technology innovation
AGENCY
Innovating Tomorrow Together

Annual Performance Plan 2017/18

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

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Technology Innovation Agency

FY2017/18 Annual Performance Plan

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FOREWORD BY THE CHAIRPERSON

This document serves as the Technology Innovation Agency (TIA) Annual Performance Plan (APP) for the Financial Year (FY) 2017/18 and signifies the commitment of the Agency to deliver on its mandate as per the Key Performance Indicators (KPIs) of the Department of Science and Technology (DST). This APP is based on the Agency's Strategic Plan FY2015/20. The Strategic Plan defines the organisation's strategic objectives which have been aligned to key government priorities (Government Nine Point Plan) outlined in the Medium-Term Strategic Framework Policy (MTSF) for FY2014/19, the National Development Plan (NDP) 2030, the New Growth Path (NGP), the Industrial Policy Action Plan and the DST's Decadal Innovation Plan.

To sustain the above alignment, TIA intends to strengthen its relationship within the NSI to bolster innovation partnerships such as those with the National Advisory Council for Innovation (NACI), Academy of Science of South Africa (ASSAf), Council for Scientific and Industrial Research (CSIR), Centre for Public Service Innovation (CPSI), Small Enterprise Development Agency (SEDA) and the National Intellectual Property Management Office (NIPMO).

Context

The last strategic planning cycle of the organisation focused on attracting and retaining skills; equipped with the necessary vision, vigour, requisite abilities and buy-in to the changing landscape of high performance. Internally, a significant operational consideration through the change-management process, resulted in the building of equity in human resources to enable TIA to facilitate a broader organisational transformative process. Management embarked on a leadership programme designed to address insufficiencies. This, in conjunction with the Change Management process, was an assurance of the entity being able to effectively deliver on its mandate whilst addressing all previous deficiencies.

An emphasis was placed on fostering good relations with stakeholders in both the public and private sectors to assist in making the innovation system more effective in supporting future social and economic growth. In the past period TIA has not engaged enough with the private sector and the year ahead the agency will seek to unlock value in this sector to support its mandate. No environment is without challenges and certainly TIA is no exception, however, with a common vision and the acknowledgment of its vital role within the National System of Innovation (NSI) which is underpinned by its mandate, no challenge is seen as overwhelming. TIA is pleased to report that the current year sees its profile and reputation in the NSI as pleasing and encouraging considering the various engagements and strengthened ties with strategic partners and various other important role-players.

The internal control environment within TIA was reviewed, weaknesses were identified and corrective and consequence management was applied. TIA remains determined to improve quality, efficiency and accountability throughout its governance processes. This performance plan is underpinned by the reconfigured internal environment through mandatory activities such as policy review, enhanced, effective administration and greater assurance with the internal audit function being repositioned as a complementary function. TIA is gearing progressively to improve performance in line with accountability and delivery on its objectives in line with the DST's expectations.

This APP provides the much-needed support to National Government to alleviate the challenges related to poverty, unemployment and inequality. TIA's value proposition to achieve this lies in its four roles where: as a Connector of networks it is to link and connect opportunities; as the Active Funder to invest directly in technology ideas; as the Facilitator to create an enabling environment to ensure commercialisation of technology innovations; and as the Service Provider to provide access to skills, enterprise development support and equipment via its programmes.

TIA's focus is on technology development; from proof of concept to the pre commercialisation. To achieve this, TIA established the following funds: the Seed Fund, the Technology Development Fund and the Commercialisation Support Fund. In order to deal with the effective implementation of these funds, TIA implemented pre- and post-investment processes to improve client management, turnaround times and post-approval support to existing and new technology projects within the TIA portfolio. In terms of non-financial support to its projects TIA's Innovation Skills Development (ISD) unit continues to strengthen its support in the areas of business and entrepreneur development.

Impact and value creation are critical considerations for the organisation. To this end, an annual independent process of Economic Impact Assessment (EIA) is conducted. The EIA seeks to assess and inform how we optimally allocate resources, continually ensure more targeted interventions and ultimately validate the multiplier effect of our resource deployment.

Conclusion

It is our determination that by supporting innovation the economy would begin to set out on a qualitatively different path that ensures more rapid and sustainable growth, higher investment and more leveraged funding which, in turn, leads to increased employment opportunities. The TIA Board Strategic Planning Workshop, conducted in June 2016, was a very useful and important process in determining the direction of the organisation. All strategic considerations and inputs from the White Paper Review and revised Decadal Plan will find expression in a subsequent iteration of this document.

TIA's drive is to address the gaps within the NSI so as to contribute towards the realisation of a portfolio of technology innovations whose impact is the improvement in the quality of life of all citizens of South Africa.

Ms. Khungeka Njobe
Chairperson of the Board

OFFICIAL SIGN OFF

It is hereby certified that this APP:

1. Was developed by the management of the TIA under the guidance of its Board;

2. Takes into account all the relevant policies, legislation and other mandates for which TIA is responsible; and

3. Accurately reflects the performance measures TIA will endeavour to achieve over the fiscal year FY2017/18.

Werner van der Merwe

Chief Financial Officer Signature: _____

Barlow Manilal

Chief Executive Officer Signature: _____

Khungeka Njobe

Chairperson of the Board Signature: _____

Approved by:

Minister Naledi M. Pandor

Executive Authority Signature: _____

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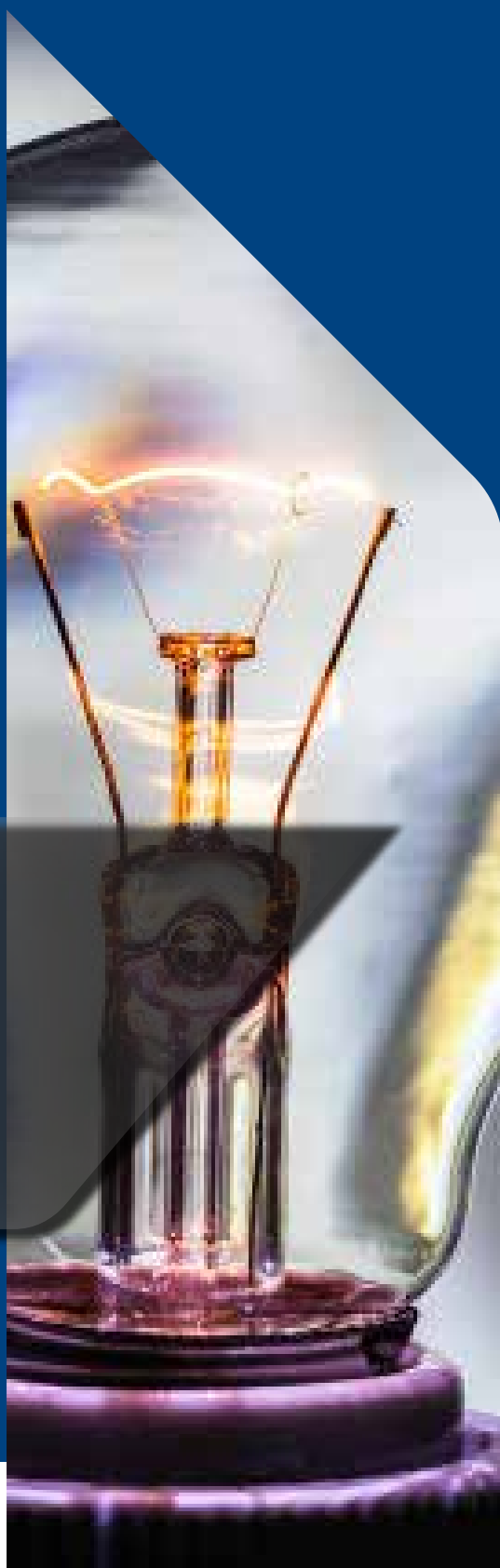


Strategic Overview

1. INTRODUCTION

This Annual Performance Plan, which has been prepared in line with the National Treasury requirements, elaborates on how TIA's Annual Performance Plan for the fiscal year (FY) 2017/18 will be implemented during the Medium-Term Expenditure Framework (MTEF) period. It is informed by the priorities identified in TIA's FY2015/20 Strategic Plan and gives details of the Agency's annual targets.

This plan forms the basis for monitoring progress against the strategic plan, where performance against the targets will be approved by the Board and reported to the Shareholders on a quarterly and annual basis. This document shows the planned programmes, budget and annual indicators for strategic objectives for the MTEF period and quarterly indicators for the FY2017/18 for each of TIA's three strategic objectives. Further detailed operational plans, including an appropriate programme risk register and risk-mitigating plan, will support the achievement of the strategic objectives.

Technology Innovation Agency

2. VISION

To be a leading technology innovation agency that stimulates and supports technological innovation to improve the quality of life for all South Africans.

3. MISSION

To facilitate the translation of South Africa's knowledge resources into sustainable socio-economic opportunities.

4. VALUES

Teamwork
Together we can do more. Fostering teamwork creates a TIA work culture that values collaboration and co-operation.

Professionalism
At TIA we apply the most appropriate skills, competencies, experience & knowledge of best practices cohesively in conductiong our work.

Excellence
TIA will be accountable to all stakeholders to deliver exceptionally high standards of work and performance.

Integrity
At TIA everyone strives to do what they said they would, when they said hey would do it. **"We keep our word"**.

Transparency
Engage in inclusive open communication, and hold each other accountable for our performance and conduct.

Innovation
At TIA we foster a culture where we continually nurture and implement new ideas from our staff and stakeholders that enhance how we do things and deliver services.

Figure 1 TIA Values

4.1 Articulation of TIA values to drive performance

In articulating the focus activities going forward, the acronym TIA has been expressed per letter to reflect the values of the organisation:

T – represents Teamwork

This with all stakeholders within the NSI, inclusive of all government national departments, private sector partners and internally within the organisation.

I – represents Impact

This in relation to the contribution the organisation makes to the NSI and in addressing national imperatives through the execution of its mandate.

A – represents Accountability

In terms of meeting expectations as well as ensuring optimal governance and compliance standards to both internal and external stakeholders with regards to the performance of the organisation.

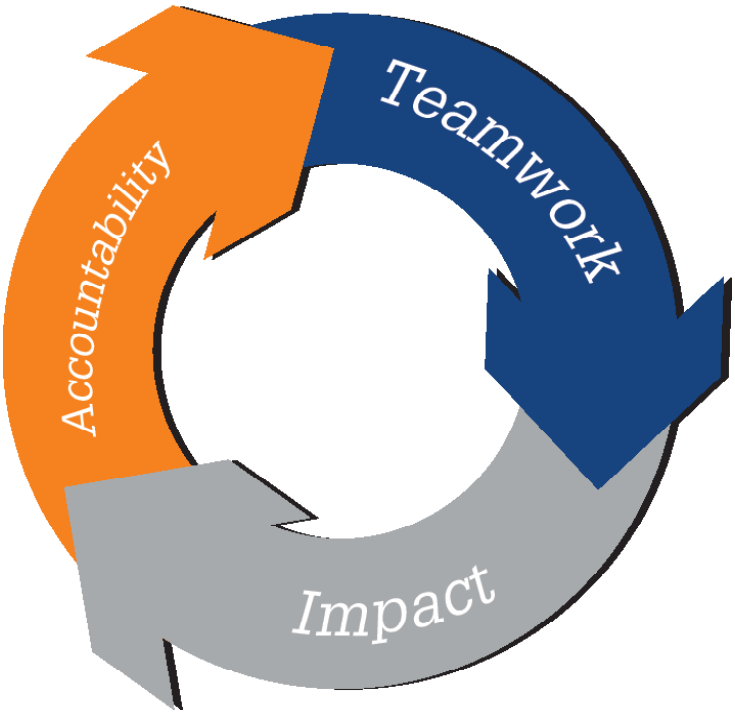


Figure 2 TIA Values to drive Performance [1]

[1]Mr B Manilal TIA's CEO Presentation at the Board Strategy Session 27-28 June 2016 – *Improving operational matrices and management for increased organisation performance*

PART A

5. LEGISLATIVE AND OTHER MANDATES

The mandate of the Technology Innovation Agency (TIA) is derived from the provisions of the Technology Innovation Act (Act 26 of 2008), which establishes TIA as an Agency to promote the development and exploitation, in the public interest, of discoveries, inventions, innovations and improvements. The Act defines "the object of TIA is to support the State in stimulating and intensifying the technological innovation in order to improve economic growth and the quality of life of all South Africans by developing and exploiting technological innovations". [2]

TIA was created to enhance the country's capacity to translate a greater proportion of local research and development (R&D) into commercial technology products and services. This is the case as knowledge generated at various universities and public research institutions has not been reaching the market owing to a lack of funding instruments targeted at the development of technologies. The gap in funding has meant that there has been no translation of the knowledge generated and the utilisation of that knowledge in addressing the socio-economic development needs of the country. It is therefore the mission of TIA to exploit South Africa's knowledge resources into sustainable socio-economic opportunities that lead to creation of knowledge based industries which in turn will result in companies becoming more competitive. To this end, TIA has established programmes and initiatives to ensure connectedness along the innovation value chain to allow for technologies to be supported and progressed from the laboratory to the market.

In performing against its mandate, TIA has through its various activities supported the development of technologies in alignment to national priorities outlined in the National Development Plan (NDP)2030, Medium Term Strategic Framework (MTSF) outcomes and sub-outcomes, DST policies; Bio-economy Strategy and Ten Year Innovation Plan (TYIP). In performing against these key policy instruments, from FY2010/11 to FY2015/16 the results have as follows; over 150 innovation products have been developed; a total of R2,1 billion has been disbursed to support the development of new technological innovations and over 6500 small medium to micro scale enterprises(SMMEs) have been supported. This has resulted in a contribution of R4.1 billion in terms of Gross Domestic Product (GDP) to the national economy and has led to 14022 jobs being created.

Going forward the agency is positioning itself to be a hub in developing technologies within the NSI by ensuring visibility of its project portfolio to all the various stakeholders therein. This would be underpinned by partnerships the agency will form to ensure that there is a seamless progression of ideas across the innovation value chain. In addition will extend its service offering to other national departments and the private sector so as to capacitate the system in developing new technologies. It is envisaged that this will unlock additional funding which will be applied to strengthen the interventions needed in localising technologies in order to achieve a broader socio-economic impact. Furthermore, intelligence will be gathered from all the innovation activity occurring in Science Councils, HEI's, Universities of Technology, Offices of Technology Transfer amongst others in a bid to understand the evolution of the NSI and the technical needs of our stakeholders. Work is ongoing to enhance internal capacity to ensure that all processes and systems are optimised to delivery on the expectations of our stakeholders.

[2] TIA Act 26 of 2008 – extract from Section 3 titled "Object of the Agency"
[3] Gap funding definition – this funding that bridges the innovation chasm for innovators to progress their ideas to the market

6. TIA'S POSITIONING

The Agency supports the realisation of the mandate by enabling the progression of ideas across the innovation value chain through:

- Providing risk funding to enable the exploitation of technological innovation;
- Developing technological innovations from the intellectual property sourced from innovators, Higher Education Institutions (HEIs), science councils and other stakeholders within the NSI;
- Supporting the commercialisation of industry enhancing technologies in cooperation with the broader NSI stakeholders to ensure seamless absorption of technologies to market;
- Providing access to infrastructure that will enable innovators to develop new technologies;
- Promoting innovation skill-development initiatives between academic institutions and industry to strengthen capabilities within the NSI to develop technological innovations;
- Strengthening its role as a technology Thought Leader within the NSI. This implies that TIA will work to position itself as a key source and repository of knowledge and intelligence on key information regarding technology trends and opportunities that would be critical to supporting policy development and decision-making. TIA will continuously gather valuable knowledge through constant analysis and evaluation of its portfolio and investment activities to extrapolate important lessons; undertaking analytical studies on key topics that are relevant for technology innovation; and participation in strategic local and global knowledge networks and events; and
- Enacting innovation-related schemes targeting specific groupings to provide access to general working space support, specialised equipment and access to technical experts.

In response to its mandate, TIA is positioned to provide "gap"[Gap funding definition – this funding that bridges the innovation chasm for innovators to progress their ideas to the market] funding for technology development projects with high social and economic impact. These projects are unable to attract commercial funding due to the inherent high-risk nature associated with the technology development process. TIA's funding focuses on de-risking technologies that are going through the technology development phases.

These phases are measured in terms of Technology Readiness Levels (TRL) which, when simply defined, are a measurement system used to assess the maturity level of a particular technology. Each technology project is evaluated against the parameters for each technology level and is then assigned a TRL rating based on the project's progress.

There are nine Technology Readiness Levels (TRL's). TRL 1 is the lowest and TRL 9 is the highest. TIA focuses on TRL 3-8 only;

(TRL 1 and 2 are largely basic and applied research, TRL 9 is full commercialisation and all these three TRLs are outside the mandate of TIA) which are defined below:

i. Proof of concept stage is termed TRL 3;
ii. Through to technology development, which entails prototyping and/or piloting, is termed TRL4-5; and
iii. Technology demonstration and pre-commercialisation is termed TRL 6-8.

Enabling the transformation of such ideas into commercially sustainable products, services and processes (including the necessary start-up companies) is the immediate output of the TIA value chain, as depicted in Figure 3 below. The inputs into the TIA Value Chain are namely innovators, the expertise of TIA's human resources, financial resources allocated by the National Treasury and other sources as well as facilities and resources provided by partners such as research and academic institutions.

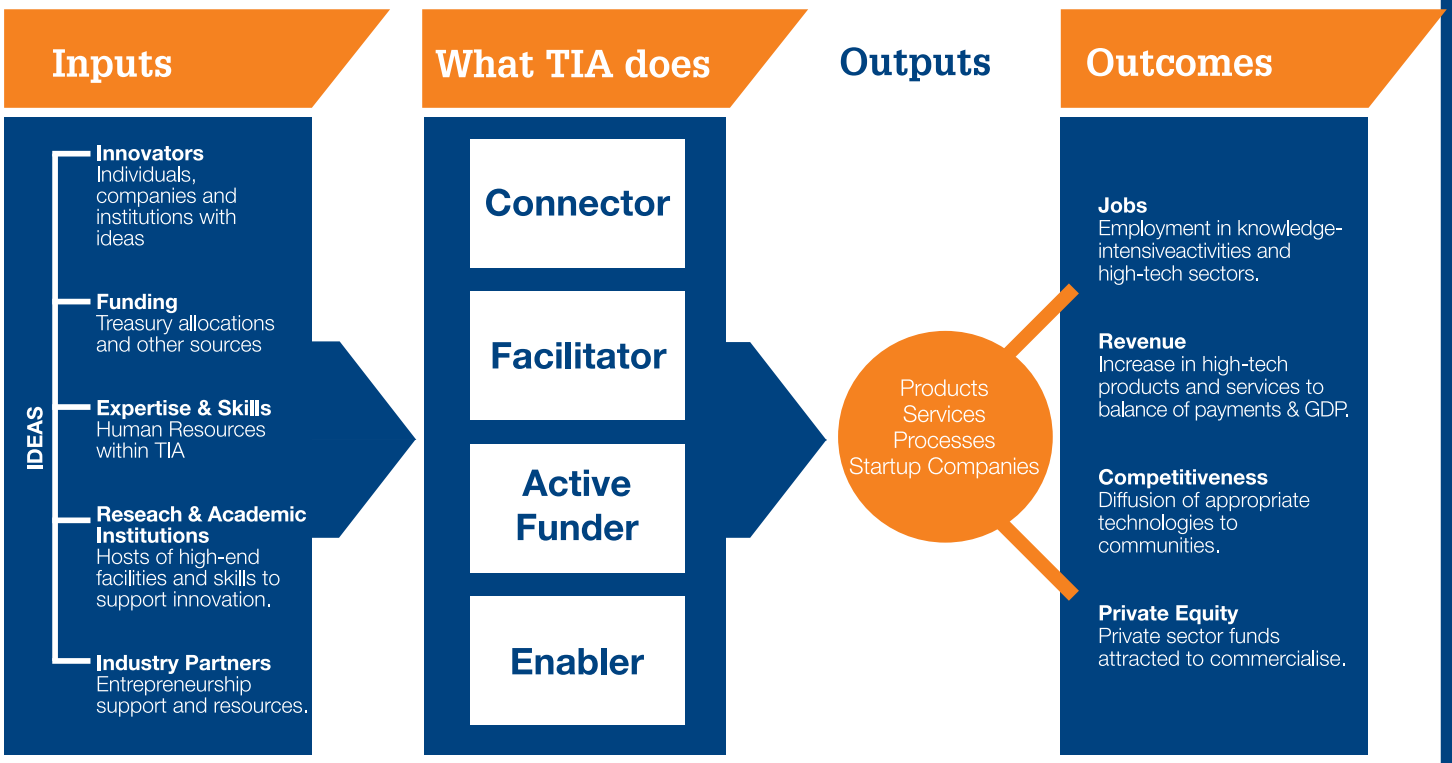


Figure 3 TIA Positioning

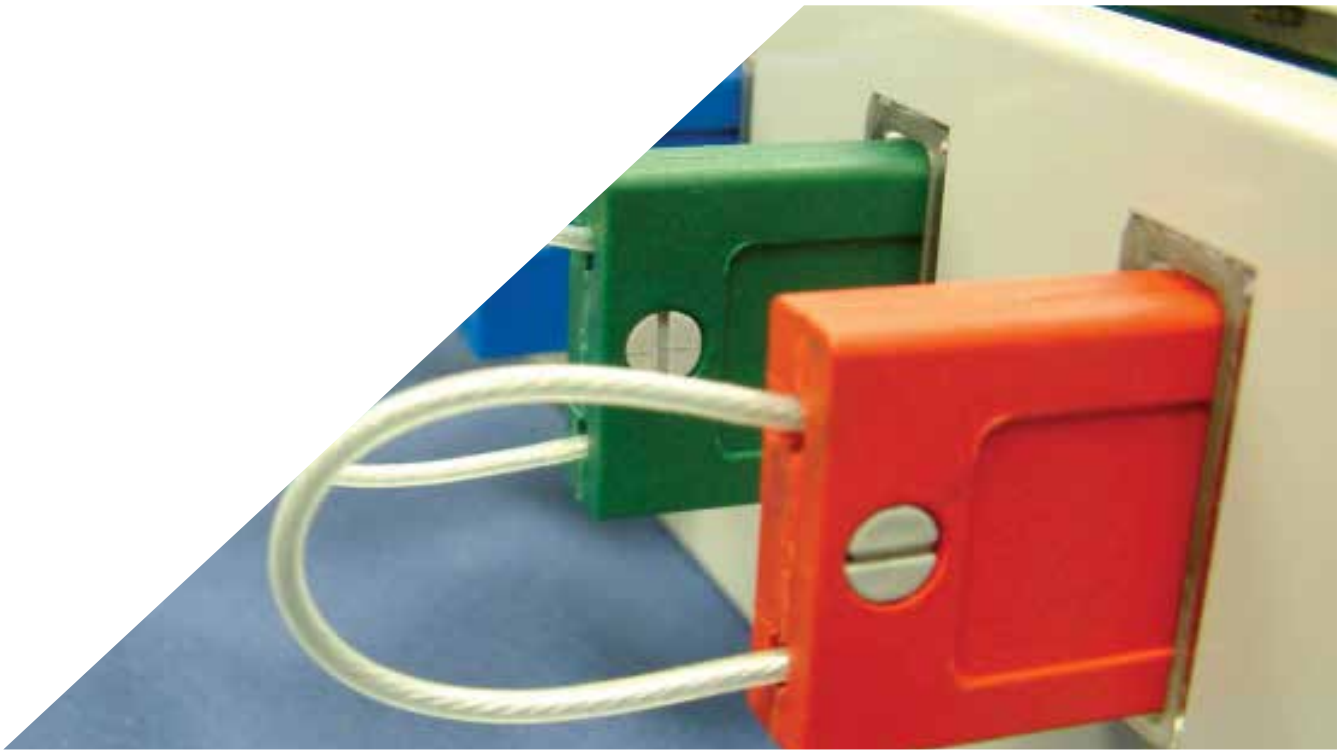
These inputs are the main elements that are converted in the transformation of ideas into technology development outputs which ultimately, once deployed into the market, have a socio-economic impact. The roles that TIA plays in applying these resources and stakeholders to achieve its outputs and desired outcomes include:

- Connector Role: Catalyse the progression of ideas across the different technology readiness levels through partnerships with private industries, universities and science councils in order to create an environment for supporting sector-specific innovations that enable global competitiveness.

- An Active Funder Role: Provide funding and expert support to innovators in order to advance ideas towards market entry and to de-risk commercialisation.

- A Facilitator Role: Assist innovators to secure funding (from companies, venture capital firms and development finance institutions) for the commercialisation of products, services and processes developed through TIA's support.

- Enabler Role: Enable access to high-end skills and equipment for innovators by providing funding and expert support to host academic and research institutions that provide innovation service offerings to progress ideas across the various TRLs up to pre-commercialisation.



TIA currently offers three risk funds over and above the programmes aimed at creating and supporting an enabling technology innovation environment to support progression of innovation towards market readiness. These are represented in Figure 4 below:

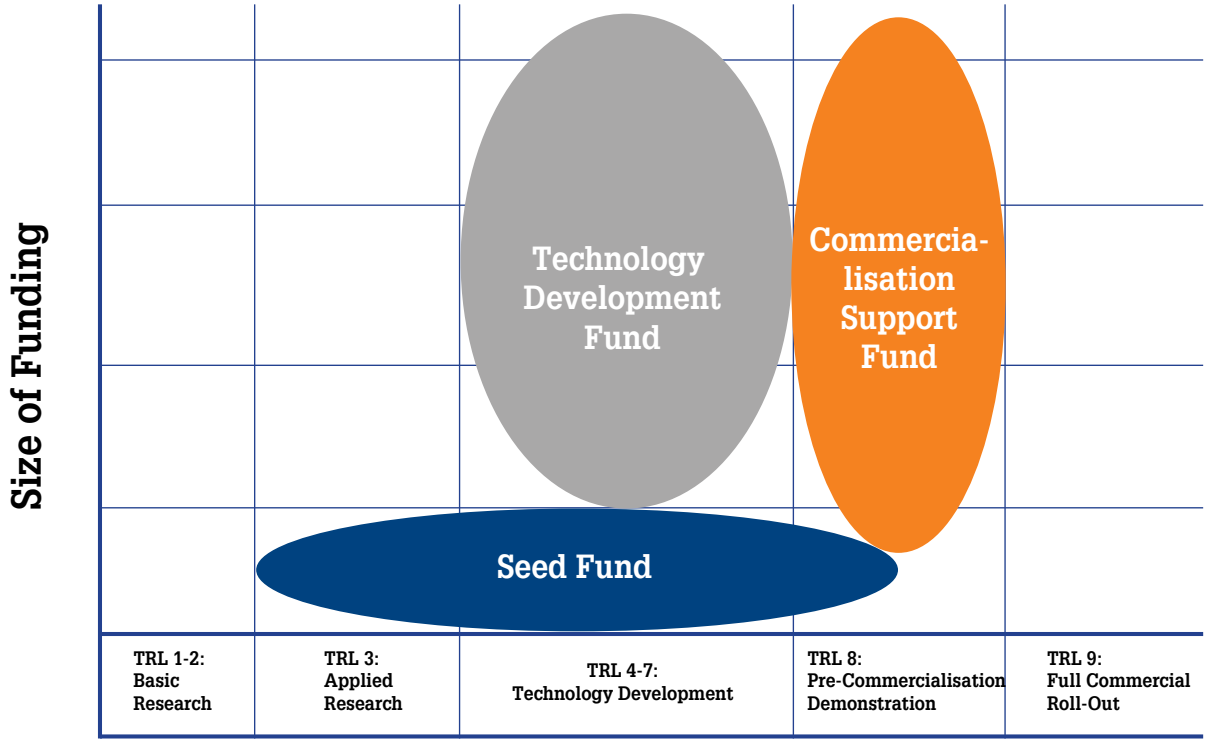


Figure 4 TIA Risk Funding Scheme

The funds are clearly differentiated based on the stage of technology development as defined by the TRL framework as presented below:

Name of Fund	Purpose of the Fund	TRL
Seed Fund (SF)	To assist innovators at HEIs, Science Councils and SMMEs to progress their research and technological outputs to develop prototypes, establish proof of concept and validate business cases.	3-8
Technology Development Fund (TDF)	To assist innovators to advance technologies along the innovation value chain, from proof of concept/ prototype to technology demonstration. The Fund is designed to make early stage technology development more attractive and less risky to the market.	4-7
Pre- Commercialisation Support Fund (PPCSF)	To prepare innovators for follow-on funding through support for market testing and validation. In this space, TIA's role is to connect technology innovators to onward business and investment opportunities.	8

Figure 5 TIA Technology Development Fund descriptions per TRL level

TIA's primary funding vehicles are grants which are conditional in areas such as performance, risk and other factors. Near proof-of-market projects are part of the support needed to make an idea investor-ready and are often important for raising venture capital and/or accessing other applicable sources of funding.

Greater emphasis is being placed on migrating of technologies through the TRLs in order to harness the full benefits of the commercialisation process. This allows for a seamless progression and de-risking of technologies along the innovation value chain, within a single entity, so that other stakeholders may find it more attractive to participate in these projects based on the value that TIA has created. To this end, a seamless integrated Innovation Portal concept is being developed with upstream and downstream NSI partners to ensure that researchers and innovators who receive support for technology development are capacitated, monitored and constructively handed over to each institution during the technology development cycle to enable them to reach the commercialisation stage.

7. POLICY CONTEXT

The current economic and social landscape is advocating for an increase in the rate of economic growth in the country in a bid to address the triple challenges of unemployment, poverty and inequality. In response to these, the government has enacted various initiatives to stimulate the economy and these initiatives are as follows:

7.1 Department of Science and Technology (DST) Priorities

In the execution of its mandate, TIA has aligned its strategic programmes to the key DST polices in a bid to strengthen the National System of Innovation (NSI) through coordinating and leading the development of country-level strategies and policies.

TIA continues to generate outputs that contribute to:

7.1.1 National Research and Development Strategy (NRDS)

This policy aims to identify specific priority areas that need to be capacitated in order to enable economic growth to be underpinned by Science, Technology and Innovation (STI). This is to be achieved through targeted innovation skill development interventions that empower innovators from HEIs, and science councils to be entrepreneurial and knowledgeable on how to protect and exploit their intellectual property.

7.1.2 Ten-Year Innovation Plan (TYIP)

The policy aims to help drive South Africa's transformation towards a knowledge-based economy in which the production and dissemination of knowledge leads to socio-economic benefits.[4] The NSI holds immense potential to increase the rate and pace of innovation, thereby accelerating the process of start-up creation, economic growth and contributing to job creation. The *DST Grand Challenges*,[5] identified in the plan, are aligned to the Agency's project portfolio in biotechnology, energy access, water security and climate change.

[4] Department of Science and Technology Ten Year Innovation Plan 2008-2018 (TYIP) Executive Summary
[5] Department of Science and Technology Ten Year Innovation Plan 2008-2018 (TYIP) page v

7.1.3 National Development Plan (NDP) 2030

The NDP notes that the development in Science, Technology and Innovation (STI) fundamentally alters the way people live, communicate and transact with profound effects on socio-economic growth and development. The NDP highlights that STI is key to equitable growth and underpins economic advances, improvement in health systems, education and infrastructure.[6]

7.1.4 New Growth Path (NGP) 2020

The NGP advocates that, in order to drive economic growth, new jobs would need to be created through seizing the potential of new economies by growing the knowledge economy.[7] The NGP notes that this would be achieved through capacitating knowledge institutions to diffuse new technologies to SMMEs and households in a bid to reduce costs and enhance competitiveness.

7.1.5 Industrial Policy Action Plan (IPAP) 2016/17 - 2018/19

The IPAP highlights the need to leverage STI for industrial growth and development. The plan outlines that this would be achieved through improving linkages between knowledge production, utilisation and innovation for industrial growth; supporting the development of large Research and Development (R&D) programmes in knowledge-intensive areas; the development of a technology commercialisation strategy; and the harmonisation of innovation support programmes.

7.1.6 State of the National Address (SONA)

During the SONA on the 9th of February 2017, the President outlined the need for radical socio-economic transformation which when defined means the fundamental change in the structure, systems, institutions and patterns of ownership, management and control of the economy in favour of all South Africans, especially the poor, the majority of whom are African and female.

[6] National Development Plan 2030 Chapter 9: Improving education, training and innovation
[7] New Growth Path (NGP) - Taking advantage of new opportunities in knowledge and green economies

7.2 Contribution of STI to the reduction of poverty, inequality and unemployment

To achieve greater alignment to National Government imperatives focused on achieving cohesive socio-economic impact, TIA has aligned its activities and the diagram on the following page reflects the structure thereof:

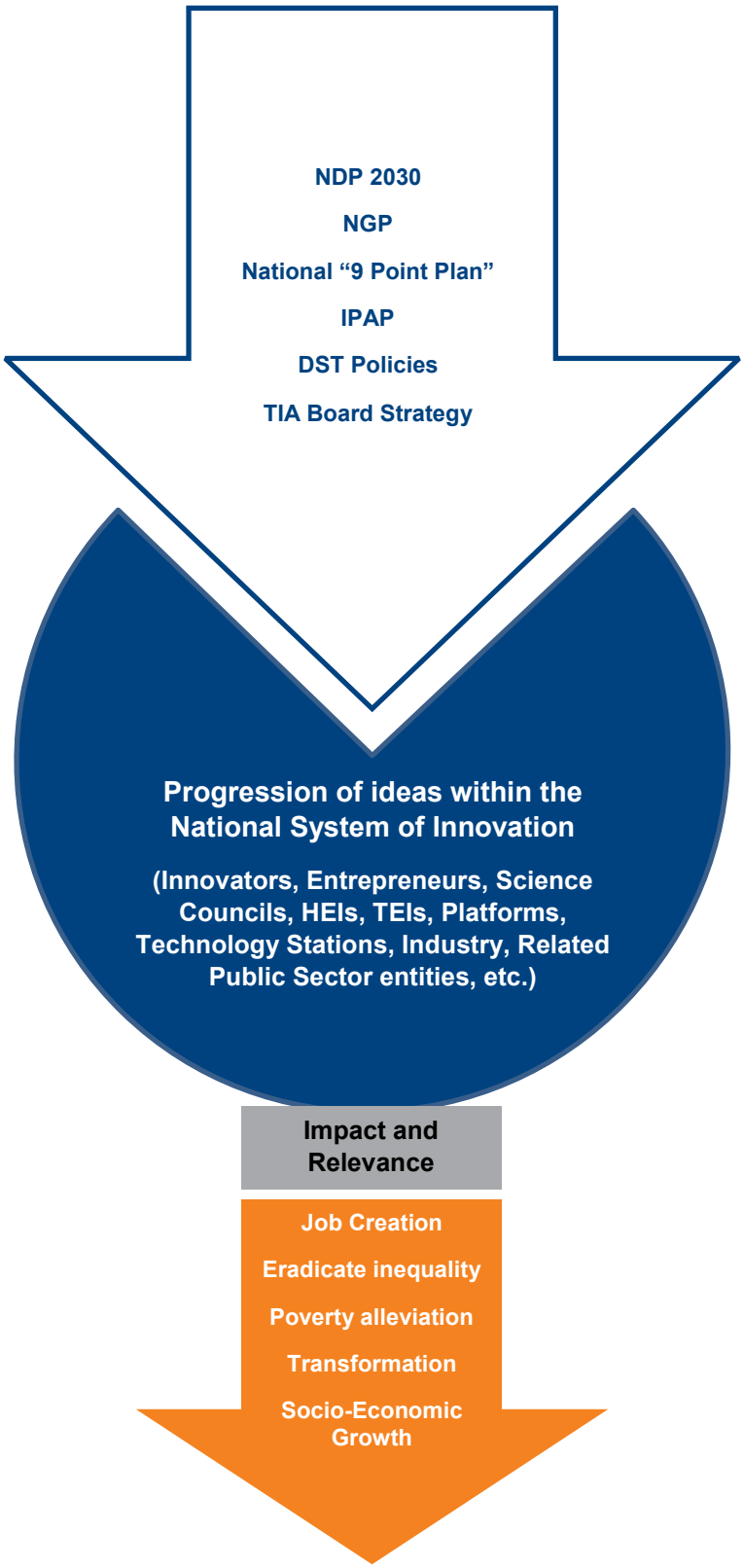


Figure 6 Flow Diagram - TIA's Impact Areas

Table 1. Contribution of STI to the reduction of poverty, inequality and unemployment

Contribution of STI to the reduction of poverty, inequality and unemployment			
STI Contribution	**Poverty**	**Inequality**	**Unemployment**
Direct	**Wealth is the anti-thesis of poverty. Innovative ideas, when sufficiently supported, are likely to result in wealth creation if successfully developed. Individuals from poverty-stricken backgrounds, when supported to develop their innovative ideas by TIA, will have the opportunity to create wealth for themselves and others.**	**The nurturing and supporting of ideas from especially inventors from disadvantaged background will contribute towards the bridging of inequality.**	**Funding of projects to develop technology immediately results in the creation of high-end technical jobs.**
	Support the development of indigenous knowledge systems for healthcare products. The developed systems will equip individuals with the necessary knowledge to be able to start their own sustainable businesses, thereby generating income.	Innovation to enhance standards of living. Technological innovations from previously disadvantaged HEIs, where majority of researchers come from impoverished backgrounds, will be targeted and supported.	Training of youth to provide services using technologies developed by TIA funding. This will be done in partnership with TIA partners where youth will be placed for internships to learn and gain experience while receiving an income.
	Small-scale farmer support through investment in agricultural technologies. These farmers are partaking and gain access to the breeding technology generated from the genomics programmes meaning that they will produce quality and highly competitive products. With the phenotypic and genomic databank to be generated from the beef genomics programme, beef production and meat quality will be improved leading to greater beef export volumes, resulting to the reduction of the SA live bovine trade deficit. This will assist small-scale farmers to grow their businesses by increasing production levels which will result in creation of new jobs, thereby reducing poverty.	Under the Technology Stations Programme would like to highlight the activities of the Limpopo Agro-food Technology Station (LATS) was set up to achieve the eight (8) anti-poverty targets as identified in the Millennium Development Goals and reduces the barriers to access of high-end skills and equipment for agro-processing innovators. The Technology Station also has a set target for females and disabled individuals that they need to assist on an annual basis. The assistance that LATS provides include provision of agro-food related training to SME/Co-operative and new start up groups as well as to entrepreneurs and individuals. The anticipated impact ranges from the provision of training in processing of vegetable atchar (i.e. Marula), jam making of most fruits (Lerotse included); Juice, Soup and Oil development (i.e. Moringa); Yoghurt Development (i.e. Sweet Potato); Protein enriched product development from Mopani worms, etc. Assistance with these types of interventions has historically led to an increase in employability and employment of the participants, and to some SMEs access to local markets.	The Youth Technology Innovation Programme (YTIP) will drive awareness sessions and active participation of young researchers and scientists currently at high education institutions and unemployed graduates who have ideas that can be supported. YTIP plans to embark on establishing and supporting social innovation initiative to fund young people residing in previously disadvantaged areas who have innovative idea that can solve challenges encountered at their communities, mainly in rural areas such Limpopo, North West, etc. The programme will be supporting about 15 technology innovations, amongst of them generated by unemployed graduates and women, for technology development and enterprise development as well as to support the innovators with a stipend funds. An amount of R 4.6m will be allocated for empowering the youth to access high-end instruments and infrastructure at incubators to support development of ideas to do scaled production.

Contribution of STI to the reduction of poverty, inequality and unemployment			
STI Contribution	**Poverty**	**Inequality**	**Unemployment**
	An amount of R10.7m will be spent for technology brokerage in Agro-processing cooperatives in local townships and poor municipalities.	Provide funding to PDIs through the Seed Fund Programme.	Train candidates for Critical Thinking Skills Programme at Graduate Level across the TRLs.
			Economic Growth
			Support entrepreneurs by funding technology development that leads to the creation of new industries: Bio-fuels, gas, renewable energy and energy management.
Indirect	Enabling universities to produce quality graduates who in turn will contribute to technology development that will assist industries to overcome obstacles and gain competitive advantages. The Seed Fund programme directly addresses the challenge of inequality by funding the research outputs and technology-enabled Previously Disadvantaged scientists, entrepreneurs, innovators and researchers across South Africa. The Seed Fund Programme also has a tactical initiative to support the technology transfer process especially among the Previously Disadvantaged Universities across South Africa. These institutions are prioritised in terms of financial and non-financial resources that are put towards coaching them, assisting with implementing systems and processes; and giving guidance	Licensing of technology developed in South Africa to a multi-national or company whose business activities are largely based oversees would generate royalties for TIA/ South Africa that would contribute to the GDP. Knowledge transfer through Technology Platform Programmes for upcoming SMMEs.	Support youth participation for ICT Technology development for mobile applications. This will assist the youth to be self-employed by starting their own businesses and possibly creating jobs in the process. - Two platforms in the portfolio (National Metabolic Platform and Centre for Proteomic and Genomic Research) aim to provide technical support to five recently established SMMEs. These new startups are entering the commercialisation phase with various technologies and creating employment opportunities: - Develop and validate a fetal gender test for buffalo and cattle and is subsequently pursuing an agreement to exploit this know-how by expanding the test to other species with an industry partner. - Polymer-based, antimicrobial thin film coating for the preservation of meat and other fresh food; - Trial and commercialise a polymer-based antimicrobial thin film for the preservation of fruit and vegetables; - Development and commercialisation of a fatty acid colloidal delivery system that is used as an antimicrobial biocide. - Food (process) quality control testing services, with an initial focus on meat contamination and adulteration in the Halaal food sector.

Contribution of STI to the reduction of poverty, inequality and unemployment			
STI Contribution	**Poverty**	**Inequality**	**Unemployment**
	Support commercialisation of innovation products to create opportunities for sustainable development of new businesses that employ members of local communities. The Technology Platform Programme will undertake the following: The Platform will continue to produce the cooperative with high-quality mushroom spawn to support the enterprise's mushroom production activities. In 17/18 the platform will also explore the opportunity to transfer liquid spawn production technology if it is able to overcome limitations placed by the availability of equipment. The cooperative produces value-added products derived from fruits and vegetables. The Platform had been providing analytical services for quantification purposes. The Platform has introduced the Coop to partners that provide marketing and business development support to the entity. The Platform will continue to provide the technical support towards standardising production protocols to enable GMP compliance and for enabling new product development. The Cooperative currently represents numerous primary cooperatives involved in bee keeping. The cooperative is currently identifying funding opportunities to fund training in effective bee keeping. The Platform will provide support for quality control and analytical services of the final produce to enable better marketing and sales. The Platform will engage the Municipality to identify and provide technical support to various community enterprises social enterprises that are involved in farming mushrooms, bee keeping and bioenergy initiatives.	Enable industry, SMMEs in particular, to benefit from the specialised knowledge and innovative technology of the universities. For The Global Clean Innovation Programme (GCIP) will be supporting at least 15 innovative SMEs and start-ups by providing them with training and mentorship to develop robust business models to build sustainable businesses around an innovative product. At least 5 of these fledgling businesses will be owned by previously disadvantaged groups namely, black, female or youth. These sustainable businesses will create and/ or retain jobs. At the same time the programme will work closely with nine universities across the country to identify promising Clean Technology Innovations within their faculties that could be supported by GCIP-SA.	Creation of new businesses through commercialisation of technologies developed. These businesses will be able to create jobs, thereby reducing unemployment.
			Assist larger firms to develop new supply chains to establish an enhanced technical capacity. TIA-funded companies can produce products that will form part of various supply chains e.g. Bio-fuels Technology Companies can produce biodiesel that can be sold to larger petroleum companies for blending into their products. This will also be contributing to the imminent National Bio-fuels Strategy.

8. SITUATIONAL ANALYSIS

8.1 TIA Performance Environment

8.1.1 The Medium-Term Strategic Framework and STI

In contributing to the triple challenges, TIA has aligned its initiatives to the Medium-Term Strategic Framework (MTSF) which is a five-year implementation plan of the NDP. The MTSF is based on an outcomes approach focusing on 14 key outcomes with measurable outputs and key activities.

These outcomes are:

1. Improved quality of basic education;
2. A long and healthy life for all South Africans;
3. For all people in South Africa to be safe and feel safe;
4. Decent employment through inclusive economic growth;
5. A skilled and capable workforce to support an inclusive growth path;
6. An efficient, competitive and responsive economic infrastructure network;
7. Vibrant, equitable and sustainable rural communities with food security for all;
8. Sustainable human settlements and improved quality of household life;
9. A responsive, accountable, effective and efficient local government system;
10. Environmental assets and natural resources that are well protected and continually enhanced;
11. Creation of a better South Africa able to contribute to a better and safer Africa and world;
12. An efficient, effective and development-oriented public service and an empowered, fair and inclusive citizenship;
13. An inclusive and responsive social protection system; and
14. Transformation of society and unity in the country.

TIA, through its mandate and activities, contributes to many of these outcomes, as well as sub-outcomes defined under the overall MTSF umbrella (see Table 2 below). The progress in the realisation of these is articulated therein.

Table 2 Contribution to the MTSF commitments undertaken by TIA in the 2014-2019 MTSF cycle

OUTCOME	SUB-OUTCOME	ACTION/COMMITMENT	PROGRESS 2016/17	PLANS 2017/18
Outcome 2: A long and healthy life for all South Africans	Sub-Outcome 8: Reduced costs of health care	Investment into the development of affordable and adaptable novel health products. Support early stage research outputs, through providing funding and access to services, to enable innovators, researchers and SMMEs to address the health needs of South Africa with funding and programmatic support. Collaborate with other NSI stakeholders and role-players to enable their pipelines of technologies that address the health of South Africans and contribute to a long life for all.	The Drug Discovery Programme has performed well enough to secure further funding for 2016 and 2017 from the Medicine for Malaria Venture (MMV) and the Strategic Health Innovation Partnerships (SHIP) unit of the MRC. The Seed Fund portfolio has several health innovations including natural drug candidates, TB and HIV diagnostic devices and other medical devices that have cost advantages.	The portfolio of projects includes the development of Active Pharmaceutical Ingredients (API) which can be used to synthesise several important drugs including anti-retroviral; development of new antimalarial; development of user-friendly crutches for long-term and regular use. Aim to continue to involve the development of technologies that, if successfully commercialised, would immensely contribute to the healthy life of South Africans. The services available to early stage technology developers and innovators on the Technology Platforms Programme will be enhanced with the inclusion of new services and platforms; including Bio-informatics, compound libraries and enabling the DST's Omics[Omics means a field of study in biology ending in -omics, such as genomics, proteomics or metabolomics] initiative.

[8] Omics means a field of study in biology ending in -omics, such as genomics, proteomics or metabolomics

Table 2 Contribution to the MTSF commitments undertaken by TIA in the 2014-2019 MTSF cycle

Outcome 4: Decent employment through inclusive economic growth	Sub-Outcome 10: Investment in research, development and innovation supports inclusive growth by enhancing productivity of existing and emerging enterprises and supporting the development of new industries.	Support new energy generation technologies. Use our partnerships with science councils, HEIs and incubators and development agencies to provide financial and non-financial support to entrepreneurs and SMMEs; thereby increasing their chances of success and creating gainful employment. Provide appropriately designed funding to meet the needs of early stage innovators and entrepreneurs. Actively promote and support entrepreneurs to receive follow-on funding for the next stage of their business.	A proposal for the Bio-fuels Technology Demonstration Programme was sent to the DST to propose and motivate for the programme to continue for the next three years. A total amount of R20m has been requested in order to keep the programme going for the next three years. The IES Programme will continue to encourage and facilitate private sector investment in the Technology Stations (TS), with the TS network having managed to attract R20m of co-investment from industry	A business plan for the Bio-fuels Technology Demonstration Programme (BTDP) has been developed by the Energy Strategic Technology Area (STA) Unit and sent to the DST as a proposal for the continuation of the BTDP. Feedback is still awaited. The programme supports the development of second and third generation Bio-fuels technologies in South Africa i.e. Non-food feedstock from lignocellulose materials such as bagasse, forest residue and purposely grown energy crops such as vegetative grasses will be used instead of food-based feedstock used in first-generation technologies. This will ensure that the Bio-fuels industry does not compete with food security. This will also promote local agricultural development (particularly small-scale farmers) from previously disadvantaged communities.

Table 2 Contribution to the MTSF commitments undertaken by TIA in the 2014-2019 MTSF cycle

Outcome 5: A skilled and capable workforce to support an inclusive growth path	Sub-Outcome 2: Increase access and success in programmes leading to intermediate and high level learning	Capacitating the NSI with critical thinking skills. Support the technology transfer process and the NSI partners; thereby creating experiential learning opportunities through commercialisation of their opportunities.	Launch of the Future500 and New Generation programme at National Science Week. YTIP has developed a mechanism to exploit the rich knowledge based in Higher Educational Institutions such as Technology Station by providing a platform through which the youth can access this facilities during prototype development of their concept. This will in turn result in valuable skill transfer and enhance both knowledge and skill transfer amongst the youth. The programme is partnering with incubation providers to support enterprise development of young technology entrepreneurs through mentoring, business coaching and business training.	50 students from Universities of Technology (UOTs) and HEIs will attend the fast-track master's innovation programme in partnership with focusing on new industries. Partner with Southern African Research & Innovation Management Association (SARIMA) and South African Technology Network (SATN) to focus on the development of critical skills and technology transfer experience development in TIA's Programmes.

Outcome 7: Comprehensive rural development and land reform	Sub-Outcome 5: Increased access to quality infrastructure and functional services, particularly in education, healthcare and public transport in rural areas.	Extend YTIP's reach in providing access and financial support in prototype development and testing, Intellectual Property advice and protection, business incubation and business coaching to rural communities.	Rolled out rural innovation initiative aimed at engaging with youth located in rural areas who have innovative ideas that can address challenges experienced by their rural communities.	Co-funding between TIA, LEDDET and Industrial Development Corporation (IDC) are underway towards contribution in revitalising agriculture and the agro-processing value chain. Limpopo Agro-food Technology Station (LATS) is now incorporating chemical profiling to their services which will assist SMMES to improve the shelf-life of their products. This will be done in conjunction with identified students in the University of Limpopo. LATS will be expanding their serves to the provision of technical and business incubation to support young entrepreneurs, struggling SMMEs and Co-operatives. These services will train clients in technical product development, prototype development, product design and manufacturing to increase their local competitiveness. The TS is also undergoing a SANAS accreditation process which will be of value to SMMEs. Additionally, LATS is hoping to partner with local government to revitalise former agro-processing centres in Limpopo to increase access for businesses and co-operatives. LATS will also develop mobile agro-processing units to extend their reach to isolated poverty stricken homelands. These mobile units will be used to demonstrate the technologies that the local communities can utilise to improve their livelihoods.

Outcome 10: Protect and enhance our environmental assets and natural resources	Sub-Outcome 3: An environmentally sustainable, low carbon economy resulting from a well-managed transition.	Promoting clean technology innovation.	Over the past 3 years (and over the next 2 years) the Global Clean Technology Innovation Programme has successfully organized three business accelerator programmes organized nationally The programme has trained and mentored seventy-seven SMEs and start-ups, who have innovations in the clean technology categories Energy Efficiency, Renewable Energy, Waste to Energy, and Water Efficiency and Green buildings. The commercialisation of these technologies will contribute to the protection of our environmental assets and natural resources. Special consideration has been made to mainstream gender and youth imperatives into the programme by promoting women and young entrepreneurship. To this end, the project has created some specific recognition categories for Most Promising Women-led Business and Most Promising Youth-led Business. By providing training and mentorship the programme contributes to a skilled work-force, and by supporting strong and sustainable business models the programme contributes enterprise development that leads to decent employment.	Supporting technologies with the intention to commercialise products that would contribute to this outcome: New technological innovations in renewable energy (solar, wind, etc.) will be targeted at various HEIs and science councils. Fuel cells technologies will be achieved by supporting initiatives such as the Hydrogen South Africa (HySA) programme. Bioenergy technologies (biomass to energy and waste to energy) – The Bio-fuels Technology Demonstration Programme will be used to contribute to the Bio-Economy Strategy, which is one of the DST's grand challenges. Energy management technologies (energy storage and efficiency) – Innovation in batteries will be supported in order to address issues such as energy storage. This will be done through initiatives such as TIA's uYilo programme which is based at the Nelson Mandela Metropolitan University. Clean coal technologies (greenhouse gas, emissions controls technologies). Waste-water treatment and recycling technologies – this will be achieved through partnerships with the Water Research Council and the Department of Water and Sanitation. Ocean Wave technologies – Pursue technologies that will use sea water (wave energy) to generate power to purify sea water to potable standards.

8.1.2 TIA Performance Environment

TIA is currently implementing its 2015-2020 Strategic Plan, which was tabled in Parliament in March 2015. In order to position the activities of the Agency within the framework of the NDP and other DST priorities, the 2015-2020 Strategic Plan is structured around three strategic outcome-oriented goals that will drive the initiatives of the agency over the next five years.

These goals are as follows:

- Goal 1: To support the commercialisation of technological innovations;
- Goal 2: To increase infrastructure access for technology development; and
- Goal 3: To stimulate an agile and responsive NSI.

The efforts of all the programmes in the organisation are directed towards the realisation of the abovementioned strategic outcome oriented goals. The factors that lead to a subdued performance against these goals are the fragmentation of the NSI in providing a seamless progression of ideas from the different actors in the system, the rapid pace of technology advancements which undermine the work done in managing the investment portfolio, IP leakages caused by a bureaucratic regulatory environment, the slow growth pace of the economy and the lack of a private-public appetite for partnerships that can unlock risk funding for technology development and commercialisation.

For each of these goals, TIA has defined a number of proxy indicators to measure the progress over the period of the Strategic Plan and the table below shows how these programme objectives are linked to the strategic, outcome-oriented goals.

Table 3 TIA Contribution to DST Proxy Indicators

Technology Innovation Agency				
Contribution to the DST Strategic Outcome-Oriented Goals to FY 2019				
		TIA ontribution in FY2017/18		TIA ontribution to FY 2019
DST Strategic outcome-oriented goal 1	Goal Statement: Over the next 5 years, build on previous gains to create a responsive, coordinated and efficient NSI			
Proxy Indicator 1:	Cabinet approval secured for the first comprehensive decadal plan for STI aligned to the NDP by 2019	-		-
Proxy Indicator 2:	Budget coordination and legislative instrument for coordination finalised by 2019	-		-
Proxy Indicator 3:	Improved systems in place by 2019 for a more rational and strategic deployment of public funding for STI activities	-		-
Proxy Indicator 3:	By 2019, a 300% increase in the rand value of investment by government and the private sector in R&D partnerships as compared to 2013 achieved (MTSF Outcome 4, sub-outcome 10)	R 113m		R 551m
DST Strategic outcome-oriented goal 2	Goal Statement: Over the next 5 years to maintain and increase the relative contribution of South African researchers to global scientific output			
Proxy Indicator 1:	22 032 researchers supported by 2019	-		-
Proxy Indicator 2:	Publication of at least 33 700 ISI-accredited research articles supported by 2019	-		-
Proxy Indicator 3:	Number of articles co-published with researchers on the African continent doubled	-		-

DST Strategic outcome-oriented goal 3	Goal Statement: Over the next 5 years to increase the number of high-level graduates and improve their representivity			
Proxy Indicator 1:	70 960 postgraduate students supported by 2019.	-		-
Proxy Indicator 2:	4 200 graduates and students placed in science, engineering, technology and innovation (SETI) institutions by March 2019.	100		500
Proxy Indicator 3:	5 521 160 people reached through science engagement activities by 2019.	15,000		50,000
Proxy Indicator 4:	Three times the number of Master's and PhDs in areas of priority identified in the NRDS and TYIP by 2019 (measured on a 2012 baseline).	80		300
DST Strategic outcome-oriented goal 4	Goal Statement: Over the next 5 years to derive a greater share of economic growth from R&D-based opportunities and partnerships			
Proxy Indicator 1:	By 2019, new commercial and industrial financing of R2bn secured for a portfolio of R&D-led industrial development initiatives funded by the DST.	-		-
Proxy Indicator 2:	By 2019, additional revenue of R500m generated from firms and companies that are or have received support from DST-funded instruments since 2010.	R 142m		R 671m
Proxy Indicator 3:	By 2019, performance of 10 000 SMEs improved through technology interventions.	2,800		14,200
DST Strategic outcome-oriented goal 5	Goal Statement: Over the next 5 years to accelerate inclusive development through scientific knowledge, evidence and appropriate technology			
Proxy Indicator 1:	By 2019, decision-support provided that strengthens or improves the delivery of at least 10 government services or functions.	-		-
Proxy Indicator 2:	Between 2014 and 2019, contribution of technology-based opportunities for local economic development introduced or strengthened in at least five distressed municipalities.	1		3
Proxy Indicator 3:	By 2019, opportunities for improving the standard of living of at least 500 000 people in South Africa and/or 12 communities unlocked through S&T interventions funded by the DST.	-		-

Table 4 TIA Strategic Outcome Oriented Goals, Proxy Indicators, and Programme Strategic Objectives

TIA STRATEGIC OUTCOME-ORIENTED GOAL 1: **SUPPORT THE COMMERCIALISATION OF TECHNOLOGICAL INNOVATIONS**		**PROGRAMME STRATEGIC OBJECTIVES SUPPORTING STRATEGIC OUTCOME-ORIENTED GOALS**
Strategic outcome-oriented goal statement	Over the next 5 years, continue to accelerate the development and deployment of technologies into the market to increase economic competitiveness and socio-economic transformation.	To support and facilitate the development and progression towards commercialisation of industry enhancing technologies in cooperation with the broader NSI stakeholders to ensure seamless absorption of technologies to the market.
Proxy indicators	**Proxy Indicator 1** Develop 51 innovation project outputs and ensure that these are taken up by the market by 2019. **Proxy Indicator 2** Develop 102 technologies, products, processes that would advance by two or more Technology Readiness Levels by 2019. **Proxy Indicator 3** Raise an amount of R416m to fund technology development by 2019.	
Link to DST Strategic Outcome-Oriented Goal 4	Using knowledge for economic development	

Table 4 TIA Strategic Outcome Oriented Goals, Proxy Indicators, and Programme Strategic Objectives

TIA STRATEGIC OUTCOME-ORIENTED GOAL 2: **INCREASE INFRASTRUCURE ACCESS FOR TECHNOLOGY DEVELOPMENT**		**PROGRAMME STRATEGIC OBJECTIVES SUPPORTING STRATEGIC OUTCOME-ORIENTED GOALS**
Strategic outcome oriented goal statement	Over the next 5 years, broaden access to advanced technology infrastructure that would enable knowledge and skills transfer to support innovation.	To lower barriers to technology development and transfer within the NSI by introducing innovation-related schemes targeting specific groupings, and provision of general working space support, specialised equipment and access to technical experts.
Proxy indicators	**Proxy Indicator 1** Develop 350 knowledge innovation products by 2019. **Proxy Indicator 2** Support 69% Previously Disadvantaged Individuals who have established SMMEs as a percentage of total projects supported, receiving funding, support and/or technology services from TIA by 2019. **Proxy Indicator 3** Support 14200 SMMEs in having access to technology infrastructure by 2019.	
Link to DST Strategic Outcome-Oriented Goal 2&3	Increased knowledge generation and human capacity development.	

Table 4 TIA Strategic Outcome Oriented Goals, Proxy Indicators, and Programme Strategic Objectives

TIA STRATEGIC OUTCOME-ORIENTED GOAL 3: **STIMULATE AN AGILE AND RESPONSIVE NSI**		**PROGRAMME STRATEGIC OBJECTIVES SUPPORTING STRATEGIC OUTCOME-ORIENTED GOALS**
Strategic outcome oriented goal statement	Over the next 5 years, encourage synergistic local and international partnerships that connect ideas, resources and funding to individuals, industries, SMMEs and knowledge institutions.	To support the development and progression of industry enhancing technologies in cooperation with the broader NSI stakeholders to ensure seamless absorption of technologies to the market. To provide leadership within the NSI on technology innovation and improved alignment to the Agency's mandate.
Proxy indicators	**Proxy Indicator 1** Host 124 Technology Innovation initiatives by 2019. **Proxy Indicator 2** Leverage an amount of R671.2m in additional funding to TIA's budget for technology development support by 2019. **Proxy Indicator 3** Improve the turnaround time for processing applications to 14 weeks by 2019.	
Link to DST Strategic Outcome Oriented Goal 1	A responsive, coordinated and efficient NSI	

8.2 Progress in achieving the Strategic Plan goals

8.2.1 Goal 1 – Support commercialisation of technological innovations

The key objective of TIA is to progress ideas and research outputs from proof of concept through to demonstration and pre-commercialisation. In the period FY2015/16, TIA invested in excess of

R0.3-billion in funding for various technology development projects. This saw a total of 76 technologies and knowledge-innovation products such as prototypes, patents, technology demonstrators and technology transfer packages, supported. This has been against a backdrop of fiscal constraints in which the budget was cut over the MTEF period to FY2014/15. Despite this, TIA has continued to provide risk funding at the same levels (in terms of rand value spent) and has absorbed the cuts through optimisation of operating costs.

From the project portfolio that has been funded in FY2015/16, approximately 27 projects reached demonstration stage and nine have been commercialised. This has led to the creation of jobs and the creation of companies producing products and services that are contributing to the economy. The portfolio has been attractive to third parties who have, in turn, invested R97.9m to support the technologies in reaching the market.

Over the remaining period from FY2017/18 to FY2019/20, much of the focus will be dedicated to improving the quality of the portfolio through strengthening internal processes that support the progression of ideas. This is envisaged to involve a much more cohesive alignment with other actors in the NSI through the creation of a glass pipeline that will allow for a seamless migration of projects. Additional work would be undertaken into:

- Creating responsive funds that address the requirements of the stakeholders, e.g. a fund that seeks to provide resources for small-scale piloting of the technology, product or service developed; and

- Monitoring the performance of projects post the investment cycle to ensure that support is provided to see a technological innovation reach market.

Enacting the initiatives enlisted above would capacitate the Agency to improve the pace at which ideas are migrated through the innovation value chain.

8.2.2 Goal 2 – Increase infrastructure access for technology development

There has been growth in the extent of access to technology infrastructure that TIA offers. TIA provides infrastructure services for technology development. These facilities provide technical engineering and scientific support to innovators, entrepreneurs, SMMEs and large industry companies that require research, analytical and testing services to either validate or progress their technologies though the value chain. The Technology Platforms saw a phenomenal growth of 40% in their portfolio, hosting a total number of 102 projects by FY2015/16. Most of the platforms are located at universities across the country which has enabled various collaborations that have resulted in ideas being developed and tested. This, in turn, has resulted in the leveraging of co-investment in the region of R142m to resource research outputs to progress through the innovation value chain. The Technology Station Programme has delivered effective technology support services to SMMEs, particularly with regards to product and process improvement services, prototype development and technology absorption services.

The performance to date reveals the demand for such services and over the period to FY2019/20 studies will be commissioned to evaluate the impact of such programmes in addressing the triple challenges. The results of these studies will be used to inform how the programmes may be scaled up to contribute to technology localisation that can unlock inclusive growth and economic development.

8.2.3 Goal 3 – Stimulate an agile and responsive National System of Innovation

TIA continues to make inroads in weaving its offerings within the NSI. Much progress has been made to date with respect to embedding its positioning and role within the NSI through multiple engagements with the main and sub-actors therein. This has been welcomed as over the earlier period from FY2010/11 to FY2014/15 TIA's role had become unclear and ambiguous. The change in executive management has provided much impetus as a more tactical approach has been adopted to re-position the organisation. A key challenge that remains, however, is that the NSI largely remains fragmented and uncoordinated.

The DST, in FY2016/17, has initiated a review of the NSI that incorporates institutional reviews of its entities, including TIA. The review has coincided with TIA commissioning a socio-economic impact analysis, customer satisfaction survey and the formulation of an intergovernmental relations programme. The results of these will be used to inform how better linkages may be established to progress ideas to market. Furthermore, TIA continues to hold bi-lateral meetings with the DST family of entities with a view to integrate its mandate, leverage its operating capacity and streamline processes to ensure that there is much more fluidity in terms of workflows in the progression of ideas. It is envisaged that the recommendations of the DST institutional review will complement the Agency's current efforts in consolidating its position within the NSI.

Over the remaining period to FY2019/20, TIA is moving to strengthening the role of the private sector and public-private partnerships in its service offering in a bid to capacitate an integrated NSI that is reactive to the changing landscape as this is a critical requirement for success.

In assessing the context to which TIA is performing against its strategic, outcome-oriented goals, a critical examination is provided below into the external and internal environment in which the Agency operates.

8.3 External Environment

8.3.1 Global Trends

The key talking point at the World Economic Forum (WEF) Annual Meeting held in Davos, Switzerland in January 2016 was mainly around the impact of the 4th Industrial Revolution on business models and supply chains. When defined, the 4th Industrial Revolution is the idea of smart factories in which machines are augmented with web connectivity and are connected to a system that can visualise the entire production chain and make decisions on its own.[9]

The discussions held at WEF concluded that the impact of the 4th Industrial Revolution is that in the future, technological innovation will lead to a supply-side miracle, with long-term gains in efficiency and productivity. Transportation and communication costs will drop, logistics and global supply chains will become more effective, and the cost of trade will diminish, all of which will open new markets and drive economic growth. [10] As a funder and enabler of technology development, TIA must be agile in preparing for the 4th Industrial Revolution to enable the country to position itself competitively in response to the changes in the market.

[9] Bernard Marr, Forbes Magazine http://www.forbes.com/sites/bernardmarr/2016/04/05/why-everyone-must-get-ready-for-4th-industrial-revolution/#11b4122f79c9
[10] Author: Klaus Schwab is Founder and Executive Chairman of the World Economic Forum

8.3.2 South African Innovation Landscape

According to the National Advisory Council on Innovation (NACI) STI indicators for 2015, there has been a steady increase in the number of patents granted by the US Patent and Trademark Office from 91 in 2008 to 161 in 2013.[11] Though the number may be low in relation to the level of innovation activity that occurs within the NSI, the trend is, however, encouraging as it points to the promising performance in the period to follow. This growing trend is also further supported by early data from National Intellectual Property Management Office (NIPMO) data which reveals that there has been growth in the number of inventions disclosures being received for protection. NACI is currently working on providing inputs into the Green Paper on Science, Technology and Innovation as it has undertaken a review of the NSI. It is envisaged that completion the results will be shared with TIA to enable the strategic programmes to be refined to align to evolving NSI.

TIA has continued to accelerate its mandate by actively engaging with HEIs that continue to have a healthy appetite for the Seed Fund instrument in developing early stage research. To date from FY2014/15, the HEI portfolio performance is as such that 63% of the projects are on track and 17% have been completed and ready for commercialisation. The delayed projects are approximately 15% (down from last year January 2016) of the current portfolio, due to various reasons, including the loss of project staff; delays incurred by institutional procurement and management delays. TIA will in the year ahead review the STI reports from the top 6 universities in the country in a bid to ascertain the level of innovation activity within HEI's as they are knowledge generating institutions . The results of the review will provide input into refining the Seed fund programme which targets to provide financial intervention for academia.

Of significance is that, over the last year, universities have been faced with protests by enrolled students who are pressing that the tuition for higher education be fully funded by the national government. Considering the dependence of universities on tuition fees as a source of revenue, a scrapping or capping of tuition fees would leave them with a major revenue shortfall.[12] The impact of this would be that the budget available for R&D from the core revenue sources in these institutions may have to be redirected to cover core operating costs.

8.3.3 Science Councils

Science councils, such as the Medical Research Council (MRC),Agricultural Research Council (ARC) and Water Research Council (WRC), have sector-specific mandates in health, agriculture and water respectively. Research councils are strategically located between the business sector – which allocate an important share of the R&D expenditure to experimental research – and the universities, for which basic research represents the most important activity.

The NACI STI Indicators for 2015 reveal that there has been much collaboration between science councils and universities suggesting that there are shared areas of interest which could lead to the generation of research outputs that may need to be supported for commercialisation. Furthermore, the report notes the low levels of collaboration between science councils and business sectors. This suggests that there are opportunities, with the right operating model, where TIA may provide capacity in the development of technologies that could see more work being undertaken to support industry competitiveness.

[11] National Advisory Council on Innovation (NACI) STI indicators for 2015
[12] http://www.pwc.co.za/en/higher-education/Funding-public-higher-education-institutions-SA.html

8.3.4 Technology Innovation Enablers

i. Technology and Human Resources for Industry Programme (THRIP)

This is a dti-funded programme designed to enable South African industry to access skills, expertise and infrastructure within the higher education sector in order to develop innovative solutions for industry-specific needs. During the FY2015/16, the programme was repositioned from NRF and integrated into the dti. This was a better strategic fit since the orientation of the initiative is to capacitate industry. The process for applying for funding was revised such that the industry partner is the entity that submits the project application and not the HEI. The programme continued to register numerous patents, prototypes and products during the past financial period. The outputs realised by the programme present an opportunity for TIA to collaborate with the THRIP programme by deploying its service offerings to ensure that the products developed are commercialised and supported to reach the market.

ii. Support Programme for Industrial Innovation (SPII)

This dti-funded programme is designed to promote and assist technology development in local industries through the provision of financial assistance for projects that develop innovative products and/or processes. During FY2015/16, the programme was transferred from the Industrial Development Corporation (IDC) to be administered by the Incentive Development and Administration Division (IDAD) of the dti. The programme is divided into three support schemes, namely the Product Process Development (PPD) scheme which is a non-repayable grant focusing on small, micro and medium enterprises; the Matching Scheme which provides a non-taxable, non-repayable grant of between 50% and 75% of qualifying costs; and the conditionally repayable Partnership Scheme which is a non-taxable and conditionally repayable grant of 50% of qualifying costs.

The re-orientation of the programme presents an opportunity for TIA to leverage its risk-funding schemes to support the development of technologies with specific reference to SMMEs that need to be capacitated to participate and contribute to the broader economy.

iii. Offices of Technology Transfer (OTT)

Offices of Technology Transfer play numerous roles, ranging from encouraging researchers to disclose their inventions, to securing patent protection for technological inventions, evaluating the commercial potential of the inventions, developing marketing and business models (for start-ups) and negotiating licensing deals.

In reviewing the levels of activity therein, we were advised that during FY2016/17, an Intellectual Property and Technology Transfer Survey was commissioned by NIPMO and SARIMA to examine the levels of innovation activity emanating from universities and science councils. The details of the results of the survey would be released in Q1 of FY2017/18 and upon receipt, these will be reviewed to inform TIA on possible opportunities that exist in progressing research outputs to the market. Notwithstanding the results of the survey, the Technology Stations Programme (TSP) FY2015/16 data revealed that of the 285 competitive improvements supported through the TS activities, only 38% where official disclosures in line with the Intellectual Property Rights from Publicly Funded Research and Development Act 51 of 2008. This suggests there is much activity occurring at the TTO stationed within HEI and this will be reviewed closely when the results of the Intellectual Property and Technology Transfer Survey are released. The activity is represented as show in Figure 7.

[13] THRIP Annual Report FY2015/16

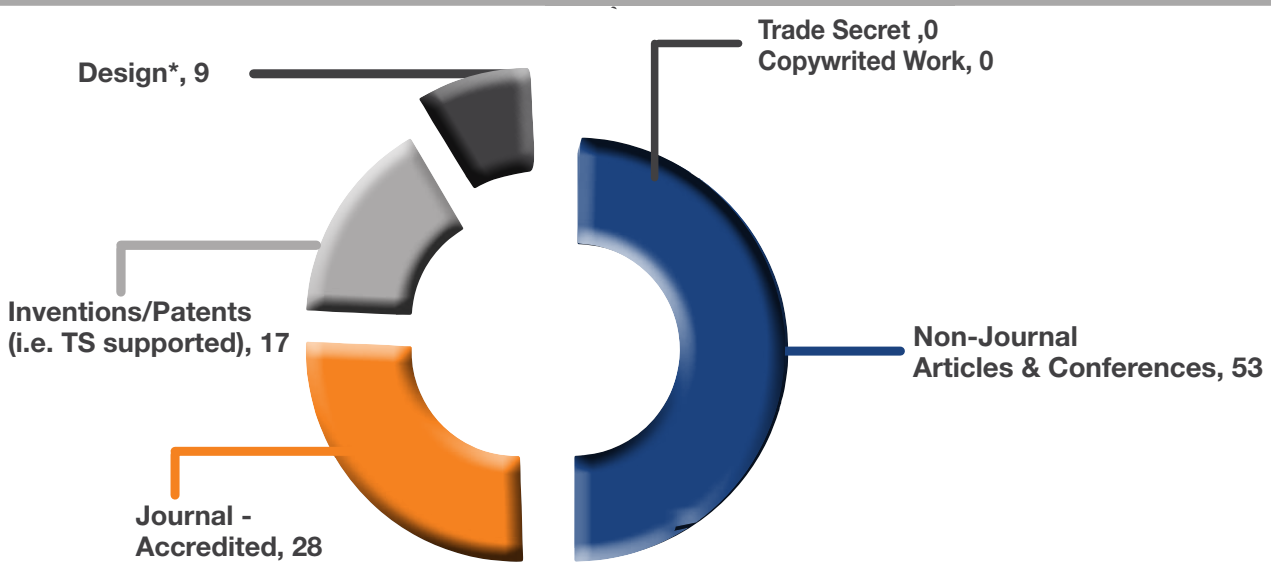


Figure 7 Technology Station official supported disclosures as per the IPR Act for Publicly Financed Research and Development Act 2008

8.3.5 Economic Landscape

For the South African economy to advance along the trajectory set out in the NDP where it can address poverty, unemployment and inequality, it will require a strong, coherent and effective NSI, working in a coordinated manner to achieve national priorities. The narrative at the moment is that South Africa continues to face macro-economic constraints. National Treasury, however, has been proactive in drafting policies to ensure that the economy continues to find new avenues for growth. In the recent Medium-Term Budget Policy Speech (MTBPS) presented to Parliament on 26 October 2016, the Minister of Finance Pravin Gordhan highlighted that "... *the MTBPS revises our growth expectation for the South African economy to 0.5 per cent for the 2016 calendar year, somewhat lower than the February estimates of 0.9 per cent. For the current fiscal year, the revised growth estimate is 1.0 per cent. We currently expect growth to rise to 1.7 per cent next year. With appropriate policies in place we will see the recovery strengthen more rapidly…*" [14]

In response to the current economic climate during FY2016/17 the private sector community, under the auspices of the Minister of Finance, established a R1.5bn private sector fund to stimulate entrepreneurship and support the growth of small, micro and medium enterprises (SMMEs). With SMMEs widely acknowledged to be key drivers of job creation and economic activity, the fund will invest in high-potential entrepreneurs and SMMEs and will provide them with access to a cohort of experienced mentors.[15] As SMMEs are established in developing technological innovations, it is against this backdrop that the Agency is going to complement this initiative by the private sector by looking into how it can create a hub and spoke model that it is able to attract both private and public sector institutions to invest in progressing ideas to the market. To this end, TIA will engage with the DST to partner with the local banks to provide additional funding are they are currently investing in innovation, clean energy and the ICT sector. This process will be compliment with the development of a stakeholder framework that seeks to outline the level of engagement TIA would like to have with its partners in pursuing its mandate.

[14] Pravin Gordhan Medium-Term Budget Policy Speech 26 October 2016
[15] http://www.politicsweb.co.za/politics/r15bn-private-sector-sme-fund-established--ceo-ini

8.3.6 Socio Economic Impact Assessment

TIA, in FY2016/17, instituted an independent socio-economic impact assessment for the period covering six years from FY2010/11 to FY2015/16.[16] The impact modelling exercise was conducted using the national Social Accounting Matrix (SAM). This matrix determined the Agency's economic impact for the period specified. All the agency's programmes were analysed in the assessment and the following figure 8 displays the general total impact trends for the total of all strategic programmes namely:

1. Administration (Operations);
2. Innovation Funding and Pre-Commercialisation and Support (IFPCS); and
3. Innovation Enabling & Support (IES).

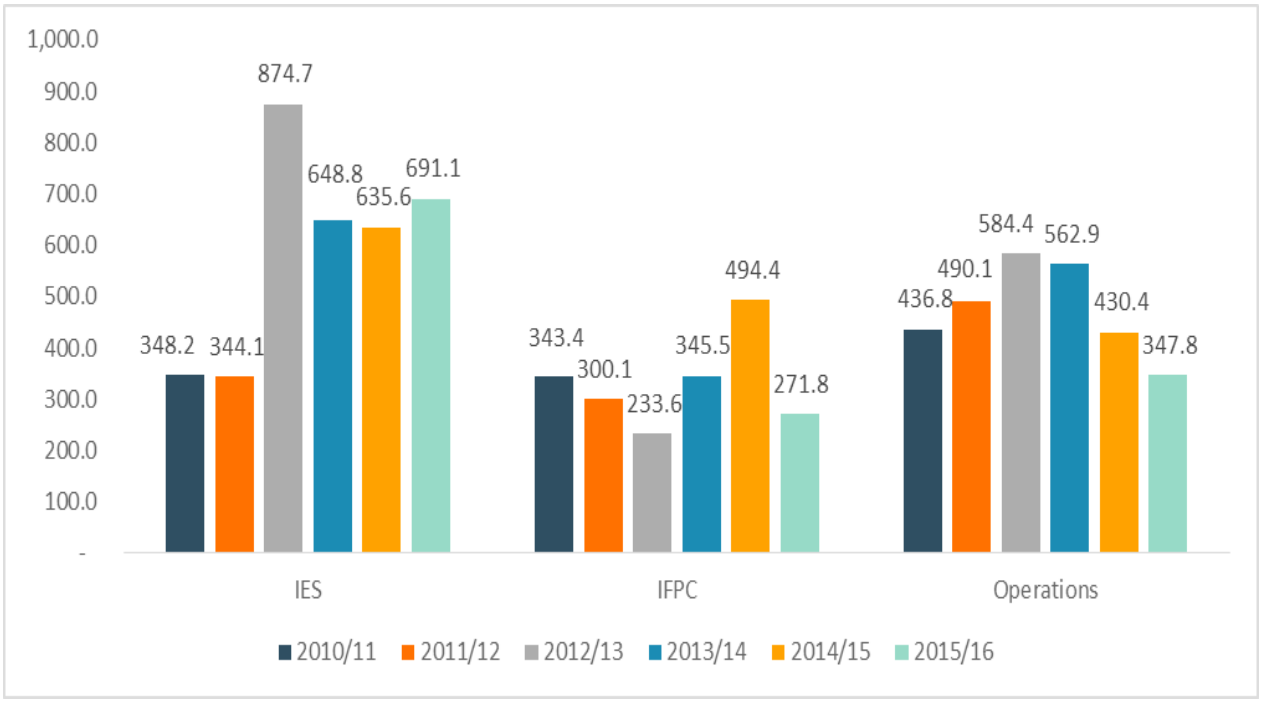


Figure 8 TIA Economic Impact on Production, Rm, 2010/11-2015/16

The results revealed the following;

- For the IES Programme, there was a sharp rise in all production impacts during FY2012/13. This can be attributed to the higher injection of grant expenditure which gradually decreased to a relatively constant level from FY2013/14 to FY2015/16.
- The IFPCS Programme's impact decreased between FY2010/11 to FY2012/13, thereafter expanding rapidly up to the FY2014/15.
- For Administration's (Operations) there is a distinct decline from 2013/14 to 2015/16, however the difference between 2014/15 and 2015/16 is extremely high Administration's total production impact on the economy does not differ much between FYs, however, recently the total impact has declined steeply to R347, 8-million, which is due to the lowered grant budget awarded by the National Treasury. This, however, indicates that the agency's financial performance, and therefore its impact, could be at a higher level.

[16] Technological Innovation Agency Economic Impact Assessment 2010/11-2015/16 Financial Year – Impact Report underkaen by Urban Econ Pty Ltd.

*NB in analysing the economic impact of this programme, it should be noted that this is determined by the examining (the payments made mainly to suppliers and employees in form of tax contributions) GDP, sector specific industry indices and tax data in order to compute the applicable matrices. Based on the performance of each, the resultant production measures would reflect the same. The total impacts on all macro-economic elements are presented in the table below.[1]

The total impacts on all macro-economic elements are presented in the table below.[17]

	IES	IFPCS	Total Programmes	Operations	Grand Total
Employment (Number)	6 043	2 894	8 938	5 084	**14 022**
Beneficiaries (Number)	-	-	-	-	**3 651**
Production (Rm)	3 542,5	1 988,8	5 531,3	2 852,5	**8 384**
GDP (Rm)	1 829,3	848,1	2 677,3	1 419,0	**4 09**
Income (Rm)	896,3	372,1	1 268,4	699,8	**1 968**
Taxes (Rm)	-	-	-	171,8	**172**
Production Multiplier	2,7	3,3	2,9	-	**2,87**
Estimated Leveraged Funds (Rm)	-	-	-	-	**372**
Successful Investments Revenue (Rm)					**5 954**
Royalty Amount Received (Rm)	-	-	18,9	-	**19**

Table 5 Total TIA Economic Impact, FY2010/11-FY2015/16

The implications of the study reveal that for the Agency to realise its mandate, it would have to:

1. Strengthen its IES programme as this derived the most impact for the period under review. This would mean that further similar studies would have to be undertaken at sub-programme level in assessing the adequacy, scope and structure of the instruments in addressing the needs of the targeted beneficiaries; and

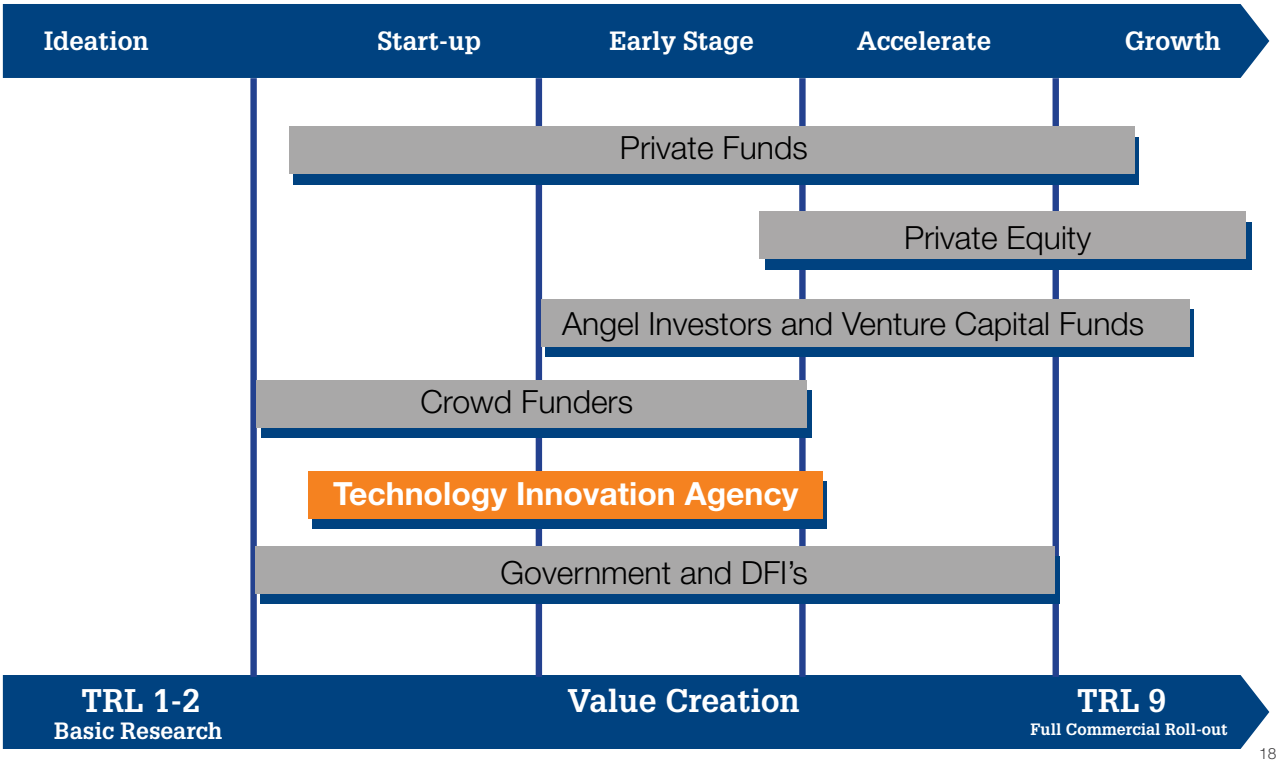
2. Reassess the funding instruments within the IFPCS programme to take into account the need for rapid access to funding for technology development by innovators and bridging the finance gap for small-scale technology piloting in assisting SMMEs to commercialise their technologies.

It is envisaged that undertaking the above mentioned activities would improve TIA service offering and enable the Agency to be relevant and responsive to the evolving needs of the NSI.

[17] Technological Innovation Agency Economic Impact Assessment 2010/11-2015/16 Financial Year – Impact Report (Final Draft)

8.3.7 Technology Innovation Funding Landscape

The various actors within the NSI continue to provide risk funding for technology development with the view to progress projects across the innovation value chain. Due to fragmentation of the funding eco-system, however, there has been no cohesive traction generated in the commercialisation of such projects as funding mandates limit the extent to which the different actors may fund. The figure below shows the different funding instruments available in the technology development funding system:



[18]

Figure 9 TIA's value proposition

According to a recent report undertaken by Innovosource Research Group, to support a new technology towards successful commercialisation, funding is required for activities during the different phases of technology development. Typically, university technology transfer offices do not have the funds to develop technologies to Venture Capital (VC) funding-readiness. This results in a large number of top technologies emanating from universities being forgotten in the fast-growing patent cemetery of the public-sector innovation channel.

The re-integration of SPII into the dti also presents a further challenge in that to access funding, the innovator and entrepreneur would first have to incur the costs and claim these thereafter. This presents a cash flow challenge for start-ups as they are cash-strapped from inception and would need ongoing working capital support to sustain operations. However, with the quantum of funding available, TIA will seek to engage the dti to ascertain the seamless integration of its offerings. The DST has signed a framework with all government departments to promote a more cohesive manner of engagement and TIA would adopt this in aligning its risk-funding schemes to the NSI.

[18] DFI means Direct Funding Institution. This is an alternative financial institution which includes microfinance institutions, community development financial institution and revolving loan funds

In commercialising projects to reach to the market, TIA relies on follow-on funders to provide the funding quantum to allow for technology piloting as its current resources limit this to technology demonstration. In handing over project upstream to other funders, like the IDC Technology Venture Fund, there have been a few challenges experienced. According to the IDC's latest report on its performance to 2014, the organisation continues to experience a limited number of quality investment opportunities from the National Innovation System. This is due to a lack of commercially-focused research at universities and science councils, inefficiencies at their Technology Transfer Offices (TTOs) and a shortage of entrepreneurs capable of commercialising intellectual property from these entities. The few local venture capital funds available often resist the temptation to invest in unproven technologies. They prefer to invest only after a product has gained initial market traction and has proven revenue scalability.

8.3.8 Entrepreneurs

The entrepreneurial domain has been, for too long, dominated by the narrative that there is lack of adequate funding to support them progressing ideas to market. A study was commissioned by PWC and Silicon Cape into the challenges experienced by technology based emerging companies in South Africa. The findings were presented at a NACI Round Table Symposium on 25 October 2015 and these outlined the following:

a) Access to market is the biggest challenge for most entrepreneurs; funding is a secondary matter;

b) Working capital was a challenge when contracting with larger corporates or national government whose payment cycles for services runs into 90 days;

c) Critical skills are a problem in seeking to capacitate highly technical operations;

d) The figure of 27% was presented as the percentage of female founders of tech-based businesses;

e) Most of the entrepreneurs where not young, most were over 30 and have had industry experiences to assist in mitigating regulatory risks in their chosen technology fields; and

f) 49% indicated that they would need assistance through mentorship.[19]

It is clear then that non-financial support is a critical factor in determining the success of tech-based start-ups. There is a need to enhance the service offering of TIA to ensure that, post the investment period (migration of the project from TIA portfolio at TRL 8 to reach commercialisation at TRL 9), the project survives well into the market. TIA will be introducing two new measures in assessing the readiness of the technology to be commercialised i.e. Market Readiness Level (MRL) and Business Readiness Level (BRL).

These would be assessed at each phase through the migration of the project along the innovation value chain so as to ensure that the entrepreneur is well equipped to deal with the market dynamics.

[19] Report: NACI Round Table Symposium on the 25th of October 2015

8.4 Internal Environment

8.4.1 Technology Portfolio Performance

From FY2010/11 to FY2016/17, the project portfolio has performed as follows (an indication and not qualified by information on hand):

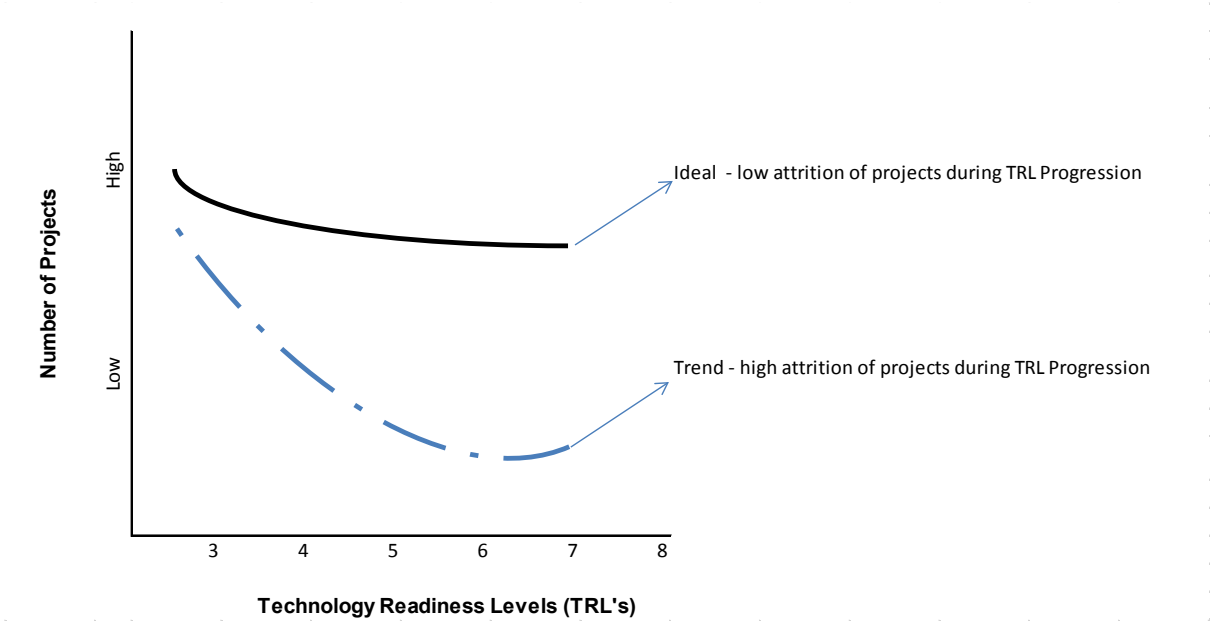


Figure 10 Attrition of project per TRL progression

In seeking to interpret the attrition of projects per Technology Readiness Level (TRL) the following needs to be considered:

- Rise of emerging technologies – The past five years have seen shifts in economic structures as emerging technologies have disrupted traditional supply chains thereby leading to changes in end-user demands. Agile technologies have created a whole new and ever-evolving market structure. This has made the management of the project portfolio a balancing act in order to derive value from the performance of the portfolio;

- Slow pace of reforms to traditional funding models to keep up with the pace of change – Upstream funding however is not tailor-made to address the specific requirements for market penetration; each sector has a different aggregation of criteria for entry which elongate time to market; and

- Infrastructure and Regulation not in place to support the deployment of the technology in the market – The gap funding instruments centre largely on the manufacturing readiness level i.e. the industrialisation of the particular product together with and the associated risk profile thereof.

TIA supports technology development at two levels: at a project level and at a systemic programme level.

At project level, the failure of the projects systemically would mainly be centred on lack of a market case owing to the fluidity of the landscape. Technology development takes on average 18-30 months depending on the stage of entry and technology field. Within the Agency value chain, the highest risk lies at TRL 6-7 as the failure to demonstrate the technology would mean that the funds invested to that point would be unrealised through assimilation of the technology by follow-on funders.

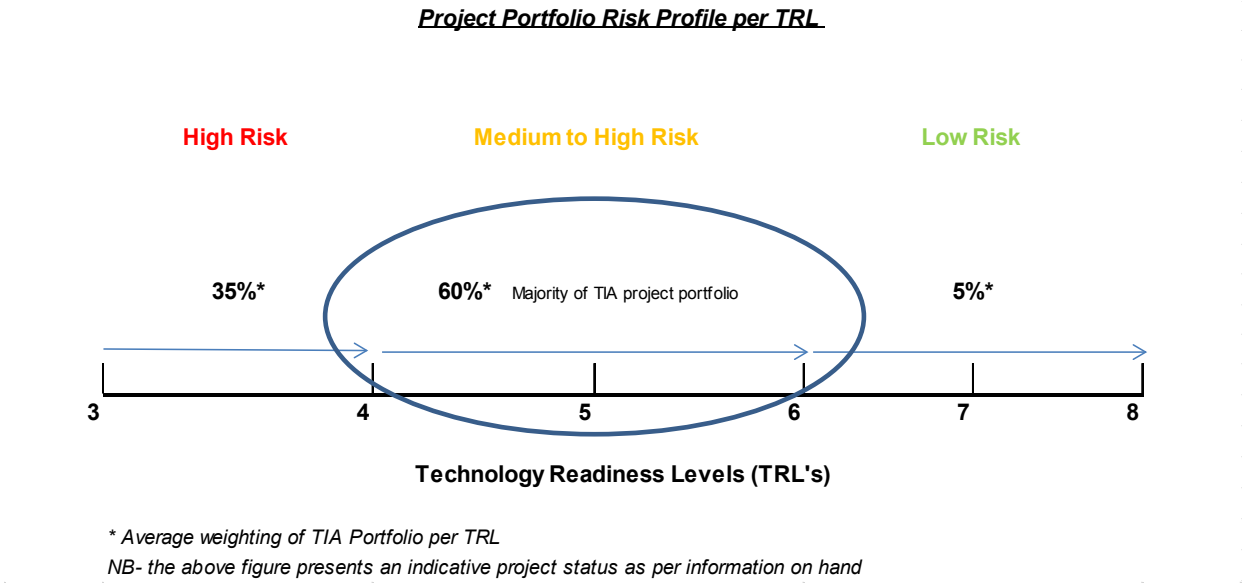


Figure 11 Project Portfolio Risk Profile per TRL progression

This observation has led to the Agency considering additional measures to the traditional TRL matrix to include MRL and BRL to ensure that projects are assessed simultaneously with the technology development stages. This new measurement will ensure that there is a seamless progression of technologies in the NSI as all the core aspects that inform the scaling of the project would be critically assessed at all phases of development.

In relation to mitigating risk at the various TRL levels, the Agency is well positioned owing to the fact that its investment framework accommodates risk and there is sound internal capacity to support the project through all the stages. However, having said that, it remains that in certain instances a market is to be created so as to ensure that indigenous knowledge generated is translated into products and services that take advantage of South Africa's natural and human resources. Such projects are usually scalable as they could possibly generate the critical mass to sustain the profitability thereof. Therein lays the gap as again this would require a more risk tolerant appetite which most traditional funders in commercialising technologies would not have as there needs to be provision made for at least a 12-18 months to enable the operation to break even.

At systemic programme level, the failure of initiatives to develop and commercialise technologies is largely underpinned by a lack of integration to existing value chains in a bid to unlock socio-economic value. Targeted initiatives lack the technical depth owing to the lack in skills to trigger the establishment of new industries that require significant capital contribution to get going. There are new levels of industrialisation that the country needs in order to be competitive at a global level and investment in the mechanisation of emerging industries is critical in unlocking value.

8.4.2 Stakeholder Analysis

Establishing and maintaining positive and purposeful relationships with stakeholders represents one of the four cornerstones of TIA's sustainability. This is clearly articulated in the balanced scorecard. As an agency of state, TIA has a large number of important stakeholders whose needs and interests it serves directly and indirectly. The three most important stakeholders, who form the core of the TIA ecosystem, are: The Innovator, the Investor and the Citizen. TIA's stakeholder engagement strategy for the Financial Year will continue to be framed within the three parameters of Teamwork, Impact and Accountability. This ethos will remain our mantra for years to come. The ultimate outcomes of this strategy should lead to a much more productive and coordinated NSI and augmented funding base, leading to transformation and inclusive development with visible impact on our communities.

The NSI has continued to show resilience, dynamism and growth with the rapidly growing involvement of the youth, who consistently bring countless innovative solutions to the market; a research community that has begun to anchor its work around innovation; and industry that is demonstrating greater responsiveness to the needs of entrepreneurs. Embracing innovation as an important tool in the economic development policy mix. Government also continued to invest in innovation through a variety of incentives that aim to increase private sector investment and deepening partnerships between academia and industry. In addition, government is increasingly looking to technology to implement many of its programmes and strategies to accelerate service delivery.

However, a key challenge, is the continued existence of a fragmented and uncoordinated ecosystem. Therefore, TIA needs to work more closely with a wide range of players in the NSI to support the DST's efforts in fostering a coordinated and productive ecosystem that is responsive to the needs of stakeholders. The Marketing and Communications unit continue to leverage on the existing relationship with the DST's Communication unit to ensure there is consistent, timeously and strategic dissemination of STI developments across the NSI. In the year, ahead the following initiatives will be enacted to align the communications plan:

1. The DST will be requested to share their media plans and Communications Strategy to ensure that TIA activities are supporting these. To this end, TIA will provide the existing Stakeholder Engagement, Events and Media plans to the DST in order to identify appropriate opportunities of participation and/ or collaboration, and how to improve communication between the Agency and e.g. CSIR, NCRST, NACI, SEDA, HEIs, SAASTA and identified parties;

2. Scheduling of quarterly meetings with Programme 2, 3, 4 and 5 for programme specific events and engagements where TIA and DST's programme could discuss the planned engagements of the upcoming quarter. Themes and important notices from the Minister can be discussed and plans can be revised per quarter to ensure we all convey consistent messages.

3. A repository of success stories to be stored by both units so that they are easily available on demand; and

4. To ensure consistency it will be arranged that at least one representative per entity will attend award ceremonies, media briefings to ensure that the event is reported, published and distributed within the NSI

TIA undertook several engagements with the higher education sector through a pro-active programme of CEO-led strategic engagements with Vice-Chancellors for RDI; partnering with SARIMA and the South African Technology Network (SATN). The positive momentum created by the Seed Fund has necessitated TIA to explore opportunities for collaboration on a wider set of initiatives, such as more integration of innovation activities with local community challenges and issues of transformation.

Science councils also present a source of good pipeline projects for TIA. Interactions with NIPMO, the WRC, CSIR and MINTEK have enabled conversations on the establishment of a more coordinated management of the value chain that will see innovative ideas moving seamlessly into TIA's funding streams and innovation enabling programmes. Whilst the primary focus has largely been around creating a good understanding of the individual institutional mechanisms, greater focus will now shift towards the mining and successful migration of projects into the TIA funding streams.

TIA has also established key partnerships with industry on several initiatives implemented through the Innovation Funding and Pre-commercialisation and Enabling programmes. The Technology Stations, the Innovation Skills Development and the Youth Technology programmes have been instrumental in attracting the interest of private sector partners to TIA as these are well positioned around entrepreneurship training and enterprise development.

In addition to pursuing an active stakeholder relationship programme, TIA actively promoted its brand through a range of events to promote its offerings and where promising projects from the portfolio were exposed to opportunities for market uptake and fundraising. The hosting of the second DST-led Innovation Bridge Match-Making Event to be held in Q3 of FY2017/18 will build on the experience and gains from the inaugural session held in February 2015 and further reinforce the role of government, represented by TIA and NIPMO, as a key driver and enabler of technology innovation in South Africa.

The Innovation Bridge is a key platform that enables effective connections between stakeholders, primarily connecting researchers and innovators with support agencies, customers and investors. The Innovation Bridge is one of three pillars of the DST's Technology Match-Making Programme that includes the establishment of a Stakeholder Database and on-line platform intended to enable interactions amongst stakeholders in the intervening periods between the Match-Making events. The latter two components have now been consolidated into a single Innovation Portal that will host both the stakeholder database and the on-line networking platform.

Through concerted communications initiatives, TIA has, for the first time in a few years, seen favourable media coverage with positive reports about its achievements, especially from its innovation enabling programmes. This created an Advertising Value equivalent of R1.3m for the FY2015/16.

Lastly, innovators and entrepreneurs are TIA's raison d'etre. The responsiveness of TIA's programmes and the attitude of staff towards the needs of our key customers remain the most critical conditions for success. For this reason, TIA has taken concerted steps to position itself appropriately to respond to customer needs. Two key initiatives in the FY2015/16 included conducting an independent Customer Satisfaction Survey and hosting a Staff Conference around the theme of "Customer Centricity". The outcomes of these initiatives point to a TIA that is beginning to position itself as an important player in the NSI and as a key partner in technology innovation.

8.5 Organisational Environment

TIA will focus on developing the organisation as an employer of choice by creating and nurturing a culture of quality and high-performance through the development and growth of the Human Resource capacity; identifying and developing IT platforms that will enhance communication and effectiveness of every employee; analysing the business effectiveness and efficiency; defining business improvement plans across the organisation; implementing ISO accreditation; managing information and knowledge; and providing a healthy, safe and secure office environment.

Apart from the traditional transactional and administrative function expected by the various business units in

Corporate Services, the focus will be to redesign itself and implement a service delivery approach aligned to becoming a partner to the business, understanding the needs of the organisation as well as the employees.

The orientation of HR, IT, Facilities and Knowledge Management is one of responsiveness to both immediate and long-term business needs, providing both operational excellence and strategic insight. The focus for FY2017/18 will be on:

a) Continuous business process improvement by adopting ISO 9001 Quality Management System to improve business process efficiency and customer satisfaction;

b) Entrenching a high-performance culture within the organisation. This would be achieved through the implementation of a TIA Competency Framework which will be used in all elements of talent management from talent attraction and talent retention to performance management;

c) Providing secure and accessible IT Infrastructure and solutions;

d) Implement and maintain a healthy, safe and secure office environment that will support and nurture the development of an innovative, creative and high-performing workforce;

e) Create an enabling work environment with a strong value system and work ethic for a productive workforce by implementing a programme to develop a high-performance culture in the organisation; and

f) Integrated Business intelligence – to develop a single performance management and decision-making dashboard, extracting and collating information from functional systems. This will enable the organisation to position itself as a knowledge-based organisation.

8.6 Description of Strategic Planning Process

TIA started its planning process for FY2017/18 in June 2016. The process was managed by the Planning, Risk, Intelligence, Monitoring and Evaluation (PRIME) unit which reviewed the international and domestic political, technological, economic and social landscape and formulated scenarios to inform the strategic planning context.

The first engagement was from 28-29 June 2016 with the Board and the TIA Executives in which critical consideration was given to the operating environment; voice of the shareholder; voice of the stakeholder; key programme outcomes and performance management matrices.

The second engagement was on 11July 2016 with the Deputy Director Generals (DDGs) from Programme 1, 2, 3 and 5 from the DST in which a discussion ensued with TIA Executives, Heads of Units and Portfolio Managers with respect to key thematic focus areas for FY2017/18 as well as clarifying approaches, terminologies and target definition.

The final engagement was on 18 October 2016 in which the planned activities were discussed with the DST based on the feedback received.

9. PLANNED STRATEGIC INITIATIVES

9.1 Teamwork

- In terms of the NSI co-ordination, TIA aims to improve the effectiveness of the NSI [Effectiveness refers to how well the Technology Ecosystem works in terms of technology generation, progression and commercialisation]. TIA will position itself as the hub that engages widely within the NSI to translate knowledge generated into commercial products and services. This would enable optimal utilisation of resources in order to achieve a broader socio-economic impact that redresses the triple challenge the country is facing. The current socio-economic situation demands that TIA fosters better partnerships and derives greater yields and outcomes from these relationships in a bid to deliver value to the stakeholders. In FY2017/18 TIA would seek to identify the entry points upstream and downstream in terms of its service offerings to better position itself in relation to its mandate;

- TIA will extend itself as a Thought Leader to key government departments in a bid to inform them on key technology system acquisitions and trend analyses. The competencies for these are housed within the current investment activities TIA undertakes. This institutional knowledge may be extended to provide inputs that inform better decision-making for procurement of strategic infrastructure; and

- Continuous gathering of valuable knowledge through experiences is critical in establishing TIA as an innovation leader for the benefit of policy makers and all stakeholders in the NSI. Providing such a service will contribute to goodwill which, in turn, builds the Agency's reputation and will encourage leveraging of economic resources thereby yielding a much broader and deeper impact. These activities would be underpinned by an Innovation Framework (this is an accord/agreement that would govern the strategic partnership (s) / relationship (s) TIA enacts to fulfil its mandate. It would contain the scope of envisaged engagements and outline the mechanisms to support the agreed activities) between identified strategic partners and TIA to ensure that the commitment and execution is undertaken in a manner that is transparent and holds TIA and other partners accountable for the delivery thereof.

9.2 Impact

- TIA will expedite the delivery of its mandate across all strategic programmes and initiatives. A critical assessment will be undertaken to:

    a) Ascertain the relevance and impact of financial and non-financial support instruments to optimise impact;

    b) Broaden the focus to all economic sectors in order to enhance industry competitiveness; and

    c) Broaden the focus of technology platforms and stations to ensure the extension of their life cycle.

- There is need to capitalise on the competitive advantage TIA has within in the NSI as this has not been exploited owing to an insular focus adopted over the previous financial years. As key leadership positions within the organisation have been filled, TIA is fit to fully explore the depth of its mandate. This, therefore, warrants the case to scale up programme capacity with speed and agility as more can be done to realise a *bigger bang for its buck*.[21]

- It is on this basis that TIA will seek to review its current performance targets to ensure that they are not

[20] Effectiveness refers to how well the Technology Ecosystem works in terms of technology generation, progression and commercialisation
[21] TIA CEO B Manilal Board Strategy Feedback Session 21 July 2016

too soft. Furthermore, it will stretch targets that are considered possible to exploit to align to the capability embedded in the organisation. The ultimate beneficiaries of the outcomes and impact of TIA's value chain are the citizens of South Africa who expect more to be done to address the challenges they face.

- In support of this, the funding schemes and programmes will be core to the TIA service offering as they are the mechanisms to be deployed in responding to the innovation needs of the NSI. The application process for accessing such funds will be reviewed and categories will be introduced based on the risk assessment and level of funding required. The concept of a rapid funding instrument[22] is currently being investigated that would afford innovators access to vouchers within 48 hours of completing their application. This would typically suit a low-risk profile and there is a proven case that the technology being developed has merit in terms of validity and a clear market case. Such an instrument will ensure that there is a seamless progression of ideas along the innovation value chain.

- In addition, as part of our funding model, TIA will work with other government agencies such as the IDC and relevant dti instruments to establish a more coordinated and coherent approach for commercialisation and industrialisation of technology innovations. As mentioned above, such funding will be provided as conditional grants and loans and, in exceptional cases, as equity. Greater emphasis will be placed on leveraging funding through sustainable and high yield partnerships and stakeholder engagements.

9.3 Accountability

- TIA will continue to seek greater alignment and representation with the Department of Science and Technology in the execution of its mandate. Bi-Lateral sessions and working sessions with the TIA management team have been planned to ensure that there is common understanding on thematic focus areas. This will inform the nature of engagement with other stakeholders within the NSI to ensure that synergies are strengthened amongst key institutions.

- The results of the Customer Satisfaction Survey reveal that TIA may need to commission a customer experience journey mapping exercise at each contact point from application to final exit on the investment process. The focus of such an exercise would anchor itself on regular communication and improved turnaround times to customers in a bid to reflect the Agency's commitment in progressing their technology along the innovation value chain.

9.4 Strategic Stakeholder Engagement Initiatives

TIA will drive five stakeholder engagement initiatives framed around the high-performance drivers of Teamwork, Impact and Accountability

These will consist of:

- Fostering strategic alignment with stakeholder needs;
- Partnership programme to exploit synergistic relationships with key players in the NSI;
- Driving stakeholder networking platforms;
- Positioning a positive TIA brand and,
- Promoting a culture of innovation through a focused public engagement programme in partnership with SAASTA.

[22] TIA CEO B Manilal Board Strategy Feedback Session 21 July 2016

Specifically, for the FY2017/18, TIA will undertake the following stakeholder consultative activities:

i. Alignment with Stakeholder Needs

- Continued strategic engagements with the R&D Vice-Chancellors at higher education institutions;
- Leverage the DST's established relationships with other government departments to identify and drive relevant innovation programmes within the context of the newly established Interdepartmental Framework for Science and Technology (S&T) that guides the prioritisation of the S&T cooperation line with its FY2015/2020 Strategic Plan;
- In partnership with the DST and the dti, host industry/sectoral consultative workshops with Industry Associations to identify innovation needs; and
- TIA will also conduct more detailed and programme-specific customer surveys as part of an annual programme going forward.

ii. Partnership Programme for a productive NSI

- TIA will work towards the establishment of a glass pipeline[23] that promotes porous boundaries amongst various players within the NSI, promoting a singular view of projects by which all partners within the NSI be it science councils, institutional funders, enterprise development support organisations and other key stakeholders – collaborate to create a seamless environment for innovation, commercialisation and start-up formation to thrive;
- TIA will also continuously look for opportunities to establish effective international partnerships to drive joint technology innovation; attract international funding and investment into the South African STI; market access; institutional and human capacity development for the NSI and knowledge exchange. Key to this will be to continue strengthening relations with our counterparts in the African continent. Therein, we are guided by the Department's strategic agenda that emphasizes capacity building and knowledge exchange. For this purpose, TIA has deliberately engaged a few selected partners in the continent, inclusive of Namibia, Tanzania, Sudan, Botswana, Angola, Kenya, and others in the last few years and will continue to identify new viable partnerships for this purpose. From these relationships, two key strategic initiatives have been implemented. Firstly, through the Technology Stations Programme, TIA provided training to staff at the Kenya University of Technology on the operation and maintenance of CNC machines. Secondly, TIA has entered into a MoU with the Namibian National Commission on Research, Science and Technology (NCRST) through which TIA will support the establishment of a Technology Station at the NCRST. Through the Biosafety Technology Platform TIA continues to support and advice on the NCRST on risk assessment methodologies and regulatory best practices in the management of genetically modified mechanisms. This exchange of knowledge, continues to contribute to Namibia's review and improvement of their Biosafety Act 2006.

iii. Establishing Networking Platforms

- Post the Innovation Bridge Event, TIA will place greater focus on the establishment of a fully functional Innovation Portal to enable continued interactions amongst stakeholders, especially continuing to facilitate deal-making between innovators, funders and customers;
- TIA will launch a monthly TIA Network Fridays Programme that will bring together small groups of stakeholders in direct interaction with communities of TIA investees to promote opportunities for funding,

[23] Glass pipeline means the visibility of TIA's project portfolio to all the strategic partners within the NSI

market uptake, mentorships and other relevant resources such as partnerships. This programme will be implemented in major centres in Gauteng, Western Cape, Eastern Cape and Kwa-Zulu Natal (KZN) in partnership with not-for-profit organisations that have access to relevant local innovation ecosystem stakeholders, such as Simodisa, Silicon Cape and Innovate Durban in KZN, amongst others; and

- The third strand will consist of the hosting of dialogue workshops and events that provide platforms for engagement on pertinent topics around innovation.

iv. Promoting a positive TIA Brand

This involves the basic activity of creating awareness of TIA in the market, promoting a good understanding of its mandate and offerings. This will also involve a properly designed communications plan to highlight the TIA's achievements and centrally positioning it as the first point of call and reliable partner in technology innovation in South Africa. Key to this is promoting the uptake of the Agency's offerings. Four key activities will be undertaken under this focus area.

1. Increasing customer satisfaction – This will involve implementing measures to drive responsiveness to the needs of TIA customers and stakeholders. These will include establishing a fully functional Call Centre, establishment of an Independent Appeals Panel; organising workshops to help unsuccessful applicants improve their applications; implementing mechanisms to correct communication deficiencies with applicants and implementing a Customer Journey Mapping system. These activities will be underpinned by the undertaking of Annual Customer Satisfaction Surveys with the aim of improving the current satisfaction rating level of 5.7 to a target of 7.5 out of 10;

2. Staff Brand Engagement – The envisaged rating above can only be achieved if staff are fully attuned to the needs of the customers and stakeholders. As such the implementation of a staff brand engagement programme will constitute a key deliverable that will instil and help TIA staff to live the TIA values that are strongly predicated on customer-centricity;

3. Marketing and promotional campaigns – This initiative sits within TIA's Strategic Objectives that aim to increase the uptake of TIA-supported projects in the market, the uptake of TIA funds and innovation enabling programmes. TIA will execute these through road-shows across the nine provinces, including rural communities and townships to increase its reach in areas where it does not have physical presence. Local and international conferences and events will also be exploited along with key partnerships that offer the opportunity to increase TIA's brand capital; and

4. Promoting media coverage and exposure – This will entail the execution of an effective TIA communication strategy that emphasises increasing the exposure of TIA's success stories its activities, projects and programmes at both regional and national level across all media platforms. In this regard, TIA will aim to achieve an Advertising Value Equivalent (AVE) of R2m.

vi. Promoting a culture of innovation through science engagement

- In giving expression to this Innovation Framework, SAASTA has crystallised these into three focus areas of science education, science communication and science awareness. TIA will thus collaborate closely with SAASTA, to leverage resources and support for the implementation of Science Engagement activities that are closely connected to the TIA mandate and its activities. For this purpose, therefore, TIA will pursue the following activities:

Table 6 Planned strategic stakeholder initiatives FY2017/18

Focus Area	Activities	Indicator	Reporting Timelines
Science Awareness	Opportunities for innovators to showcase their technologies to non-science communities	20	Quarterly
	Number of learners attending open-days at technology stations	2000	Quarterly
Science Education	Number of learners reached through the Future	500	Yearly
	Technology Stations Outreach Programme	2000	Quarterly
Science Communication	Programme specific news articles	4	Quarterly
	Increased placements of success stories in media	4	Quarterly

10. OVERVIEW OF THE FY2017/18 BUDGET AND MTEF ESTIMATES

TIA has made significant adjustments over the last couple of years to the budget to accommodate the reduction in MTEF allocations. TIA has restructured and realigned the major areas to note are discussed below:

10.1 Administration costs

Administration and employee costs reduced considerably from R211m in FY2013/14 to

R 167m in FY2017/18, decreasing the administration costs as a percentage of total expenditure from 36% to 30% in the same period. This ratio will be maintained at around 30% for the MTEF period. It is important to note that the administration costs include all costs to administer funding received such as employee costs, investment and programme management, the costs to review applications and consultant costs to provide independent opinions for technical evaluations. Employee costs related to staff involved in the direct management of programmes and investments such as the Technology Stations, Technology Platforms, Technology Funding, Youth Innovation and Seed Fund are included in the target of 30%.

A high-level activity based costing analysis revealed that pure administration cost as a percentage of total cost is 14% over the MTEF period.

Employee costs reduced from R117m in FY2013/14 to R105m in FY2017/18 due to the organisational design process which enabled TIA to change its structure to support the strategy. Productivity improved considerably due to a reduced number of staff supporting the same activity levels. System enhancements further contributed to higher efficiency with the implementation of the Grant Management System supporting the funding application process. Administration costs reduced by 34% from R94m in FY2013/14 to R62m in FY2017/18 due to cost reductions and savings in consultancy fees, rental costs, utilities and IT-related costs.

Administration costs are fully funded from the Baseline allocation received from the DST.

10.2 Investment funding

The focus is to disburse R 153m towards Technology Development and Pre-Commercialisation. This is funded through Baseline allocation amounting to R45m and Bio-economy allocation amounting to R 53m. The remaining amount of R 56m will be funded through Other Income and Interest Income. An amount of R 228m is allocated for the Innovation Enabling Funding where TIA will continue to support the ISDP, the YTIP, the TPP, the TSP, the TIP and the Seed Fund for HEIs and SMMEs. The Innovation Enabling programmes are funded through the Bio-economy allocation from the DST amounting to R103m and TSP allocation amounting to R 36m. The remaining amount will be sourced through contract specific and other income.

The entity's investment framework policy was also revised to enable a streamlined funding model for the projects/programmes. TIA was able to maintain the efficiency ratio for project funding at 70% of funding raised despite the reduced funding due to a considerable reduction in administration costs and the ability to raise other income.

10.3 Other income

The entity will continue to focus on obtaining other sources of income to support the programmes and project funding initiatives. This will be done through contract specific funds from the DST and other government institutions and through partnerships with the private sector. The other income for 2017/18 increased by 13 % when compared to the plan for FY2016/17.

Table 7 TIA MTEF Budget FY2017/18 to FY2019/20 as per Allocation Letter

	2017/18			2018/19			2019/20		
	Baseline R'000	Bio-economy R'000	TSP R'000	Baseline R'000	Bio-economy R'000	TSP R'000	Baseline R'000	Bio-economy R'000	TSP R'000
Allocation letter	204,447	156,048	36,237	216,305	165,678	38,339	217,858	185,516	40,486
Utilised	287,473	156,048	105,000	307,927	165,678	105,000	322,473	185,516	105,000
Administration	159,049	7,802	-	166,910	8,284	-	178,174	8,814	-
Support and infrastructure cost	61,172	780	-	64,222	828	-	67,782	911	-
Human Resources	97,877	7,022	-	102,688	7,456	-	110,392	7,903	-
IFPCS	101,220	52,549	-	106,837	57,804	-	103,491	70,008	-
IES	27,204	85,697	105,000	34,180	90,858	105,000	40,808	97,089	105,000
Technology Platforms	-	56,401	-	-	60,270	-	-	65,502	-
TSP	-	-	105,000	-	-	105,000	-	-	105,000
ISD	4,000	7,000	-	4,000	7,000	-	4,000	7,000	-
YTIP	2,000	3,000	-	2,000	3,000	-	3,000	3,000	-
TIPS	9,204	4,296	-	9,180	5,588	-	8,808	6,587	-
Seed fund	10,000	15,000	-	10,000	15,000	-	15,000	15,000	-
Thought leadership	2,000			9,000			10,000		
Consortium based funding	-	10,000	-	-	8,732	-	-	9,605	-
Overutilisation	-83,026	-	-68,763	-91,622	-0	-66,661	-104,615	-0	-64,514

Table 8 Overview of 2017/28 Budget and MTEF Estimates and Expenditure Trends

R'000	Audited outcome			Adjusted appropriation	MTEF Estimates		
Programme	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Administrative	211,189	161,201	130,470	146,675	166,851	175,194	186,987
IFPCS	112,408	161,789	126,333	108,942	153,769	164,641	173,500
IES	261,998	211,693	252,424	354,091	227,901	238,770	252,502
Total	585,595	534,683	509,227	609,708	548,521	578,605	612,989
Goods and services	93,618	50,689	46,913	56,106	61,952	65,050	68,693
Compensation of employees	117,571	110,512	83,557	90,569	104,899	110,144	118,295
Tansfers	374,406	373,482	378,757	463,033	381,670	403,411	426,002
Total	585,595	534,683	509,227	609,708	548,521	578,605	612,989

The expenditure trends of TIA are given below (extract of the Estimates of National Expenditure)

Table 9 Vote expenditure trends by Programme and economic classification

R'000	Annual budget	Audited outcome	Annual budget	Audited outcome	Annual budget	Audited outcome	Annual budget	Revised estimate
Programme	2013/14		2014/15		2015/16		2016/17	
Administrative	158,151	211,189	181,359	161,201	141,659	130,470	159,675	146,675
IFPCS	177,168	112,408	134,698	161,789	183,606	126,333	148,942	108,942
IES	185,762	261,998	76,661	211,693	168,045	252,424	207,791	354,091
Total	**521,081**	**585,595**	**392,718**	**534,683**	**493,310**	**509,227**	**516,408**	**609,708**

Table 10 Entity Budget

	Audit outcome 2013/2014 R' 000	Audit outcome 2014/2015 R' 000	Audit outcome 2015/2016 R' 000	Revised estimate 2016/17 R' 000	Budget 2017/18 R' 000	Budget 2018/19 R' 000	Budget 2019/20 R' 000
Administration	**211,189**	**161,201**	**130,470**	**146,675**	**166,851**	**175,194**	**186,987**
Support and infrastructure cost	93,618	50,689	46,913	56,106	61,952	65,050	68,693
Human Resources	117,571	110,512	83,557	90,569	104,899	110,144	118,295
Investments	**374,406**	**373,482**	**378,757**	**463,033**	**381,670**	**403,411**	**426,002**
Innovation Funding and Pre Commercialisation and support	112,408	161,789	126,333	108,942	153,769	164,641	173,500
Innovation Enabling and support	261,998	211,693	252,424	354,091	227,901	238,770	252,502
Technology Platforms	69,683	41,544	67,118	77,867	56,401	60,270	65,502
Technology Station Programme	112,286	92,958	83,433	126,396	105,000	105,000	105,000
Innovation Skills Development	9,349	19,076	21,154	20,000	11,000	11,000	11,000
Youth Technology Innovation	6,588	4,573	5,249	10,000	5,000	5,000	6,000
Technology Innovation Programmes	2,221	9,832	4,344	42,828	23,500	23,500	25,000
Seed Fund	61,871	43,710	70,297	68,000	25,000	25,000	30,000
Thought Leadership	-	-	829	9,000	2,000	9,000	10,000
Total expenditure	**585,595**	**534,683**	**509,227**	**609,708**	**548,521**	**578,605**	**612,989**
Total funding	**568,724**	**472,698**	**462,929**	**496,408**	**548,521**	**578,605**	**612,989**
Allocation from DST	481,081	338,386	385,188	382,364	396,732	420,322	443,860
Additional income target	64,468	116,441	60,385	104,044	141,789	148,283	159,129
Interest income	23,175	17,871	17,356	10,000	10,000	10,000	10,000
Surplus/Deficit	-16,871	-61,985	-46,298	-113,300	-	-	-
Capex allocation:				7,000	7,000	7,000	4,800

10.4 Budget Allocation per Programme

Table 11 Budget outlined per Programme 1 Administration

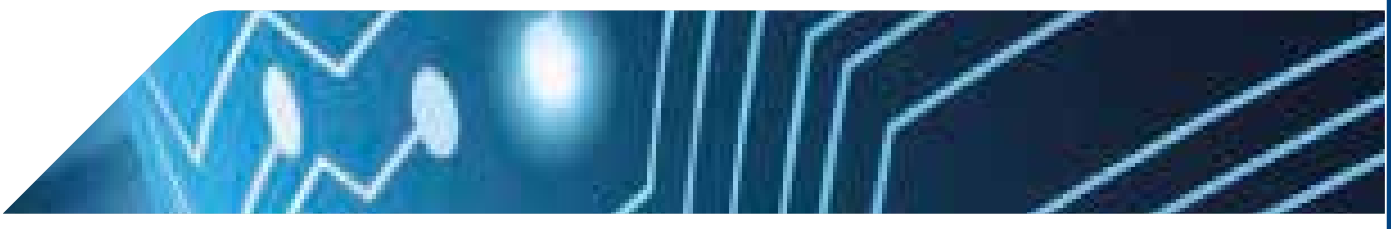
R'000	Audited outcome			Adjusted appropriation	MTEF Estimates		
Programme	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Administrative	211,189	161,201	130,470	146,675	166,851	175,194	186,987
Goods and services	93,618	50,689	46,913	56,106	61,952	65,050	68,693
Compensation of employees	117,571	110,512	83,557	90,569	104,899	110,144	118,295

Table 12 Budget outlined per Programme 2 Innovation Funding and Pre-Commercialisation

R'000	Audited outcome			Adjusted appropriation	MTEF Estimates		
Programme	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
IFPCS	112,408	161,789	126,333	108,942	153,769	164,641	173,500
Respresented by Tansfers	112,408	161,789	126,333	108,942	153,769	164,641	173,500

Table 13 Budget outlined per Programme 3 Innovation Enabling and Support

R'000	Audited outcome			Adjusted appropriation	MTEF Estimates		
Programme	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Technology Platforms	69,683	41,544	67,118	77,867	56,401	60,270	65,502
Technology Station Programme	112,286	92,958	83,433	126,396	105,000	105,000	105,000
Innovation Skills Development	9,349	19,076	21,154	20,000	11,000	11,000	11,000
Youth Technology Innovation	6,588	4,573	5,249	10,000	5,000	5,000	6,000
Technology Innovation Programmes	2,221	9,832	4,344	42,828	23,500	23,500	25,000
Seed Fund	61,871	43,710	70,297	68,000	25,000	25,000	30,000
Thought Leadership	-	-	829	9,000	2,000	9,000	10,000
Total	261,998	211,693	252,424	354,091	227,901	238,770	252,502
Respresented by Tansfers	261,998	211,693	252,424	354,091	227,901	238,770	252,502



PART B

PROGRAMME AND SUB-PROGRAMME PLANS

11. PROGRAMME 1: ADMINISTRATION

11.1 Strategic Overview

The PSF & BAKM (People, Systems, Facilities and Business Analysis & Knowledge Management) Division is an internal support function with the employee as its main customer. The purpose of the Division is to create an enabling environment for the development of a high-performance culture by nurturing and growing the Human Resource capacity, identifying and developing an IT platform that will enhance communication and effectiveness of every employee, building the TIA knowledge management architecture for preservation and management of TIA's intellectual assets: knowledge and information, and providing a healthy, safe and secure office environment.

The PSF & BAKM Division, therefore, contributes directly to the Strategic Objective (SO) 3: To develop an effective and efficient internal environment to successfully execute the strategy.

11.2 Sub-programme overview

In order for the division to create a seamless and integrated enabling environment for sustainable operational excellence and professional outlook as a business partner of choice by nurturing talent and modernising IT offerings, the division consists of four divisions, each with a specific focus.

11.2.1 Human Resource Business Unit

The purpose of the HR Business Unit is to enable the nurturing of individual talent, passion and purpose in order to unlock individual potential. The HR Business Unit will contribute directly to the Key Performance Indicators 3.4 Functional organisational structure as measured by vacancy and turnover rate; as well as Key Performance Indicator 3.5 Effective implementation of the Talent Management Strategy. The Business Unit will focus on the following areas:

- Improve and modernise recruitment practices through the implementation of a recruitment system to reduce the vacancy rate from the current 12% to less than 9%;
- Ensure that the organisation is fully capacitated to deliver on its mandate;
- Develop and implement an integrated reward and recognition strategy in order to attract and retain competent and committed talent.

11.2.2 Information Technology (IT) Business Unit

The purpose of the IT Business Unit is to provide IT excellence through modernisation in response to the diverse needs of the organisation. The IT Business Unit will contribute directly to the Key Performance Indicator 3.2: Improved adequacy and effectiveness of the TIA internal control environment. The Business Unit will focus on the following areas:

- Implement and maintain an integrated TIA application portfolio, optimisation of the records Management solution; implementation of a Customer Relationship Model (CRM) for improved operational and strategic management and decision making;
- Implement a streamlined, supported and maintained IT infrastructure and operations

11.2.3 Facilities Business Unit

The purpose of the Facilities Business Unit is to establish a professional working environment that will stimulate innovation and creative thinking by providing integrated and safe office space, resources and security. The Facilities Business Unit contributes indirectly to the majority of the SO3 KPIs through the following focus areas:

- Cost-effective acquisition and management of the property portfolio of TIA (Gauteng, KZN, WC offices and the platform's accommodation) by ensuring all lease agreements are renewed and concluded timeously and associated operational services are rendered accordingly;
- Design and implement healthy, safe and modernised office space for all employees that will support improved productivity and efficiency in the Gauteng offices.

11.2.4 Business Analysis & Knowledge management (BAKM)

The purpose of the Business Analysis & Knowledge Management Business Unit is to achieve operational excellence and effectiveness across TIA by improving the efficiency of the organisation and business intelligence processing. The BAKM Business Unit only contributes indirectly to the Key Performance Indicator 3.1: Investment approval turnaround time though the development of the investment processes and associated development and enhancement of the Grant Management System (GMS) system. The BAKM Business Unit contributes directly to the Key Performance Indicator 3.2: Improved adequacy and effectiveness of the TIA internal control environment. The Business Unit will focus on the following strategic areas:

- Analyse operational efficiency and effectiveness through business process engineering and operational work-study and implement the recommendations towards business improvement;
- Optimise the management of knowledge by the implementation of a market intelligence e-library and continuous optimisation of records management practices and;
- Implement an integrated quality management system across the organisation by conducting a gap analysis and finalise the audit for ISO 9001[24] certification.

[24] The standard defines an ISO 9000 Quality Management System (QMS). ISO 9001:2008 is focused on meeting customer expectations and delivering customer satisfaction.

11.3 Programme 1 Administration Risk Management and Mitigating Actions

Strategic Objective	Risk Description	Mitigation Action
To develop a high-performance culture by providing integrated HR services that will attract, develop and retain a motivated, committed and competent workforce	Lack of motivated, committed and competent workforce.	Implementation of competency based talent management practices associated with recruitment, performance management and career development; Implementation of a market-related, equitable and competitive remuneration framework; Implementation of an integrated Human Resources Integrated Management System (HRIMS); and Implementation of succession planning.
To establish a secure, cost-effective and well-run IT operation that is recognised for its responsiveness, flexibility, and effectiveness.	Lack of integrated and secure IT infrastructure and operations.	Implementation of IT governance as per KING III and IV guidelines and COBIT 5[25]; Implementation of IT security in accordance with the ISO 27001/2; ISO 38500; Implementation of IT operations management in accordance with the ITIL v3; and Implementation of Disaster Recovery.
To establish a facilities and security management capability that will ensure compliance to all health, safety and environmental legislation and policies.	Lack of providing healthy, secure and safe office space.	Compliance to the OHS Act 85 of 1993; Implementation of physical security services and access control in accordance with MISS (Minimum Information Security Standards) & MPSS (Minimum Physical Security Standards); Lease agreements are signed and managed; and Facilities service agreements are signed and managed.
To provide an easily accessible office support service including venue booking, visitor management, hospitality services, transport and courier service.	Non-availability of sufficient and timeous office support services.	Implementation of stock control for stationery and wellness stock; and Implementation of fleet management services.
To identify and recommend areas of business improvement through the provision of business analysis services including business process re-engineering, work-study and the implementation of quality management initiatives.	Poor organisational effectiveness and efficiency.	Implement continuous processes re-engineering; Implementation of work-study; ISO 9001 certification; and Implementation of integrated Business Intelligence.
To manage and preserve the knowledge and information of TIA in compliance with the required legislation.	Loss of organisation's critical information and knowledge.	Implementation of Records Management in accordance with the National Archive guidelines and practice notices; and Implement integrated information management practices in accordance to MISS and ISO27001/ ISO30300.

[25] COBIT 5 is the latest edition of ISACA's globally accepted framework. It provides an end-to-end business view of the governance of enterprise IT, reflecting the central role of information and technology in creating value for enterprises of all sizes

11.4 Programme 1 – Administration MTEF Performance Indicators and Targets for FY2017/18

STRATEGIC OBJECTIVE: To provide technology development funding and support in strategic, high-impact areas.								
DST Strategic Outcome	Outputs	Performance Indicator	Strategic Target 2015-2020	Audited/Actual Performance 2015/16	Estimated performance 2016/17	Medium-Term Targets		
						2017/18	2018/19	2019/20
Strategic Outcome-Oriented Goal 5: Knowledge utilisation for inclusive development	Products, Processes, Services and Start-up Companies	Amount of income received [26]	R671.2m	R153.8m	R104m	R141.8m	R148.3m	R159.1m

[26] This is to be interpreted to be as measure for the income received for return on investments from any of the TIA funding instruments i.e. loan, royalty grants and/or equity sale.

STRATEGIC OBJECTIVE: To develop an effective and efficient internal environment to successfully execute the strategy								
DST Strategic Outcome	Outputs	Performance Indicator	Strategic Target 2015-2020	Audited/ Actual Performance 2015/16	Estimated performance 2016/17	Medium-Term Targets		
						2017/18	2018/19	2019/20
Strategic focus area 1: To optimise its financial resources and implement initiatives for business and investment process improvement								
Strategic Outcome-Oriented Goal 1: A responsive, coordinated and efficient NSI	Efficient and effective investment management processes	Investment approval turnaround time	14 Weeks	11 Weeks and 3 days	4 months	16 weeks	15 weeks	14 weeks
		Improved adequacy and effectiveness of the TIA internal processes	Improve efficiency & effectiveness ratios by 5%	Clean Audit	Clean audit opinion	ISO 9001 certification	Develop efficiency & effectiveness matrix, including baseline ratios	Improve efficiency & effectiveness ratios by 5%
		Amount of funds utilised for projects and programmes as a percentage of the total actual expenditure	70%	72%	69%	70%	70%	70%

Strategic focus area 2: To develop a culture of high performance and innovation amongst employees								
Strategic Outcome-Oriented Goal 1: A responsive, coordinated and efficient NSI	Highly motivated, committed and competent TIA staff A high – performance Customer -Centric culture	Functional organisational structure as measured by vacancy for funded positions	<10%	13.38%	<12%	<11%	<10%	<10%
		Effective implementation of talent management[27] initiatives – employee engagement ratio[28]	3.8[29]	3.7	3.8	3.8	3.9	4.0

[27] Talent Management refers to all initiatives associated to recruitment, performance management, reward and remuneration, training and development that will drive employee engagement.
[28] Employee engagement is measured .in terms of attraction (A), retention (R) and performance(P) combined.
[29] The 2015/2016 Employee Engagement rate for South Africa and Southern Africa as measured by the Emergence Growth through their annual Africa EE survey is 68% (3.4).

11.5 Programme 1 – Administration Quarterly Performance Indicators and targets for FY2017/18

STRATEGIC OBJECTIVE: To provide technology development funding and support in strategic high impact areas.						
Performance Indicators	Reporting period	Annual target	Quarterly targets			
			Quarter 1	Quarter 2	Quarter 3	Quarter 4
Amount of income received	Quarterly	R141.8m	R0m	R10m	R48m	R83.8m

STRATEGIC OBJECTIVE: To develop an effective and efficient internal environment to successfully execute the strategy.						
Performance Indicators	Reporting period	Annual target	Quarterly targets			
			Quarter 1	Quarter 2	Quarter 3	Quarter 4
Strategic focus area 1: To optimise its financial resources and implement initiatives for business and investment process improvement						
Investment approval turnaround time	Quarterly	16 weeks	16 weeks	16 weeks	16 weeks	16 weeks
Improved adequacy and effectiveness of the TIA internal processes	Quarterly	ISO 9001 Certification	Finalising ISO readiness assessment	Implement recommendation report	ISO 9001 inspection/audit	Certified as ISO 9001 compliant
Amount of funds utilised for projects and programmes as a percentage of the total actual expenditure	Quarterly	70%	10%	15%	20%	25%

11.5 Programme 1 – Administration Quarterly Performance Indicators and targets for FY2017/18

STRATEGIC OBJECTIVE: To develop an effective and efficient internal environment to successfully execute the strategy.						
Strategic focus area 2: To develop a culture of high performance and innovation amongst employees						
Functional organisational structure as measured by vacancy for funded positions	Quarterly	<11%	<11%	<11%	<11%	<11%
Effective implementation of talent management initiatives – employee engagement ratio	Quarterly and Annual	3.8	20% implementation of initiatives as per the Talent Management strategy	60% implementation of initiatives as per the approved Talent strategy	75% implementation of the initiatives as per the approved talent strategy	3.8

12. PROGRAMME 2: INNOVATION FUNDING AND PRE-COMMERCIALISATION AND SUPPORT

12.1 Strategic Overview

The IFPC Division supports the development and exploitation of technology innovations by enabling and facilitating the conversion of technology ideas into enterprises. This is done by funding the development of technology and the preparation of the technologies developed for commercialisation or use the programmes strive to de-risk technological innovations as they mature through the technology readiness levels (TRL) scale. Once the concept for a technology idea has been proven and the application assessed and approved, the IFPC provides financial support to the technology development using the Technology Development Fund (TDF) for further development or the Pre-Commercialisation Support Fund (PCSF) for projects that have been demonstrated and are now ready to enter and participate in the market.

The IFPC will also proactively search for new technological innovations around the country. This will be done through existing relations with the various stakeholders within the NSI such as science councils and HEIs. The IFPC will also create new relations in and outside of the NSI by targeting locally developed technological innovations in provinces that have not benefited much from IFPC offerings historically e.g. Limpopo, Northern Cape, etc.

Pre-commercialisation support will be made available as part of IFPC business. Locally developed technologies that have matured enough to advance to the commercialisation stage will be assisted through the Pre-Commercialisation Fund. This fund will assist with the development of sound commercialisation plans and testing the market in order to be ready for full commercialisation.

Non-financial support to locally developed technologies will include linking technologies that have been developed with other funders who will assist with the commercialisation of these technologies. It is important for these relationships to be forged at early stages while the technology is being developed.

The IFPC division seeks to drive the following initiatives in bid to strengthen the programmes offering:

a. Upstream Integration

A new approach is being implemented where TIA sources projects from public institutions conducting research and development (including science councils, universities and universities of technology) and builds such projects into applications ready for TIA to conduct due diligence to ascertain their funding readiness.

b. Downstream Integration

TIA's role in the NSI is to support projects (from TRL 2 to TRL 4) by providing seed funding to help the project achieve the proof of concept stage. This renders such projects ready and eligible for consideration of further funding, by firstly the Technology Development Fund to move the projects from TRL 4 to TRL 7, and secondly through the Commercialisation Support Fund which helps to transition projects from TRL 7 to TRL 9 (full commercialisation). TIA saw some of the projects it funded serendipitously provided with further funding for their ultimate commercialisation by public funding organisations such as the IDC and private venture capital.

c. Concurrent Innovation

The implementation of the upstream and downstream integration of TIA's activities with those of other role players in the NSI will help foster a much more deliberate, smoother and successful transition of R&D activities to technology and product development activities and finally to the commercialisation of such technology products and services within newly developed or existing enterprises.

d. Development of New Funding Instruments

Rapid Finance Fund (RFF) – this is for projects that require relatively smaller amounts of funds for certain activities. The turnaround time for decision-making in the RFF will be attractively short and funds will be made available within 5 working days.

e. Patent Maintenance Support Fund (PMSF) –In some instances, a project would have to protect its intellectual property through Patents that are too expensive to service, maintain, protect and defend. This fund's purpose will then be to ensure that intellectual property within the projects that TIA is funding is adequately serviced, maintained, protected and reasonably defended. The implementation of this fund will be in partnership with (where relevant) and mindful of the services provided by NIPMO and dti (Department of Trade and Industry) instruments that also offer support services to IP maintenance, protection and defense within SMMEs.

12.2 Sub-programme overview

The IFPC division has various business units that respond to the biotechnology sector in supporting technology development. The sub-programmes' activities are aligned to key DST strategies namely the Bio-Economy Strategy, DST's Ten Year Innovation Plan (including addressing the DST Grand Challenges) and the National Research and Development Strategy. Various initiatives have been enacted to support technology development. This will include (and not be limited to) the following:

12.2.1 Advanced Manufacturing (AM) Sub-Programme

Overview

The purpose of the AM Sub-Programme is to build, develop and support a quality portfolio of projects in advanced manufacturing that contribute to transforming South Africa's manufacturing industry into a competitive, inclusive, high-tech and high-value creation industry. Advanced Manufacturing falls under Programme 5 of the DST: Socio-Economic Innovation Partnerships and is housed in the Technology Localisation, Beneficiation and Advanced Manufacturing Directorate. The current priority for the Advanced Manufacturing Directorate is to determine which technology domains it will be investing in over the next 10 years.

Planned initiatives for the year

- The AM sub programme, through its active participation in the JASC, will continue with its work in canvassing the relevant players in the Aerospace NSI with the intention to determine the need and value of the Aerospace Technology Innovation Program (ATIP) for the industry;
- Source and support new projects in line with the strategy that is aligned with the National Agenda of Advanced Manufacturing;

- The AM sub programme will continue to participate and support the DST in the finalisation of Technology Road Maps in the focus areas of Additive Manufacturing, Automation, Advanced Electronics, Photonics and Aero-Structures through its membership in the Advanced Manufacturing Technology Roadmap Project (AMTRP) Steering Committee; and
- The AM sub programme will continue to participate and support Air Traffic Navigation Systems (ATNS) and will target the National Association of Automotive Component and Allied Manufacturers (NAACAM) for collaboration in Auto Sector Innovation.

12.2 2 Agriculture Sub-Programme

Overview

The purpose of the Agriculture Sub-Programme is to seek to contribute – financially and non-financially – towards the development of high-impact technologies, products and services that would result in a competitive, broad-based, inclusive and sustainably growing agricultural sector in South Africa

Planned initiatives for the year

- Partnerships with the DST-Sector Innovation Fund's Post-Harvest Innovation Programme to mine opportunities to build a healthy portfolio of Post-Harvest technologies and;Mine HEI and SC's portfolios;
- Small-Scale Farmer-Technology Diffusion initiative

12.2.3 Energy Sub-Programme

Overview

The Energy Sub-Programme will contribute towards resolving the energy challenge by focusing on the following areas which have the potential to create jobs and stimulate economic growth; Renewable energy technologies, with specific emphasis on solar and fuel cells technologies; Bio-Energy technologies (i.e. biomass to energy, waste to energy and alternate fuels); Energy management technologies (energy recovery, storage and efficiency); and Clean coal technologies (greenhouse gas emissions, controls technologies).

Planned initiatives for the year

- Support and accelerate the Bio-fuels Technology Demonstration Programme and;
- Proactively target technology innovation at universities across the country.

12.2.4 Information Communication and Technology (ICT) Sub-Programme

Overview

The ICT Sub-Programme will focus on contributing to the three ICT Research and Development Innovation (RDI) roadmap clusters as depicted in Table 3 below. This focus ensures alignment with both the national priorities and the DST's agenda. Furthermore, the ICT Sub-Programme is already on the path of delivering on these focus areas.

Planned initiatives for the year

The ICT Sub-Programme will continue to implement and participate in the national implementation of the following: Disruptive Technologies (from the McKinsey Disruptive Technology Report); Automation of Knowledge Work; Internet of Things; Cloud Technology; DST RDI Technology Cluster; Industry Applications; and Service Economy.

12.2.5 Health Sub-Programme

Overview

The Health Strategic Technology Area sub programme aims to enhance South Africa's global competitiveness in the health arena and to deliver socio-economic value through technological innovation in healthcare products and services addressing the prevention, diagnosis, and/or treatment of priority disease areas. The priority diseases that have been identified as having the greatest impact on public health and quality of life in South Africa and Sub-Saharan Africa, include HIV/AIDS, tuberculosis, malaria, respiratory diseases, cancer and non-communicable diseases such as diabetes and cardiovascular disease. The priority investment areas include drug development, Indigenous Knowledge Systems (IKS) and complementary medicine, medical devices and diagnostics, and vaccines and biologicals.

Planned initiatives for the year

- Partnership with the MRC's Strategic Health Innovation Partnerships (SHIP) programme to mine opportunities to build a healthy portfolio of medical device technologies;
- Partner with Biovac to bring new investment opportunity and assess the impact of the Health investment portfolio in partnership with the Human Sciences Research Council (HSRC).

12.2.6 Natural Resources Sub-Programme

Overview

The purpose of the Natural Resources Sub-programme is to seek to contribute – financially and non-financially – towards the development of high-impact technologies, products and services that would address challenges and contribute towards the development of industries in the Mining and Minerals, Water Resources and Environmental Sustainability (including Waste Management) sectors and areas. The Government Outcomes, as adopted in the National Government's Programme of Action are: Outcome 2 – A long and healthy life for all South Africans; and Outcome 10 – Environmental assets and natural resources that are well protected and continually enhanced.

Planned initiatives for the year

- To support Mining Operation Phakisa[30] to give effect to the state playing an active role both in funding research and development and in guiding the type of research and development in the private and public sectors;
- Build the water deal pipeline through partnerships such as with the WRC.

[30] Operation Phakisa is a fast results delivery programme that was launched by government in July 2014 to help in implementing the National Development Plan, with the goal of boosting economic growth and create jobs. It is a cross-sector programme where various stakeholders engage to implement initiatives and concrete actions to address constraints to delivery in a prioritised focused area for public accountability and transparency.

12.2.7 Workout and Restructuring Unit

Overview

The purpose of the Workout and Restructuring Unit is to facilitate the optimal management of TIA's investments in projects and to support the well-being of projects by focusing on the following:

- Optimising recovery where business failure is unavoidable;
- Facilitating TIA's Equity divestment;
- Providing support, in respect of projects showing signs of distress, divestment and the need for structuring;
- Reducing the risk of project failure;
- Co-ordinating and facilitating Business Support (this responsibility has been temporarily parked in this Unit); and
- Advising projects on deal structures.

12.3 Programme 2 Innovation Funding and Pre-Commercialisation Risk Management

Department Strategic Objective	Risk Description	Mitigation Action
To fund and support the development of technology-based products and services and their commercialisation in an effective and efficient manner.	Project Failures: Generic investment risks on all projects.	Adequate resources required for better, dedicated Project Monitoring.
	Inadequate Capacity of Deal Teams: Inadequate number of internal experts on technology, commercialisation, investment legalities and intellectual property legalities will make it impossible to process targeted new investment proposals through the application to due diligence processes.	Focus all activities of current Deal Teams solely on this activity and urgently fill vacancies in bottleneck areas such as IP & legal. Obtain external and temporary additional resources for due diligence.
	Inadequate Project Pipeline.	Active portfolio mining of projects from science councils, HEI (TTOs) etc.
To foster vertical integration of TIA's activities in the innovation ecosystem (NSI).	Upstream integration: Projects in upstream institutions are not ready or do not fit TIA's requirements.	Pro-actively clarify the criteria TIA uses to evaluate projects' eligibility for funding and communicate this interactively with the institutions before applications are lodged with TIA.
	Downstream integration: TIA funded projects are not suitable or ready for funding by downstream institutions.	Ensure that the criteria for the up-take and funding of the commercialisation of projects from TIA by downstream DFIs are communicated and clarified pro-actively.
Optimise the outputs and outcomes from technology development and pre-commercialisation activities whilst optimising the funding process and the spending of available funds.	Under-disbursement of allocated funds: Not able to disburse funds as planned to a weak pipeline or projects not meeting milestones put as conditions for disbursements.	Build a very strong pipeline of eligible projects from different sources; Obtain external and temporary additional resources for due diligence. Master the attrition rate of projects and plan accordingly for an adequate pipeline.
	Projects funded yield developed technologies that are not commercialisable.	Ensure an effective commercial due diligence process and evaluation system; and Develop a support system for the projects funded.

12.3 Programme 2 Innovation Funding and Pre-Commercialisation Risk Management

Department Strategic Objective	Risk Description	Mitigation Action
To form collaborative relationships for co-investment with interested parties in the NSI.	Limited co-investment by other investors in TIA projects.	Pro-actively lobby and solicit co-investment in TIA projects by potential private and public investors.
Optimise the outputs and outcomes from technology development and pre-commercialisation activities.	Investment approval turnaround time is longer than the allowed maximum.	Always look for ways of shortening the approval turnaround time. Pro-actively engage potential applicants and workshop, where practical, to ensure understanding of the requirements; and Obtain external resources where necessary to ameliorate internal resource constraints.
	Key staff resigning from the Department.	Put in place staff engagement and retention programmes; Quicker initiation of the recruitment process by the Department.
	Lack of attractiveness of TIA's offer to potential recruits.	TIA HR to ensure that the recruitment process and remuneration are market-related and demand adequate and realistic.
Develop and create robust processes to ensure rigour in the processing of projects requesting funding from TIA.	The need for rigor may result in prolonging approval turnaround times.	Ensure that there is a balance between rigour and speed in decision-making.

12.4 Programme 2 Innovation Funding and Pre-Commercialisation MTEF Performance indicators and targets for FY2017/18

STRATEGIC OBJECTIVE To provide technology development funding and support in strategic, high-impact areas.								
DST Strategic Outcome	Outputs	Performance Indicator	Strategic Target 2015-2020	Audited/Actual Performance 2015/16	Estimated performance 2016/17	Medium-Term Targets		
						2017/18	2018/19	2019/20
Strategic Outcome-Oriented Goal 4: Using knowledge for economic development	Progress in the development of technology.	Number of technologies, processes or services advancing by two or more TRL levels.[31]	60	10	12	13	14	15
	Products, Processes, Services and Start-up Companies; Positive technology-balance of payment; Economic growth; and Improved quality of life	Number of innovation project outputs taken up in the market.	51	7	14	10	11	12
Strategic Outcome-Oriented Goal 5: Knowledge utilisation for inclusive development	Increasing co-investment and leveraging of TIA funds.	Amount of additional funding attracted into TIA's portfolio.[32]	R327m	R44.7m	R59m	R66m	R94m	R100m

[31] This may include innovation projects that have reached demonstration stage (TRL 7).
[32] This includes funding from the shareholder, co-funding, from a third party and any additional funding leveraged for completion of the innovation project.

12.5 Programme 2 Innovation Funding and Pre-Commercialisation Quarterly performance indicators and targets for FY2017/18

STRATEGIC OBJECTIVE To provide technology development funding and support in strategic, high-impact areas.						
Performance Indicators	Reporting period	Annual target	Quarterly targets			
			Quarter 1	Quarter 2	Quarter 3	Quarter 4
Number of technologies, processes or services advancing by two or more TRL levels.	Quarterly	13	2	4	4	3
Number of innovation project outputs taken up in the market.	Quarterly	10	0	3	4	3
Amount of additional funding attracted into TIA's portfolio.	Quarterly	R66m	R15m	R16m	R17m	R18m

12.6 Programme 2 - Innovation Funding and Pre-Commercialisation MTEF Performance indicators and annual and quarterly targets for FY2017/18 per indicator per unit

Performance Indicators	Quarterly targets				Medium Term Targets		
	Quarter 1	Quarter 2	Quarter 3	Quarter 4			
1.1 Number of technologies, processes or services advancing by two or more TRL levels	2	4	4	3	13	14	15
Energy	0	0	0	1	1	2	2
Information Communication Technology	0	0	1	0	1	1	2
Advanced Manufacturing	0	1	0	1	2	2	3
Natural Resources	1	1	2	0	4	2	2
Agriculture	1	1	1	0	3	5	3
Health	0	1	0	1	2	2	3
1.2 Number of innovation project outputs taken up in the market	0	3	4	3	10	11	12
Energy	0	1	1	0	2	2	3
Information Communication Technology	0	0	1	1	1	1	0
Advanced Manufacturing	0	0	0	1	2	2	3
Natural Resources	0	1	0	1	2	2	2
Agriculture	0	1	1	0	2	2	2
Health	0	0	1	0	1	2	2
1.3 Amount of additional funding attracted into TIA's portfolio	R15m	R16m	R17m	R18m	R57m	R94m	R100m
Energy	R2.5m	0	R2.5m	R6m	R10m	R14m	R16m
Information Communication Technology	R2.5m	R6m	0	0	R9m	R12m	R12m
Advanced Manufacturing	R2.5m	0	R2.5m	R2m	R7.6m	R10m	R9m
Natural Resources	R2.5m	R1m	R3m	R4.4m	R10.4m	R15m	R16m
Agriculture	R2.5m	R6m	R6m	R600k	R18m	R25m	R26m
Health	R2.5m	R3m	R3m	R5m	R11m	R18m	R21m

13. PROGRAMME 3: INNOVATION ENABLING AND SUPPORT

13.1 Department Strategic Overview

The Innovation Enabling and Support (IES) Programme's purpose is to enable and stimulate a culture of innovation in the NSI with an aim to build a vibrant and enabled ecosystem. It will assist TIA in delivering on its mandate using a combination of financial and non-financial programmatic interventions designed with stakeholder engagement and validation. The IES has established seven programmes aimed at stimulating, enabling and supporting the culture of innovation in South Africa to contribute towards building a vibrant ecosystem within the NSI.

The IES Programme lowers the barriers of technology development to enable others to innovate within their own value chains. This is done with the intention of stimulating the market adoption of the opportunities at hand in order to realise its strategic impact. The net effect may be realised in supporting the sustainability of those enterprises and industry value chains. The outcomes of IES' strategic programmes include improving economic growth by focusing on the delivery of financial and non-financial interventions to SMMEs, entrepreneurs and innovators with products, services and technological development.

The Programme's initiatives and activities will align to national imperatives by focusing its current and potential programmes on the following areas: finding alternative technologies, processes and services to assist in resolving the energy crisis; revitalising the agriculture and agro-processing value chain through supporting biotechnological and other services; supporting a more effective implementation of a higher impact IPAP; encouraging private sector participation and investment in TIA-supported investments, programmes and initiatives; and unlocking the potential of SMMEs, cooperatives, township and rural enterprises involved in innovative technologically enabled and focused products and services.

13.2 Sub-Programme Overview

These programmes are Technology Innovation Programmes (TIPs), Technology Stations Programme (TSP), Technology Platforms Programmes (TPP), Youth Technology Innovation Programme (YTIP), Innovation Skills Development Programme (ISDP), Seed Fund Programme (SFP) and Global Cleantech Innovation Programme (GCIP).

13.2.1 Technology Innovation Programmes (TIPs)

The Technology Innovation Programme Business Unit (TIPs) is a mechanism to drive coordinated multi-party R&D initiatives. The TIPs is a collaborative programme that aims to leverage the strengths of partners to drive a technology solution. Its purpose is to facilitate greater collaboration within the existing ecosystem by leveraging the strengths of respective partnering groups. The main objective of Technology Innovation Programmes is to address national priorities or areas of strategic social and economic importance through the utilisation of technology innovation. TIPs aim to promote the sharing of skills, infrastructure, IP and funding to accelerate industry-led applied research by adopting a value chain approach and catalysing collaborations amongst value chain players, such as public research institutions, entrepreneurs, companies, suppliers, manufacturers both competing and co-operating in an industry.

New TIPs will focus on localisation of key technologies such as those in emerging sectors such as E-Waste, Nuclear Medicines, Medical Waste Recycling, as well as sectors requiring support for growth and expansion such as Med-devices, while sourcing existing technologies available from HEIs and SCs within the NSI.

13.2.2 Technology Stations Programme (TSP)

Technology Stations Programme (TSP) is a network that offers sophisticated infrastructure and effective technological solutions to targeted industries and communities. The TSP is positioned to directly contribute to National priority areas as a critical enabler in several sectorial and regional innovation systems. The core goal of the TSP is to contribute towards improving the competitiveness of industry through the application of specialised knowledge, technology and facilitating the interaction between industry and academia to enable innovation.

The below are key initiatives that formulate the planned activities in the management, support and capacitating of the host institutions in realisation of the TSP goal and objectives:

- Coordinate technology stations' marketing of the programme competency with the web base system to assist the station making the technical feasibility efficient and effective as well as gap identification for firms on a quarterly basis;
- Support the stations to comply with the relevant national and local standards such as South African National Accreditation System (SANAS) and International Standards Organisation (ISO); Support the stations to comply with the relevant national and local standards such as SANAS and ISO by end June 2017;
- Create integration model with DSTs Technology Localisation Implementation Unit (TLIU) for sector-wide support and Technology Assistance Packages (TAPs) while TSP should also identify criteria for rewarding collaboration through simulation network centres (including mobile hubs) via co-location with specific national projects.

13.2.3 Technology Platforms Programmes (TPP)

The TPP has been designed by TIA to fund and support the establishment and operations of technology platforms that facilitate access to key infrastructure and expertise for technology innovation in targeted technology areas. The platform outputs are the provision of scientific and technical services not traditionally provided by universities to the NSI and that lower the barriers for platform users to engage in technology innovation. The Technology Platforms must support users to develop technologies with market interest and build relevant technical competencies that will be required either now or envisaged in the future.

The TPP sub programme intends to contribute to the achievement of the IES priorities by participating in the establishment of industry-relevant technology innovation programmes. Some of the key activities and initiatives are:

- Development of a bio-manufacturing and bio-processing technology development programme;
- Implementation of a bio-safety communication plan;
- Assessment of formulation and drug delivery capabilities;
- Explore the implementation of the computational biology and bioinformatics services;
- Accelerate the implementation of the Microalgal Technology Development Centre;Accelerate the implementation of the Microalgal Technology Development Centre;
- Feasibility assessment of a bio-imaging and bio-characterisation competencies;
- Assess and implement a drug-screening and compound library management capability;
- Support the DST's implementation of the DIPLOMICS in line with the South African National Roadmap for Research Infrastructure; and

- Implementation of the South African Bio-design Initiative (SABDI).

Strengthen outreach and a visibility of the Programme through marketing and outreach initiatives, including the development and implementation of an internationalisation of Platform capabilities and outputs.

13.2.4 Youth Technology Innovation Programme (YTIP)

YTIP was created to accommodate young innovators who may not necessarily be directly linked to any SCs, HEIs or SMMEs. This programme is designed to assist young innovators to access risk funding, mentorship and business skills support. YTIP seeks to play the connector and facilitator role in supporting the development of new technologies by the youth, which can be taken to the market to solve various social and technological challenges.

The programme is set to focus on digging the platinum mine of untapped potential to source innovative ideas from students at HEIs across the country. The YTIP will be supporting young people to turn their innovative ideas into viable commercial entities and provide means and mechanisms to breed techno-entrepreneurship capacity amongst young people. Access to financial and non-financial support serves as a key determinant factor for young scientists, researchers and entrepreneurs to innovate, grow and succeed. The programme aims to extend its reach in providing access and financial support in prototype development and testing, Intellectual Property advice and protection, business incubation and business coaching through the following:

- Drive active participation of young researchers and scientists using YTIP pitching sessions in partnerships set up with Small Enterprise Finance Agency (SEFA), National Empowerment Fund (NEF), National Youth Development Agency (NYDA), IDC, dti and higher education institutions on a quarterly basis; and

- Provide enterprise development support to techno entrepreneurs with Small Enterprise Development Agency (SEDA) incubation programmes to drive knowledge management agenda using seminars and workshops bi-annually.

13.2.5 Innovation Skills Development Programme (ISD)

TIA has identified the need to strengthen the fundamental business skills associated with new technology innovations. The ISD is designed to enhance business innovation skills of recipients of TIA funding to improve the commercial prospects of their projects. A secondary objective of the Programme is to contribute towards the development of business innovation skills for potential recipients of TIA funding, in collaboration with other role-players. The ultimate outcome of the programme will be individuals with adequate information to make informed decisions on the commercialisation of their technologies. Furthermore, the ISD serves as a service to TIA's financial and non-financial support programmes to enhance their operational effectiveness in the following activities:

- ISD Future 500 will be promoting initiatives and projects for project migration in TRL (3-4) to enable knowledge innovation products that are complemented by internships (200 interns) with 100 interns placed in SC's/ TTOs/Incubators/Tech Stations/Platforms/Industry. The Chuma Programme will realise with 10 candidates placed in TIA/ OTT's/ Science Councils (SC's) / Venture Capital (VC) / Intellectual Property (IP) firms with business plans developed for TIA pipeline. The Critical Thinking Skills (CTS) will host at least 70 candidates participating in the CTS L3;;

- The Next Gen 100 will focus in TRL 4-7 Bio Entrepreneur Programme with over 40 delegates participating

in the programme, including SMMEs receiving support and an Innovation Fellowship Programme (LIF) with international partners such as Royal Academy Fellowship Programme (United Kingdom) and local Gauteng Accelerator Programme (GAP) in the Bio-Economy;At Systemic Level, the Foresight Leadership Innovation Programme (FLIP) will be instrumental in supporting at least 50 local trainers/coaches/mentors to participate in the Public Administration Innovation Programme that will see councillors trained on basic FLIP where the unit will also coordinate panel discussions on new innovations skills' programmes;

- At Systemic Level, the Foresight Leadership Innovation Programme (FLIP) will be instrumental in supporting at least 50 local trainers/coaches/mentors to participate in the Public Administration Innovation Programme that will see councillors trained on basic FLIP where the sub programme will also coordinate panel discussions on new innovations skills' programmes;

- The Energy Water Sector Education Training Authority (EWSETA) and TIA have just signed an MOU and will collaborate on a three-year programme going forward. The first and second will focus on mastering the creative process and developing new technologies as well as developing collaborative skills. The third year will focus on supporting the innovations, the progression of the technologies and entrepreneurial skills. The programme plans to take 500 candidates through our innovation boot-camp through the critical thinking skills training of which 250 will be interns. Top teams selected with novel/ localised innovations will participate in international assignments and

- The international assignment will include identifying inbound and outbound technologies. Starting in April 2017, 50 students from universities of technology and other HEIs will attend the fast-track master's innovation programme in partnership with SATN focusing on waste streams. Thirty students from UOTs and HEIs will attend the fast-track PhD innovation programme, in partnership with focusing on new industries.

13.2.6 Seed Fund Programme

The Seed Fund continues to be a strategic initiative for TIA; and its strategic positioning in the funding value chain will assist the organisation to make an impact in the availability of TIA's funding, its turnaround time for qualifying recipients to access funding and the networks of its implementation partners (HEIs, science councils, incubators and development agencies).

The Seed Fund Programme will attempt to extend its partner network among science councils and SMME Seed Fund sub-programmes as a means of further developing regional economies by providing SMMEs with the gap funding to embark on and take advantage of their opportunities. The Seed Fund model may also be extended to TIPs, GCIP, and certain Technology Station and Platform clients through the current implementation model. Currently, participants on the ISD programme based at HEIs have access to Seed Funding through implementation partners and incubators. Among these, the Seed Fund Programme will assess and trial an internal funding mechanism that will provide funding directly to applicants, thereby bypassing partner organisations not funding SMMEs who are not part of their networks. Non-financial support will, however, be needed for these recipients.

The programme will continue building on the calls and traction that it has gained in the past by focusing on the following initiatives:

- Priming the glass pipeline of projects for TIA and other funders with the continued growth of the Seed Fund portfolio by conducting calls for applications to HEIs and science council researchers, innovators and SMMEs;

- Supporting the HEI and SMME models' implementation partners in quarterly engagements that assist recipients, monitor and evaluate their own portfolio's performance against indicators. This is a strategic initiative to enable the teamwork value of the NSI by transferring knowledge and experience to implementation partners;
- Supporting the SMME Seed Fund partners to implement their Seed Fund Programmes' processes as a means of knowledge and experience exchange;
- Exploring other sources of funding to establish new partnerships in the SMME Seed Fund sub-programme.

13.2.7 Global Cleantech Innovation Programme (GCIP)

The GCIP is a three-year donor-funded initiative co-implemented by UNIDO and TIA in South Africa. The programme is aligned to one of the grand challenges as identified in the DST Ten Year Innovation Plan. TIA's mandate speaks to improving the quality of life of citizens. Green investments contribute to reducing the country's reliance on fossil fuels which, in turn, reduce air pollution and carbon emission levels which are currently quite high. These interventions also improve energy access, water security and employment; ultimately supporting the objectives of the South African government.

Over its duration FY2014/15 to FY2017/17, the project primarily aims to promote an innovation ecosystem in South Africa by:

- Assisting in the identification and early-stage nurturing of the most promising innovative local clean technologies;
- Coordinating with various existing national programmes, platforms relating to the promotion and development of clean technologies, and providing pre-selected candidates and applicants for them; and
- Facilitating the local and global linkage and networking of the most promising start-ups of South Africa with mentors and potential business partners.

An integral part of this programme is the development of the institutional capacity of local implementing partners, which are typically government agencies focused on SMME development, clean technology and innovation. Furthermore, this programme seeks to reinforce, strengthen and connect existing in-country initiatives rather than duplicate existing activities. In the year ahead, the programme will build on the previous years' successes and enhance the GCIP-SA outcomes by:

- Developing a model to institutionalise the methodology and learning of the GCIP-SA into TIA;
- Increasing the reach of the programme, specifically in under-served regions and groups (black innovators, youth, and women) through targeted stakeholder engagement, media and Public Relations (PR) activities;
- Providing further structured support to alumni to accelerate commercialisation and contribute to business sustainability;
- Enhancing mentor capacity through dedicated skills transfer activities; and
- Developing case studies as an input into the Measuring and Evaluation process.

13.3 Programme 3 Innovation Enabling and Support MTEF Performance Indicators and targets for FY2017/18

STRATEGIC OBJECTIVE To provide technology development funding and support in strategic, high-impact areas.								
DST Strategic Outcome	Outputs	Performance Indicator	Strategic Target 2015-2020	Audited/Actual Performance 2015/16	Estimated performance 2016/17	Medium-Term Targets		
						2017/18	2018/19	2019/20
Strategic, Outcome-Oriented Goal 4: Using knowledge for economic development.	Products, Processes, Services and Start-up Companies.	Number of technologies, processes or services advancing by two or more TRL levels.[33]	60	17	12	13	14	15
Strategic Outcome-Oriented Goal 5: Knowledge utilisation for inclusive development.		Amount of additional funding attracted into TIA's portfolio. [34]	R224m	R53.1m	R49m	R47m	R53m	R57m

[33] This may include innovation projects that have reached demonstration stage (TRL 7).
[34] This includes funding from the shareholder, co-funding, from a third party and any additional funding leveraged for completion of the innovation project.

13.3 Programme 3 Innovation Enabling and Support MTEF Performance Indicators and targets for FY2017/18

STRATEGIC OBJECTIVE To provide thought leadership and an enabling environment for Technology Innovation in collaboration with other role-players.									
DST Strategic Outcome	Outputs	Performance Indicator		Strategic Target 2015-2020	Audited/Actual Performance 2015/16	Estimated performance 2016/17	Medium-Term Targets		
							2017/18	2018/19	2019/20
Strategic Outcome-Oriented Goal 1: A responsive, coordinated and efficient NSI	Creation of employment and employment opportunities. Innovation skills development. Innovative product, processes and services supporting economic growth.	Number of knowledge innovation products produced (prototypes developed, Intellectual Property, technology demonstrators developed and technology transfer packages) as a result of TIA funding and support programmes.		350	76	77	83	91	100
		a	Prototypes Developed	173	38	38	42	46	49
		b	Intellectual Property	42	9	8	9	10	12
		c	Technology demonstrators developed	124	27	28	30	33	36
		d	Technology transfer packages	11	2	3	2	2	3
Strategic Outcome-Oriented Goal 3: Human capital development		Number of knowledge innovation products produced by TIA supported programmes receiving additional funding.[34]		122	8	25	27	30	33
		Number of Small, Medium, and Micro Enterprises receiving technology support.[35]		14 200	2 197	2400	2 800	3 360	3 840

[34] TIA funded programmes that, as a result of their execution, give rise to third party funding, co-funding and/or co-development.
[35] Technology support is defined as technical oriented services to SMMEs/Businesses to be competitive in related sectors of manufacturing to accelerate the exploitation of technology.

13.3 Programme 3 Innovation Enabling and Support MTEF Performance Indicators and targets for FY2017/18

Strategic Outcome-Oriented Goal 4: Using knowledge for economic development	Creation of employment and employment opportunities. Innovation skills development. Innovative product, processes and services supporting economic growth.	Number of PDI owned SMMEs assisted as a percentage of total SMMEs supported, receiving funding, support and/or technology services from TIA.[36]		69%	Measure defined and targets set	63%	65%	67%	69%
		Number of Technology Innovation initiatives (e.g. conference papers, presentations and posters, policy recommendations, panel discussions, position papers, publications and think tanks relating mainly to keynote addresses) undertaken by TIA		124	20	30	31	37	43
		a	Conference papers	3	0	0	1	1	1
		b	Presentations and posters	46	10	10	10	12	14
		c	Policy recommendations	4	0	1	1	1	1
		d	Panel discussions	27	7	5	7	9	10
		e	Position papers	3	0	0	1	1	1
		f	Publications	5	1	3	1	1	1
		g	Think tanks	33	9	11	9	11	14
		h	Keynote addresses (speeches)	3	0	0	1	1	1

[36] This may include individuals who have received assistance to enable them to operate as SMME's.

13.3 Programme 3 Innovation Enabling and Support Performance Indicators and targets for FY2017/18

STRATEGIC OBJECTIVE To provide technology development funding and support in strategic, high-impact areas.						
Performance Indicators	Reporting period	Annual target	Quarterly targets			
			Quarter 1	Quarter 2	Quarter 3	Quarter 4
Number of technologies, processes or services advancing by two or more TRL levels	Quarterly	13	2	4	4	3
Amount of additional funding attracted into TIA's portfolio	Quarterly	R47m	R15.5m	R5m	R0m	R26.5m

STRATEGIC OBJECTIVE To provide thought leadership and an enabling environment for Technology Innovation in collaboration with other role- players.						
Performance Indicators	Reporting period	Annual target	Quarterly targets			
			Quarter 1	Quarter 2	Quarter 3	Quarter 4
Number of knowledge innovation products produced (prototypes developed, Intellectual Property, technology demonstrators developed and technology transfer packages) as a result of TIA funding and support programmes.	Quarterly	83	20	20	21	22
Prototypes developed	Quarterly	42	10	10	10	12
Intellectual Property	Quarterly	9	2	2	2	3
Technology demonstrators developed	Quarterly	30	7	7	7	9
Technology transfer packages	Quarterly	2	0	0	1	1

Number of knowledge innovation products produced by TIA supported programmes receiving additional funding.		Quarterly	27	7	7	8	5
Number of Small, Medium, and Micro Enterprises receiving technology support.		Quarterly	2 800	840	560	840	560
Number of PDI owned SMMEs assisted as a percentage of total SMMEs supported, receiving funding, support and/or technology services from TIA.		Quarterly	65%	16%	32%	48%	65%
Number of Technology Innovation initiatives (e.g. conference papers, presentations and posters, policy recommendations, panel discussions, position papers, publications and think tanks, relating mainly to keynote addresses) undertaken by TIA.		Quarterly	12	3	3	3	3
a	Conference papers	Quarterly	1	0	0	0	1
b	Presentations and posters	Quarterly	10	2	2	2	4
c	Policy recommendations	Quarterly	1	0	0	0	1
d	Panel discussions	Quarterly	7	2	2	2	1
e	Position papers	Quarterly	1	0	0	0	1
f	Publications	Quarterly	1	0	0	0	1
g	Think tanks	Quarterly	9	2	2	2	3
h	Keynote addresses (speeches)	Quarterly	1	0	0	0	1

13.5Programme 3: Innovation Enabling and Support MTEF Performance Indicators and annual and quarterly targets for FY2017/18 per indicator per unit

Performance Indicators	Quarterly targets				Medium Term Targets		
	Quarter 1	Quarter 2	Quarter 3	Quarter 4			
1.1 Number of technologies, processes or services advancing by two or more TRL levels	2	4	4	3	13	14	15
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	0	0	0	0	4
Technology Platforms Programme	0	0	0	0	0	1	1
Seed Fund Programme	2	4	4	3	13	4	5
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	0	0	0	0	9	5
1.3 Amount of additional funding attracted into TIA's portfolio	R15.5m	R5m	R0m	R26.5m	R47m	R53m	R57m
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	0	R500k	R500k	R300k	0
Technology Platforms Programme	R15.5m	R5m	0	R26m	R46.5m	R50m	R57m
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	0	0	0	0	0	0
2.1 Number of knowledge innovation products as a result of TIA funding and support programmes, consisting of:							
2.1a Prototypes Developed	10	10	10	12	42	46	49
Youth Technology Innovation Programme	2	2	2	2	8	10	11
Technology Innovation Programmes	0	0	0	0	0	0	0
Technology Platforms Programme	0	0	0	0	0	9	11
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	8	8	8	10	34	27	27
2.1b Intellectual Property	2	2	2	3	9	10	12
Youth Technology Innovation Programme	0	0	0	0	0	1	4
Technology Innovation Programmes	0	0	0	0	0	0	0

Technology Platforms Programme	0	0	0	0	0	1	2
Seed Fund Programme	2	2	2	3	9	8	6
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	0	0	0	0	0	0
2.1c Technology demonstrators developed	7	7	7	9	30	33	36
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	2	0	3	0	5	9	9
Technology Platforms Programme	5	3	4	8	20	15	18
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	4	0	1	5	9	9
2.1d Technology transfer packages	0	0	1	1	2	2	3
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	1	1	2	1	2
Technology Platforms Programme	0	0	0	0	0	1	1
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	0	0	0	0	0	0
2.2 Number of knowledge innovation products produced by TIA supported programmes receiving additional funding	7	7	8	5	27	30	33
Youth Technology Innovation Programme	2	2	0	0	4	0	5
Technology Innovation Programmes	5	2	2	0	9	5	6
Technology Platforms Programme	0	1	2	2	5	2	8
Seed Fund Programme	0	0	0	0	0	6	6
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	2	4	3	9	17	8
2.3 Number of Small, Medium, and Micro Enterprises receiving technology support	840	560	840	560	2800	3360	3840

Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	0	0	0	0	0
Technology Platforms Programme	0	0	0	0	0	0	0
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	840	560	840	560	2800	3360	3840
2.4 Number of PDI owned SMMEs assisted as percentage of total SMMEs supported, receiving funding, and support and/or technology services from TIA.	16%	32%	48%	65%	65%	67%	69%
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	0	0	0	0	0
Technology Platforms Programme	0	0	0	0	0	0	0
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	16%	32%	48%	65%	65%	67%	69%
2.5 Number of Technology Innovation initiatives undertaken by TIA, consisting of:							
2.5a Conference papers	0	0	0	1	1	1	1
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	0	0	0	0	0
Technology Platforms Programme	0	0	0	1	1	1	1
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	0	0	0	0	0	0
2.5b Presentations and posters	2	2	2	4	10	12	14
Youth Technology Innovation Programme	0	0	0	4	4	5	6
Technology Innovation Programmes	0	0	0	0	0	0	0
Technology Platforms Programme	2	2	0	0	4	3	3
Seed Fund Programme	0	0	2	0	2	4	5
Innovation Skills Development Programme	0	0	0	0	0	0	0

Technology Stations Programme	0	0	0	0	0	0	0
2.5c Policy recommendations	0	0	0	1	1	1	1
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	0	0	0	0	0
Technology Platforms Programme	0	0	0	0	0	0	0
Seed Fund Programme	0	0	0	1	1	1	1
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	0	0	0	0	0	0
2.5d Panel discussions	2	2	2	1	7	9	10
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	2	2	0	4	0	0
Technology Platforms Programme	0	0	0	0	0	5	3
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	2	0	0	1	3	4	7
2.5e Position papers	0	0	0	1	1	1	1
Youth Technology Innovation Programme	0	0	0	1	1	1	1
Technology Innovation Programmes	0	0	0	0	0	0	0
Technology Platforms Programme	0	0	0	0	0	0	0
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	0	0	0	0	0	0
2.5f Publications	0	0	0	1	1	1	1
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	0	0	0	0	1
Technology Platforms Programme	0	0	0	0	0	1	0
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	1	1	0	0

Technology Stations Programme	0	0	0	0	0	0	0
2.5g Think Tanks	2	2	2	3	9	11	14
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	2	2	2	3	9	0	13
Technology Platforms Programme	0	0	0	0	0	11	1
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	0
Technology Stations Programme	0	0	0	0	0	0	0
2.5h Keynote addresses (speeches)	0	0	0	1	1	1	1
Youth Technology Innovation Programme	0	0	0	0	0	0	0
Technology Innovation Programmes	0	0	0	1	1	1	0
Technology Platforms Programme	0	0	0	0	0	0	0
Seed Fund Programme	0	0	0	0	0	0	0
Innovation Skills Development Programme	0	0	0	0	0	0	1
Technology Stations Programme	0	0	0	0	0	0	0

14. STRATEGIC OUTCOMES LINKED TO KEY PERFOMANCE INDICATORS

Strategic Objective 1		To provide technology development funding and support in high-impact areas			
Rationale for objective		To support and facilitate the development and progression towards commercialisation of industry enhancing technologies in cooperation with the broader NSI stakeholders to ensure seamless absorption of technologies to the market			
Impact	Government Outcome	DST Strategic Outcome	TIA Strategic Outcome	Outputs	Performance Indicators
Employment GDP Production Multiplier Estimated Leveraged Funds Successful Investment Revenue Income	**Outcomes 4:** Decent employment through inclusive economic growth. **Outcome 5**: A skilled and capable workforce to support and inclusive growth path. **Outcome 6:** An efficient, competitive and responsive infrastructure network.	**Strategic Outcome-Oriented Goal 4:** Using knowledge for economic development. **Strategic Outcome-Oriented Goal 5:** Knowledge utilisation for inclusive development.	**Strategic Outcome-Oriented Goal 1:** Support the commercialisation of technological innovations.	Products, Processes, Services and Start-up Companies.	1.1 Number of technologies, processes or services advancing by two or more TRL levels . 1.2 Number of innovation project outputs taken up in the market. 1.3 Amount of additional funding attracted into TIA's portfolio. 1.4 Amount of income received.

14. STRATEGIC OUTCOMES LINKED TO KEY PERFOMANCE INDICATORS

Strategic Objective 2		To provide thought leadership and an enabling environment for technology innovation in collaboration with other role players			
Rationale for objective		2.1 To provide leadership within the NSI on technology innovation and improved alignment to the Agency's mandate 2.2 To lower barriers to technology development and transfer within the NSI by introducing innovation-related schemes targeting specific groupings, and provision of general working space support, specialised equipment			
Impact	**Government Outcome**	**DST Strategic Outcome**	**TIA Strategic Outcome**	**Outputs**	**Performance Indicators**
Employment Production Multiplier Estimated Leveraged Funds Beneficiaries	**Outcomes 4:** Decent employment through inclusive economic growth. **Outcome 5**: A skilled and capable workforce to support and inclusive growth path. **Outcome 6:** An efficient, competitive and responsive infrastructure network.	**Strategic Outcome-Oriented Goal 1:** A responsive, coordinated and efficient NSI. **Strategic Outcome-Oriented Goal 3:** Human capital development. **Strategic Outcome-Oriented Goal 4:** Using knowledge for economic development.	**Strategic Outcome-Oriented Goal 2:** Increase access to technology infrastructure.	Creation of employment and employment opportunities. Innovative product, processes and service supporting economic growth. Sustaining of struggling sectors through introduction of new technologies.	2.1 Number of knowledge innovation products produced (prototypes developed, Intellectual Property, technology demonstrators and technology transfer packages) as a result of TIA funding and support. 2.2 Number of knowledge innovation products produced by TIA supported programmes receiving additional funding. 2.3 Number of Small, Medium, and Micro Enterprises receiving technology support. 2.4 Number of PDI-owned SMMEs assisted as a percentage of total SMMEs supported receiving funding, support and/or technology services from TIA. 2.5 Number of Technology Innovation initiatives (e.g. conference papers, presentations and posters; policy recommendations; panel discussions; publications and think tanks, relating mainly to keynote addresses) undertaken by TIA.

14. STRATEGIC OUTCOMES LINKED TO KEY PERFOMANCE INDICATORS

Strategic Objective 3		To develop an effective and efficient internal environment to successfully execute the strategy			
Rationale for objective		3.1 To optimise its financial resources and implement initiatives for business and investment process improvement 3.2 To develop a culture of high performance and innovation amongst employees			
Impact	Government Outcome	DST Outcome	TIA Outcome	Outputs	Performance Indicators
Employment	**Outcomes 4:** Decent employment through inclusive economic growth. **Outcome 5**: A skilled and capable workforce to support and inclusive growth path.	**Strategic Outcome-Oriented Goal 1:** A responsive, coordinated and efficient NSI.	**Strategic Outcome-Oriented Goal 3:** To Stimulate an agile and responsive NSI.	Efficient and effective investment management processes. Highly motivated, committed and competent TIA staff. A high – performance Customer centric culture.	3.1 Investment approval turnaround time. 3.2 Improved adequacy and effectiveness of the TIA internal processes. 3.3 Amount of funds utilised for projects and programmes as a percentage of the total actual expenditure. 3.4 Functional organisational structure as measured by vacancy rate for funded positions. 3.5 Effective implementation of talent management initiatives – employee engagement ratio.

15. MEDIUM-TERM TARGETS

STRATEGIC OBJECTIVE 1: To provide technology development funding and support in strategic high-impact areas.											
DST Strategic Outcome	**Outputs**	**Performance Indicator**		**Strategic Target 2015-2020**	**Audited/Actual Performance 2015/16**			**Estimated performance 2016/17**	**Medium-Term Targets**		
					2013/14	2014/15	2015/16		2017/18	2018/19	2019/20
Strategic Outcome-Oriented Goal 4: Using knowledge for economic development.	Products, Processes, Services and Start-up Companies.	1.1	Number of technologies, processes or services advancing by two or more TRL levels.[37]	102[38]	37	8	27	24	26	28	30
		1.2	Number of innovation project outputs taken up in the market.[41]	51	8	6	9	14	10	11	12
Strategic Outcome-Oriented Goal 5: Knowledge utilisation for inclusive development		1.3	Amount of additional funding attracted into TIA's portfolio. [39]	R551m	R74.4m	R201m	R97.9m	R108m	R113m	R147m	R157m
		1.4	Amount of income received.[40]	R671.2m	R87.7m	R76.0m	R153.8m	R104m	R141.8m	R148.3m	R159.1m

[37] This figure originates from the Amended Strategic Plan. The Strategic Plan contains targets only which when added gives u the R671.2m. the APP has to show alignment with the Strategic Plan hence the fact that a calculation of the APP figures will differ[38] The reason for the increase of the targets throughout all three strategic objectives is due to the previous strategic document only had targets for three years instead of five and we revised accordingly. TIA will be hosting a Board Strategic Session in June 2017 and the Performance Indicators will be reviewed to address qualitative orientation of the same.

[39] This includes funding from the shareholder, co-funding, from a third party and any additional funding leveraged for completion of the innovation project.

[40] TThis is to be interpreted to be as measure for the income received for return on investments from any of the TIA funding instruments i.e. loan, royalty grants and/or equity sale.

[41] Innovation project outputs are defined as the technologies or processes or services that have attracted commercial or industrial application interest from external parties. .This Performance Indicators focus is on commercialisation

15. MEDIUM-TERM TARGETS

STRATEGIC OBJECTIVE 2: To provide thought leadership and an enabling environment for Technology Innovation in collaboration with other role-players.											
DST Strategic Outcome	**Outputs**	**Performance Indicator**		**Strategic Target 2015-2020**	**Audited/Actual Performance 2015/16**			**Estimated performance 2016/17**	**Medium-Term Targets**		
					2013/14	2014/15	2015/16		2017/18	2018/19	2019/20
Strategic Outcome-Oriented Goal 1: A responsive, coordinated and efficient NSI.	Creation of employment and employment opportunities. Innovation skills development. Innovative product, processes and services supporting economic growth.	2.1	Number of knowledge innovation products produced (prototypes developed, Intellectual Property, technology demonstrators developed and technology transfer packages) as a result of TIA funding and support programmes.	350	27	38	76	77	83	91	100
		2.1a	Prototypes developed	n/a [41]	n/a	n/a	38	38	42	46	49
		2.1b	Intellectual Property	n/a	n/a	n/a	9	8	9	10	12
		2.1c	Technology demonstrators developed	n/a	n/a	n/a	27	28	30	33	36
		2.1d	Technology transfer packages	n/a	n/a	n/a	2	3	2	2	3
Strategic Outcome-Oriented Goal 3: Human capital development.		2.2	Number of knowledge innovation products produced by TIA supported programmes receiving additional funding.[42]	122	0	8	8	25	27	30	33

[41] This Performance Indicator breakdown had only been implemented in FY2015/16.
[42] TIA funded programmes that, as a result of their execution, give rise to third party funding, co-funding and/or co-development.

15. MEDIUM-TERM TARGETS

Strategic Outcome-Oriented Goal 4: Using knowledge for economic development.		2.3	Number of Small, Medium, and Micro Enterprises receiving technology support.[43]	14 200	1 904	2 188	2 197	2 400	2 800	3 360	3 840
		2.4	Number of PDI owned SMMEs assisted as a percentage of total SMMEs supported, receiving funding, support and/or technology services from TIA. [44]	69%	0	0	Measure defined and targets set	63%	65%	67%	69%
		2.5	Number of Technology Innovation initiatives (e.g. conference papers, presentations and posters, policy recommendations, panel discussions, position papers, publications and think tanks, relating mainly to keynote addresses) undertaken by TIA.	124	0	0	27	30	31	37	43
		2.5a	Conference papers	n/a[45]	n/a	n/a	0	0	1	1	1
		2.5b	Presentations and posters	n/a	n/a	n/a	10	10	10	12	14
		2.5c	Policy recommendations	n/a	n/a	n/a	0	1	1	1	1
		2.5d	Panel discussions	n/a	n/a	n/a	7	5	7	9	10
		2.5e	Position papers	n/a	n/a	n/a	0	0	1	1	1
		2.5f	Publications	n/a	n/a	n/a	1	3	1	1	1
		2.5g	Think tanks	n/a	n/a	n/a	9	11	9	11	14
		2.5h	Keynote addresses (speeches)	n/a	n/a	n/a	0	0	1	1	1

[43] Technology support is defined as technical oriented services to SMMEs/Businesses to be competitive in related sectors of manufacturing to accelerate the exploitation of technology.
[44] This may include individuals who have received assistance to enable them to operate as SMME's.
[45] This Performance Indicator breakdown had only been implemented in FY2015/16.

15. MEDIUM-TERM TARGETS

STRATEGIC OBJECTIVE 2: To provide thought leadership and an enabling environment for Technology Innovation in collaboration with other role-players.											
DST Strategic Outcome	**Outputs**	**Performance Indicator**		**Strategic Target 2015-2020**	**Audited/Actual Performance 2015/16**			**Estimated**	**Medium-Term Targets**		
					2013/14	2014/15	2015/16		2017/18	2018/19	2019/20
Strategic focus area 1: To optimise its financial resources and implement initiatives for business and investment process improvement											
Strategic Outcome-Oriented Goal 1: A responsive, coordinated and efficient NS	Efficient and effective investment management processes.	3.1	Investment approval turnaround time.	14 Weeks	0	0	11 Weeks and 3 days	4 months	16 weeks	15 weeks	14 weeks
		3.2	Improved adequacy and effectiveness of the TIA internal processes.	Improve efficiency and effectiveness ratios by 5%	Unqualified Audit	Clean Audit	Clean Audit	Clean audit opinion	ISO 9001 certification	Develop efficiency and effectiveness matrix, including baseline ratios	Improve efficiency & effectiveness ratios by 5%
		3.3	Amount of funds utilised for projects and programmes as a percentage of the total actual expenditure	70%	64	70%	72%	73%	70%	70%	70%

15. MEDIUM-TERM TARGETS

Strategic focus area 2: To develop a culture of high performance and innovation amongst employees											
Strategic Outcome-Oriented Goal 1: A responsive, coordinated and efficient NSI	Highly motivated, committed and competent TIA staff. A high – performance Customer centric culture	3.4	Functional organisational structure as measured by vacancy for funded positions	<12%	7.3%	11.12%	13.38%	<12%	<11%	<10%	<10%
		3.5	Effective implementation of talent management[46] initiatives – employee engagement ratio.[47]	3.8[48]	0	0	3.7	3.8	3.8	3.9	4.0

[46] Talent Management refers to all initiatives associated to recruitment, performance management, reward and remuneration, training and development that will drive employee engagement.
[47] Employee engagement is measured .in terms of attraction (A), retention (R) and performance(P) combined.
[48] The 2015/2016 Employee Engagement rate for South Africa and Southern Africa as measured by the Emergence Growth through their annual Africa EE survey is 68% (3.4).

16. QUARTERLY TARGETS

No	Performance Indicators	Reporting period	Annual target	Quarterly targets			
				Quarter 1	Quarter 2	Quarter 3	Quarter 4
1.1	Number of technologies, processes or services advancing by two or more TRL levels.	Quarterly	26	4	8	8	6
1.2	Number of innovation project outputs taken up in the market.	Quarterly	10	0	3	4	3
1.3	Amount of additional funding attracted into TIA's portfolio.	Quarterly	R113m	R30.5m	R21m	R17m	R44.5m
1.4	Amount of income received.	Quarterly	R141.8m	R0m	R10m	R48m	R83.8m

STRATEGIC OBJECTIVE 2: To provide thought leadership and an enabling environment for Technology Innovation in collaboration with other role-players.

	Performance Indicators	Reporting period	Annual target	Quarterly targets			
				Quarter 1	Quarter 2	Quarter 3	Quarter 4
2.1	Number of knowledge innovation products produced (prototypes developed, Intellectual Property, technology demonstrators developed and technology transfer packages) as a result of TIA funding and support programmes.	Quarterly	83	20	20	21	22
2.1a	Prototypes developed	Quarterly	42	10	10	10	12
2.1b	Intellectual Property	Quarterly	9	2	2	2	3
2.1c	Technology demonstrators developed	Quarterly	30	7	7	7	9
2.1d	Technology transfer packages	Quarterly	2	0	0	1	1

2.2	Number of knowledge innovation products produced by TIA supported programmes receiving additional funding.	Quarterly	27	7	7	8	5
2.3	Number of Small, Medium, and Micro Enterprises receiving technology support.	Quarterly	2 800	840	560	840	560
2.4	Number of PDI owned SMMEs assisted as a percentage of total SMMEs supported, receiving funding, support and/or technology services from TIA.	Quarterly	65%	16%	32%	48%	65%
2.5	Number of Technology Innovation initiatives (e.g. conference papers, presentations and posters, policy recommendations, panel discussions, position papers, publications and think tanks, relating mainly to keynote addresses) undertaken by TIA.	Quarterly	31	7	7	7	10
2.5a	Conference papers	Quarterly	1	0	0	0	1
2.5b	Presentations and posters	Quarterly	10	2	2	2	4
2.5c	Policy recommendations	Quarterly	1	0	0	0	1
2.5d	Panel discussions	Quarterly	7	2	2	2	1
2.5e	Position papers	Quarterly	1	0	0	0	1
2.5f	Publications	Quarterly	1	0	0	0	1
2.5g	Think tanks	Quarterly	9	2	2	2	3
2.5h	Keynote addresses (speeches)	Quarterly	1	0	0	0	1

STRATEGIC OBJECTIVE 3: To develop an effective and efficient internal environment to successfully execute the strategy.							
No	**Performance Indicators**	**Reporting period**	**Annual target**	**Quarterly targets**			
				Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
3.1	Investment approval turnaround time.	Quarterly	16 weeks	16 weeks	16 weeks	16 weeks	16 weeks
3.2	Improved adequacy and effectiveness of the TIA internal processes.	Quarterly	ISO 9001 Certification	Finalising ISO readiness assessment	Implement recommendation report	ISO 9001 inspection/audit	Certified as ISO 9001 compliant
3.3	Amount of funds utilised for projects and programmes as a percentage of the total actual expenditure.	Quarterly	70%	10%	15%	20%	25%
3.4	Functional organisational structure as measured by vacancy for funded positions.	Quarterly	<11%	<11%	<11%	<11%	<11%
3.5	Effective implementation of talent management initiatives – employee engagement ratio.	Quarterly and Annual	3.8	20% implementation of initiatives as per the Talent Management strategy	60% implementation of initiatives as per the approved Talent strategy	75% implementation of the initiatives as per the approved Talent strategy	3.8

LIST OF ACRONYMS

ACRO	African Clinical Research Organisation
AMTS	Advanced Manufacturing Technology Strategy
ARC	Agriculture Research Council
AVG	Automated Guided Vehicle
ATS - CPUT	Agri-foods Technology Station – Cape Peninsula University of Technology
ASSAf	Academy of Science of South Africa
BAKM	Business Analysis & Knowledge Management
BFS	Bankable Feasibility Study
BIDC	Bio-manufacturing Industry Development Centre
BiODX	Biological Chemical Technologies (Pty) Ltd
CAD	Computer-Aided Design
CCDI	Cape Craft and Design Institute
CEO	Chief Executive Officer
CEIP	Centre for Engineering Innovation and Production
CHIETA	The Chemical Industries Education and Training Authority
C.O.J.E.D.I	City of Joburg Educating Digital Intern Programme
CPGR	Centre for Proteomic and Genomic Research
CPSI	Centre for Public Service Innovation
CPT	Pharma Chemical Process Technologies
CPUT	Cape Peninsula University of Technology
CSFE	Continuous Supercritical Fluid Extraction
CSIR	Council for Scientific and Industrial Research
CRO	Chief Risk Officer
CUBIC	Cape University Body Imaging Centre
CUT	Central University of Technology
DCTS-NMMU	Downstream Chemicals Technology Station – Nelson Mandela Metropolitan University
DD	Due Diligence
DIY	Do It Yourself
DPSS	Diode Pumped Solid State
DRDLR	The Department of Rural Development and Land Reform
DSBD	Department of Small Business Development
DST	Department of Science and Technology
DUT	Durban University of Technology
NMMU	Nelson Mandela Metropolitan University
ECDC	Eastern Cape Development Corporation
EIA	Economic Impact Assessment
EWSETA	Energy and Water Sector Education and Training Authority
ESN	Enterprise Social Network
EXCO	Executive Committee
FEED	Department of Economy and Enterprise Development
FMS	Fund Management Systems
FY	Financial Year
GAP	Gauteng Accelerator Programme
GMO	Genetically Modified Organisms Act
GMS	General Management System

CPGR	Centre for Proteomic & Genomic Research
GCIP	Global Cleantech Innovation Programme
GEF	Global Environment Facility
GFIA	Global Forum for Innovation in Agriculture
GIT	Green Iron Technology
GPT	Geo Pollution Technologies
GRAP	Generally Recognised Accounting Practice
H3D	Drug Discovery and Development Centre
HEI	Higher Education Institution
HIV	Human Immunodeficiency Virus
HR	Human Resources
HySA	Hydrogen South Africa
iBATECH	Indigenous Botanical Adjuvant Technology
IAC	Internal Assessment Committee
IAT-SU	Institute for Advanced Tooling – Stellenbosch University
IAT-TUT	Institute for Advanced Tooling – Tshwane University of Technology
IAT-WSU	Institute for Advanced Tooling – Walter Sisulu University
ICT	Information and Communications Technology
IDC	Industrial Development Corporation
IDF	Identity Development Fund
IE&S	Innovation Enabling and Support
IFC	Investment Framework Committee
IFPCS	Innovation Funding and Pre-Commercialisation and Support
IIA	Internal and Investment Audit
Invo Tech	Innovation Technology Business Incubator
IP	Intellectual Property
IPAP	Industrial Policy Action Plan
IPT	Integrated Pricing-label Technology
IRBA	Independent Regulatory Board of Auditors
ISD	Innovation Skills Development
ISO	International Organisation of Standardisation
IT	Information Technology
IWWT	Institute of Water and Wastewater Technology
JICA	Japan International Cooperation Agency
JS	Jonker Sailplanes
KPI	Key Performance Indicator
KZN	KwaZulu-Natal
LATS-UL	Limpopo Agro-food Technology Station – University of Limpopo
LEDET	Limpopo Economic Development, Environment and Tourism
LMNO	Lithium Manganese Nickel Oxide
LPG	Leak Proof Green
m	Million
MADCap	Men of African Descent and Cancer of the Prostate
M&E	Monitoring and Evaluation
MCTS-UJ	Metal Casting Technology Station – University of Johannesburg
MMV	Medicines for Malaria Venture

MoU	Memorandum of Understanding
MP	Member of Parliament
MRI	Magnetic Resonance Imaging
MTEF	Medium-Term Expenditure Framework
MUT	Mangosuthu University of Technology
NACI	National Advisory Council for Innovation
NASAC	Network of African Science Academies
NCRST	National Commission on Research, Science and Technology
NCSA	Natural Carotenoids South Africa (Pty) Ltd
NDP	National Development Plan
NECSA	South African Nuclear Energy Corporation SOC Limited
NH1-MSap	Neo & Hollo's 1st Monitoring Solar Submersible pump
NIPMO	National Intellectual Property Management Office
NMMU	Nelson Mandela Metropolitan University
NMR	Nuclear Magnetic Resonance
NRF	National Research Foundation
NSI	National System of Innovation
NT	National Treasury
NWGA	National Wool Growers Association
NWU	North West University
NYDA	National Youth Development Agency
OVI	Onderstepoort Veterinary Institute
PDI	Previously Disadvantaged Individuals
PDTS-CUT	Product Development Technology Station – Central University of Technology
PEETS-UJ	Process, Energy and Environmental Engineering Technology Station – University of Johannesburg
PFMA	Public Finance Management Office
PRIME	Planning, Risks, Intelligence, Monitoring & Evaluation
PSF	People Systems and Facilities
R&D	Research and Development
RCIPS	Research Contracts & Intellectual Property Services
RDA	Regional Development Agencies
RDP	Reconstruction and Development Programme
RSDTS-VUT	Rural & Sustainable Development Technology Station – Vaal University of Technology
RSDTS-VUT	Rural & Sustainable Development Technology Station – Vaal University of Technology
SA	South Africa
SABS	South African Bureau of Standards
SAICA	South African Institute of Chartered Accountants
SAENSE	Screening Applications and Exploring Novelty in Specialised Environments
SANEDI	South African National Energy Development Institute
SARIMA	South African Research & Innovation Management Association
SASRI	South African Sugar Research Institute
SATN	South African Technology Network
SBD	Settle Bed Detector
SC	Science Centre
SF	The Seed Fund Programme
SEDA	Small Enterprise Development Agency
SETIIP	Science Engineering and Science Engineering and Technology Industry Internship Proposals
SHIP	Strategic Health Innovation Partnerships

Sliek	Sliek Vitamin Supplements (Pty) Ltd
SMART	Specific, Measurable, Attainable, Relevant and Time-bound
SME	Small Medium Enterprise
SMME	Small Medium & Micro Enterprises
Solar PACES	Solar Power and Chemical Energy Systems
SO	Strategic Objective
SOEs	State Owned Enterprises
SSRC	Strategic Stakeholder Relations and Communication
STA	Strategic Technology Area
STI	Science, Technology and Innovation
STIAS	Stellenbosch Institute for Advanced Study_
SU	Stellenbosch University
SWET	Stellenbosch Wind Energy Technologies
TB	Tuberculosis
TDS	Titsetso Development Solutions
TIA	Technology Innovation Agency
TIHMC	The Innovation Hub Management Company
TIP	Technology Innovation Programme
TIPS	Technology Innovation Programmes
TPP	Technology Platforms Programme
TRL	Technology Readiness Level
TS	Technology Station
TSC-MUT	Technology Station in Chemicals & Chemistry – Mangosuthu University of Technology
TSC-TUT	Technology Station in Chemicals – Tshwane University of Technology
TSCT-CPUT	Technology Station in Clothing and Textiles – Cape Peninsula University of Technology
TSE-TUT	Technology Station in Electronics – Tshwane University of Technology
TSMPT-VUT	Technology Station in Material and Processing Technologies – Vaal University of Technology
TSP	Technology Stations Programme
TU-K	Technology University of Kenya
TUT	Tshwane University of Technology
TTO	Technology Transfer Office
UCT	University of Cape Town
UFS	University of Free State
UK	United Kingdom
UNIDO	United Nations Industrial Development Organisation
UWC	University of Western Cape
VUT	Vaal University of Technology
WHC	Wits Health Consortium
Wits	University of the Witwatersrand – Johannesburg
Xsit	X Sterile Insect Technique (Pty) Ltd
YTD	Year to date
YTIP	Youth Technology Innovation Programme

technology innovation
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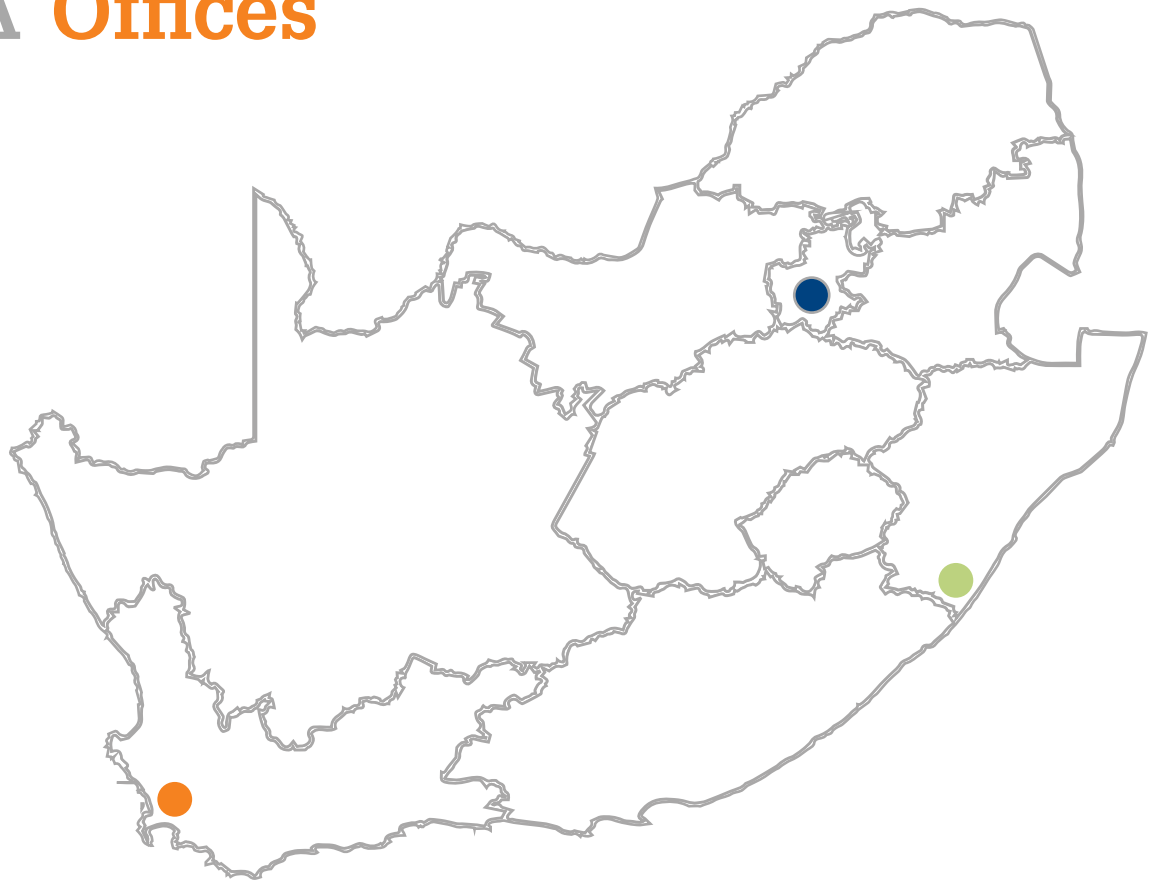
TIA Offices



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