NSTF Strategy 2015/16 – 2020

National Science and Technology Forum (NSTF)

STRATEGIC PLAN

2015/16 – 2020

Compiled by Jansie Niehaus, Executive Director

National Science and Technology Forum
Postal Address:
PO Box 9823, Pretoria, Gauteng 0001, South Africa
Tel: + 27 12 841 3987
E-mail: enquiries@nstf.co.za
Web: www.nstf.org.za
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<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIEIE</td>
<td>African Institute of Excellence in Information Ethics</td>
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<tr>
<td>ARC</td>
<td>Agricultural Research Council</td>
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<tr>
<td>AS &amp; TS</td>
<td>Associated Scientific and Technical Societies</td>
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<tr>
<td>ASSAf</td>
<td>Academy of Science of South Africa</td>
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<tr>
<td>CSIR</td>
<td>Council for Scientific and Industrial Research</td>
</tr>
<tr>
<td>DAFF</td>
<td>Department of Agriculture, Forestry and Fisheries</td>
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<td>DBE</td>
<td>Department of Basic Education</td>
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<td>DST</td>
<td>Department of Science and Technology</td>
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<td>ECSA</td>
<td>Engineering Council of South Africa</td>
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<td>EDD</td>
<td>Economic Development Department</td>
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<td>Exco</td>
<td>Executive Committee</td>
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<td>GSSA</td>
<td>Geological Society of South Africa</td>
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<td>ICT</td>
<td>Information and Communication Technology</td>
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<td>IKS</td>
<td>Indigenous Knowledge Systems</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>NACI</td>
<td>National Advisory Council on Innovation</td>
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<td>NDC</td>
<td>NDC Nkowankowa Demonstration Centre</td>
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<tr>
<td>Necsa</td>
<td>South African Nuclear Energy Corporation</td>
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<tr>
<td>NGO</td>
<td>Non-governmental Organisation</td>
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<td>NIKSO</td>
<td>National Indigenous Knowledge Systems Office</td>
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<tr>
<td>NPC</td>
<td>Non-Profit Company</td>
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<tr>
<td>NPO</td>
<td>Non-Profit Organisation</td>
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<td>NRF</td>
<td>National Research Foundation</td>
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<td>NSI</td>
<td>National System of Innovation</td>
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<td>NSTF</td>
<td>National Science and Technology Forum</td>
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<tr>
<td>NWU</td>
<td>North-West University</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>NYS</td>
<td>National Youth Service</td>
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<tr>
<td>PWC</td>
<td>Price Waterhouse Coopers</td>
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<tr>
<td>proSET</td>
<td>Professionals in Science, Engineering and Technology</td>
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<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>SA</td>
<td>South Africa</td>
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<tr>
<td>SAAE</td>
<td>South African Academy of Engineering</td>
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<td>SAASTA</td>
<td>South African Agency for Science and Technology Advancement</td>
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<td>SAICE</td>
<td>South African Institution of Civil Engineering</td>
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<tr>
<td>SARS</td>
<td>South African Revenue Service</td>
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<td>SET</td>
<td>Science, Engineering and Technology</td>
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<tr>
<td>SETI</td>
<td>Science, Engineering, Technology and Innovation</td>
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<tr>
<td>SKA</td>
<td>Square Kilometre Array</td>
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<td>SMME</td>
<td>Small, Micro and Medium Enterprise</td>
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<tr>
<td>SOE</td>
<td>State Owned Enterprise</td>
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<tr>
<td>STEM</td>
<td>Science, Technology, Engineering and Mathematics</td>
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<tr>
<td>SU</td>
<td>Stellenbosch University</td>
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<tr>
<td>the dti</td>
<td>Department of Trade and Industry</td>
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<tr>
<td>THRIP</td>
<td>Technology and Human Resources for Industry Programme</td>
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<tr>
<td>UCT</td>
<td>University of Cape Town</td>
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<tr>
<td>UFS</td>
<td>University of the Free State</td>
</tr>
<tr>
<td>UJ</td>
<td>University of Johannesburg</td>
</tr>
<tr>
<td>Unesco</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>UP</td>
<td>University of Pretoria</td>
</tr>
<tr>
<td>Wits</td>
<td>University of the Witwatersrand</td>
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<td>WRC</td>
<td>Water Research Commission</td>
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2 EXECUTIVE SUMMARY

The NSTF is the largest, most longstanding and most representative stakeholder body of its kind, with a proud history of stakeholder engagement with Government and continued support from stakeholders on all levels. It represents more than 100 organisations, councils and institutions and spans both the private and public sectors. The NSTF is not a Government agency. It is registered as a non-profit company and a non-profit organisation.

The NSTF has 7 membership sectors and these are represented on the NSTF Executive Committee (Exco):

- Business (small, medium and large business, including business associations)
- Civil society and labour
- Government
- Higher education
- Professional bodies and learned societies – which is known as proSET (Professionals in Science, Engineering and Technology) and governed by a sub-committee
- Science councils and statutory bodies – governed by a sub-committee
- State-owned enterprises

The NSTF vision is a transformed country where SET and innovation contribute to a high quality of life for all who live in SA, where the profile of SET professionals is representative of the population’s profile and where the education system is effective, particularly in terms of performance in SET subjects and promoting innovation.

The NSTF mandate is to represent a wide range of stakeholders in science, engineering and technology (SET). Through this mandate, its mission is:

- To promote SET and innovation
- To network stakeholders and engage all Government departments around SET-related issues
- To lobby Government at all levels on behalf of stakeholders

The NSTF engages with all Government departments, discussing policies and providing feedback and recommendations. However, there is a challenge with this engagement. Follow-up consultations, post feedback, do not always occur. It is essential to create formal and established discussion channels with Government departments.

Why is it essential that the NSTF has more endorsement and formal channels with Government departments? The NSTF is different from Government agencies with only a small degree of overlap. It is an independent voice and the most representative of the National System of Innovation (including stakeholders in the private sector and civil society). The NSTF can ensure robust debate and encourage collaboration across silos. Furthermore, there is always a need for an independent forum in a democracy.

The NSTF can play a coordinating and unifying role due to its independent and non-partisan nature. This includes facilitating collaboration across Government and bridging some of the persistent gaps that exist within the SET landscape. The ‘National System of Innovation’ is difficult to quantify. This SET landscape is very complex and its diverse aspects cannot be contained within the mandate of a single Government department. At the same time, there is a need for the DST to collaborate with other departments to fulfil its mandate.

While statutory bodies have established channels, it is equally important that a broader stakeholder forum that includes civil society is formally heard and acknowledged by Government. Research and feedback are essential for informed Government decision making but the fragmentation and inconsistencies of research and
information structures create challenges to getting a SET overview. (Research and information structures include science councils and statutory agencies.)

The NSTF represents most of the disparate research and information structures and creates a collaborative space. These organisations and initiatives do not play the same role as the NSTF – the NSTF is more representative of the National System of Innovation, aiming to include all of these bodies plus other stakeholders.

The initial focus is on establishing a formal channel with the DST which will assist the DST in connecting with other Government departments. Once a successful model for a channel is created, this can be taken across to other Government departments with the support of the DST. Since the NSTF is non-partisan, it will be able to assist the DST with connections between other Government departments.

The NSTF has contributed to the attainment of the 4 strategic aims of the DST’s Science Engagement Framework throughout its 20 years of existence.

- In terms of Framework Strategic Aim 1, the NSTF popularises SET and innovation through the Share ‘n Dare Programme. The programme uses role modeling, creating a platform for regular exposure of science practitioners.
- The focus of Framework Strategic Aim 2 is to develop a critical public engaged in SET discourse. A primary aim of the NSTF is to influence and monitor public SET-related policy as the most representative stakeholder body of its kind, spanning both the public and private sectors.
- The Framework Strategic Aim 3 is the promotion of science communication to enhance science engagement. The NSTF has promoted science communication through its Award category for “Communication for outreach and awareness” for many years. It also promotes science communication through its Share ‘n Dare Programme.
- The Framework Strategic Aim 4 of profiling South African science and science achievements has been supported by the NSTF, for many years, through its NSTF Awards and the associated youth outreach projects. Promoting SET R&D and achievements across all Government departments is also part of NSTF activities.

This strategy focuses on the 4 strategic objectives of the NSTF:

1. To influence and monitor public SET-related policy
2. To promote dialogue, among SET stakeholders, between the public and private sectors, between Government and other stakeholders, and between experienced SET professionals and the youth
3. To promote and celebrate excellence in research, SET capacity building and education, SET communication, innovation and SET activities that can have a positive impact on society and improve people’s lives, and SET activities that contribute to sustainable development
4. To implement and support projects that are cross-cutting and multi-disciplinary in nature, where appropriate, to contribute to the attainment of the Vision and Mission.

Influencing and monitoring public SET-related policy through feedback is very much dependent on establishing formal engagement channels with the various Government departments. The NSTF can play a significant role around legislation, throughout its lifecycle.

The NSTF promotes dialogue between the various stakeholders in a number of ways:

- Discussion forums and workshops that address issues of public SET-related policies
- Distributing SET news through the monthly newsletter
- Through the NSTF website
Further promotion of dialogue around SET is very much dependent on funding and stronger endorsement from Government departments.

Through the prestigious annual NSTF Awards, the NSTF promotes and celebrates outstanding SET and innovation contributions. The awards encourage the involvement and participation of SET organisations in research while raising awareness among the general public about local research and its relevance. They address Government R&D targets by involving business, drawing attention to scarce skills and profiling role models. The awards also facilitate knowledge transfer to learners and students, encouraging them to pursue careers in SET.

The NSTF implements and supports projects that contribute to attaining the Vision and Mission. These include youth outreach with projects such as:

- The **Brilliants Programme** celebrates the top performers in matric maths and science, and aims to motivate them to continue with studies for SET-related careers. It recognises 18 first year students studying in the science, medicine and engineering fields. A young man and woman are chosen from each of the 9 provinces. These students must have received top marks in mathematics and physical science in the National Senior Certificate Examinations (Grade 12) of the previous year.
- The **Share ‘n Dare programme** creates platforms for top researchers and other SET professionals to inform and inspire high school learners and university students. The programme aims to promote SET among students at tertiary institutions and among high school learners visiting science centres. This includes clarifying award winners’ fields of expertise and highlighting career opportunities in SET. It also enhances the knowledge of communities and increases public understanding.
- The **bursary database for SET-related studies** collects bursary information so that SET-related study funding can be found in one place for easy access. Based on online searches and NSTF member organisation participation, this is currently the only one of its kind in South Africa.
- The **online details of more than 50 SET career paths** gives information for learners and students on some of the many exciting careers that can be pursued.
- **Financial contributions towards projects that promote SET education and awareness** are given through the proSET (professional associations) sector of the NSTF. Requirements for these projects include that they are related to SET, SET education (including maths education), SET awareness raising, or training.

The Brilliants programme has included bursaries sponsored by the dti’s THRIP Programme and by the DST. Part of future strategic actions focus on finding more bursaries for top performing first year students.

The NSTF also has 3 primary operational goals. The first goal is to find financial sustainability and security. Current sources of funding need to be supplemented for this to happen. The second operational goal of managing stakeholder relationships is outlined through a communications and stakeholder management strategy. An additional person is being found to focus on this critical area. Sustainable human resources is the third goal. This is very much dependent on funding from the DST.

Through scenario planning, it is clear that the NSTF will have an even greater impact on the SET landscape if funding is made available. While the 20-year-old NSTF produces high impact results with minimal resources, sustainability isn’t ensured.

The NSTF is an organisation worthy of support by Government and other sponsors. To render the NSTF sustainable in the long term and allow it to have greater impact, the NSTF needs:
- Increased and long-term funding support, particularly with respect to increased capacity within the NSTF Secretariat to further the NSTF’s impact as a whole
- Stronger endorsement by key role players starting with formal engagement channels with Government
3 INTRODUCTION

The NSTF that is not a Government agency – it is the most representative stakeholder body of its kind

The National Science and Technology Forum (NSTF) is not a Government agency. It is registered as a non-profit company and a non-profit organisation. The NSTF is the largest, most longstanding and most representative stakeholder body of its kind, with a proud history of stakeholder engagement with Government. It represents more than 100 organisations, councils and institutions. It spans both the private and public sectors.

There are 7 membership sectors

The NSTF has 7 membership sectors, which are represented on the NSTF Executive Committee (Exco) and the NSTF Awards Adjudication Panel:

- Business (small, medium and large business, including business associations)
- Civil society and labour
- Higher education
- Professional bodies and learned societies – which is known as proSET (Professionals in Science, Engineering and Technology) and governed by a sub-committee
- Science councils and statutory bodies – governed by a sub-committee
- State-owned enterprises

3.1 THE NSTF VISION, MISSION, MANDATE, VALUES AND STRATEGIC OBJECTIVES

The NSTF Vision

A transformed country where SET and innovation contribute to a high quality of life for all who live in SA, where the profile of SET professionals is representative of the population’s profile and where the education system is effective, particularly in terms of performance in SET subjects and promoting innovation.

The NSTF Mission

- To promote SET and innovation
- To network stakeholders and engage all Government departments around SET-related issues
- To lobby Government at all levels on behalf of stakeholders

The NSTF Mandate

To represent a wide range of stakeholders in science, engineering and technology (SET)

The NSTF Values

- The democratic principles as enshrined in the Constitution of the Republic of South Africa
- Responsible and ethical action on behalf of members
- Conducive environment for dialogue
- Promote collaborative action

There are 4 strategic objectives of the NSTF:

5. To influence and monitor public SET-related policy
6. To promote dialogue, among SET stakeholders, between the public and private sectors, between Government and other stakeholders, and between experienced SET professionals and the youth
7. To promote and celebrate excellence in research, SET capacity building and education, SET communication, innovation and SET activities that can have a positive impact on society and improve people’s lives, and SET activities that contribute to sustainable development.

8. To implement and support projects that are cross-cutting and multi-disciplinary in nature, where appropriate, to contribute to the attainment of the Vision and Mission.

Various NSTF activities assist in achieving these objectives
The NSTF currently conducts various activities to achieve these objectives. (The projects are discussed in more detail in this document.) These include:

- Discussion Forums
- The NSTF Awards
- Various projects (including Youth Outreach projects)
- Distributing SET news on behalf of the SET community

The NSTF engages with about 12 Government departments
The NSTF engages with various Government departments (about 12), discussing policies and providing feedback and recommendations. The Department of Science and Technology (DST) and Department of Agriculture, Forestry and Fisheries (DAFF) are represented on the Exco.

The NSTF challenge with Government departments is to create formal and established discussion channels
The process of engaging with Government departments is challenging. A primary aim of the NSTF is to provide feedback and recommendations, including interactive discussion with Government. However, follow-up consultations (after providing the information) do not always occur. It is essential to create formal and established discussion channels with Government departments.

The difference between the NSTF and Government agencies
The NSTF is different from Government agencies. It has not been established in terms of an Act of Parliament, does not receive Government grant funding, and does not have to report to Government. The role of the NSTF and its activities need to be assessed against this background.

The NSTF began with the transition to democracy and has outlasted the fashion of stakeholder forums of 20 years ago
The NSTF was established by a group of stakeholders and interested individuals, including ANC supporters and the fledgling Department of Arts, Culture, Science and Technology. This was at the time of South Africa’s political transition to democracy.

Various stakeholder forums were spontaneously formed throughout the country at the time. The process ensured that the agenda of the envisaged new South Africa would include key issues and representative stakeholder groups, focusing on important matters such as equal education and equal access to health services. The NSTF is a civil society forum that has outlasted the end of the perceived need for of stakeholder forums of 20 years ago.

The NSTF is an independent voice and a valuable asset to the National System of Innovation
Although the political transition has long passed, the NSTF has retained its original mandate – that of representing a wide range of stakeholders in science, engineering and technology (SET). Over the years consideration was given to the NSTF becoming a Government agency, however, those involved in the NSTF decision-making structures believe that the NSTF has to be independent of Government so that it can:

- play the unencumbered role of providing critical and constructive feedback to Government
include various stakeholders in the private sector and civil society, in addition to Government and Government agencies.

The NSTF is a valuable asset in the National System of Innovation. It can ensure robust debate and encourage collaboration across silos. The NSTF is an instrument of democracy, encouraging free speech and critical voices.

The NSTF occupies a niche in the SET landscape and can play a coordinating and unifying role

The SET landscape is a complex one, with many role players for its size. South Africa has a strong science and engineering community, but it is small compared to the country’s population. It is important to realise the niche that the NSTF occupies within this complex ‘system’. The NSTF can play a coordinating and unifying role, making it easier to get an overview of and navigate the SET landscape.

3.2 Description of Strategic Planning Process

Strategic planning process incorporated extensive feedback from the Exco and Secretariat.

This document is a continuation of the original NSTF strategy. This has included, since 2007, a Mission and Vision Statement. The current strategic planning process has incorporated extensive feedback from the Executive Committee (Exco) and the numerous Secretariat strategic sessions.

The document is comprehensive in order to show the NSTF’s excellent track record and importance.

The document further provides an overview of the NSTF’s history, current environment, its activities and achievements, and operational challenges. It has been written as comprehensively as possible, in order to thoroughly inform the reader of the track record and importance of this forum.

The strategy shows that, with funding, the NSTF can continue its good work plus have an even greater impact in South Africa.

An analysis shows that the NSTF has significant strengths to build on, but that funding and human resources provide major challenges to its sustainability. A detailed SWOT analysis and Scenario analysis are included. This strategy envisages an NSTF that can not only continue its good work, but have a greater impact in South Africa in future. Projects and actions are listed throughout the document that could help to realise this vision.
4 BACKGROUND AND INFORMATION ON THE NSTF

4.1 ABOUT THE NATIONAL SCIENCE AND TECHNOLOGY FORUM (NSTF)

The NSTF is a broadly representative umbrella stakeholder body for SET
The NSTF is an umbrella stakeholder body that is broadly representative. It is for organisations with an interest in science, engineering, technology (SET) and innovation.

The NSTF is the largest and most representative stakeholder body of its kind, spanning both private and public sectors
The NSTF is the largest, most longstanding and most representative stakeholder body of its kind. It represents more than 100 organisations, councils and institutions. It spans both the private and public sectors. The NSTF consists of a formidable gathering of expertise and experience. The individual representatives of member organisations include:
- Researchers and scientists (in various disciplines)
- Engineers (in all branches of engineering)
- Entrepreneurs and business people
- Technologists and technicians
- Administrators
- Academics and teachers

4.2 NSTF MEMBERSHIP SECTORS

NSTF members participate under the following sectors:
- Business: Small, medium and large business, including business associations
- Civil society and labour
- Government
- Higher education
- Professional bodies and learned societies – known as proSET (Professionals in Science, Engineering and Technology).
- Science councils and statutory bodies
- State-owned enterprises

4.3 LEGAL STATUS

The NSTF is a non-profit company and non-profit organisation
The NSTF is a registered non-profit company (registration number 2007/029165/08). It is also registered as a non-profit organisation (registration number 92042) with the Department of Social Development, in compliance with the Non-Profit Organisation Act, No. 71 of 1997.

4.4 EXISTING NSTF ACTIVITIES

4.4.1 DISCUSSION FORUMS/WORKSHOPS

Addressing issues of public SET-related policies: These address issues of public SET-related policies. Five to six gatherings are held per year and are attended by 50-80 participants each. The topics are of cross-cutting relevance to the SET community. All presentations, as well as reports of the discussions and
recommendations, are published on the NSTF website. This contributes to fulfilling the NSTF’s main mandate.

4.4.2 DISTRIBUTING SET NEWS THROUGH THE MONTHLY NEWSLETTER

SET-related public policies, events and other SET news: The newsletter focuses on SET-related public policies, events and other SET news in South Africa, in addition to NSTF news. The information is taken from a wide variety of sources to give readers a monthly overview of the SET landscape. The NSTF newsletter is sent to more than 7000 subscribers. Each year, the newsletter provides more than 300 relevant website links. These links are also posted on the NSTF homepage, which is updated with news twice a week.

4.4.3 RUNNING THE NSTF AWARDS PROCESS AND GALA DINNER

Annual SET awards to encourage and reward excellence: The NSTF has been running the NSTF Awards annually since 1998. This includes all the arrangements, publicity and fundraising, as well as the adjudication process and associated youth outreach projects. The NSTF Awards honour and celebrate outstanding contributions to SET and innovation. The awards encourage and reward excellence in:

- Scientific research
- Technological innovation
- Environmental sustainability/Green economy
- Technology transfer
- Education and training
- Capacity building
- Management
- Communication and outreach

4.4.4 YOUTH OUTREACH PROJECTS

- The Share ‘n Dare programme creates more than 20 platforms per year for the NSTF Awards winners to address the youth. It provides SET role models and shows youth the wide range of SET careers and possibilities that exist. This occurs at science centres and universities, as well as on community radio stations. In addition, the winners are profiled in the monthly NSTF newsletter. The project has been running since 2008, resulting in NSTF Awards winners sharing their knowledge with thousands of young people. Research is conducted on the Share ‘n Dare programme on an ongoing basis. It is based on audience surveys when the NSTF Awards winners present. It also evaluates the convergence of ICTs for community informatics.
- The Brilliants Programme recognises, inspires and assists 18 top performers in matric physical science and maths. Some of these first-year students are awarded bursaries or are helped to access bursaries. The initiative has been running since 2003.
- Bursary information: The ‘Bursaries’ section of the NSTF website (previously a separate website www.sciencebursaries.org.za) keeps learners and students updated with available science-related bursaries. This initiative was started with United Nations Educational, Scientific and Cultural Organization (Unesco) and DST funding in 2011.

4.5 HISTORY OF THE NSTF

4.5.1 FROM THE NSTI TO NSTF

The NSTI, the precursor of the NSTF, participated in the CODESA Convention

The National Science and Technology Initiative (NSTI) was the precursor of the NSTF. It participated in South Africa’s landmark CODESA Convention (Convention for a Democratic South Africa) in 1991. As a
result of findings and recommendations of the NSTI, Government together with other key stakeholders founded the NSTF in 1995. This was to oversee implementation of the recommendations.

**NSTF was to oversee restructuring of national science system and to ensure an integrated approach to science and technology**

The then-Minister of Arts, Culture, Science and Technology, Mr Ben Ngubane, recognised the body as a science, engineering and technology (SET) forum for consultation and addressing SET issues within the broad SET community. The NSTF was established to oversee the restructuring of South Africa’s national science system and to ensure an inclusive approach to science and technology.

**NSTF as sounding board, communication channel, constructive watchdog, best practice creator and sharer of positive SET advancements**

On 28 March 1995, the first plenary meeting of the NSTF was opened by then-Minister Ben Ngubane. The mandate given to the NSTF was to act as the sounding board, communication channel and constructive watchdog of SET in South Africa. Integral to this mandate was establishing best practice norms, interacting with Government and sharing the positive advancements being made in SET fields.

**Continued support from DST and stakeholders on all levels**

The NSTF has continued to enjoy support from the Ministry and Department of Science and Technology. There has also been continuous support from stakeholders at all levels, from the smallest of businesses to the largest science councils and universities.

### 4.6.2 Historical Milestones

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<thead>
<tr>
<th>Date</th>
<th>Milestone</th>
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<tbody>
<tr>
<td>1996</td>
<td>Contributed and provided input into the White Paper on Science and Technology and other policy and planning processes within Government.</td>
</tr>
<tr>
<td>Leading up to 1998</td>
<td>Initiated the discussion that led to the declaration of South Africa’s first Year of Science and Technology (YEAST) in 1998.</td>
</tr>
<tr>
<td>1998</td>
<td>Established the highly-acclaimed annual NSTF Awards to honour role models and reward excellent achievements in SET.</td>
</tr>
<tr>
<td>1998</td>
<td>Participated and added considerable value to initiatives and processes relating to the establishment of the National Research Foundation (NRF).</td>
</tr>
<tr>
<td>2001 onwards</td>
<td>Played an active role in the evaluation, review and implementation processes of the:</td>
</tr>
<tr>
<td></td>
<td>- National Development Research Strategy (NDRS) - 2002</td>
</tr>
<tr>
<td></td>
<td>- National Research and Technology Foresight Exercise – 2002</td>
</tr>
<tr>
<td></td>
<td>- Innovation Indicators – 2005</td>
</tr>
<tr>
<td>2001</td>
<td>Initiated debate and discussions on Ethics in SET in South Africa that produced a discussion document and a charter that aimed to establish a National Consultative Council on SET Ethics in South Africa.</td>
</tr>
<tr>
<td>2002</td>
<td>Participated in the lobbying for the establishment of a separate Government department that would focus entirely on SET in SA. The structure and plans for the</td>
</tr>
</tbody>
</table>
new Department of Science and Technology (DST) were presented to the NSTF and its members for comment.

### 2002

### 2003
- Substantially contributed to the development of the *Science and Technology division of NEPAD*. This was to ensure that SET plays its rightful role in the New Partnership for Africa’s Development (NEPAD) on the African continent.
- Merged membership with the *AS&TS Trust* (Associated Scientific and Technological Societies of South Africa). Initially the new membership group was known as SETAG (Science, Engineering, Technology and Associated Group). It was renamed *proSET* (Professional in Science, Engineering and Technology) in 2009. This sector accounts for about 40% of NSTF member organisations.
- Initiated the *Brilliant Programme* to recognise top matric performers in physical science and mathematics (previously called the Education Recognition Programme).

### 2004
- Aspired to change the face of education in South Africa by initiating discussions and leading national consultations that resulted in the formulation and implementation of the *National Strategy for Mathematics, Science and Technology Education (NSMSTE)*.

### 2002-2004
- Contributed actively towards the generation of the *National Strategy for Sustainable Development* and also participated meaningfully in the organisation and deliberations of the World Summit for Sustainable Development.

### 2006
- Advocated for the review of *work permits for SET professionals*. This led to workshops and discussions on the effects of the ‘brain drain’ on South Africa.

### 2007
- Discussion of and stakeholder feedback on: the *National System of Innovation (NSI)* and the *Ten Year Innovation Plan*.

### 2008
- Participated in the *preliminary discussions on the establishment of the Technology Innovation Agency (TIA)*.
- Initiated the *Share ‘n Dare programme* to provide platforms for professional scientists to share their knowledge and experiences with the youth.

### 2009
- Held the first annual *NSTF Science Councils Symposium*, organised by representatives of the Science Councils and Statutory Bodies membership sector.

### 2008 - 2012
- Managed the *National Youth Service* on behalf of DST for 5 years. This benefitted 330 young unemployed graduates.

### 2008 - 2015
- Managed the *DST’s Incentive Bursary Scheme* for 8 years. This benefitted more than 70 students.
4.6 **THE NSTF’S CORPORATE GOVERNANCE STRUCTURE**

The NSTF is a broad stakeholder body that represents over 100 organisational members in 7 distinct sectors. (See the proportions of the sectors under section 6.)

### 4.6.1 THE NSTF EXECUTIVE COMMITTEE AND BOARD

There are representatives for the 7 sectors and they are not paid for their service

Each member organisation is represented at the NSTF Annual General Meeting by official representatives appointed by each organisation. Six of the sectors of membership each elect representatives to the Executive Committee (Exco), which meets about 7 times a year. Government representatives for DST and DAFF on the Exco are appointed by these Government departments. Members of the Executive Committee are not paid for their services. The NSTF Board of Directors is a subset of the NSTF Executive Committee, ie some of the Exco members were appointed as Directors taking legal responsibility for NSTF as a registered non-profit company. There are currently (as of September 2015) 5 directors on the Board of the NSTF. The board meetings coincide with Exco meetings.

**Exco has representation from Government and engages with all Government departments responsible for SET and innovation policies**

The Government sector is represented on the Exco by the DST and DAFF. However, NSTF engages with all Government departments responsible for policies that relate to science, engineering, technology and innovation.

### 4.6.2 THE DIRECTORS AND THE OTHER EXECUTIVE COMMITTEE MEMBERS

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof Ali Dhansay</td>
<td>NSTF Chairman and Company Director</td>
</tr>
<tr>
<td>Dr Takalani Rambau</td>
<td>NSTF Vice-Chairman and Company Director (resigned in November 2015)</td>
</tr>
<tr>
<td>Ms Jansie Niehaus</td>
<td>NSTF Executive Director and Company Director</td>
</tr>
<tr>
<td>Mr Denis Hunt</td>
<td>Business Sector Representative and Company Director</td>
</tr>
<tr>
<td>Mr David Kramer</td>
<td>Civil Society Sector Representative and Company Director</td>
</tr>
<tr>
<td>Prof Lesley Cornish</td>
<td>Higher Education Sector Representative</td>
</tr>
<tr>
<td>Mr Thabiso Mudau</td>
<td>Science Councils and Statutory Bodies Sector Representative (resigned November 2015, replaced by Mr Nirdesh Singh of Mintek)</td>
</tr>
<tr>
<td>Mr Barry MacColl</td>
<td>State-owned Enterprises Representative</td>
</tr>
<tr>
<td>Mr Dawie Botha and Mr Reinhard Meyer</td>
<td>proSET (Professional Bodies Sector) Representatives</td>
</tr>
<tr>
<td>Prof Brenda Wingfield</td>
<td>Immediate Past Chairman and Company Director</td>
</tr>
<tr>
<td>Dr Philemon Mjwara</td>
<td>Government Sector: Department of Science and Technology (Director General)</td>
</tr>
</tbody>
</table>
Dr Ntsane Moleke  
Government Sector: National Advisory Council on Innovation

Dr Ramagwai Sebola  
Government Sector: Department of Agriculture, Forestry and Fisheries  
(resigned from DAFF in November 2015 and replaced by his successor at DAFF)

Ms Wilna Eksteen  
Office Manager and Secretariat

Ms Makwena Ramaru  
Committees Secretary

4.6.3  **GOVERNANCE STRUCTURE OF THE NSTF (DIAGRAM)**

- **Science Councils & Statutory Bodies**  
  Sub-Committee, chaired by an Exco member

- **Executive Committee**
  - Oversight/Fiduciary responsibility

- **Board of Directors**
  - proSET Sub-Committee  
    (elected by proSET membership)  
    chaired by an Exco member

- **Executive Director**
  - Sits on Board & sub-committees.  
  - Reports to Board/Exco.  
  - Directs the secretariat etc
5 NSTF STAKEHOLDER BODIES IN SCIENCE, ENGINEERING, TECHNOLOGY (SET) AND INNOVATION

5.1 STRUCTURE OF THE NSTF MEMBERSHIP AND APPROXIMATE MEMBER PROPORTION PER SECTOR

The diagram below shows the NSTF’s membership sectors and approximate member proportion per sector. Here the Business and State Owned Enterprises (SOE) sectors have been combined.

<table>
<thead>
<tr>
<th>Membership sector</th>
<th>Number of member organisations</th>
<th>Percentage of non-Government members:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>17</td>
<td>--</td>
</tr>
<tr>
<td>Science Councils &amp; Statutory Bodies</td>
<td>16</td>
<td>15%</td>
</tr>
<tr>
<td>Higher Education</td>
<td>14</td>
<td>13%</td>
</tr>
<tr>
<td>Civil Society</td>
<td>22</td>
<td>20%</td>
</tr>
<tr>
<td>Business and SOEs</td>
<td>17</td>
<td>16%</td>
</tr>
<tr>
<td>proSET (Professional Bodies)</td>
<td>38</td>
<td>36%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>124</td>
<td>100%</td>
</tr>
</tbody>
</table>
5.2 Government sector

The Government sector is represented by the Department of Science and Technology (DST). However, the NSTF engages with all Government departments responsible for policies that relate to science, engineering, technology and innovation. DST and the Department of Agriculture, Forestry and Fisheries (DAFF) are represented on the NSTF Executive Committee.

Key interactions with the NSTF: In terms of stakeholder feedback and joint collaborations, the NSTF interacts with all Government departments around relevant research, technology transfer and policy formulation and implementation. Representing the broad spectrum of the System of Innovation, the NSTF provides feedback and recommendations. As noted previously, the challenge is in continuing this discussion around the feedback and recommendations within Government departments. There is a clear need to create more formalised channels with the various Government departments to assist this process. This is to ensure the feedback is acknowledged and an official response is given as to the status of the feedback/recommendations. Below shows how the NSTF interacts with the national departments, giving examples of the types of relevant issues associated with each Government department:

<table>
<thead>
<tr>
<th>Department</th>
<th>Examples of relevant issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Agriculture, Forestry and Fisheries (DAFF)</td>
<td>Establishment or strengthening of various industries eg agro-processing and aquaculture, food security, drought resistant crops and breeds</td>
</tr>
<tr>
<td>Department of Basic Education (DBE)</td>
<td>Quality of STEM education, rollout of ICT-assisted teaching and learning, and research in education</td>
</tr>
<tr>
<td>Department of Cooperative Government and Traditional Affairs (CoGTA)</td>
<td>Protecting and developing indigenous knowledge for the benefit of communities.</td>
</tr>
<tr>
<td>Department of Energy (DoE)</td>
<td>Emerging technologies that might alleviate the energy crisis in SA, be better for the environment than current sources, and mitigate climate change, as well as giving households and communities more access to energy</td>
</tr>
<tr>
<td>Department of Environmental Affairs (DEA)</td>
<td>Balancing the need for economic growth with conservation of the environment, including biodiversity, sustainable development, and mitigation of climate change</td>
</tr>
<tr>
<td>Department of Health (DoH)</td>
<td>Medical research and technologies that improve primary health, nutrition, medical procedures and healing</td>
</tr>
<tr>
<td>Department of Higher Education and Training (DHET)</td>
<td>Quality of tertiary education, particularly in STEM subjects, the promotion of post-graduate research, bursary opportunities for talented students, adequate preparation of SET graduates for the workplace</td>
</tr>
<tr>
<td>Department of Home Affairs (DHA)</td>
<td>Policies around the movement and settlement of people with scarce and critical skills into the country. Security of</td>
</tr>
</tbody>
</table>
the databases kept by the DHA, which include personal particulars on all citizens (biometrics, and smart cards, for example)

| Department of Human Settlements (DHS) | The improvement of housing and the development of better towns and neighbourhoods, where the inhabitants are safe, live within a convenient distance of public transport and access to education, water, sanitation, and other facilities. Also cost-efficient building materials and methods that have been researched. Mitigating harm to the environment. |
| Department of Mineral Resources (DMR) | Research and technologies to nurture beneficiation industries, and improve the efficiency and safety of mining and processing of minerals, while preserving and restoring the natural environment |
| Department of Public Enterprises (DPE) | As the Government department responsible for State Owned Enterprises (SOEs), key decisions regarding the relevant technologies for efficient electricity generation, and rail, air and sea transport, among others, reside with the DPE |
| Department of Public Works (DPW) | The establishment of infrastructure (roads, dams, bridges, structures for electricity generation and distribution, etc) with appropriate technology, safety, and with the necessary skills |
| Department of Science and Technology (DST) | All matters concerning scientific research, technology transfer and innovation, the pipeline of skills for science and technology, etc. |
| Department of Small Business Development (DSBD) | Establishment of small businesses based on new technologies, and entrepreneurial skills |
| Department of Telecommunications and Postal Services (DTPS) | All matters relating to ICTs – the digital divide, skills issues, infrastructure, cyber-security |
| Department of Trade and Industry (the dti) | The establishment and strengthening of industries through new and appropriate technologies |
| Department of Water and Sanitation (DWS) | Issues of access to water and sanitation, treatment of water and waste, safety and health, research, skills, related environmental considerations, etc |
| Economic Development Department (EDD) | The role of SET in the economy, and how to strengthen and monitor SET’s contribution to the economy, as well as the skills pipeline |

(Although this is not an exhaustive list, it covers most of the NSTF’s work under Strategic Objective 1.)
5.3 **Science Councils and Statutory Bodies Sector**

This NSTF membership sector is for those organisations created by an act of parliament and substantially supported by Government grants. These are state agencies for:

- Research and development (R&D)
- Funding of R&D
- Regulation of sectors related to R&D and engineering

**Key interactions with the NSTF:** The NSTF, as the stakeholder body for SET and innovation organisations in South Africa, hosts a Symposium (or Discussion Forum) every year in consultation with the representatives of the Science Councils and Statutory Bodies sector. This has been going since 2009. This platform allows these organisations to present and showcase their work and engage industry and role-players with regards to a particular cross-cutting topic. It also encourages networking among researchers among the various science councils.

Past topics addressed in this manner are:

- How the Science Councils and Statutory Bodies address the National Priorities as outlined by the President of South Africa (2009)
- Commercialisation of research outputs - challenges and success stories of the Science Councils (2010)
- Collaborations of Science Councils with Industry and Higher Education around Commercialisation (2011)
- Achieving NDP 2030 targets: What skills are needed by Science, Technology and Innovation Institutions? (2013)
- Beneficiation of South Africa’s natural resources (2014)

5.4 **Higher Education and Training Sector**

This membership sector of the NSTF is for tertiary institutions of learning and higher education forums or umbrella bodies. Thus most universities and universities of technology belong to this membership sector.

**Key interactions with the NSTF:** Academics actively participate in every meeting or event, including the NSTF Awards, due to their interest and the key role they play in the SET landscape. Tertiary institutions bring current research forward where necessary, highlighting areas pertinent to particular topics. Often researchers in this sector collaborate with individual science councils and/or industry. Thus the boundaries between sectors are blurred and presentations by academics often demonstrate how much multi-disciplinary and collaborative research and development is done in South Africa. This sector’s membership is also involved whenever discussions are conducted around skills development or research in the case of specific topics on skills development. Because NSTF represents both universities and universities of technology, it is ideally placed to encourage interaction between these two sub-sectors, and to raise the perceived status of universities of technology.

5.5 **Civil Society and Labour Sector**

This is a very diverse membership sector which includes NGOs of various kinds that do the following:

- Promote science and technology, and raise awareness among school learners and the public
- Are involved in education and competitions at school level around SET, mathematics and innovation
- Provide community services or training and technology transfer
• Represent community organisations
• Represent labour in SET-related sectors of the economy

**Key interactions with the NSTF:** This sector engages within discussion forums where the topics are relevant. This NSTF membership sector requires further development. It is difficult to organise the sector and address issues of interest and concern because of the diversity of organisations. However, the NSTF offers potential channels of communication with various Government departments, and amplifies the voices of small organisations that lack the clout and networks to ensure that they are heard.

### 5.6 Business Sector

The NSTF has a diverse group of member organisations in the business sector, including large companies and SMMEs, as well as business associations.

**Key interactions with the NSTF:** It is an important aspect of the NSTF that businesses, business associations and state-owned enterprises can be members and active participants. In fact, it is one of the most important reasons for the NSTF – to bring Government, industry and civil society together. This sector engages around issues relating to the System of Innovation, such as R&D (research and development), job creation and bringing innovations to market. It is in the private sector where the necessary innovation takes place to generate uniquely South African goods and services. An expanding national economy relies on the export of such goods and services. Government policies and national strategic frameworks are of critical importance for providing a conducive environment in which science and the development of innovative technology can thrive. This strategy focuses on developing formal and established channels with Government. One of the reasons this channel is so critical is to provide a formal channel for the business sector to have a cohesive voice regarding issues around the National System of Innovation framework.

### 5.7 State Owned Enterprises sector

State Owned Enterprises (SOEs) are those organisations that include a majority ownership by Government. The NSTF membership includes Eskom, the South African Nuclear Energy Corporation (Necsa) and Rand Water. The importance of SOEs is that they provide essential services for the country and therefore should not be entirely at the mercy of market forces.

**Key interactions with the NSTF:** Decisions made by Government affecting these SOEs, and decisions made by the SOEs themselves, affect the economy as well as the lives of everyone in the country. Research and development conducted in or commissioned by the SOEs are therefore of critical importance. The involvement of this sector in the NSTF is useful to the sector itself and to the other members of the forum. This sector engages in a similar way to the business sector, around issues relating to the System of Innovation, such as R&D, job creation and bringing innovations to market.
5.8 Professional Bodies and Learned Societies sector (proSET)

5.8.1 About proSET
proSET is a membership sector of the NSTF consisting of professional bodies and learned societies in SET and SET education. proSET consists of about 40 professional bodies and learned societies that are also NSTF members. proSET focuses on the following:

- Facilitating cooperation among professional organisations regarding SET and education
- Facilitating and contributing to improved SET education
- Promoting the image of all SET practitioners

History of proSET: proSET was previously known as SETAG (Scientific, Engineering, Technological Societies and Allied Professions Group of South Africa). SETAG resulted from a merger between the memberships of NSTF and the AS&TS Trust (Associated Scientific and Technical Societies of South Africa) in 2003. SETAG was active from 2003 to 2010, during which time it was renamed as proSET. The proSET sector of the NSTF was revived in 2012. A new proSET committee was elected, after a dormant period of about two years. proSET is not a separate legal entity. It is governed by the founding documents of the NSTF.

proSET Discussion Forums: As a sector of the NSTF, proSET hosts an annual Discussion Forum (previously called proSET Presidents’ Forum). This Discussion Forum focuses on issues of cross-cutting interest to the proSET member organisations, in particular around engineering and education.

The proSET Committee meets three times a year. Following is a list of the current committee members:

- Mr Reinhard Meyer, proSET representative on NSTF Exco and member of Geological Society of South Africa (GSSA)
- Mr Dawie Botha, proSET representative on NSTF Exco and member of South African Academy of Engineering (SAAE) – previously of SAICE
- Mr Richard Gundersen, Former AS&TS trustee
- Dr Rolf Becker, Member (CEO) of South African Council for Natural and Applied Science Practitioners (SACNASP)
- Ms Jansie Niehaus, NSTF Executive Director*
- Ms Wilna Eksteen, NSTF Office Manager*
- Ms Makwena Ramaru, (NSTF) Secretary for proSET Committee*

*ex officio (meaning holding a position or membership due to the nature of another position, in this case being part of the NSTF secretariat, and not by election or appointment)

6.8.2 proSET Funds
During 2011, the NSTF worked with the former AS&TS Trustees and Directors to transfer the AS&TS Trust funds to the NSTF. (Previously the funds had been dormant for many years.) This money is ring fenced for proSET and is to be used for projects consistent with the mandates of the NSTF, proSET and the old AS&TS Trust. (All these mandates are very similar). The proSET Committee decides on how funds will be
used, with the trustees/directors’ approval. The AS&TS Trust fund is managed by the NSTF Secretariat and audited annually.

The current trustees/directors of the AS&TS Trust fund: Prof Brenda Wingfield, Dr Takalani Rambau and Mr Ralph Gunn.

5.8.3 PROSET PROJECT GRANTS
Organisations that are NSTF members under the proSET sector can apply annually for project grants. Criteria for these project grants are as follows:

The member organisation must meet the following requirements:
• Be a paid-up member of NSTF in the proSET sector
• Be a voluntary association, a non-profit company or a non-profit organisation
• Not be primarily funded by Government or Government agencies
• Be solvent and have other sources of income besides proSET funding

The projects must meet the following requirements:
• Related to SET, SET education (including maths education), SET awareness raising, or training
• Regarded by many proSET organisations as having common or cross-cutting interest to the SET community
• Already well established or be linked to existing projects

The following factors are also considered:
• Projects that will have a multiplier effect eg training trainers
• Projects that will have measurable outcomes, and that include plans to evaluate processes and outcomes
• Projects that promote ongoing professional development of individual members of proSET member organisations
6  ANALYSIS OF THE EXTERNAL ENVIRONMENT

6.1 THE SCIENCE AND TECHNOLOGY CONTEXT

New Department of Science and Technology in 2004
In 1994, the ANC Government gave South Africa its first dedicated Ministry and Department of Arts, Culture, Science and Technology. However, many stakeholders had lobbied for a separate Ministry and Department of Science and Technology. In 2004 these were established for the first time. As such, South Africa has a very young Ministry and Department within its young democracy.

NSTF regarded as a valuable vehicle for stakeholder engagement and collaborative projects
The NSTF was established as a stakeholder forum to monitor the process of developing science and technology structures, and to facilitate communication with stakeholders about the process. As such, the NSTF succeeded in the role for which it was formed. However, those involved with the NSTF have continued to regard it as a valuable vehicle for stakeholder engagement and collaborative projects.

Complexity of the ‘National System of Innovation’ (NSI) means collaboration is the way forward
The science and technology landscape is, however, very complex and its diverse aspects cannot be contained within the mandate of a single Government department. The DST itself recognises that it has to collaborate with other departments to fulfil its mandate.

National System of Innovation does not have structure and is difficult to quantify
The DST has referred to the SET landscape as the ‘National System of Innovation’. This is a contentious phrase because it is not a systematic ‘system’. It has no structure, and it is difficult to quantify. The ‘system’ is also not under DST’s control, nor is it entirely under Government control. The ‘system’ is more like the economy – it is predictable and measurable only to a certain extent. The Government has to understand it as well as is possible, in order to have some ability to make forecasts and to make decisions about how its actions will influence the outcomes.

Research essential for informed Government decision making
Research is important to inform the decisions of all Government departments and organs of state. Scientific research and technological innovation are crucial to the work of at least 10 Government departments.

Fragmentation and inconsistencies of research and information structures mean difficulty in getting a SET overview
Some of these Government departments have corresponding portfolio committees in Parliament. Some of the research agencies (or ‘science councils’) are linked to line departments (such as the Agricultural Research Council and the Department of Agriculture, Forestry and Fisheries). Some departments have other statutory agencies under their authority. Part of the difficulty of getting an overview of the SET landscape is due to the fragmentation and inconsistencies of these structures.

NSTF represents the disparate research and information structures and creates a collaborative space
The NSTF represents most of the SET stakeholders in the public sector, Government agencies, research councils, etc, as well as the private sector (including NGOs, business, and professional societies). The NSTF’s challenge is to promote debate, networking and collaboration among these departments and organisations, as well as with other sectors.

Examples of types of organisations and initiatives that provide SET policy advice directly to Government
Following are some examples of organisations and initiatives that provide SET policy advice to Government:
• The Academy of Science of South Africa (ASSAf) is an organisation of top scientists in the country. Academies across the world exist to advise their governments. Even if they are fully funded by the government, their independence is generally respected. Expert advice through studies (commissioned or consensual) is highly respected. The Academy in SA has grown from strength to strength and there is a firm commitment by the DST to fund and support it. ASSAf is a member of the NSTF.

• The National Advisory Council on Innovation (NACI) is a body of expert commissioners. It was formed for the purpose of advising Government on innovation. Its work complements that of ASSAf. NACI is a member of the NSTF and has special representation on the NSTF Exco.

• The Technology Innovation Agency (TIA) is the DST’s agency for promoting and facilitating innovation. Together with NACI, it can advise the DST on anything related to innovation.

• COHORT, as heads of research organisations, is a semi-formal structure intended to promote networking among heads of such statutory organisations. It makes it possible for the DST to consult all the heads of organisations at the same time, regardless of the line departments to which their organisations report.

These organisations and initiatives do not play the same role as the NSTF – the NSTF is more representative of the National System of Innovation, aiming to include all of these bodies

These organisations and initiatives do not play the same role as the NSTF. The NSTF is unique in that it is not directly answerable to Government. The NSTF is not a Government agency, represents a wider stakeholder reach and does not operate on an invitation-only basis. Due to these factors, the NSTF is more representative of the National System of Innovation. The intention is that all of the above bodies will be part of the NSTF. Some of these organisations are already members of the NSTF. However, they could make better use of the NSTF to disseminate information, create platforms for discussion and stakeholder consultation, and to form collaborations with diverse organisations. There will be more impetus to do this if the NSTF is recognised as the umbrella body by the DST and there are formal channels between the DST and the NSTF.

While statutory bodies have established channels, it is equally as important that a broader stakeholder forum that includes civil society is formally heard and acknowledged by Government

Because the NSTF is the umbrella body, providing a cohesive voice from the System of Innovation to the Government, it is important to have established channels with the Government. While statutory bodies have established channels, it is equally as important that a broader stakeholder forum that includes civil society is formally heard and acknowledged by Government.

Government is also informed by ad hoc stakeholder workshops

Government departments also organise public stakeholder workshops for feedback. These are open for anyone to attend. At the same time, specific individuals and organisations are invited to ensure that the relevant organisations and individuals are present. A good example is the series of workshops across the country held by the Department of Energy in 2013, to discuss the Draft Integrated Energy Plan for the country.

The DST uses workshops, summits and conferences for stakeholder feedback

The DST has been calling workshops to draft roadmaps for particular sectors. It has also driven processes for stakeholder feedback before – notably the Foresight Exercise and the Provincial Indabas (until about 2004). Most recently, DST called an STI Stakeholder Summit (of heads of all affected organisations, as well as sister departments). In December 2015, DST is organising a Science Forum. This is similar to a major conference and includes as one of its themes ‘The interface between science and policy making’.

The NSTF can assist the Government in making stakeholder engagement even simpler through NSTF members and database
There is an opportunity for Government departments to make use of the NSTF and its database. While Government departments have good processes in place for stakeholder engagement, the NSTF can assist in making the process even simpler. The NSTF can help organise a significant number of key SET stakeholders into an NSTF group discussion forum. The NSTF can also help identify the stakeholders.

**Persistent gaps that are difficult for Government to bridge**

There are also particular and persistent gaps which are difficult for Government (including the DST) to bridge:

- Science and Basic Education (addressed through science centres and pilot programmes). Responsibility for this falls between the DST and Department of Basic Education (DBE)
- Science and undergraduate studies. Responsibility falls between the DST and the Department of Higher Education and Training (DHET)
- The gaps between DST and other departments’ research components – proposed solution is the Unified Science Vote, but it is not certain whether this is feasible or likely to happen
- Gaps between science councils and their line departments, where scientific research and engineering and technological skills may not be adequately understood or appreciated
- Gaps between science councils and higher education institutions
- Gaps between science institutions and industry
- Creation and promotion of science careers in preference over financial careers
- Gap between natural sciences and social sciences
- Gap from discovery to product development and commercialisation
- Neglect of Design as a discipline, from school level (‘technology’) to specialist level
- Awareness in SA of Unesco’s science commission and active links in civil society

**NSTF can bridge some of the gaps as a flexible and impartial broker**

The NSTF, as a civil society body, is able to easily bridge some of the gaps listed above. It can do so by being flexible and an impartial broker. In particular it has no line department to report to, notwithstanding its good relationship with the DST.

**NSTF is a forum for as wide a range of stakeholders as possible**

The NSTF’s ongoing role is to provide a forum for as wide a range of stakeholders as possible. This includes a variety of economic sectors, Government departments, state agencies, research organisations. It also spans both the public and private sectors.

**NSTF represents substantial number of NSI stakeholders**

The NSTF represents a substantial number of stakeholders of the ‘SET system’ (or in DST terminology – the ‘NSI’ or National System of Innovation). These include:

- Wherever scientific research is undertaken
- Wherever new technologies are being applied and developed
- Wherever science teaching is taking place
- Wherever science awareness is raised
- Wherever young people are being trained in new technologies

The NSTF strives to represent as close to 100% as possible of the NSI stakeholders.

**The NSTF is more representative of the National System of Innovation and thus should have formal Government channels**

As noted previously, the process of engaging with Government departments is challenging. As the cohesive voice of the National System of Innovation, the NSTF should be providing feedback and recommendations to
all Government departments with follow-up discussions. Feedback needs to be acknowledged and an official response given as to the status of the feedback/recommendations.

While Government departments receive feedback and recommendations from statutory bodies, these organisations do not play the same role as the NSTF – the NSTF is more representative of the National System of Innovation. Statutory bodies have established channels with Government. It is equally as important that a broader stakeholder forum that includes civil society is formally heard and acknowledged by Government.

The initial focus is on establishing a formal channel with the DST which will assist the DST in connecting with other Government departments

Given the good relationship with the DST, the focus is on starting with a formal DST channel. The NSTF has close links with the DST yet at the same time is independent. Once a successful model for a channel is created, this can be taken across to other Government departments with the support of the DST. Since the NSTF is non-partisan, it will be able to assist the DST with connections between other Government departments.

6.2 LEGISLATION AND POLICIES OF KEY SIGNIFICANCE FOR THE NSTF

6.2.1 The DST’s Science Engagement Framework

The NSTF welcomes and supports the DST’s initiative of formalising its promotion of science engagement through the Science Engagement Framework (December 2014). This Framework will lead to an increase in Government resources allocated for science engagement in all its forms. In particular, it is commendable that the Science Engagement Framework includes:

- The concept of ‘science engagement’ as an all-encompassing term. Furthermore, ‘science engagement’ is recognised as a two-way interaction and not one-sided as an expert imparting information to a totally uninformed audience. (See (3.2) Field definition in the Science Engagement Framework document.)
- Improving coordination of various projects involving science engagement. This involves a more systemic approach to monitoring and evaluation (see (4) Problem statement: (c) Monitoring and evaluation in the Science Engagement Framework document) and coordination of marketing of South African SET-related achievements (p 32 of the Science Engagement Framework document).
- Expecting DST-funded entities to spend at least 4% of their budgets on science engagement (p38: (6.3) Funding: Interventions in the Science Engagement Framework document).
- Non-public sector initiatives, such as those by NGOs, in its support and strengthening of the science centre system (p23: Proposed interventions in the Science Engagement Framework document).

The NSTF has contributed to the attainment of the 4 strategic aims of the Science Engagement Framework

The NSTF endorses the 4 strategic aims of the Science Engagement Framework (5.4 in the Science Engagement Framework document). The NSTF has also contributed to the attainment of these strategic aims throughout its 20 years of existence.

| Framework Strategic Aim 1: “To popularise science, engineering, technology and innovation as attractive, |
|----------------------------------------------------------|---------------------------------------------------|
| The NSTF has worked to achieve this aim through the Share ‘n Dare Programme for the past 7 years. (See section 9.5.3.) |
| The NSTF Share ‘n Dare Programme includes the following requirement from the Framework (Strategic Aim 1 (c)): “...every learner or student should |
relevant and accessible in order to enhance scientific literacy and awaken interest in relevant careers.”

| Framework Strategic Aim 2: “To develop a critical public that actively engages and participates in the national discourse of science and technology to the benefit of society.” | The NSTF fully supports this strategic aim as it relates to the NSTF’s first strategic objective: To influence and monitor public SET-related policy. (See 9.1 for further details.) Furthermore, a critical and well-informed public is key to a well-functioning democracy.

Through the NSTF’s Strategic Objective 1, the NSTF is committed to public policy engagement related to SET. Through Strategic Objective 2, the NSTF is committed to promoting discussion and debate. It is precisely around ‘disputed’ issues that discussions need to be held, and the NSTF has addressed such issues throughout the years through discussion forums. (See Appendix C for a sample list.)

Where the NSTF’s focus is unique, is that NSTF provides platforms for a variety of SET professionals to discuss among themselves, with or without people who are not involved in SET professions. NSTF also promotes collaboration among professional societies across a range of SET-related professions (through its membership sector ‘proSET’ (See 5.8)).

It is reassuring to note that: “Other platforms will be created for public discussions on policy directions” (besides state agencies), because the NSTF is willing and able to be involved and add value to such endeavours.

The Framework further states: “A stronger focus on applicability of science (solving practical problems) and co-operation with other societal actors (e.g. formal dialogue across sectoral divides such [as] between the public and the private sector, labour, etc.)” As discussed in section (5) in this strategy document, the NSTF represents a large number of organisations from various sectors, and the membership spans both the public and private sectors.

Under Strategic Aim 2 of the Science Engagement Framework, it is also pointed out that increased discussion of SET in society is not without risk: “...future science and society dialogue will need to anticipate increasing pressure from lobby groups and the prevention of bias, confusion between risk and uncertainty..., and procuring legitimate roles for non-governmental organisation roles in the science and technology debate.” (p 26 of the Framework)

NSTF can assist with this challenge. The NSTF is independent of Government. yet can create platforms for discussion among groups that differ in their interpretations of current events and issues related to SET.

Framework Strategic Aim 3: “To promote

| The NSTF has promoted science communication through its Award category for “Communication for outreach and awareness” for many years, jointly

| be exposed to career information and opportunities for discussions with scientists, engineers and technologists (role modelling).” (p22 in the Science Engagement Framework document).

As pointed out on p19 of the Framework: (4) Problem statement: (e):

“...ensuring regular exposure of science practitioners (i.e. scientists and researchers) to platforms in which they need to communicate their craft in accessible ways to the general public...”, the Share ’n Dare Programme creates platforms for science practitioners to do just this action.
NSTF has been promoting online interactions between the scientific community and the youth. It is only in about the past 2 years that scientists and other SET professionals have started using profiles on social media and are willing to interact with learners and students online. The NSTF is committed to furthering such interaction which makes use of available and convenient information and communication technologies.

### Framework Strategic Aim 4: “To profile South African science and science achievements domestically and internationally, demonstrating their contribution to national development and global science, thereby enhancing its public standing.”

The NSTF supports this strategic aim through the NSTF Awards (NSTF Strategic Objective 3, section (9.3) in this document).

Awards celebrations and publicity assist in profiling South African science, as well as engineering, technological innovation, capacity building, and related endeavours. The NSTF places specific emphasis on the publicity efforts around the NSTF Awards, including the associated youth outreach projects.

The NSTF continues to be committed to building the image of South African SET and innovation, which is critical for key partnerships (“with the private sector and the international world of science”, p31 of the Science Engagement Framework) and socio-political support. This has always been part of how the NSTF sees its role in terms of promoting SET. The NSTF Awards, in particular, have always been about showcasing South African achievements in SET, many of which are indeed “world-class” (as the Framework notes, p31).

Under Strategic Aim 4 of the Framework (p 32 of the Science Engagement Framework), the contradiction described is of DST being responsible for all R&D in the country and yet not having the budget or mandate to regulate or influence R&D across the board. Notably DST may not encroach upon the mandates of other departments such as Agriculture and Health. – and consequently has a “communication dilemma” when promoting all R&D taking place in the country.

The NSTF is ideally positioned to communicate the achievements of South African science (SET) across the various departments. Already planning is being done to celebrate the International Year of Pulses in 2016 in partnership with the Department of Agriculture, Forestry and Fisheries (DAFF). Part of the year’s activities will include an Award for Crop Science and Food Security as part of the NSTF Awards. This will contribute to profiling South African research in agriculture. There is also the possibility of instituting an annual Award for Research related to Agriculture.

Outstanding research in Medical fields has received substantial recognition at the NSTF Awards over the years. The years 2011 to 2014 are indicative,
because of the individual awardees, and excluding the Communication Award, about 28% were in medical research.

In the Framework, p43: (7.3.4) ‘Industry, Non-governmental Organisations and professional bodies’: “A number of non-governmental organisations are already participating significantly in implementing science promotion initiatives. Partnerships with these organisations will be encouraged to enhance the implementation of this framework while ensuring efficiencies in so doing.”

The NSTF welcomes this mention on p43 of the Framework: “non-governmental organisations such as the National Science and Technology Forum could provide a platform for public debate in association with SAASTA.”

The Framework further points out that: “Science, technology and innovation knowledge workers in South Africa are affiliated in numerous professional bodies. These professional bodies... will be encouraged to contribute to this framework by creating incentives for their members or registered scientists to communicate their work in an effective manner to the broader society.”

It is not clear what incentives the professional bodies can create to encourage members to communicate. It will not be possible for the organisations to give a discount on individual members’ membership fees, as they are already financially constrained. It would therefore be useful if a small science engagement grant could be made available to each professional association. If the professional bodies that are members of NSTF are prioritised in this regard, it could be a good start to better interaction with the professional bodies.

6.2.2 The NSTF engages on all legislation and policies

The NSTF engages stakeholders on all legislation and other policies of any ministerial portfolio or national department. The only criterion is whether the piece of legislation or policy relates in some way to issues in SET and/or innovation. The NSTF is not bound to a specific Government department. The NSTF’s aim is to provide feedback and recommendations. In essence, the NSTF provides a feedback mechanism but not an endorsement mechanism.

Examples of the types of policy are listed below:

<table>
<thead>
<tr>
<th>Department</th>
<th>Policy examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Government policy</td>
<td>National Development Plan (NDP)</td>
</tr>
</tbody>
</table>
| Policies of the Department of Science and Technology | • Department of Science and Technology: Strategic Plan for the Fiscal Years 2015-2020  
• Science Engagement Framework - Science and society engaging to enrich and improve our lives, December 2014  
• The Ten-Year Innovation Plan for Science and Technology  
• South Africa’s National Research and Development Strategy, 2002  
• White Paper on Science & Technology - Preparing for the 21st |
### 6.3 Stakeholder engagement of science and technology

**Agencies established for science engagement with stakeholders**

Since the DST was established in 2004, various bodies have been founded to promote public engagement in various forms. The DST recently (2014) drafted a Science Engagement Strategy for the first time. The Strategy gives an overview of the agencies that were established.

**NSTF occupies a specific and clear niche with only a small degree of overlap with established DST agencies**

The question arises whether there is overlap in the mandates of these bodies and the NSTF. There is indeed a small degree of overlap, but the NSTF occupies a specific and clear niche within the ‘system’.

**Because it’s not a statutory body, the NSTF is a clear and independent representative of NSI stakeholders**

The NSTF is not a statutory body and, as such, is an independent entity. It clearly represents the voice of National System of Innovation (NSI) stakeholders. The NSTF can grant membership to any organisation that the Executive Committee approves. Positions on committees are through democratic election processes. In both cases, these are not determined by the state.

**There is always a need for an independent forum in a democracy**

Because statutory bodies also promote platforms for free speech, scientific reportage and robust debate, the distinctiveness of the NSTF is not immediately apparent. This is credit to our country’s democracy. However, it is important to have bodies, such as the NSTF, which operate at arm’s length from Government. This presents a balance in the democratic environment – a space for active and independent debate where and when this is necessary.

**NSTF engages with stakeholders that work with SET daily**

The NSTF primarily engages with stakeholders that work with science, engineering and technology on a daily basis – the researchers, engineers, research administrators, lecturers and teachers, etc. The membership of the NSTF is organisationally based. It has no individual members. Thus individual participants in events, discussion forums and on committees, are not necessarily chosen according to academic merit. Rather the choice is based on what they can contribute to the discussion or tasks, as well as democratic election and representitivity (in the case of committees).

**NSTF engages with youth in a structured manner**

The NSTF also engages the youth through projects, mainly those linked with the NSTF Awards. The original motivation for initiating the Awards was to make young people, in particular, aware of the wealth of scientific talent in South Africa. The aim is also to showcase the many opportunities for them to pursue interesting careers in science.
Using the media, the NSTF engages with the wider public around SET – from highlighting South African SET accomplishments to explaining the NSTF Discussion Forum topics

The NSTF also engages with the wider public around SET. There is a targeted media campaign, with media partners, around the NSTF Awards winners. This creates a communication platform that highlights South African SET accomplishments. The NSTF also sends out media releases after each NSTF Discussion Forum. These releases explain the discussed issues in a way that is relevant to the wider public.
SWOT ANALYSIS

<table>
<thead>
<tr>
<th>Strengths of the NSTF</th>
<th>Weaknesses of the NSTF</th>
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<tbody>
<tr>
<td>• Loyal membership: Despite the challenging fund-raising environment currently caused by the state of the economy, the NSTF has nevertheless succeeded in retaining its membership, and members pay their membership fees.</td>
<td>• Because the NSTF works through the representatives of its member organisations, there isn’t always enough interaction with the other employees or members of the organisations. Communication in this regard has to be strengthened. Once funding is sourced, a plan will be created.</td>
</tr>
<tr>
<td>• Represents most of the stakeholders in SET</td>
<td>• The Exco and Board do not have enough black members. This is difficult to address as everyone qualified to sit on these structures is very busy and their services are sought after. Also, there is no remuneration for the Exco and Board members.</td>
</tr>
<tr>
<td>• Long history (since 1995), continuity and much experience</td>
<td>• The secretariat is too small (only 5 permanent staff in 2015) for the work to be done.</td>
</tr>
<tr>
<td>• Executive Committee and Board of Directors have a commitment to the organisation and they fulfil their oversight role</td>
<td>• Funding: although the NSTF has a core amount of funding it can mostly rely on, it requires more funding to support its current operations, and even more is required to expand operations.</td>
</tr>
<tr>
<td>• Database of more than 7000 individuals interested in SET</td>
<td>• Because the NSTF is not constituted as a Government agency, it cannot be given a VAT-exempt (or zero-rated) grant from Government.</td>
</tr>
<tr>
<td>• Secretariat of hard working, efficient and reliable people</td>
<td>• There are opportunities to collaborate with various stakeholders in the SET environment, as NSTF has done in the past. This is frequently a ‘win-win’ situation as the various strengths of the parties are shared and they complement each other. The NSTF is flexible enough in its position as a non-partisan entity to undertake these collaborations.</td>
</tr>
<tr>
<td>• Sufficient sponsorship for the NSTF Awards to fund the endeavour. The NSTF has managed to raise sufficient sponsorship for the NSTF Awards again in 2015, even with a small profit to put back into the organisation’s activities.</td>
<td>• Currently the fund-raising environment is not ideal, and some smaller member organisations find it difficult to pay the modest membership fees. If many members should experience financial strain, the NSTF could find itself having to cut back its operations.</td>
</tr>
<tr>
<td>• Income from annual membership fees</td>
<td>• When stakeholders do not perceive the valuable work done by the NSTF and do not realise that the NSTF’s role is worth supporting, they might not continue with their participation and support.</td>
</tr>
<tr>
<td>• Independence from Government</td>
<td>• Succession planning is difficult due to the small size of the secretariat, as well as some difficulty in filling positions on the Exco whenever an Exco member resigns. In particular, more employees are needed to get involved in the content of discussions, identifying speakers and pertinent issues, motivating people to attend and participate, chairing sessions, and following up on recommendations.</td>
</tr>
<tr>
<td>• ‘Impartial broker’ (non-partisan) which is an advantage for collaborative work</td>
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Opportunities for the NSTF

• Although Government has introduced and amended much of the legislation, regulations and strategies over the first 20 years of our young democracy – there are still gaps. New bills are frequently tabled in Parliament and there are strategies coming out of various departments, etc. Thus the NSTF still has a role to play by facilitating discussions around Government policy, and seeking to lobby and influence policy developments. This applies to various Government departments and not only to the DST.

• There are opportunities to collaborate with various stakeholders in the SET environment, as NSTF has done in the past. This is frequently a ‘win-win’ situation as the various strengths of the parties are shared and they complement each other. The NSTF is flexible enough in itsa position as a non-partisan entity to undertake these collaborations.

• There are opportunities to implement projects on behalf of stakeholders, because the NSTF is flexible due to its NPC-status and has few levels in its hierarchy.

Threats to the NSTF

• Currently the fund-raising environment is not ideal, and some smaller member organisations find it difficult to pay the modest membership fees. If many members should experience financial strain, the NSTF could find itself having to cut back its operations.

• When stakeholders do not perceive the valuable work done by the NSTF and do not realise that the NSTF’s role is worth supporting, they might not continue with their participation and support.

• Succession planning is difficult due to the small size of the secretariat, as well as some difficulty in filling positions on the Exco whenever an Exco member resigns. In particular, more employees are needed to get involved in the content of discussions, identifying speakers and pertinent issues, motivating people to attend and participate, chairing sessions, and following up on recommendations.
8 NSTF’S STRATEGIC PLAN 2015/16 – 2020

8.1 THE NSTF VISION, MISSION, MANDATE, VALUES AND STRATEGIC OBJECTIVES

The NSTF Vision
A transformed country where SET and innovation contribute to a high quality of life for all who live in SA, where the profile of SET professionals is representative of the population’s profile and where the education system is effective, particularly in terms of performance in SET subjects and promoting innovation.

The NSTF Mission
- To promote SET and innovation
- To network stakeholders and engage all Government departments around SET-related issues
- To lobby Government at all levels on behalf of stakeholders

The NSTF Mandate
To represent a wide range of stakeholders in science, engineering and technology (SET)

The NSTF Values
- The democratic principles as enshrined in the Constitution of the Republic of South Africa
- Responsible and ethical action on behalf of members
- Conducive environment for dialogue
- Promote collaborative action

There are 4 strategic objectives of the NSTF:
1. To influence and monitor public SET-related policy
2. To promote dialogue, among SET stakeholders, between the public and private sectors, between Government and other stakeholders, and between experienced SET professionals and the youth
3. To promote and celebrate excellence in research, SET capacity building and education, SET communication, innovation and SET activities that can have a positive impact on society and improve people’s lives, and SET activities that contribute to sustainable development
4. To implement and support projects that are cross-cutting and multi-disciplinary in nature, where appropriate, to contribute to the attainment of the Vision and Mission.

8.2 BUILDING ON PREVIOUS STRATEGY

The NSTF’S Strategic Plan 2015/16 – 2020 is built on the previous NSTF strategy. The outline of this strategy can be found in Appendix A.
9 Achieving the Strategic Objectives

9.1 Activities to achieve Strategic Objectives 1 and 2

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<tbody>
<tr>
<td>1.</td>
<td>To influence and monitor public SET-related policy</td>
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<tr>
<td>2.</td>
<td>To promote dialogue, among SET stakeholders, between the public and private sectors, between Government and other stakeholders, and between experienced SET professionals and the youth</td>
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</table>

The NSTF has linked objectives 1 and 2 because in practice, it is through discussion, debate and dialogue that SET-related policies are unpacked. This allows all SET stakeholders, and anyone concerned about public SET-related policy, to be well informed and to give feedback on specific issues. Policy is influenced by collating the views of experts and stakeholders, and then giving feedback to Government. By engaging the youth in some of the discussions, the NSTF contributes to building a public that is well informed and aware of critical SET-related issues. Creating and maintaining feedback mechanisms to Government are part of building a robust democracy. A highly educated and aware public, similarly, is a pre-condition for a democratic system that works optimally.

9.1.1 To influence and monitor public SET-related policy

One of the key objectives of the NSTF is to engage with and influence SET- and innovation-related policies. This is the NSTF’s main mandate from the NSTF’s inception.

Various Government departments’ work includes SET-related aspects and some have NSTF-member science councils reporting to them

Whereas the NSTF was established as a sounding board for the development of the science and technology system specifically, there are various Government departments whose work includes scientific research, technological innovation, and technology transfer. Some of these departments have science councils reporting to them (e.g. the Agricultural Research Council (ARC) reports to DAFF). Such science councils are members of the NSTF.

NSTF provides a collaborative and unified voice for information structures used for informed policy decision making

Research is important for informed decision making but there is a fragmented nature to the information structures that feed Government. Because of the fragmentation, there is a need for an umbrella body stakeholder forum. This will allow for a better overview of the SETI landscape and the National System of Innovation. The NSTF represents the disparate research and information structures and creates a collaborative space. The NSTF does not play the same role as these information structures. It is more representative of the National System of Innovation, it is not a Government agency, represents a wider stakeholder reach, and does not operate on an invitation-only basis.

A DST challenge is to better coordinate and influence the SET-related work of other national departments

The DST interacts with all science councils to an extent but is limited by the separation of mandates between national departments. One of the challenges for DST is how to better coordinate and influence the SET-related work of other national departments.

Impartial NSTF can create interactive and collaborative SET platforms for Government departments

The NSTF, as an impartial broker, can create platforms for various Government departments to interact
around SET-related policy issues. It has been done previously by bringing Government officials together in the same discussion forum. This is one example of how the NSTF can bridge some of the gaps.

**Government can use the NSTF as part of consulting with stakeholders around legislation and regulations**

Government is expected to consult the public in its development of legislation and regulations. This is usually done, according to law, by publication in the Government Gazette and the call for public comment within a short period of time. There are also Government departments that organise stakeholder forums for the specific purpose of engaging and consulting the relevant stakeholders. It is, therefore, in the interest of Government to make use of the NSTF to communicate and consult with particular groups of stakeholders. The NSTF can assist the Government in making stakeholder engagement even simpler through NSTF members and database, among other things.

**Effective engagement with Government, including the monitoring of SET-related policies, requires formal discussion channels to be developed**

For there to be effective engagement with Government, including the monitoring of SET-related policies, formal discussion channels need to be developed. This will allow for feedback and recommendations from the NSTF to be acknowledged.

**9.1.2 THE LIFECYCLE OF LEGISLATION**

**NSTF and its members can make significant contributions within the lifecycle of legislation**

There are a number of places where stakeholder input can be made into the legislative cycle. The NSTF can make positive contributions at various points in the process of developing legislation relevant to SET and innovation.

- **NSTF, as a partner, can assist with stakeholder input when drafting a Green or White Paper:** Where a Government department drafts or reviews a Green Paper or White Paper, the department may decide to call on a few stakeholders and experts to get outside input. At this point, NSTF can play a role if the DST recognises NSTF as a partner.

- **NSTF, as a partner, can assist with stakeholder input when drafting a Bill:** Where a Government department is tasked with drafting a Bill, the department may decide to call on a few stakeholders and experts to get outside input before the draft is finalised. At this point, NSTF can play a role if the DST recognises NSTF as a partner.

- **NSTF can interact with relevant Portfolio Committees in Parliament:** As part of the discussion process in Parliament, Portfolio Committees discuss Bills and Amendments of Law. NSTF can provide further information and research on a specific topic to the relevant Portfolio Committees.

- **NSTF can publicise calls for public comment and submit a coordinated response from its members when a Bill is published in the Government Gazette:** Once the process of discussion, approval or disapproval by Parliament, and any proposed amendments are completed, the Bill is published in the Government Gazette for public comment. One of the roles NSTF can play is publicising such calls for public comment as soon as these are published in the Gazette. The NSTF can also gather responses from its members and submit a coordinated response, on behalf of NSTF member organisations, to Government. This is dependent on establishing a formal engagement channel with the DST.

**9.1.3 VEHICLES FOR NSTF POLICY ENGAGEMENT**

**NSTF has experience in managing constructive policy engagements with its stakeholders**

The NSTF has managed many constructive policy engagements with stakeholders through public
meetings, has published many reports on such meetings on its website, and disseminated information on public SET-related policy.

**NSTF policy engagement includes a number of vehicles**

There are, however, other vehicles which have been used from time to time.

- Small consultative meetings
- Interactions with Parliamentary Portfolio Committees
- Public stakeholder meetings, some of which are planned and hosted by the membership sectors
- Online interaction in social media
- Online surveys conducted among the public, or a section of the public, or an exclusive group
- Reports on the outcomes of stakeholder meetings, social media interaction, and surveys
- Dissemination of policies, analyses and summaries of policies, through the NSTF newsletter

### 9.1.4 DISCUSSIONS, WORKSHOPS AND EVENTS WITH MEMBERS

**NSTF Discussion Forums are open to anyone interested in the topic**

NSTF Discussion Forums are usually open to anyone interested in the topic. Attendance is free of charge, for any employee, official, or individual member of NSTF member organisations. Individuals not attached to any NSTF member organisation are also welcome to attend, but pay an attendance fee.

**NSTF Discussion Forums provide a platform for constructive engagement**

NSTF Discussion Forums aim to provide engagement with Government officials, key role players at a senior level and experts, and provide a platform for constructive interaction. Delegates and participants have a chance to pose questions, discuss the implications and comment on the focus points. The objectives are always to provide a platform:

- To engage with public policies and cross-cutting concerns of the SET-related sectors
- For Government to clarify SET-related policies and Government initiatives
- For stakeholders to feed their collective knowledge, insights, and opinions based on experience, into high-level processes
- To share information among researchers and various kinds of practitioners and decision makers, including industry, thus bridging the private-public sector gap
- For networking among NSTF members and stakeholders
- So the DST and other Government departments can brief stakeholders and to listen to their concerns and input
- For increased involvement of industry and business – companies, including SMMEs, business associations and state-owned enterprises are active participants in the NSTF’s activities

**Extensive information dissemination after each Discussion Forum, as well as event evaluation**

A media release of the Discussion Forum is produced and circulated to the NSTF’s unique database of the science and technology community of about 7000 individual contacts. Complete proceedings (including a summary of issues and/or recommendations to take forward) are produced and posted on the website. These remain permanently available on the site. See [www.nstf.org.za](http://www.nstf.org.za). Each event is evaluated using Evaluation Forms. This includes ratings for each speaker and the event generally.

**High hit rate on web-based Discussion Forum media releases highlight relevance of topics**

Thousands of hits are recorded on the NSTF website, particularly on the media releases on Discussion Forums. This illustrates the relevance to stakeholders of the topics addressed by the NSTF discussion forums. See Appendix B for a sample list of topics that have been addressed by NSTF Discussion Forums.
9.2 THE WAY FORWARD FOR NSTF POLICY ENGAGEMENT

Regarding direct interaction with Government in terms of influencing and monitoring SET-related policy

- Develop a formal channel of engagement with the DST that allows for a process once feedback and recommendations are given. This includes creating a Memorandum of Agreement (MoA).
  - This formal channel provides a collaborative and unified voice for information structures used for informed policy decision making.
  - Once the channel has been created with the DST, this will then be used as a model to create channels with other Government departments with endorsement from the DST.
  - The channel will then open the way to discuss unifying the information structures, better coordinating and influencing SET-related work with other national departments, and developing increased stakeholder consultation with the NSTF membership.
  - The channel will also allow for discussion around disseminating information on studies and publications by experts. This includes studies commissioned by Government. The non-partisan NSTF can facilitate discussions on such studies, distribute and publicise them, and re-package them in an accessible format and language. Endorsement and recognition by Government of the NSTF’s role will assist in making the NSTF more useful for all SET stakeholders.
  - The channel will also provide guidance on the following action points below.

- Dependent on the formal engagement and support of the DST, increased interactions with Parliamentary Portfolio Committees (PPCs):
  - On completion of public stakeholder forums, the forum reports to be sent to one or more relevant PPCs for their information.
  - The chairpersons of PPCs to be invited to public stakeholder forums (as has occasionally been done) to present and participate.
  - NSTF to propose experts to present to PPCs on particular current issues. When PPCs are discussing particular draft legislation, the NSTF can seek expert input or conduct a survey to assist.

- Dependent on the creation of a formal DST channel and the engagement and support of the DST, the NSTF can publicise calls for public comment and submit a coordinated response from its members. This is when the bill is published in the Government Gazette.

- Reports on the outcomes of stakeholder meetings, social media interaction, and surveys as a feedback mechanism for policymakers:
  - Such reports are already produced and posted on the NSTF website. However, to act as a useful feedback mechanism for policymakers, these to be used as the basis for interaction with the policy makers. This would be both in Government departments and Parliament. This action is dependent on the formal engagement and support by the DST.

Regarding NSTF vehicles of communication for stakeholder engagement

Although the NSTF has managed many successful and constructive policy engagements with stakeholders through public meetings, some of the other communication vehicles need to receive greater attention going forward.

- Because some of these communication vehicles are more challenging to organise than public stakeholder forums, the NSTF requires endorsement from Government departments. For example, interactions with experts require the endorsement of an established engagement channel with the DST.
• **Small consultative meetings with experts to be held more often**, with the help of, for example, key stakeholders, policy analysts, and Government officials.
  o This is in order to plan public stakeholder forums, reports, surveys, etc.
  o Experts are needed to take the concepts from the NSTF Discussion Forums, as an example, and move these forward with concrete actions.
  o Funding of the NSTF secretariat capacity is needed for this to be effective.

• **Increased online interaction using social media:**
  o It is relatively easy to call attention to postings on, for example, the NSTF website through Twitter, Facebook, LinkedIn, etc. However, to initiate and manage an online discussion is time consuming and requires knowledgeable NSTF employees to be available and willing to interact. Funding from the DST to increase the secretariat will assist with this.

• **Online surveys to be conducted at least once a year among the public, or a section of the public, or an exclusive group:**
  o Multiple choice questions on opinions related to current topics can be formulated. Online surveys can be created and disseminated.

• **Through the NSTF newsletter, dissemination of policies, analyses and summaries of policies:**
  o Here the NSTF has done well, publishing links to SET-related policy developments every month. This includes often publishing summaries of policies so that the readers can more easily take note of the new policies’ contents.
  o What needs to happen is collaboration with policy analysts, or identification of existing analyses, that will give insight into the implications of particular policies. This action is dependent on increased funding.

• **The NSTF to take its SET Discussion Forums to various places in the country**, organising stakeholder consultations closer to where the stakeholders are. This action is dependent on increased funding.

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**9.3 Activities to achieve Strategic Objective 3**

3. To promote and celebrate excellence in research, SET capacity building and education, SET communication, innovation and SET activities that can have a positive impact on society and improve people’s lives, and SET activities that contribute to sustainable development.

**9.3.1 The NSTF Awards**

NSTF Awards is the flagship project of the NSTF, honouring and celebrating outstanding contributions to SET and innovation

The NSTF Awards is the flagship project of the NSTF and has been running since 1998. It had co-branding sponsorship from BHP Billiton from 2011 to 2014, and then with South32 (the company that resulted from the demerger of BHP Billiton) for 2015.

The NSTF Awards honour and celebrate outstanding contributions to science, engineering, technology (SET) and innovation. The awards encourage and reward excellence in:

- Scientific research
- Technological innovation
- Environmental sustainability/Green Economy
- Technology transfer
- Education and training
- Capacity building
Objectives of the NSTF Awards

- These prestigious awards celebrate, acknowledge and promote excellence in the South African research and development (R&D) community. This is done by cross-cutting sectors, levels, gender and race, while recognising both individuals and teams.
- The NSTF Awards celebrate scientific research that is professional, innovative, forward looking and relevant to both South Africa and the rest of the world.
- The awards encourage the involvement and participation of SET organisations in research while raising awareness among the general public about local research and its relevance.
- The awards address Government R&D targets by:
  - Involving business
  - Drawing attention to scarce skills
  - Profiling role models
  - Facilitating knowledge transfer to learners and students, encouraging them to pursue careers in SET

Ultimately the purpose of the NSTF Awards is to contribute to achieving sustainable socio-economic growth for South Africa and to improving the quality of people’s lives.

Annual theme usually aligned to the Unesco year’s theme

Every year a theme is celebrated at the NSTF Awards Gala Dinner. It usually aligns to the theme year declared by the United Nations, thereby supporting the Science Sector of the Unesco National Commission of South Africa and the DST which chairs the Science Sector.

Largest and most prestigious public SETI awards in South Africa

The NSTF Awards has grown to be the largest and most prestigious public SET and innovation awards in South Africa. The previous winners are widely recognised as worthy recipients. The NSTF Awards have been endorsed and supported by the DST since the inception of the awards. The Honourable Minister of Science and Technology is the official patron.

These awards are unique in South Africa

There are a number of reasons that the awards are special:

- The NSTF Awards are the only awards that are open, where the Call for Nominations includes the public.
- The process and awards event are collaborative.
- The awards recognise a variety of outstanding contributions by individuals and teams. These include all practising scientists, engineers and other professionals across the system of innovation. The categories include research for innovation, research capacity building, management and related activities, communication for outreach and awareness, and achieving environmental sustainability and the Green Economy.
- Youth outreach is an integral part of the awards project. Top performing learners in mathematics and science in Grade 12 are recognised every year through the Brilliants Programme. There is also a year-long series of interactions between NSTF Awards winners and students and learners across the country. This is called the Share ’n Dare programme.

9.3.2 ADJUDICATION PROCESS
There is an independent adjudication panel and a panel of experts

An adjudication panel of independent judges is assembled annually. It represents all sectors of the NSTF membership and – in the case of the sponsored categories – the sponsors. The adjudication panel reviews the nominations, identifies those that are eligible, short-lists the finalists and makes the final selection of winners. A panel of experts is also appointed by the NSTF Executive Committee. These experts assist the adjudication panel by reviewing and providing validation of the selections.

Category nominations are evaluated according to the NSI generic value chain

The generic value chain, which links science, engineering, technology and innovation together, is expressed in the definition of the National System of Innovation (NSI). The value chain spans the stages of inputs, processes, outputs, impacts and outcomes. The nominations in each category are evaluated according to each of these stages. It specifically includes:

- Research, development and creative work undertaken on a systematic basis. This is in order to increase the stock of knowledge, including knowledge of people, culture and society and the use of this stock of knowledge to devise new applications.
- Technology transfer activities associated with research, experimental development and contributing to the dissemination and application of scientific and technical knowledge
- Scientific and technical education and training

9.3.3 NSTF Awards’ Sponsors and Partnerships

The NSTF supports the principle of collaborative, widely-inclusive awards. With most of the sponsors, there have been lasting partnerships over many years. The NSTF remains open to new partnerships with other SET-related organisations. See Finance and Budget (Section 12) for the list of sponsors.

Here follows the list of the long-term sponsors and partners of the NSTF Awards:

- Department of Science and Technology (since 1998)
- The Technology and Human Resources for Industry Programme (THRIP), an initiative of the Department of Trade and Industry (since 2004)
- Eskom (since 2003)
- Council for Scientific and Industrial Research (CSIR) (since 1998)
- Business Report (since 2010) which is part of The Star, Pretoria News, Cape Times and Mercury newspapers
- BHP Billiton (2011-2014), now South32 (2015 onwards)
- Mail&Guardian newspaper (since 2011)
- National Research Foundation (NRF) (2003-2014)
- SAASTA, a business unit of the National Research Foundation (2005-2014)

9.3.4 Awards Categories

All the NSTF Awards are for an outstanding contribution to science, engineering, technology (SET) and innovation within the following areas:

<table>
<thead>
<tr>
<th></th>
<th>Contribution over a Lifetime over a decade or more</th>
<th>One winner</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Annual theme award (associated with the NSTF Awards theme of that year) over a lifetime</td>
<td>One winner</td>
</tr>
</tbody>
</table>
9.4 THE WAY FORWARD FOR THE NSTF AWARDS

The NSTF Awards has continued to be a successful endeavour. It will remain the flagship project of the NSTF, organised in the same way and following the same objectives. The ultimate purpose is to contribute to achieving sustainable socio-economic growth for South Africa and to improving the quality of people’s lives.

- Co-branding sponsorship with South32 will continue. Further sponsors and partnerships will continue to be explored.
- The theme will continue to be aligned with UNESCO’s theme of the year (when applicable).
- The nomination and judging processes will continue as has been done previously. These have stood up to close scrutiny. Category nominations will continue to be evaluated according to the NSI generic value chain.
- Youth outreach will continue to be an integral part of the NSTF Awards. This includes the Brilliants Programme and Share ‘n Dare.

9.5 ACTIVITIES TO ACHIEVE STRATEGIC OBJECTIVE 4

4. To implement and support projects that are cross-cutting and multi-disciplinary in nature, where appropriate, to contribute to attaining the Vision and Mission.

The NSTF initiates and runs projects, as well as implementing and supporting projects where NSTF is commissioned to play a role. This is subject to approval by the Exco and provided that certain criteria are met.

9.5.1 YOUTH OUTREACH
The NSTF promotes and invests in SET, including mathematics and innovation among the youth. This is important because:

- SET subjects open doors for learners to pursue fulfilling careers
- The future of SET and innovation depends on young people being inspired to explore the subjects, study courses and exciting careers that exist already, and be prepared for the new ones that will exist in future.

The NSTF promotes and invests in SET among the youth in the following ways:

- The **Brilliants Programme** celebrates the top performers in matric maths and science, and aims to motivate and inspire them to continue with studies for SET-related careers.
- The **Share ‘n Dare programme** creates platforms for top researchers and other SET professionals to inform and inspire high school learners and university students.
- The **bursary database for SET-related studies** collects bursary information so that SET-related study funding can be found in one place for easy access. Based on online searches, this is currently the only one of its kind in South Africa.
- The **online details of more than 50 SET career paths** gives information for learners and students on some of the many exciting careers that can be pursued.
- **Financial contributions towards projects that promote SET education and awareness** are given through the proSET (professional associations) sector of the NSTF.

Youth projects previously implemented by NSTF:

- The **National Youth Service (NYS) programme** (on behalf of the DST) was implemented by the NSTF. The NYS provides opportunities for work experience to previously unemployed young SET graduates. NSTF managed the NYS programme from 2007 to 2012, and 330 young unemployed graduates benefitted from the programme during that time. Management of the programme included the employment and payroll management of all beneficiaries nationally. The NSTF commissioned and managed the evaluation of this programme, and feedback on the NSTF’s role was unanimously positive. The current programme is managed by SAASTA, a business unit of the National Research Foundation.
- The **Incentive Bursary Scheme for undergraduate students in SET studies** (also on behalf of the Department of Science and Technology) provided study support to about 70 students from 2008 to 2015. Implementation of the project included organising annual orientation weekends and retreats where the students were encouraged and assisted with study tips and guidelines for building their future careers. (The programme has now been phased out by the DST.)

### 9.5.2 The NSTF Brilliants Programme

The NSTF Brilliants Programme recognises 18 first year students studying in the science, medicine and engineering fields. A young man and woman are chosen from each of the 9 provinces. These students must have received top marks in mathematics and physical science in the National Senior Certificate Examinations (Grade 12) of the previous year. They are selected by the NSTF from lists provided by the Provincial Education Departments.

The aims of the Brilliants Programme:

- **Inspire and motivate** through a speakers' programme (workshop) and tour of science related sites and facilities:
  - To inspire and motivate young talented people with exposure to SET in the field, contact with potential role models and mentors, and advice from experts who can address their
concerns
- To encourage top students to complete their science, engineering and technology (SET) studies
- To inspire top students to pursue a career in SET
- To provide advice for successful studies and careers

- Recognition
  - To recognise and honour top performers some of whom have received very little acknowledgement, especially in disadvantaged areas and schools
  - The recognition includes publicity for the Brilliants Programme, the students and their provinces. The details of the programme and the winning students are also part of the annual NSTF Awards ‘Who’s Who’ booklet.
  - To reward top performers with sponsored travel and accommodation, a special ceremony, and recognition by representatives of Government departments and sponsors

- Bursaries
  - To identify top performers studying without bursaries – simply because they did not know they could apply for bursaries in Grade 12 – and assist them in finding bursaries

**Reason for the Brilliants Programme – to encourage students to complete their studies in science or engineering**
Top results in Grade 12 do not guarantee success. Many school leavers and even graduates struggle to find appropriate work and direction in their lives. This is a concern for SET industries, professionals and for the NSTF. In particular, the NSTF tries to encourage students to complete their studies in science or engineering as far as they possibly can (preferably up to PhD level). The NSTF also tries to motivate students to find their way into one of the many interesting and fulfilling positions in the National System of Innovation (which includes scientific research, engineering and industry).

**Brilliants awardees are chosen based on maths and science results in matric**
The NSTF requests the lists of top performers in physical science (in the National Senior Certificate) from all the provincial education departments. Two top students from each province are selected, based on their performance in both mathematics and physical science, as well as their chosen field of study. Only students who matriculated at public schools are selected. Thus the Brilliants Programme consists of the top first year students with a passion for science, registered at South African universities for SET-related qualifications. The Ministry and Department of Basic Education have given their support to the Brilliants Programme for many years.

**In partnership with the NSTF, The dti’s THRIP Programme awards bursaries to at least two Brilliants’ students annually**
The THRIP Programme, funded by the dti, awards bursaries to 1 or 2 Brilliants’ students every year. This is done in partnership with the NSTF. This was done on a rotational basis, ensuring that over the years each province was included. However, the THRIP Programme comes to an end in 2016.

**The NSTF Brilliants Programme inspires and motivates previously-disadvantaged students**
Many deserving previously-disadvantaged students have been inspired and motivated, as well as often helped to obtain bursaries. For the past 9 years, an average of 18 students per year has been identified for the Brilliants Programme. On average 2 of these students were given bursaries from the DST Brilliants bursary fund. However, this DST bursary fund comes to an end in 2016.
9.5.3 NSTF Share ‘n Dare Programme

In the words of the Minister of Science and Technology, Ms Naledi Pandor, in her keynote address at the 2014/2015 NSTF Awards gala dinner: “...the prevalence of role models in any society is absolutely crucial in guiding young people towards careers in science...”

The NSTF Share ‘n Dare programme provides a platform for NSTF Awards winners to act as SETI role models and ambassadors

The NSTF Share ‘n Dare programme was started as part of the NSTF Awards. It provides a platform for NSTF Award winners to act as role models and ambassadors for SET and innovation. The winners share knowledge with youth and communities, inspiring young people to pursue studies and careers in SET and innovation. This occurs during the year after the winners receive their award.

Aims of the share ‘n dare programme

- To promote SET among students at tertiary institutions and among high school learners visiting science centres in South Africa
- To enhance the knowledge of communities and increase public understanding
- To clarify award winners’ fields of expertise among students and learners
- To highlight career opportunities in SET to students and learners and to provide them with SET role models
Share ‘n Dare based on the concept where ICT is used to build communities (Community Informatics)

This project is inspired by literature highlighting the decreasing interest among learners worldwide in studying science and technology disciplines. Share ‘n Dare is based on the concept of Community Informatics – where ICT is used to build communities. Research is conducted on the Share ‘n Dare programme on an ongoing basis. It is based on audience surveys when the NSTF Awards winners present. The research also evaluates the convergence of ICTs for community informatics. An annual report is compiled with the results.

Share ‘n Dare creates awareness of the importance of SET among the youth through presentations, the internet and radio

The NSTF calls the programme ‘Share ‘n Dare’ as the award winners share their knowledge and experiences, and dare young people to follow in their footsteps. It focuses on creating awareness of the importance of SET among students and high school learners to encourage scientists and engineers of the future. Award winners are invited to participate in a range of knowledge-sharing activities, bringing them in direct contact with thousands of students and learners. There are also further knowledge transfer opportunities, such as ICT, the internet and radio. These opportunities have the potential to reach millions.

Award winners typically share their personal life story of what sparked their interest, how they planned their journey to study and their career. These stories are excellent real-life examples of how one’s life and career can progress to eventually becoming a successful scientist, engineer etc.

NUMBER OF PEOPLE PER AUDIENCE GROUP BETWEEN 2012 AND 2015

![Bar chart showing the number of people per audience group between 2012 and 2015.](image-url)
NUMBER OF PEOPLE IN THE AUDIENCES PER PROVINCE BETWEEN 2012 AND 2015

BENEFITS OF CLARIFYING SCIENCE AND CAREER OPPORTUNITIES FOR LEARNERS, COMMUNITY INFORMATICS STUDY 2013/2014 BY HENDRA VAN ZYL, CONSULTING RESEARCHER
9.5.4 **proSET Investment in Youth-Related Projects**

*proSET*, the sector of the NSTF membership consisting of professional bodies and learned societies, is particularly aware of the importance of educating and preparing youth for SET-related careers. *proSET* determines, through its elected committee, how to allocate the funding that is ringfenced for *proSET* projects. The funding derives from the now-disbanded SA&TS Trust, whose fund was transferred through proper legal processes to the NSTF’s custodianship.

The *proSET* committee favours supporting projects of cross-cutting interest to its members and, therefore, youth-related projects in particular. Its members are particularly aware of the importance of educating and preparing talented youth for future SET-related careers.

Grants totaling about R200 000 were first allocated in the financial year 2014/2015 for 4 strategic projects. Grants were first allocated and paid out in the financial year 2014/2015, totaling about R200 000. Four projects were supported, namely:

- The annual Research School of SAARMSTE (Southern African Association for Research in Mathematics, Science and Technology Education), where post-graduate students of science, technology, engineering and mathematics education were trained in research and writing skills.
- Chemistry Educators’ Workshop hosted by SACI (SA Chemical Institute), to train teachers on experience-based and learner-centred teaching techniques, while strengthening their understanding of chemistry.
- The annual SAICE Water Competition, otherwise known as ‘Aquilibrium’ (SAICE is the South African Institution of Civil Engineering).
- DVDs used in mathematics teacher training, published by the South African Mathematics Foundation (SAMF).
A similar total will be granted to appropriate projects for the 2015/2016 year
The proSET Committee put out another Call for Proposals in 2015 and received 7 proposals, some of which were approved. A similar total will be granted to appropriate projects for the year.

The proSET Committee is also working on 2 more projects on behalf of its members
In addition to member proposals, the proSET Committee is working on 2 projects on behalf of the members. These are a comprehensive directory of the membership and a computer-based tool for SET-career awareness among the youth.

proSET member organisations can apply annually for project grants
Organisations that are NSTF members under the proSET sector can apply annually for project grants. A modest amount of R200 000 – R400 000 of the proSET fund is to be spent on suitable projects annually.
Requirements for these projects include:
- They should be related to SET, SET education (including maths education), SET awareness raising, or training
- Projects that will have a multiplier effect are given preference, eg training trainers or teachers

(See 5.8 for further details about the proSET sector of NSTF Membership.).

9.5.5 YOUTH-INVESTMENT PROJECTS HAVE A CASCADING EFFECT
Every project which invests in the youth has a cascading effect. The dramatic difference that it can make to inspire and assist just one individual will have the effect of inspiring others and possibly attract further assistance.

For example, the NSTF is tracking the students who were selected for the Brilliants programme in past years. Many of them are continuing to do well in their studies and, as senior students, some of them are tutors of younger students. It is expected that they will obtain the qualifications they are studying for and that some of them will progress to post-graduate studies. Such young people could become leaders in their fields.

Another example is the investment of proSET project funding in the training of teachers. This will certainly bear fruit in future. The post-graduate beneficiaries will be training teachers in SET subjects and the chemistry teachers will put their new skills to use, educating a new generation of students who have the potential to become scientists, engineers and other SET-related professionals.

Developing experts in various SET-related fields and leaders means that many more young people will be guided in future, towards successful studies in SET fields, and successful career paths.

9.6 THE WAY FORWARD FOR YOUTH-RELATED PROJECTS
- The Brilliants programme described above will continue as it is currently, dependent on the available funding. However, the programme has more potential. Currently 18 top performing first year students are assisted to travel to Gauteng, attend the NSTF Awards Gala Dinner, an educational tour, and a motivational speaker session. Dependent on funding and capacity in the NSTF secretariat, the following projects will be initiated to enhance this programme further:
  - Ongoing undergraduate study support for Brilliants’ students: Arranging an annual contact session with the 18 students who are recognised by this programme will ensure that the NSTF can follow up and build on the process that was started in the students’ first year. This
will increase the chances that they would persevere with their SET-related study courses, and be better prepared for their SET-related careers. This is dependent on funding and support from the DST.

- **Brilliants students as role models in the Share ‘n Dare programme:** The current and past Brilliants students to be used as role models for the youth. For example, one of the 2015 students was invited by NSTF to address high school students.

- **Stories of inspiration to further define Brilliants students as role models:** The Brilliants students’ stories are already routinely published in the NSTF Newsletter and on the website throughout the year. This to be expanded to audio or video recordings of interviews, and producing webcasts of their stories. A book with their stories and photos to be created. This would also encourage them to continue on their path as they are now role models.

- **Bursary Fund for Brilliants students:** There are always a few of the Brilliants students who do not have bursaries despite having been among the very top performers in the country during matric. THRIP has provided for these students to some extent (providing 2-4 bursaries per year). However, the aim is to have a Brilliants Bursary Fund to ensure support for these extremely talented students. Ideally there should be a special bursary fund for SET students in general.

- **Expansion of the Brilliants programme to include more of the top performing science and maths students:** There are more top students in physical science and mathematics than the 18 selected students who are recognised every year. NSTF always has a shortlist of top performing students. All of them deserve to be recognised in some way. The aim is help these students with bursaries although they would not attend the NSTF Awards. This is dependent on discussions with the DST. Furthermore, if the DST should fund increased capacity in the NSTF secretariat, there will be more capacity to establish a bursary fund where the SET community could contribute. An alternative or additional initiative is to use the extra NSTF capacity to match existing SET bursaries to these top students. A programme of recognition and assistance for those not selected, would be a worthy initiative. This would allow the Brilliants programme to have greater impact and would promote SET studies more effectively. If the Brilliants Programme is expanded, there may be a chance of rivaling the efforts of the South African Institute of Chartered Accountants (SAICA) to recruit top performers in mathematics for their profession. Recognition could be given in each of the provinces to, for example, the top 10 in every province (5 men and 5 women). Currently learners with high aggregate marks are recognised in provinces and in the media (through other initiatives), but not specifically in physical science. This is a unique feature of the NSTF Brilliants Programme and contributes to promoting physical science as a school subject.

- **The NSTF intends to continue with the Bursary Database project, which collects information on bursaries for SET-related studies in one place.** This entails constant maintenance of the relevant interactive website section as well as the database itself. It requires a permanent member of staff whose job description is dedicated to this work. The NSTF has done successful publicity for the website, which receives thousands of hits each month. With funding to increase the capacity of the office, this initiative can reach its full potential.

- **The NSTF intends to continue providing information on SET career paths using the platforms created as part of the Bursaries Database project.** More than 50 SET careers are already defined on the website, and this information could be expanded.

  - **Some of this information should be linked to the initiatives that provide role models to the youth.** Careers related to the fields of expertise of the role models can be highlighted.
(Share ‘n Dare is an example of this.) This again requires expertise and time commitment and relies on extra capacity in the NSTF secretariat.

- **Cell phone app for SET career advice:** Increasingly young people have internet access and are able to download application software through their cell phones. This is a way in which the existing NSTF career advice can be put within reach of the learners and teachers who most need such advice. This initiative is also dependent on funding.

- **The NSTF intends to continue with the Share ‘n Dare programme as it runs currently.** With increased sponsorship and funding, the programme has the potential to grow in the following ways:
  - To do video recordings of the NSTF Awards winners’ talks, and post podcasts on the website
  - To include winners of other SET Awards in South Africa in the programme
  - To ensure, to a greater extent, that Awards winners visit remote locations to address the youth
  - To increase the publicity of every event and attract media attention
  - To write up the Awards winners’ talks in accessible language, and translated into various South African languages
  - To provide training to community radio presenters and the Awards winners, on popular science communication

- **The proSET project fund is ready to be developed further.** Now that the processes for transition and transfer of the responsibilities and funding from the old AS&TS Trust to proSET/NSTF are complete, and there is a responsible Committee and oversight processes in place, the following is needed:
  - **Office capacity:** The NSTF secretariat provides administrative support to the proSET Committee. Because many of the functions required for this support overlap with the secretariat’s usual work, it is possible to do so (eg the proSET membership is managed as part of the NSTF membership). However, because management of funding is involved, at least one post should be dedicated to the proSET fund.
  - **Creating a bursary fund:** The proSET fund can form the basis for fund-raising for SET-related projects, including a bursary fund (see notes under creation of a bursary fund dedicated to SET-related studies)
  - **Additional projects:** Given sufficient office capacity and complementary funding to expand the proSET fund, more worthy projects of the 40 proSET member organisations can be supported, and the proSET committee can oversee a few projects of cross-cutting interest of its own initiative.

**Future potential projects**

In addition to the projects described above, the NSTF is willing to pursue other projects of cross-cutting interest to its members, and to support youth development in the interest of the skills pipeline for scientific and other professions. This is dependent on funding.
9.7 Organogram: Summary of Current Activities of the NSTF in Terms of its Strategic Objectives

**Structure**
- Exco
- Sub-committees
- Membership
- Member reps
- Secretariat

**Activities**
- Strategic objectives 1 and 2: Discussion forums
  - Strategic objective 3: NSTF Awards
  - Strategic objective 4: Youth outreach and other projects
- Strategic objectives 1-4:
  - Website, database and newsletter

**Outputs**
- Media releases
- Full proceedings
- Recommendations
- NSTF Awards finalists identified and celebrated
- NSTF Awards winners identified and celebrated
- NSTF Awards publications and publicity
- Brilliants programme
- Share ‘n Dare programme
- Science bursaries website and database
- Many hits on website
- Large database of contacts interested in SET
- Regular & informative newsletters
- Good feedback on evaluation

AND MORE!

**Objectives**
1. Influence and monitor SETI policy
2. Recognise excellence
3. Youth outreach
4. SET news dissemination

AND MORE!
10 OPERATIONAL GOALS

10.1 OPERATIONAL GOAL 1: FINANCIAL SUSTAINABILITY AND SECURITY

The sources of funding for the NSTF are:
- membership fees
- fundraising projects such as the awards gala dinner which attracts sponsorships
- administering projects for the DST where a project administration fee can be earned
- attracting project support from sources who are able to contribute to the costs of a project, other than the DST

**Membership fees are insufficient to fund NSTF activities**

It was seen at an early stage that in order to fund activities aligned to the NSTF mandate and mission, membership fees would be wholly insufficient as a source. Membership fees need to be affordable, as well as provide a benefit to the member organisations.

**In some instances, the NSTF has found sponsors for projects**

The NSTF has been able to identify projects and to find sponsors, in particular for the NSTF Awards. The Awards have sometimes provided a revenue stream to support activities. (The Awards are discussed separately in this document – Section 9.3).

**DST-commissioned projects contribute to the NSTF’s sustainability**

Projects commissioned by the DST have contributed to the NSTF’s sustainability and the opportunity to expand the staff complement somewhat, allowing certain activities to be implemented. At the same time, this allows the staff members to develop skills and expertise in a variety of areas.

10.1.1 **MEMBERSHIP FEES AND NSTF AWARDS**

See the Finance and Budget section in this document for more details – Section 12.

10.1.2 **CONTRACTS WITH THE DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST)**

**The International Year of Light and Light Based Technologies**

The NSTF was contracted during 2015, the International Year of Light and Light Based Technologies (as declared by the UN), to play a role in various projects:
- A new trophy was launched for the NSTF Awards, designed and manufactured by the National Laser Centre (CSIR) through additive manufacturing – a new technology promoted by the DST.
- The first year students of the NSTF Brilliants Programme were taken on a tour of the National Laser Centre and Aerosud to learn about photonics, additive manufacturing and aviation.
- A range of activities to celebrate the Year of Light was funded, particularly to raise awareness and promote physics education nationwide. The NSTF managed and channeled the funding for the activities that were coordinated by Wits University.
- Together with the National Laser Centre, a discussion forum is planned on light-based technologies (in particular additive manufacturing, optic fiber, and renewable energy technologies).

**Projects of the DST’s Sustainable Livelihoods Unit**

The NSTF is also currently contracted to assist with 2 projects of the DST’s Sustainable Livelihoods Unit:
namely the Nkowankowa Demonstration Centre (NDC) in Tzaneen, and the Hi Hanyile-DzundzeTrust, in Giyani, both in Limpopo. DST’s Sustainable Livelihoods projects involve technology and skills transfer to rural communities with the ultimate goal of establishing viable businesses.

- **DST Contract - Nkowankowa Demonstration Centre (NDC):** The NDC buys agricultural products from local farmers, and processes them in a factory, producing goods such as fruit pulp and dried fruit. The aim is to create jobs on a local level and provide opportunities for small farmers in the area. There is an on-site project manager for the NDC project. A NDC Steering Committee was initially set up by the DST to monitor and review the project on an ongoing basis. It consisted of the DST, NSTF and PricewaterhouseCoopers (PWC) representatives. The PWC was initially contracted to process financial transactions from source documentation provided by NSTF. The NSTF transferred funds to PWC and later directly to the project, in various amounts, for payments to the NDC project as required by the project and authorised by the DST.

- **DST Contract - Hi Hanyile-Dzundze Trust, Giyani, Limpopo:** The Hi Hanyile site was established by the CSIR in 2004/5, with DST funds. The project grows *Lippia Javanica*, distills essential oils and produces mosquito repellent candles on site. The aim is to use the indigenous knowledge about the plant (which has been shown to have strong mosquito repellent properties) to create a process of commercialisation, supported by research from the CSIR. The project creates jobs in the local community. For the legal business entity that will continue the Hi Hanyile activities, the CSIR established the Hi Hanyile-Dzundze Trust, a non-profit community trust, where the trustees act on a voluntary basis on behalf of the community. There is an on-site project manager responsible for operations. The intention was that the Hi Hanyile-Dzundze Trust be supported for one or two final years (2014-2016) while the business is established, without additional funding outside what is contracted. For the final year, the DST and CSIR wanted the services of appropriate institutions and individuals to facilitate the sustainable continuation of the project in control of the community trustees. The NSTF was chosen as an administrative and contracting partner to oversee the appropriate exit from the Hi Hanyile project.

**The proSET funds**

The proSET funds (the previous AS&TS Trust funds) are ringfenced for proSET projects. The funds are managed by the NSTF secretariat. As such, a modest administrative fee accrues to the NSTF. (See 9.5.4 proSET investment in youth-related projects for further details).
due to its NPC-status and has few levels in its hierarchy. The NSTF Exco and secretariat are in the
process of creating planning around this. It includes publicising to the SET community.
- The NSTF has good experience in running bursary programmes for the DST. The NSTF is available to
continue doing this and will pursue opportunities that are made available.

10.3 OPERATIONAL GOAL 2: MANAGING STAKEHOLDER RELATIONSHIPS

Managing stakeholder relationships is about lobbying, collaboration, participation and communicating
about the NSTF

Regular contact with stakeholders is essential. Contact includes stakeholder management and stakeholder
communication. Managing stakeholder relationships means promoting the valuable work done by the NSTF
and the role that the NSTF plays. It is about lobbying SET issues within Government, ensuring ongoing
participation and support among all stakeholders, and communicating the various NSTF activities to
stakeholders and the greater public.

Stakeholder Liaison Officer to be hired by the NSTF to grow stakeholder management and communication

Due to the capacity of the NSTF secretariat, it has been a challenge to grow the management of stakeholder
relationships. Consequently, the NSTF is in the process of hiring a Stakeholder Liaison Officer. This will assist
with building strong collaborative relations with Government officials, key role-players and networks to
further enhance the credibility and influence that the NSTF has within the community. Currently, the
Executive Director engages in high-level meetings with members, prospective members and other
stakeholders.

Essential to showcase the NSTF as a credible, trustworthy non-profit company – supported by Government

Stakeholder management and communication are essential to showcase the NSTF as a credible, trustworthy
non-profit company. This strengthens the need for an association with the NSTF. However, a crucial element
is the development of formal channels of engagement with Government to give further support to the NSTF’s
work and standing.

Credibility and value of the NSTF is shown by the organisation’s community service projects, among other
things

The following is a list of examples of the type of community service projects that show the credibility and
value of the NSTF:
- Arranging platforms for top scientists, engineers and other SET-related professionals to address
young people (from Grade 9 to first year at tertiary institutions)
- Recognising top achievers in matric physical science and mathematics, and inspiring and assisting
them
- Actively assisting unemployed young science graduates
- Providing bursary information and career guidance to school learners
- Managing bursary programmes
- Managing community projects based on innovative technologies
- Being a representative voice for the science, engineering and technology community
Communications strategy assists with communicating to stakeholders and managing relationships
The NSTF has a communications strategy to manage stakeholder relationships. This is a working document that continues to be improved upon. Key to communications with stakeholders is to identify the various audiences. Further actions include specific messages to the audiences dependent on any given NSTF activity. The plan includes defining the various communication channels and types of engagement.

NSTF Awards has its own more targeted communication strategy due to the depth of activity
Because of the depth of activity, the NSTF Awards has its own more targeted communication strategy. The aim of the NSTF Awards communication strategy is to increase awareness and positioning of the awards and to draw media to the awards.

Examples of NSTF target audiences/stakeholders:
- Member and non-member organisations
- Researchers / Academia
- Engineers
- STEM communicators and educators
- Science centres
- Learners and students
- Awards nominees
- Everyone involved in the Awards effort and publicity
- Government ministers and departments – national and provincial
- Parliamentary portfolio committees
- Sponsors
- Media
- Greater public

Examples of the types of regular communication to the stakeholder base:
- **NSTF Discussion Forums**: There are 5 or 6 Discussion Forums per year. Topics cover issues pertinent to science, engineering and technology (SET) and innovation. They usually last one full day, with up to 10 expert speakers giving various perspectives on the topic.
- **Monthly newsletter**: The NSTF compiles a monthly e-newsletter with SET-related news and events in the SET community (not only news in relation to the NSTF itself). It goes to a national database of about 7000 individuals interested in SET.

10.4 The way forward for managing stakeholder relationships
- The NSTF is in the process of hiring a Stakeholder Liaison Officer. This position will focus on building strong collaborative relations with Government officials, key role-players and networks.
- The NSTF is working on building formal channels with Government. Government support will validate the NSTF as a credible and trustworthy non-profit company.
- The NSTF communication strategy is a working document. This is updated and developed further on an ongoing basis.
10.5 **Operational Goal 3: Sustainable Human Resources**

The current Secretariat consists of 5 members

In the past, the staff complement has varied between 3 and 6. The secretariat should ideally consist of 8-14 permanent staff members. The secretariat currently consists of 5 staff members:

- Executive Director
- Office Manager
- Outreach and Events Manager
- Human Resource Manager/Financial Assistant
- Youth Outreach Officer

The Secretariat still needs more positions to be filled

In addition to the existing secretariat positions, the NSTF requires:

- Dedicated project managers for the various NSTF projects
- Stakeholder Liaison Officer
- Database and Web Manager
- Committees Secretary
- 2 Administrative Assistants

Existing permanent staff currently do most of the tasks but time is limited

The tasks required by these positions are currently conducted by either the existing permanent staff, or by young science graduates. These graduates are volunteers of the DST’s National Youth Service (NYS) Programme (which is managed by SAASTA under the NRF). Every year a new cohort of (usually 3) NYS volunteers is trained and supervised to do NSTF work.

The Office Manager is also the Financial Manager, and manages and supervises the office as a whole, including staff members and volunteers.

Future strategic actions rely on the addition of staff to the secretariat.

Strategic actions that have been outlined in this document, for a great part, rely on the addition of staff to the secretariat. These strategic actions include:

- Increased interactions with Parliamentary Portfolio Committees
- Organising increased small consultative meetings with experts
- Increased online interaction using social media, this includes additional online surveys
- Dissemination of policies, analyses and summaries of policies
- Taking SET Discussion Forums to various places in the country
- Organising the development of a cell phone app for SET career advice
- Increased publicity around the Share ‘n Dare Programme and other youth-focused projects
- Actively pursuing project administration work from various organisations and Government departments
- Increasing strong collaborative relations with Government officials, key role-players and networks

Profile of NSTF employees in terms of race and gender

The 5 members of the secretariat currently consist of four women and one man; two white and three black staff members. If the NYS volunteers are included, the profile of the secretariat is currently as follows:

- 2 white, 6 black, thus 75% black staff
- 6 women, 2 men, thus 75% female staff
At senior management level, the NSTF has two people: the Executive Director and Office Manager (who also serves as Financial Manager).

At the deputy management level, the NSTF has three staff members (solid blue blocks in the organogram):
- Financial Assistant
- Communications/Marketing Officer
- Youth Outreach Officer

The other staff positions are filled by volunteers or interns (the 3 blocks outlined in orange).

10.6 The way forward for sustainable human resources

- With funding from the DST, it will be possible to fill more positions in the NSTF secretariat. This will increase existing NSTF activities and allow for many of the future strategic actions to be implemented.
- Currently, succession planning is difficult due to the small size of the secretariat. Funding from the DST will provide for a larger secretariat thus making it more sustainable. It will also allow for more employees to get involved in the content of discussions, identify speakers and pertinent issues, motivate people to attend and participate, chair sessions, and follow up on recommendations. The spread of the work means that these activities are not reliant on a single person.
- The NSTF secretariat will continue to add to the organisational processes and knowledge management documents that have been developed. This is to ensure that knowledge remains in the organisation.
11 Monitoring and Evaluation

The NSTF considers monitoring and evaluation a fundamental part of ensuring that the organisation’s mission and vision are driven forward. Below shows the targets set for the current and future NSTF activities.

### Strategic objectives:

1. To influence and monitor public SET-related policy
2. To promote dialogue, among SET stakeholders, between the public and private sectors, between Government and other stakeholders, and between experienced SET professionals and the youth

#### Regarding direct interaction with Government

- Creating specific and endorsed channels of communication through to Government: The focus is on developing this formal channel with the DST first and then evaluating the success or challenges with this. Post that and with lessons learnt, the NSTF will develop formal channels with other Government departments.
- Number of interactions when assisting with drafting a bill and evaluating the success or challenges with this: This cannot be defined at this stage as it is dependent on funding and establishing a formal channel with the DST.
- Number of interactions with Parliamentary Portfolio Committees (PPCs) and evaluating the success or challenges with this: This cannot be defined at this stage as it is dependent on funding and establishing a formal channel with the DST.
- Assessing the involvement with calls for public comment and evaluating the success or challenges with this: This cannot be defined at this stage as it is dependent on funding and establishing a formal channel with the DST.
- Number of reports sent to policymakers as a feedback mechanism and evaluating the success or challenges with this: This cannot be defined at this stage as it is dependent on funding and establishing a formal channel with the DST.

#### Regarding NSTF vehicles of communication for stakeholder engagement

- Number of small consultative planning meetings with experts and evaluating the success or challenges with this: This cannot be defined at this stage as it is dependent on funding (as noted in the document previously).
- Increased online interaction using social media: This cannot be defined at this stage as it is dependent on funding (as noted in the document previously).
- Number of online surveys to be conducted: 1 x year. This will also include evaluating the success or challenges with this.
- Number of dissemination of policies, analyses and summaries of policies and evaluating the success or challenges with this: This cannot be defined at this stage as it is dependent on funding (as noted in the document previously).
- Number of newsletters sent out and evaluating how this communication channel can improve: 10 per year (excluding January and December)
- Number of Discussion Forums held: 4 x year. Discussion Forums are also monitored through an evaluation form given after the event. These results are collated and reports are written for each event. Taking these Discussion Forums to other parts of the country is dependent on funding.
- Number of reports of the Discussion Forum posted on the website post the event: 4 x year
- Number of press releases post the NSTF Discussion Forums: 4 x year
- The hits on the website/s, as well as particular pages: These are monitored every month. This data is also displayed in graphs to get a better understanding of the implications. These results are included in a monthly report. Because of the links put into the newsletter, these results also reflect on the newsletter.

### Strategic objective:

3. To promote and celebrate excellence in research, SET capacity building and education, SET communication, innovation and SET activities that can have a positive impact on society and improve people’s lives, and SET activities that contribute to sustainable development.

#### Regarding the

- NSTF Awards process and ceremony (including call for nominations, adjudication and...
### NSTF Awards

<table>
<thead>
<tr>
<th>Organising sponsors:</th>
<th>1 x year</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSTF Awards publicity and communications campaign: Ongoing throughout the year, with intensive 1 x year campaign around the Awards Gala Dinner</td>
<td></td>
</tr>
<tr>
<td>NSTF online survey to evaluate participants’ experiences of the Awards Gala Dinner: 1 x year. This is collated and provides information on how to improve the event.</td>
<td></td>
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</tbody>
</table>

### Strategic objective:

4. To implement and support projects that are cross-cutting and multi-disciplinary in nature, where appropriate, to contribute to attaining the Vision and Mission.

### Regarding youth-focused projects

| The NSTF Brilliants programme (including selection process and ceremony): 1 x year. This is monitored through an evaluation form given after the event. These results are collated and reports are written for each event. The NSTF is currently trying to source bursaries for this programme. Other potential projects noted in the strategy are dependent on funding. |
| Share ‘n Dare: Minimum of 6 events per year. Share ‘n Dare is based on the concept of Community Informatics – where ICT is used to build communities. Research is conducted on the Share ‘n Dare programme on an ongoing basis. It is based on audience surveys when the NSTF Awards winners present. The research also evaluates the convergence of ICTs for community informatics. Number of audience per audience group and per province are also calculated. An annual report is compiled with the results. Other potential projects noted in the strategy are dependent on funding. |
| Bursary database for SET-related studies: The number of hits on this part of the website is monitored every month, indicating the enormous demand for this service. |
| Online details of 50 SET career paths: Likewise, the hits on this page are monitored. Other potential projects around the career paths as noted in the strategy are dependent on funding. |
| proSET projects: The recipients of the grants are required to submit plans beforehand and reports after implementation. The reach and number of beneficiaries can be determined from these. Someone from the secretariat or proSET Committee visits the projects to see the quality of work for themselves. |

### Regarding all campaigns and projects

| When communication campaigns or particular projects are run, reports or formal evaluations are done to assist with giving feedback to Exco and other committees, members and sponsors. These evaluations are also used to plan improvements on all aspects. |
| All activities are reported on at Exco meetings, which are minuted. The Annual Report also contains reports on all activities of the NSTF in a particular year. Special review meetings are held or form part of other meetings. Reporting is also done to sponsors on aspects related to their sponsorship. |

### Operational goal 1: Financial sustainability and security (including plans for fundraising)

- Increased NSTF membership: At least 3 new organisations per year.
- Sponsorship of NSTF discussion forums and the NSTF newsletter: This is in pilot phase.
- Acquiring additional project administration work (which can include running a bursary programme): At least 1

### Operational goal 2: Managing stakeholder relationships

- Development on the communications strategy for managing stakeholder relationships: Updated at least 1 x year

### Operational goal 3: Sustainable human resources

- Adding to the secretariat’s knowledge management and processes documentation: At least 2 x year
12 Finance and Budget

12.1 Financial Administration

Financial administration is managed primarily by the NSTF Secretariat

The administration of finances is managed by the Secretariat with the assistance of an external bookkeeper. The Secretariat is responsible for:

- The financial administration of membership fees
- NSTF Awards sponsors and table/seat bookings
- Workshop registration fees
- Debtors and creditors
- The funds derived from the AS&TS Trust
- The financial administration related to contracts undertaken with the DST, of which there are currently three in place
- Overseeing annual audits
- All compliance requirements by the SARS

The external bookkeeper processes books and creates a monthly Financial Management Report

The bookkeeper is responsible for the processing of all books and reporting these to the Secretariat in a monthly Financial Management Report. This is, in turn, tabled and approved at the NSTF Executive Committee and sub-committees.

12.2 Sources of Income

The NSTF has predominantly 3 sources of income

The NSTF’s annual operational income and expenditure is typically about R2 million. Annually, the NSTF has relied on the following sources of income over many years:

- Membership fees (about 60% including DST’s contribution)
- NSTF Awards fund-raising (about 25%)
- Administration of projects (about 15%)

The proportions of income vary annually

The proportions vary somewhat from year to year. The NSTF Awards effort is self-funding in that the sponsorships and table sales cover the expenses. Some years there is no surplus from the Awards income and expenditure. This means that the NSTF then doesn’t cover its operational expenses or have funds to plough into other projects.

Administration of projects is a highly variable source of income. It also demands extra work of the existing staff as there is never enough funding to hire additional staff for this purpose.

The fund-raising environment holds many challenges due to the downturn in the economy

The South African economy is facing severe challenges. The National Treasury was only cautiously optimistic in its 2015 Budget Review:

“Global economic growth projections have been revised down in recent months, and the pattern of slow growth is likely to persist, with consequences for all developing economies. South Africa’s gross
With the South African economy in a downward turn, exacerbated by a shrinking mining sector and the severe drought currently experienced and caused by the *el nino* effect, many organisations are cutting costs wherever possible, and sponsorships become harder to find.

### 12.2.1 Memberships

**More than 90% of member organisations pay their annual fees**

The NSTF secretariat has outstanding success in terms of collection of membership fees. More than 100 member organisations are invoiced annually, and more than 90% pay their fees. For example, for the 2013/14 financial year, 97% of members paid their fees.

**Number of member organisations never falls below 100**

Every year only a few members resign (never more than 5), which is offset by a few organisations joining the NSTF. The number of members in any year never falls below 100.

**Various levels of annual membership fees and annual increase kept as low as possible**

There are various levels of annual membership fees depending on the size and sector of the organisations, as approved annually by the Exco. The annual increase levied on membership fees is kept as low as possible, to ensure that members do not resign because of the fees. As the NSTF depends on membership fees for most of its income, resignations by member organisations could severely affect the NSTF’s ability to continue delivering the expected outcomes.

**Government membership fees account for 58% of NSTF membership income**

The membership fee paid by the DST on behalf of Government is about 58% of the NSTF’s membership income, or about 35% of the NSTF’s total income.

### 12.2.2 NSTF Awards

**Cost-effective hosting of NSTF Awards fundraiser while maximising participation**

As the NSTF Awards project is a fundraiser that supports the NSTF operations, specific attention is paid to hosting the event as cost effectively as possible. At the same time, there is a focus on maximising participation in the event.

**Sponsorship collection goes well**

Sponsorship collection always goes well, as the NSTF has good relationships with the sponsors. The majority of sponsors pay within 2 months of invoices being issued. The DST is one of the NSTF Awards sponsors and contributes about 12%.

**Sponsors of the NSTF Awards:**

- Department of Science and Technology (since 1998)
- The Technology and Human Resources for Industry Programme (THRIP), an initiative of the Department of Trade and Industry (since 2004)
- Eskom (since 2003)
- Council for Scientific and Industrial Research (CSIR) (since about 2000)
- Business Report (since 2010) which is part of *The Star, Pretoria News, Cape Times* and *Mercury* newspapers
- BHP Billiton (2011-2014), and now South32 (2015)
12.3 Managing project funds

Project administration fee for staff costs and overheads

Usually an 8-10% administration fee is charged for the management of projects. This contributes towards staff costs and overheads.

12.4 Future plans for fundraising

The fund-raising model of the NSTF Awards has proved relatively successful:

- Having various sponsorship packages with a variety of branding benefits
- Charging for seating at the Awards Gala Dinner
- Generating as much publicity as possible, which benefits finalists, winners and sponsors
- Ensuring that people want to attend and that they enjoy the event

Applying the lessons learnt through the management of the NSTF Awards funding, the following options will be explored:

- **Increased NSTF membership:** This is a focus of the NSTF. A Stakeholder Liaison Officer is in the process of being hired and this will be part of the job description. Increasing membership primarily entails one-on-one meetings.

- **Membership package with modest NSTF Awards sponsorship:** Although the membership fees are charged according to a scale, the NSTF is exploring alternatives. An example is a ‘membership package’ concept that includes a modest NSTF Awards sponsorship. This might be an attractive option for the larger members, as they can derive publicity from their involvement in the Awards. The NSTF secretariat is currently working with Exco to create a plan with the aim of instituting this in 2016/2017.

- **Sponsorship in NSTF discussion forums and NSTF newsletters:** The NSTF will be running a sponsorship pilot in 2016. The pilot will include creating sponsorship packages outlining different levels of sponsorship and the benefits. Areas for branding opportunities will include the NSTF discussion forums and the NSTF newsletter.

- **More services to SET organisations:** The NSTF will provide more services to the community of SET organisations. The NSTF is well positioned and flexible enough to do so. If the staff could be expanded somewhat, there are various options in this regard. Services include running bursary programmes and doing project administration.

- **Further fundraising events:** Once the NSTF secretariat has been increased, a plan around further fundraising activities to be created. Examples include collaborative events and sponsored events.
13 Scenario planning for the NSTF

20-year-old NSTF produces high impact results with minimal resources
The NSTF has existed for 20 years (in 2015). It has much to show for these two decades (as described in the pages of this document). It has also always managed to produce good results on minimal resources. The impact of NSTF projects is continually monitored through evaluation forms and review procedures. When systematic evaluations are commissioned, the outcomes are overwhelmingly positive.

Positive outcomes rely on collaboration with members and partners
However, the NSTF is always and per definition, a collaborative endeavour. All of its impact is brought about by the efforts of the Secretariat in collaboration with the NSTF membership. Positive outcomes rely critically on the support and participation of the members and partners. Ultimately the NSTF’s measure of success is in the loyalty, over many years, of these members and partners.

Ideal to expand NSTF capacity and to ensure its sustainability
Over the past decade, the NSTF has managed to build a more prominent profile and show that it is an active organisation, involved in many initiatives addressing various issues at the interface of society and SET. At this stage, it would be ideal to expand the NSTF’s capacity and ensure its sustainability as an organisation over the next decade. At the same time, measures should be taken to increase the NSTF’s positive impact even further.

Scenario planning shows that the NSTF will have an even greater impact on the SET landscape if funding is made available
Scenario planning was developed to make clear the impact that funding will have on the NSTF. It is also a way of showing that no additional funding will cause the NSTF to be vulnerable.

13.1 Scenario 1: If the status quo is maintained

5 critical factors mean the NSTF is vulnerable to change and to being able to deliver
If the support of the NSTF and the participation of its members remains at current levels, one could expect that the NSTF continues to produce the current good results (if other factors remain the same). However, the current outcomes are critically reliant on:

- Current key staff members of the secretariat (3-4 of them)
- The ability to hire a few support staff members and reliable service providers
-Retention of current NSTF membership
- Retention of current sponsors

These five factors mean that the NSTF is vulnerable to any changes. It also means the risks to the NSTF’s ability to deliver and make an impact are many.

The risks are currently managed in the following ways:

- Documented work procedures: The various work procedures followed in the office are documented as far as possible, so that new staff can refer to these and maintain standards that have already been established.
- Help from the NYS: The NSTF office makes use of the National Youth Service (managed by SAASTA and funded by the DST) and has the assistance of 2 or 3 additional people in the office.
- Flexible staff with shared job descriptions: The NSTF office is flexible and, as staff numbers fluctuate, roles are re-assigned. Staff members also share job descriptions and assist each other so that everyone learns more than their particular role.
- **Maintenance of NSTF membership and sponsors relationships**: Relationships with NSTF membership and sponsors are maintained. Regular communications, including personal telephone calls and meetings, are essential to ensure sustainability of relationships.

- **Much attention is given to the publicity and image of the NSTF**: There is a Communications Strategy that the NSTF secretariat follows, and expert advice is called upon where necessary.

**Succession planning is still a challenge**

Nevertheless, succession planning is a challenge when there are only a few people who know how to maintain the operations of the organisation.

### 13.2 Scenario 2: If developments do not favour the NSTF

**Continued NSTF success depends on long-term core funding**

The continued success of the NSTF remains precarious without long-term core funding. If any of the following events happen, the NSTF will not be able to sustain its current outcomes and impact:

- **The loss of one or more of the current key staff members of the secretariat**: It would be hard to replace a key staff member. Candidates with similar skills would demand a higher salary, and would take at least a year to familiarise themselves with the NSTF and the roles they need to play. It takes commitment to deliver at the required level, without due compensation. The incumbent would have to have a passion for bringing about the difference that NSTF has made and can make in the future.

- **The ability to hire a few support staff members**: If the NYS is discontinued by Government, the NSTF would not be able to benefit from 2 or 3 temporary support staff members. Although it might be possible to obtain the services of interns, it is also possible that the internship programme might become constrained and then limit its support to scientific work experience for young graduates.

- **The ability to hire reliable service providers**: It is always a challenge to find reliable service providers whose services can be engaged every year. The NSTF secretariat has managed over the years to identify such providers and build ongoing good relationships with them. The companies themselves have to be successful in business and be sustainable. They have to be able to deliver to the high standards of the NSTF while charging affordable fees. Furthermore, there has to be a good relationship and mutual understanding between the NSTF and the service provider. Different from the public service, a non-profit company like the NSTF is free to establish such relationships without going through tender processes. The ability to identify such providers and build relationships with them is again dependent on current key staff members. The ability to engage the services of these providers is of course reliant on sufficient funding resources. Without such service providers, the NSTF would not be able to maintain the standards of:
  - The NSTF Awards Gala Dinner
  - The NSTF website/s
  - The NSTF newsletter
  - Publications

- **Retention of current NSTF membership**: Losing NSTF member organisations to the weak economy and a lack of funds would mean an income reduction for the NSTF. The organisation is very reliant on membership fees. More importantly, the NSTF actually consists of its members, and the Exco and other committees represent and draw on the member organisations. Losing many members would render the NSTF unrepresentative.

- **Retention of current sponsors**: Losing sponsors for the NSTF Awards would impact on the Awards effort, and not necessarily on the NSTF as such. The standards set for the NSTF Awards Gala Dinner
would be compromised but, more importantly, the youth outreach activities would have to be
curtailed or discontinued. Thus the impact of the NSTF Awards, of which a critical part is impact on
the youth, would be dramatically diminished.

13.3 Scenario 3: If developments favour the NSTF

With greater support, the NSTF can expand its reach and impact
If the NSTF is supported to a greater extent than is currently the case, the NSTF can expand its reach and impact. With an organisation like the NSTF, which makes resources go as far as possible, even a small increase in support will make a huge difference.

With increased funding and general sponsorship, there are numerous valuable projects that the NSTF can undertake
If the NSTF is funded to a greater extent than is currently the case, there are numerous projects that the NSTF can undertake. Examples are below:

- The NSTF could appoint knowledgeable people to liaise with member organisations and various experts on Discussion Forum content, improving the planning and follow up.
- The NSTF could take its SET Discussion Forums to various places in the country, organising stakeholder consultations closer to where the stakeholders are.
- Particular projects could be launched and sustained, such as employment readiness of young SET graduates.

These types of initiatives would mean that the NSTF has:

- Greater reach and interaction across the country
- Improved content resulting in publishable outcomes
- Positive outcomes of projects intended to raise awareness of SET and particular topics
- Assisting the youth to be appropriately employed

Increased funding would ensure the NSTF has sustainability, especially in terms of staff

- The staff complement can be expanded from the current 5 to the more ideal level (as discussed under Corporate Structure, 4.7) of 12 permanent staff members. This would allow for staff members to specialise more in particular roles and job descriptions, and grow their abilities. It would also allow for more sustainable succession planning.
- Increased funding for staff could also mean improved salaries to attract skilled and experienced senior staff, making it easier to replace existing staff. Current staff members would be easier to retain if they were provided with some modest benefits.
- Having a sufficient and skilled staff complement could, in some instances, also result in less reliance on service providers. For example, a staff member could load content onto the NSTF website, instead of paying an outside agency to do so.

The above would mean that all NSTF operations and projects will be expanded and improved. It would also ensure the sustainability of the office and all the activities.

Increased membership will further the NSTF as a credible and sustainable stakeholder organisation and ensure a wider reach
If more organisations support the NSTF’s mandate and initiatives, and show their support by becoming members, the NSTF would not only benefit from membership fees but, more importantly, from growing as an increasingly credible stakeholder forum.

**With effective channels that have been endorsed, the NSTF can provide valuable services to Government**
Government departments and agencies that require stakeholder consultations would look to the NSTF to provide credible lists of stakeholders, and contact persons within those stakeholder organisations. The NSTF could provide services such as mailing and publicising invitations, collation of outcomes of consultations, recommendations and action plans.

**Attracting more sponsors for the NSTF Awards would allow for increased youth outreach activities**
Should NSTF manage to attract further sponsors for the NSTF Awards, it could maintain the event itself (the NSTF Awards Gala Dinner) at its current high quality. Furthermore it could expand its youth outreach activities associated with the NSTF Awards, namely the Brilliants Programme and Share ‘n Dare programme. (See examples of future plans under Strategic Objective 4.)

**Increasing youth outreach activities will have an** expanded outreach to the youth. It will also increase the recognition of top performers in physical science and maths at school level and provide a higher profile of the NSTF Awards winners and outreach activities. (See point 9.6 – ‘The way forward for youth outreach activities’).
14 Conclusion

The NSTF has built up sustainable relationships with a broad range of stakeholders over the 20 years of its existence. It has accumulated relevant best practice, skills, and knowledge to promote SET on an ongoing basis, thereby assisting other role players in the system to perform their roles better.

It also operates as a non-partisan entity that has the flexibility to work across Government departments and to represent the largest base of stakeholders within the National System of Innovation. This can be of great assistance to the DST. The nature of the NSTF also differentiates it from other entities that provide feedback to Government. Furthermore, the aims of the NSTF are closely aligned with the DST’s Science Engagement Framework.

The NSTF has managed various projects successfully and proved that collaborative effort can make things happen and inspire the youth. The organisation has a record of clean management and responsible oversight by its executive committee and board of directors.

In short, the NSTF is an organisation worthy of support by Government and other sponsors. To render the NSTF sustainable in the long term, and allow it to have greater impact, the NSTF needs:

- Increased and long-term funding support, particularly with respect to increased capacity within the NSTF Secretariat to further the NSTF’s impact as a whole
- Stronger endorsement by key role players

Stronger endorsement by key role players needs to start with a formal engagement channel with the DST. Once this Memorandum of Agreement has been finalised and a working process developed, the model can be taken across all Government departments that engage with SET policies. This will create a collaborative platform for the DST to fill in some of the gaps that exist because of the fractured nature of the SET landscape.

The NSTF has a list of future plans and strategies aligned with its long-standing mission, vision and objectives. A great number of these depend on long-term funding and stronger endorsement by Government. The strategy shows that, with funding, the NSTF can continue its good work plus have an even greater impact in South Africa.
Appendix A

Strategic Plan 2007 - 2015

VISION

SETI system that is responsive to the needs of the nation.

MISSION

To promote and influence the formulation and delivery of policy relevant to the stakeholders, in the national interest.

STRATEGIC OBJECTIVES

The NSTF aims to:

1. Influence and monitor the development and implementation of public SETI policies
2. celebrate, recognize and reward excellence within the SETI sectors
3. contribute towards the renewal of SETI systems through youth interventions

VALUES

- The democratic principles as enshrined in the Constitution of the Republic of South Africa
- Responsible action on behalf of members
- Conducive environment for dialogue
- Promote collaborative action

STRUCTURE

The NSTF comprises the following sectors:

1. Government sector
2. Science councils and statutory bodies
3. Higher education and training sector
4. Civil society and labour
5. Small, medium and large business, and state owned enterprises
6. Professional bodies and learned societies (constituted as proSET)
### Appendix B

#### Examples of NSTF Discussion Forum topics (2013 to 2015)

<table>
<thead>
<tr>
<th>Category</th>
<th>Topics</th>
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| **ICT**           | • ICT Security and Privacy  
|                   | • Digital Wellness Workshop (collaboration with the AIEIE (UP) and the Civilian Secretariat of the Police)  
|                   | • ICT assisted education |
| **Ethics**        | • Ethics and Professional Integrity in SETI |
| **Energy**        | • Nuclear power, alternative energy sources and the SA policy environment (collaboration with British High Commission)  
|                   | • Energy for Transport: in search of Sustainable Modes for the Future (proSET initiative)  
|                   | • Does the Government's Energy Planning take full account of the available technologies, environmental impact, and the required Research and Development? |
| **Beneficiation** | • Beneficiation of SA’s Natural Resources - Agro-Processing & Mining (Science Councils’ Committee initiative) |
| **Skills**        | • What skills are needed by Science, Technology and Innovation Institutions? (Science Councils’ Committee initiative)  
|                   | • Skills and Training in SETI: Training facilities for Artisans / Integration of efforts & Change Management and Transformation |
| **The NDP**       | • The National Development Plan and COSATU critique (proSET initiative)  
|                   | • Science and Technology in relation to the National Development Plan  
|                   | • The NDP and skills needed by Science, Technology and Innovation Institutions (Science Councils’ Committee initiative) |
| **Indigenous Knowledge Systems (IKS)** | • The value of indigenous knowledge in the 21st century (International conference organised with NIKSO at DST) |
| **The National System of Innovation and DST** | • Ministerial Review Committee report on the readiness of the National System of Innovation (NSI) to meet the needs of the country  
|                   | • The outcomes of the Science, Technology and Innovation (STI) Summit of the Department of Science and Technology (DST) held in July 2013  
|                   | • South Africa’s participation and leadership role in the Science Sector of Unesco  
|                   | • Innovation – Progress, Potential and Limitations |
| **Education**     | • The Green Paper on Post-School Education and Training  
|                   | • Holistic solutions to the education crisis, and ICT assisted education solutions |
Appendix C

List of NSTF member organisations

1. ACADEMY OF SCIENCE OF SOUTH AFRICA (ASSAf)
2. AFRICABIO
3. AGRICULTURAL RESEARCH COUNCIL (ARC)
4. ALUMINIUM FEDERATION OF SA (AFSA)
5. ASSOCIATION FOR MATHEMATICS EDUCATION OF SOUTH AFRICA (AMESA)
6. BAKGATLA-BA-KGAFELA STRATEGIC INVESTMENT COMPANY (BBKSIC)
7. BOKAMOSO SCIENCE & TECHNOLOGY EDUCATION CENTRE
8. CAMI EDUCATION Pty Ltd
9. CAPE PENINSULA UNIVERSITY OF TECHNOLOGY (CPUT)
10. CENTRAL UNIVERSITY OF TECHNOLOGY (CUT)
11. CENTRE FOR ADVANCEMENT OF SCIENCE AND MATHEMATICS EDUCATION (CASME)
12. CHAMBER OF ENGINEERING TECHNOLOGY (CET)
13. CHAMBER OF MINES OF SA
14. CHEMICAL AND ALLIED INDUSTRIES’ ASSOCIATION (CAIA)
15. CORROSION INSTITUTE OF SOUTH AFRICA (corrisa)
16. COUNCIL FOR GEOSCIENCE (CGS)
17. COUNCIL FOR MINERAL TECHNOLOGY (MINTEK)
18. COUNCIL FOR SCIENTIFIC & INDUSTRIAL RESEARCH (CSIR)
19. Coza CARES FOUNDATION
20. DECIDUOUS FRUIT PRODUCERS TRUST (DFPT)
21. DENEL (Pty) Ltd
22. DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES (DAFF)
23. DEPARTMENT OF BASIC EDUCATION (DBE)
24. DEPARTMENT OF ENERGY (DOE)
25. DEPARTMENT OF ENVIRONMENTAL AFFAIRS (DEA)
26. DEPARTMENT OF HEALTH (DOH)
27. DEPARTMENT OF HIGHER EDUCATION AND TRAINING (DHET)
28. DEPARTMENT OF HUMAN SETTLEMENTS (DHS)
29. DEPARTMENT OF MINERAL RESOURCES (DMR)
30. DEPARTMENT OF PUBLIC WORKS (DPW)
31. DEPARTMENT OF SCIENCE & TECHNOLOGY (DST) - PREMIUM MEMBER
32. DEPARTMENT OF TELECOMMUNICATIONS AND POSTAL SERVICES
33. DEPARTMENT OF TRADE & INDUSTRY (the dti)
34. DEPARTMENT OF WATER AND SANITATION (DWS)
35. DESIGN BIOLOGIX CC
36. ENGINEERING COUNCIL OF SOUTH AFRICA (ECSA)
37. ENTOMOLOGICAL SOCIETY OF SOUTHERN AFRICA (ESSA)
38. ESKOM (ELECTRICITY SUPPLY COMMISSION)
39. ESKOM EXPO FOR YOUNG SCIENTISTS
40. EXXARO RESOURCES
41. FEDERATION OF UNIONS OF SOUTH AFRICA (FEDUSA)
42. FERTILIZER SOCIETY OF SA (FERTASA)
43. FOSSIL FUEL FOUNDATION TRUST
91. SOUTH AFRICAN INSTITUTE OF MEASUREMENT AND CONTROL (SAIMC)
92. SOUTH AFRICAN INSTITUTE OF PHYSICS (SAIP)
93. SOUTH AFRICAN INSTITUTION OF CHEMICAL ENGINEERING (saiche)
94. SOUTH AFRICAN INSTITUTION OF CIVIL ENGINEERING (SAICE)
95. SOUTH AFRICAN MATHEMATICS FOUNDATION (SAMF)
96. SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE (SANBI)
97. SOUTH AFRICAN NETWORK FOR COASTAL AND OCEANIC RESEARCH (SANCOR)
98. SOUTH AFRICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY (SASBMB)
99. SOUTH AFRICAN SOCIETY FOR PLANT PATHOLOGY (SASPP)
100. SOUTH AFRICAN SUGARCANE RESEARCH INSTITUTE (SASRI)
101. SOUTH AFRICAN TECHNOLOGY NETWORK (SATN)
102. SOUTH AFRICAN WEED SCIENCE SOCIETY (SAWSS)
103. SOUTHERN AFRICAN INSTITUTE OF FORESTRY (SAIF)
104. THE NATIONAL COMMITTEE FOR UNESCO (UNESCO)
105. THE SOUTH AFRICAN NUCLEAR ENERGY CORPORATION (NECSA)
106. THE TECHNOLOGY INNOVATION AGENCY
107. TSHWANE UNIVERSITY OF TECHNOLOGY (TUT)
108. UNIVERSITIES SOUTH AFRICA UNIVERSITY OF CAPE TOWN (UCT)
109. UNIVERSITY OF JOHANNESBURG (UJ)
110. UNIVERSITY OF KWAZULU NATAL (UKZN)
111. UNIVERSITY OF LIMPOPO SCIENCE CENTRE
112. UNIVERSITY OF PRETORIA (UP)
113. UNIVERSITY OF SOUTH AFRICA (UNISA)
114. UNIVERSITY OF STELLENBOSCH (SUN)
115. UNIVERSITY OF THE FREE STATE (UFS)
116. UNIVERSITY OF THE NORTH WEST
117. UNIVERSITY OF THE WITWATERSRAND (WITS)
118. VIVLIA PUBLISHERS
119. WATER INSTITUTE OF SOUTHERN AFRICA (WISA)
120. WATER RESEARCH COMMISSION (WRC)
121. ZOOLOGICAL SOCIETY OF SOUTHERN AFRICA (ZSSA)