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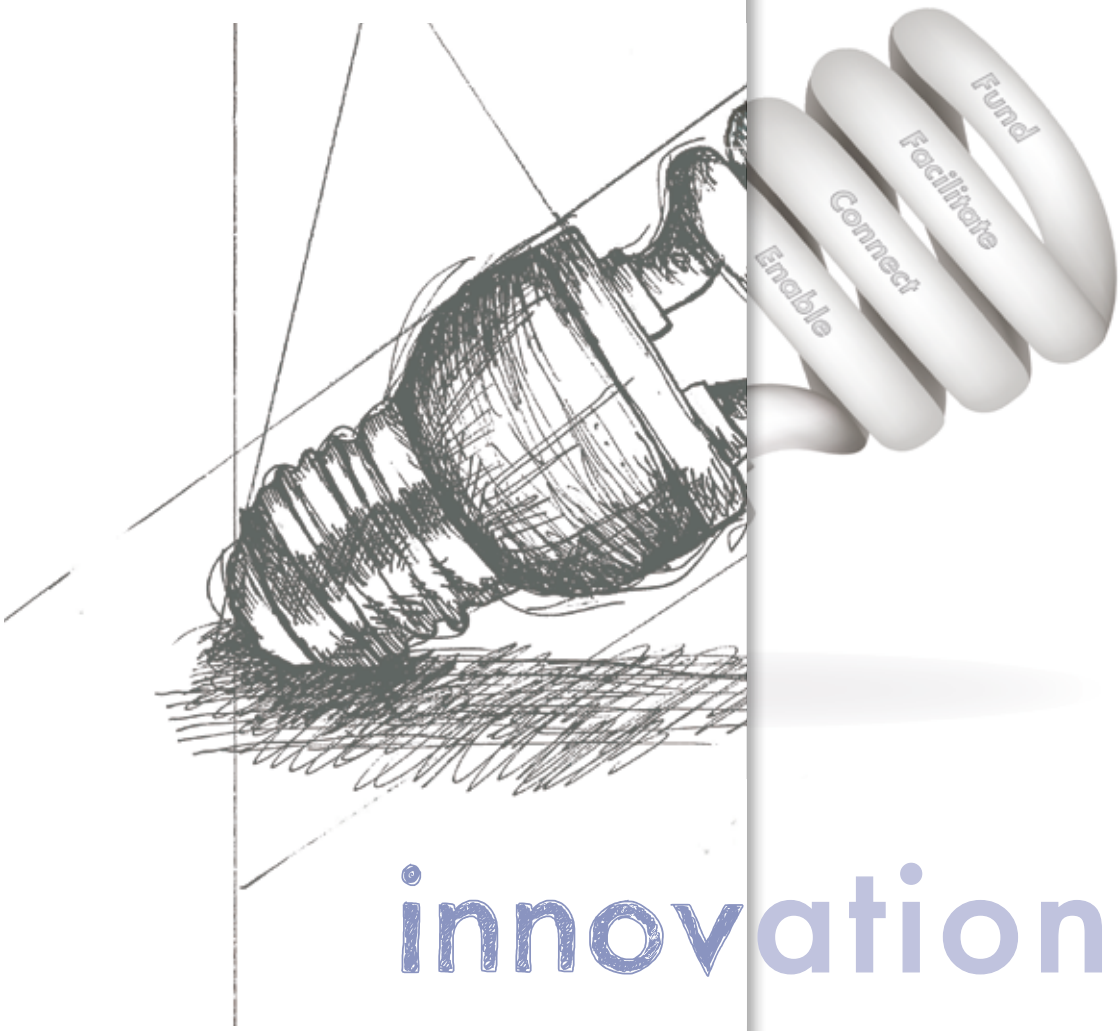
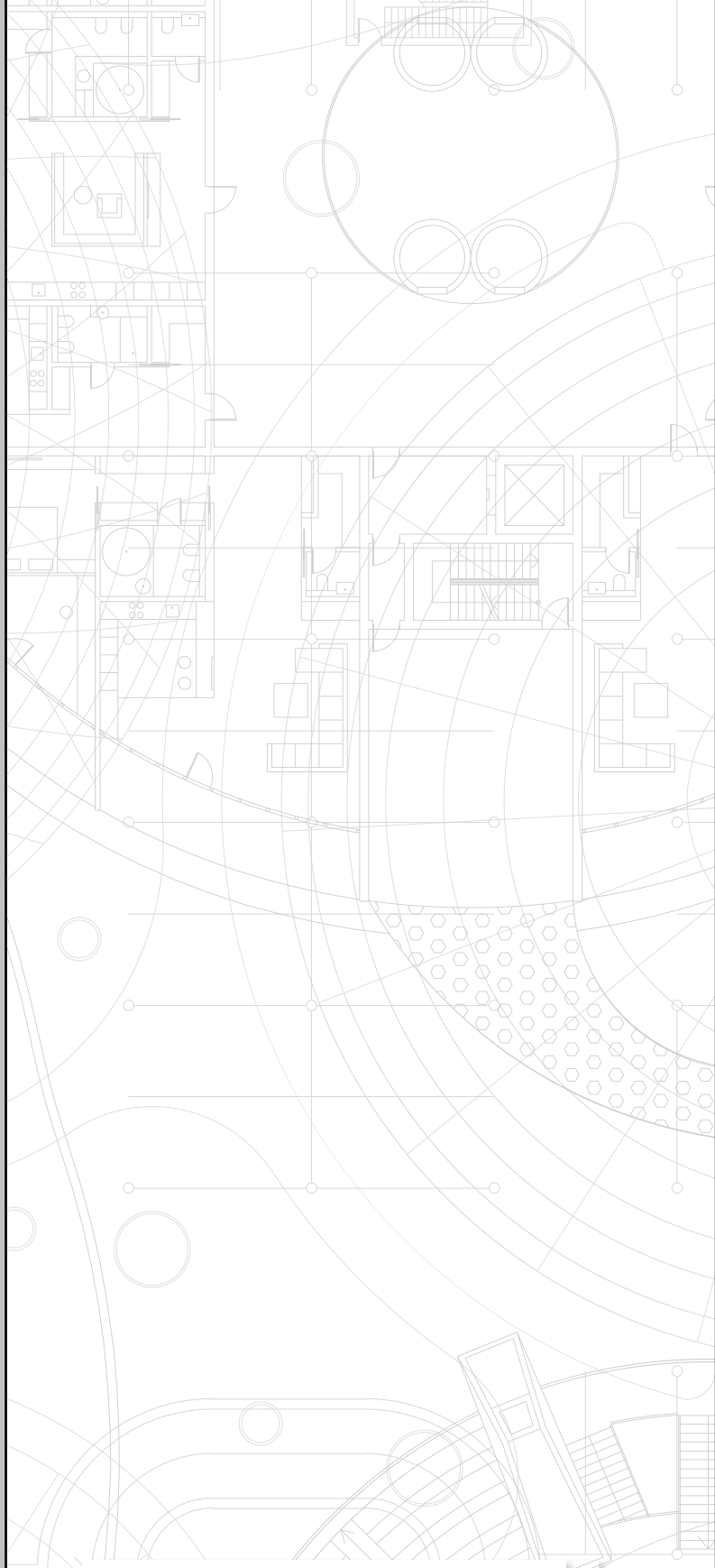



# innovation

science & technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

# Annual Report 2014/2015



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# realisation

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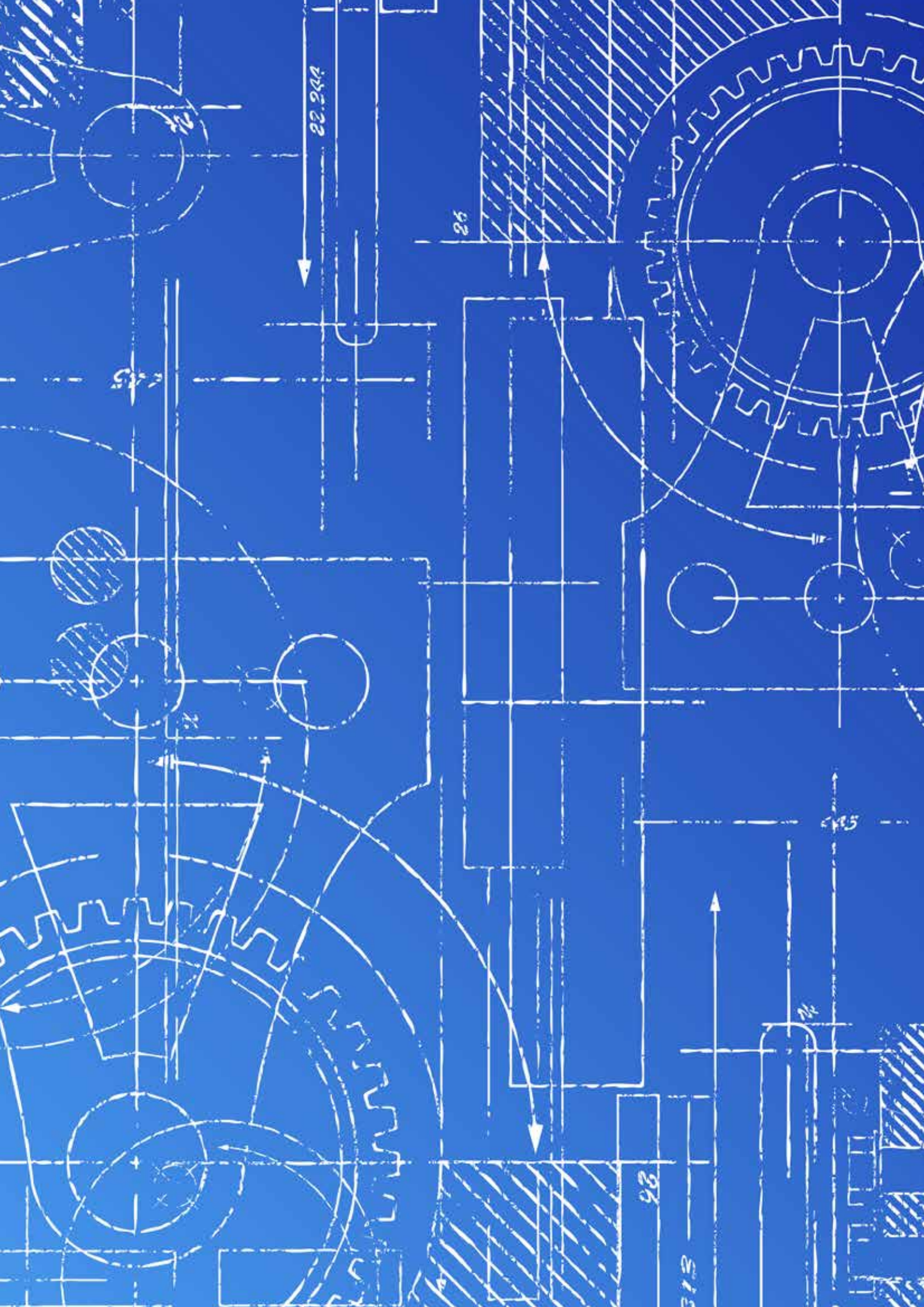
## Annual Report 2014/2015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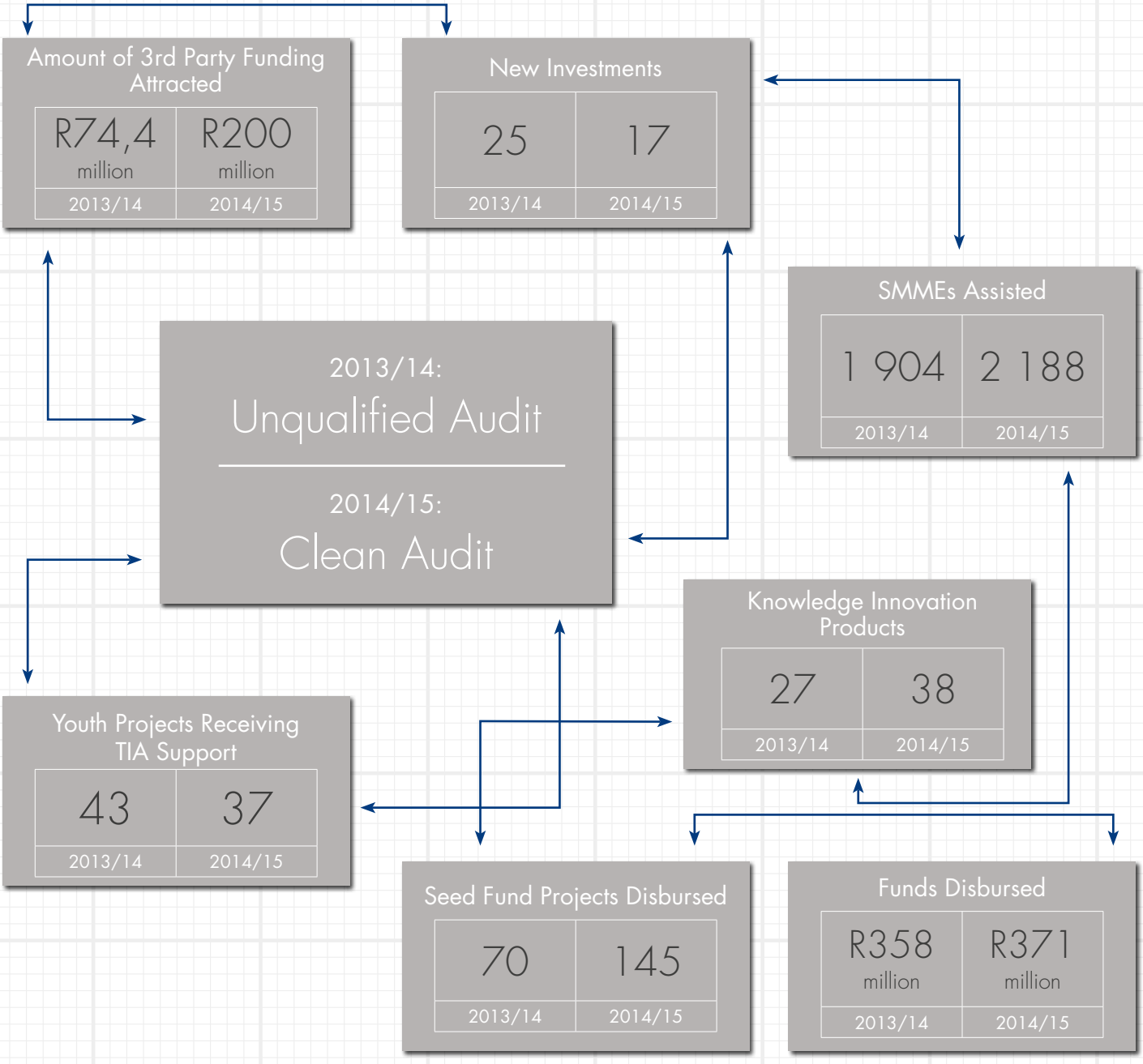
# YEAR ON YEAR PERFORMANCE

In its formative years, TIA spent time understanding the drivers and influencing factors that would assist the organisation to deliver on its strategic objectives and mandate. Investing in a solid foundation to set the Agency's tactical direction is starting to yield results as demonstrated by the year on year performance improvements. TIA is now well poised to be more active in its thought leadership role in technology innovation in South Africa.

In the year under review, R371 million was disbursed for project and programme related funding as compared to R358 million the previous financial year.

A total of R200 million was leveraged from other funders during the financial year, up from R65,5 million from 2012/13 and R74,4 million in 2013/14 financial years. The university Seed Fund programmes continues to perform well having doubled the number of projects supported from 70 in 2013/14 to 145 in 2014/15. We expect that these projects will soon feed into TIA mainstream Technology Development Fund.

A total of 38 innovative products were developed through support provided by the Technology Platforms; 8 technologies reached demonstration stage (TRL 7) and 6 were taken up by the market.



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# TECHNOLOGY INNOVATION AGENCY

## Taking technology innovation further

## Introduction

English

The Technology Innovation Agency (TIA) is an initiative of the Department of Science & Technology (DST) formed under the Technology Innovation Agency Act No.26 of 2008. TIA's mandate is to enable and support technological innovation across all sectors of the economy in order to deliver socio-economic benefits for South Africa and to enhance its global competitiveness. These goals are achieved by supporting the development and commercialisation of research outputs from Higher Education Institutions (HEIs), Science Councils (SCs), Public Entities, and private research institutions and bringing them to market.

## Inleiding

Afrikaans

Die *Technology Innovation Agency (TIA)* is 'n inisiatief van die Departement van Wetenskap & Tegnologie (DST) en is ingevolge die Technology Innovation Agency-wet, Nr. 26 van 2008, gestig. TIA se mandaat is om tegnologiese vernuwing in alle sektore van die ekonomie moontlik te maak en te ondersteun met die oog op sosio-ekonomiese voordele vir Suid-Afrika en die verbetering van die land se internasionale mededingendheid. Hierdie doelwitte word nagestreef deur ondersteuning aan die ontwikkeling en kommersialisering van navorsingsresultate van Hoër Onderwysinstellings (HOI's), Wetenskapsrade (WR's), Openbare Entiteite, en private navorsingsinstellings sodat dit aan die mark bekendgestel kan word.

## Isingeniso

Ndebele

I-*Technology Innovation Agency (i-TIA)* mtlamo wom-Nyango wezeSayensi neThekhnoloji (i-DST) etlanywe ngaphasi kwe-Technology Innovation Agency Act No.26 of 2008. Umnqopho we-TIA kukghonakalisa nokusekela imitlamo yetheknoloji kiwowoke amabululo wezomnotho ukuze iSewula Afrika izuzise umphakathi kezomnotho nokuthuthukisa ukuphuma phambili eentjhabeni zoke. Iminqopho le iphumelela ngokusekela ituthuko nemiphumela yezerhubhululo emabululweni wezomnotho eyenziwa maZiko wezeFundo ePhezulu (i-HEI), imiKhandlu yezeSayensi (ama-SC), amaziko namabululo womphakathi, namaziko wezerhubhululo begodu nokuwaletha erhwebeni.

## Tsebišo

Sepedi

*Technology Innovation Agency (TIA)* e hlamilwe ke Kgoro ya Saentshe le Thekenolotši ka tlase ga Molao wa Nmr. 26 wa 2008 wa Technology Innovation Agency. Taolelo ya TIA ke go kgonagatša le go thekga boitlhagišetšo bja thekenolotši go selaganya disektoro tšohle tša ekonomi gore e kgone go phethagatša dikholego go Afrika-Borwa le go kaonafatša phegišano ya yona boditšhabatšhabeng. Maikemišetšo a, a fihlelelwa ka go thekga tšwetšopele le kgwebofatšo ya dipoelo tša dinyakišišo go tšwa go Ditheo tša Thuto yeo e Phagamego (di-HEI), Dikhansele tša Saentshe (di-SC), Mekgahlo ya Setšhaba, le ditheo tša poraebete tša dinyakišišo le go di tliša mmarakeng.

## Selelekela

Sesotho

*Technology Innovation Agency (TIA)* ke morero wa Lefapha la Saense le Thekenoloji (DST) o theilweng tlasa Molao wa Lekalana la Boitlhahisetso ba Thekenoloji Nmr.26 wa 2008. Maikemisetso a TIA ke ho kgonahatsa le ho tshehetsa boitlhahisetso ba tsa thekenoloji ho potoloha disektara tsohle tsa moruo e le ho fana ka melemo ya moruo setjhabeng bakeng sa Afrika Borwa le ho matlafatsa matla a yona a phehisano lefatsheng lohle. Maikemisetso ana a fihlellwa ka ho tshehetsa ntshetsopele le tshebetso ya kgwebo ya ditlhahiso tse hlahang dipatlisisong tse etswang ke Ditsi tse Phahameng tsa Thuto (di-HEI), Makgotla a tsa Saense (di-SC), Ditheo tsa mmuso, le ditsi tsa dipatlisiso tsa poraefete le ho di tlisa mmarakeng.

## Matseno

Setswana

*Technology Innovation Agency (TIA)* ke letsholo la lefapha la Science & Technology (DST) le le tlhamilweng ka fa tlase ga Molao wa bo 26 2008 wa Technology Innovation Agency. Taolelo ya TIA ke go kgontsha le go tshegetsa letsholo la setegeniki go ralala maphata otlhe a ikonomi go tlisa dipoelo tsa ikonomi le loago tsa Aforika Borwa le go oketsa bokgoni jwa yone jwa go gaisana le dinaga tse dingwe mo lefatsheng ka bophara. Maikaelelo a a fitlhelelwa ka go tshegetsa tokafatso le go bapatsa ditlamorago tsa patlisiso go tswa kwa Ditheong tsa Thuto e Kgolwane (di-HEI), Dikhansele tsa Saense (di-SC), Ditheo tsa Setšhaba, le ditheo tsa patlisiso ya poraefete, le go di bapatsa.

## Singenisiso

Siswati

*I-Technology Innovation Agency (i-TIA)* ingumtamo weLitiko Letesayensi Nebuchwepheshe(i-DST) lowentiwa ngaphansi kweMtsetfo We-ejensi Yekusungula Lokusha No.26 wa-2008. Umsebenti we-TIA kwesekela lokusha lokusunguliwe kwethekhnoloji kuyo yonkhe imikhakha yemnotfo kute kwetfulwe tinzuzo tetenhlalo netemnotfo taseNingizimu Afrika nekwenta kancono kucudzelana kumave emhlaba. Lemigomo ingazuzwa ngekwesekela kutfutfuka nekutsengisa imiphumela yelucwaningo levela kuTikhungo Temfundvo Lephakeme (i-HEI) , Imikhandlu Yetesayensi (ema-SC) , Tikhungo tahulumende, netikhungo telucwaningo tangasense nekutifaka emakethe.

## Manghenelo

Tsonga

*Technology Innovative Agency (TIA)* i pfhumba leri simekiweke hi Ndzawulo ya Dyondzo na Thekinoloji leri tumbuluxiweke hi ku landza Nawu wa vu26 wa 2008 wa Ejensi ya Vutumbuluxi bya Thekinoloji . Vutihlamuleri bya TIA i ku simeka na ku seketela mapfhumba hinkwawo ya xithekinoloji eka swiyenge swa ikhonomi hinkwaswo leswaku ku va na mivuyelo eka vanhu na le ka ikhonomi ya Afrika-Dzonga na leswaku Afrika-Dzonga ri kota ku phikizana na matiko yan'wana ya misava. Swikongomelo leswi swi fikeleriwa hi ku seketela nhluvukiso na ku hangalasiwa ka mivuyelo ya vulavisisi yo suka eka Xiyenge xa Dyondzo ya le Henhla, Tikhansele ta Sayense, Mavandla ya Mani na Mani, na swiyenge swa vulavisisi swa phurayivhete na leswaku hinkwaswo swi navetisiwa.

## Marangaphanḓa

Venda

Vha *Technology Innovation Agency (TIA)* ndi thandela ya Muhasho wa Saintsi na Thekinoḽodzhi (DST) yo thomiwaho nga fhasi ha Mulayo wa Technology Innovation Agency wa Nomboro.26 wa 2008. Mushumo wa TIA ndi u konisa na u tikedza vhubveledzi ha zwa thekinoḽodzhi kha sekhithara dzoṱhe dza ikonomi u itela u ḓisa mbuelo dza ikonomi na matshilisano u itela Afrika Tshipembe na u khwaṱhisa u ṱaṱisana na dzhango. Zwipikwa izwi zwi swikelelwa nga u tikedza mveledziso na mbambadzo ya zwibviswa zwa ṱhoḓisiso u bva kha Zwiimiswa zwa Pfunzo ya Nṱha (HEIs), Khoro dza Santsi (SCs), Zwiimiswa zwa Nnyi na Nnyi, na zwiimiswa zwa ṱhoḓisiso dza phuraivethe na u zwi ḓisa kha maraga.

## Ukwazisa

Xhosa

I-*Technology Innovation Agency (i-TIA)* linyathelo leSebe lezeNzululwazi nobuGcisa (i-DST) elisekwe ngaphantsi (koMthetho we-Arhente yobu obutsha nombolo 26 wama-2008). Igunya le-TIA kukuvumela nokuxhasa ubuchwephetsha obutsha bezenzululwazi kumaziko onke ezoqoqosho ukuze kuhanjiswe uncedo lezoqoqosho lwezokuhlala kuMzantsi Afrika nokuxhobisa ukuba nokhuphiswano kwawo kwihlabathi. Ezi njongo zizuzwa ngokuxhasa uphuhliso nenkqubo epheleleyo yophando yokwazisa imveliso entsha kumaZiko eMfundo aPhakamileyo (ii-HEI), amaBhunga ezeNzululwazi (ii-SC), amaQumrhu aphantsi kukaRhulumente, namaziko abucala ophando aziwe kwimarike.

## Isingeniso

Zulu

I-*Technology Innovation Agency (TIA)* iwuhlelo olwasungulwa nguMnyango Wezesayensi Nobuchwepheshe ngaphansi koMthetho we-Technology Innovation Agency No. 26 ka-2008. Isibopho se-TIA ukuvumela nokweseka ukuqanjwa kwezinto zobuchwepheshe kuyo yonke imikhakha yezomnotho ukuze kube nemihlomulo yezenhlalo nezomnotho eNingizimu Afrika nokuthuthukisa amathuba ayo okuncintisana emhlabeni jikelele. Lezi zinjongo zifezekiswa ngokusekela ukuthuthukiswa nokudayiswa kwezinto ezitholakala ngocwaningo olwenziwa eZikhungweni Zemfundo Ephakeme (ama-HEI), Imikhandlu Yezesayensi (ama-SC), Amabhizinisi Kahulumeni, kanye nezikhungo zocwaningo ezizimele bese zifakwa emakethe.

## VISION

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

## MISSION

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

## 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 and knowledge of best practices cohesively in conducting 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 they 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.

## OVERARCHING GOALS

- To position TIA as a thought leader in technological innovation in South Africa.
- To provide South Africa with appropriate and effective support for innovation with high social and economic impact.
- To support and enhance technological innovation in Africa and globally through partnership initiatives.

## STRATEGIC OBJECTIVES

1) To provide customer-centric technology development funding and support;
2) To provide an enabling environment for technology innovation in collaboration with other role players; and
3) To develop an effective and efficient internal environment to successfully execute the strategy.

## TIA Mandate

The mandate of 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 objective of TIA is to support the State, through the DST, in stimulating and intensifying technological innovation in order to improve economic growth and the quality of life of all South Africans by developing and exploiting technological innovations.

In addition, the Public Finance Management Act (Act No. 1 of 1999) (PFMA) classifies TIA as a Schedule 3A public entity. Chapters 5 and 30 of the National Treasury Regulations provide a framework upon which TIA must prepare a Strategic Plan that is consistent with the period covered by the Medium-Term Expenditure Framework for approval by the relevant Executive Authority.

## Policy Mandate

The NDP is the principle guiding document, with the MTEF, the National Growth Plan (NGP), the Industrial Policy Action Plan (IPAP) and other strategies/policies giving articulation to achievement of the NDP vision. To this end, TIA's Strategic Plan is informed by and aligned to the broader government policies and priorities, and is part of the Policy Framework for the government-wide Monitoring and Evaluation System. A summary of these policies and their relevance to TIA is provided below.

## The Policy Landscape

| Policy/Year | Policy Link to TIA Strategy |
|---|---|
| National Development Plan: 2012 | The NDP acknowledges the key role that the National System of Innovation (NSI) can play in developing new tools and methods to improve the delivery of solutions to the economy, as well as co-ordinate the migration of research output. |
| MTSF: 2014 to 2019 | Identifies technology innovation as one of the critical policy areas required to speed up growth and transform the economy to create decent work and sustainable livelihoods. |
| New Growth Path: 2011 | Identifies technological innovation as means of opening opportunities for substantial employment creation. |
| IPAP: 2014/15 to 2016/17 | IPAP aims to strengthen technology platforms that will encourage innovation and technology development and the acquisition and commercialisation of new technologies. IPAP 6 sets out to develop the policy instruments required for technology acquisition, innovation support and the commercialisation of home-grown new technologies. TIA is well positioned to contribute towards the achievement of this intent. |
| Bio-economy Strategy: 2014 | South Africa's Bio-economy Strategy provides an economic engine for a new bio-based economy that will, in turn, provide a basis for future growth. |
| Ten-year Innovation Plan: 2008 | To drive South Africa's performance towards a knowledge-based economy. |
| National R&D Strategy: 2002 | Emphasises an integrated approach, which includes human resource development, knowledge generation, investment in science and technology infrastructure, and improving the strategic management of the public science and technology system. |

The Agency's strategy elaborates on TIA's role and contribution to the realisation of the objectives of the above-mentioned national strategies, plans and policies.

## Linkages to Government Outcomes

Government has implemented an outcomes-based approach to planning for the effective management of its various programmes. This outcomes-oriented approach measures the impact of Government's programmes and is designed to ensure that Government is focused on achieving the expected improvements in the lives of South Africans. In line with this, Government has identified a number of priority outcomes as key focus areas. During the 2015/16 to 2019/20 financial years, TIA will focus its planning efforts on linking and aligning its strategy with the following six Government outcomes:

- Outcome 2: A long and healthy life for all South Africans.
- Outcome 4: Decent employment through inclusive economic growth.
- Outcome 5: A skilled and capable workforce to support an inclusive growth path.
- Outcome 7: Vibrant, equitable and sustainable rural communities with food security for all.
- Outcome 10: Protect and enhance our environmental assets and natural resources.
- Outcome 11: Create a better South Africa and contribute to a better Africa and a better world.


Ms Khungeka Njobe

# Foreword by the Chairperson

*The Board of the Technology Innovation Agency, which assumed office in May 2013, started its term with a focus on three overarching priorities, namely the clarification of TIA strategy, addressing the gaps in governance within the organisation, and delivering on agreed-upon objectives and performance targets.*

I am, once again, honoured to present the Annual Report of the Technology Innovation Agency ("the Agency" or "TIA"). During the period under review, TIA continued on its path to stabilise and strengthen the leadership of the organisation, to strengthen governance and compliance, to refine and implement its strategy and to focus on performance, whilst ensuring there was alignment between the recently adopted strategy and the organisational structure. During the period, TIA also began initiatives to rebuild stakeholder relationships and to assume its role of enhancing thought leadership in the field of innovation.

## Stabilising and Strengthening Leadership

At the beginning of the period, the Board, with the concurrence of the Executive Authority, appointed Prof Rivka Kfir as the interim Chief Executive Officer (CEO), whilst the recruitment of a new CEO was underway. Under the leadership of Prof Kfir, the Board focused on ensuring that there was no disruption to organisational performance, whilst also launching an organisation design process aimed at aligning to the new TIA strategy and on improving operational efficiency and effectiveness. We are pleased to say that the aims of the Board, in appointing experienced leadership to begin the task of rebuilding TIA, were achieved. The executive team of TIA was also reconstituted and reconfirmed as part of the new organisational structure with Dr Sibongile Gumbi now occupying the position of Executive for Innovation Enabling and Support, Ms Pontsho Maruping assuming the role of Executive for Innovation Funding and Pre-commercialisation, and Mr Werner van Merwe appointed as the Chief Financial Officer (CFO). As we ended the period, a new CEO, Mr Barlow Manilal, joined TIA on 1 April 2015, thus assuring the Agency of continued and strong leadership at its helm.

## TIA Organisational Re-design Process

The Agency needed to operate in a manner that is aligned to the new strategy and the execution of TIA mandate. TIA needed to achieve this with less administration costs, thus ensuring more money was spent on funding innovations and innovators. In light of the current fiscal constraints experienced by Government, TIA

was not spared from its funding allocation being reduced. The financial constraints therefore made TIA's reorganisation process even more imperative.

Most organisational re-design processes are difficult and TIA's process was no exception. The Board was very pleased by the high levels of ownership and involvement in the process which was displayed by all TIA staff, including by the newly recognised unions, NEHAWU, Solidarity as well as the non-unionised employee forum. An organisation structure shaped by both TIA leadership and staff, was adopted by the Board on 25 November 2014. Implementation thereof began shortly thereafter and by year end, 48% of staff were placed against the new organisation structure. A change management process was also embarked upon and ensured that staff were aligned to the objectives of the reorganisation process.

## Strengthened Governance and Compliance

The Board had mandated the Audit and Risk Committee (ARC) to take leadership on improving controls within TIA environment. The ARC was also tasked to put in place a process to review legacy contractual agreements entered into by TIA and to ensure that these adhered and complied with the applicable laws and policies of the Agency. In this report, the increased amount of disclosed irregular expenditure at R56 million, reflects the results of this "clean up" exercise undertaken.

## Ongoing Refinement and Implementation of TIA Strategy

The strategy adopted by the Board for the period 2015 to 2020, which emphasises funding focus in the early parts of the innovation value chain – in particular technology development and pre-commercialisation activities – remains as is. Our goal is to ensure that innovation ideas can be shaped into viable technology development projects and that we de-risk the technology innovations for commercialisation funding by our partners. To achieve these aims, we have established the following funding mechanisms – the Seed Fund, the Technology Development Fund and the Commercialisation Support Fund.

## Our Performance

The Agency not only met the majority of its targets, but exceeded a few. Of the amount disbursed, R371 million were for project grants and R15,9 million represented loans. This represented a 4% increase for project grants. The Board is satisfied with the performance of the organisation against the predetermined performance objectives and targets, having reached 73%.

We end the period, confident that the initiatives embarked on, will be realised. It is also very satisfactory, given the challenges under which the organisation found itself, to announce that, the Agency received a clean audit.

TIA concluded an agreement with KAPA Biosystems Inc. for the sale of shares in its South African subsidiary, Kapa SA to an approximate amount of R59 million. Kapa SA was established in 2006 in a joint investment by TIA (then Cape Biotech) and Kapa Biosystems Inc., registered in the USA. TIA investment of R24 million was utilised to establish a research and manufacturing facility in Cape Town for the commercialisation of the company's protein engineering technology platform. TIA will be able to use these proceeds to increase its funding of innovation projects in line with its mandate.

## Stakeholder Management and Thought Leadership

The Agency recognises that stakeholder management is a critical element of the successful delivery of any project, programme or activity. The Department of Science and Technology (DST) actively provided guidance during the year on possible opportunities for partnerships through facilitating high level meetings.

Several TIA-funded projects were profiled at The Innovation Bridge, a technology partnering symposium that was organised by the DST, to showcase South African technology innovation to potential users of the technology, as well as to follow-on investors.

This year, we deepened our international relationship with the United Nations Industrial Development Organisation (UNIDO) by hosting a three-year Global Cleantech Innovation Programme (GCIP) currently being rolled out in five developing nations (Malaysia, Turkey, India, Pakistan and Armenia).

The Global Cleantech Innovation Programme for small and medium enterprises (SMEs) in South Africa (GCIP-SA) is focused on enhancing both emerging clean technology start-ups and the local entrepreneurial ecosystem. The programme uses a competition-based approach to identify the most promising entrepreneurs, while a business accelerator supports, promotes and "de-risks" the participating companies and connects them to potential investors, customers and partners.

The GCIP is specifically focused on supporting SMEs developing and commercialising clean technologies. This year the programme delivered eight finalists, with the national winner given an opportunity to present its technology to international funders in Silicon Valley, USA. We were pleased that the Deputy Minister of Science and Technology was a guest speaker at our gala dinner to celebrate the success of the finalists.

In other engagements, TIA hosted Prof Martin Fransman from the University of Edinburg in the UK, who delivered a presentation on innovation and, in particular, the role that government policy can play in fostering the emergence and development of technology-based start-up companies. TIA received a good response with 40 delegates participating in the seminar. The audience was made up of senior officials from Government, the private sector, science councils, and TIA, which included three Board members.

TIA further hosted a Sudanese delegation led by the Minister of Science and Communications, Dr Tahani Abdalla. The visit by the delegation was part of their tour of South Africa to understand the South African National System of Innovation, with a view to bilateral agreements between Sudan and South Africa.

## Acknowledgements

I would like to thank the Honourable Minister Naledi Pandor, who stepped in at the helm of the shareholder department during the first quarter of the period. Minister Pandor continues to provide immense support, guidance and leadership to TIA and is a great champion of innovation activities in our country. Further gratitude is expressed to the Deputy Minister, the Honourable Zanele KaMagwaza Msibi, who has also embraced and supported TIA's activities during this period.

We also thank the Director-General, Dr Phil Mjwara, and the officials at the DST for their continued commitment and unwavering support of the Agency.

Honourable Members of the Parliamentary Portfolio Committee on Science and Technology, under the leadership of Dr Monwabisi Bevan Goqwana, constructively engaged with TIA during the period and we are grateful for the productive engagements with the Honourable Members.

To my fellow Board members, I am deeply grateful for the hard work, commitment and diligence with which you execute your fiduciary duties for the benefit of the Agency. On behalf of the Board, I extend our appreciation to TIA executives and, in particular, the former and interim CEO, Prof Rivka Kfir, who led the Agency during this period to reach and achieve its objectives.

The Board is also pleased to welcome the new TIA CEO, Mr Barlow Manilal, and we look forward to working with him in achieving the objectives set in TIA's strategy and founding legislation. A better and more effective TIA is possible now that there is stability of leadership with Mr Manilal at the helm.

Lastly, but certainly not least, the Board is always thankful and grateful to all of TIA staff who assists the Board in creating a conducive environment for success. Having regard for the difficult road which TIA staff traversed in the last year, I wish to take this opportunity to assure each and every staff member of TIA that support and guidance from TIA Board, will be constant. We are fortunate to have excellent calibre of talented staff throughout the organisation. With the contribution of the staff who are constantly striving for excellence, I am convinced that the exceptional work will be compounded as we prepare for the year ahead. The Board remains committed and optimistic about the future of TIA and its contribution to the nation of South Africa.

Ms Khungeka Njobe
Chairperson of TIA Board


Mr Barlow Manilal

# Foreword by the Chief Executive Officer

***TIA, armed with a focused mandate, is in the enviable position to play a significant role within the National System of Innovation (NSI). We connect, enable, facilitate and fund, resulting in TIA being the only entity that has the specific mandate to take technologies from proof of concept to commercialisation.***

I was privileged to have taken over the reins of TIA on 1 April 2015. In the global village that we currently operate in, there are no concessions for late starters or special consideration towards legacy circumstances. It is all about competitiveness, best practice, agility, positioning and this ultimately equates to market relevance which is the Holy Grail for longevity of enterprises.

The economic shift from the west to the east and the race to capitalise on the dynamic and enormous African market, has created radical change in global economics. Technological innovation has, for centuries, been the differentiator and competitive advantage which has provided the crucial market access thrust in western countries. It is now time for Africa to play a role in its growth and development by exploiting its immense entrepreneurial and innovation talent base. Africa, and more specifically South Africa, has an abundance of creative and talented "idea generators". These trailblazers, however, lack the support to convert these opportunities into sustainable businesses in order to create radical new sectors, to challenge and transform existing sectors and push boundaries that culminate in services and products, which improve the quality of life for all our people, whilst being a catalyst for socio-economic growth.

TIA, armed with a focused mandate, is in the enviable position to play a significant role within the National System of Innovation (NSI). We connect, enable, facilitate and fund, resulting in TIA being the only entity that has the specific mandate to take technologies from proof of concept to commercialisation. TIA's investment is provided in the form of both financial and non-financial support.

During the period under review, the organisation underwent a major organisational transformation for improved alignment to its mandate, improved organisational effectiveness and enhanced value creation. It is now well positioned to continue, in an accelerated manner, with the numerous impressive projects contained in this report. There are also significant process improvements to augment governance and the control environment so that the clean audit achieved in the period under review, becomes the organisational standard. Strategic partnerships, collaboration, high yield synergistic relationships,

both nationally, on the African continent and further afield, will be a key focus as we play a role to position South Africa for greater localisation and beneficiation in support of the National Development Plan (NDP) goals.

Funding and grant disbursement processes have been optimised and refined for improved turnaround times, whilst additional non-funding support measures will be deployed to supplement exciting services. Our five-year strategic plan has been approved and this will guide the organisation forward.

Overall, TIA is energised for the year ahead; implementation of a number of improvements will continue as we underscore our focus on People, Products and Processes and inculcate a greater sense of Pride, Passion and Purpose.

Special and gracious acknowledgement goes out to our very committed Minister, the Director-General and colleagues of the Department of Science and Technology, as well as TIA Board, led by its engaging Chairperson, Ms Kungeka Njobe, and its subcommittees who provided the Agency's management team with unrelenting support and guidance during difficult and challenging times. They have demonstrated clear intent and this bodes well for the organisation during the year ahead. Finally, my heartfelt appreciation goes to the most important component of TIA: It's abundantly talented staff, who were the foot soldiers to have produced these impressive results.

Barlow Manilal
Chief Executive Officer

Mr Werner van der Merwe

# Overview by the Chief Financial Officer

*We are proud to announce that TIA received an unqualified audit opinion, with no emphasis of matter, and therefore a clean audit report.*

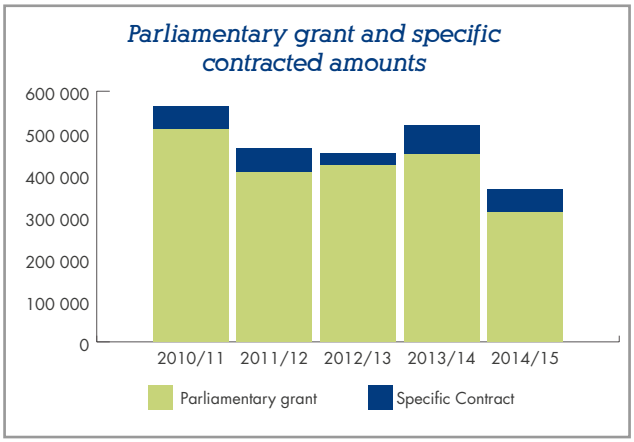
## Overview

The finalisation of the Annual Financial Statements is a strenuous process as the financial information for 6 subsidiaries, 30 associates and a minor investment were taken into account to consolidate the group results for the economic entity. This needs to be done within the timeframe as required by the PFMA. We are proud to announce that TIA received an unqualified audit opinion, with no emphasis of matter, and therefore a clean audit report. The end of the 2014/15 financial year was the fifth year of TIA's existence and a five-year overview is included at the end of this report.

## 1. Revenue

### Parliamentary grant and specific contracted amounts from the DST

The Parliamentary grant decreased by 30% to R338 million (2013/14: R481 million), a reduction amounting to R143 million. The specific contracted agreements recognised as income in 2014/15, amounted to R51 million, a reduction of 18% from the prior year's amount of R62 million.



### Other income:

The Parliamentary grant reduction caused TIA to reduce costs and be on the lookout for other means to increase income. Other income increased with 225% to R83 million (2013/14: R26 million). A significant amount of R59 million represents the profit on the sale of an equity investment in an associate company.

## 2. Administrative Costs

Further action to combat the reduction mentioned under point 1 above, was to reduce administrative expenditure. An Organisational Design (OD) process was embarked upon whereby the number of staff was reduced from 240 to 142. The impact of the OD process was a reduction in staff costs from R117 million in 2013/14, to R110 million in 2014/15. Administration costs were significantly reduced by 44% to an amount of R53 million (2013/14: R94 million). Cost reduced, was predominantly in travel and consultancy fees.

## 3. Investment and Project Funding

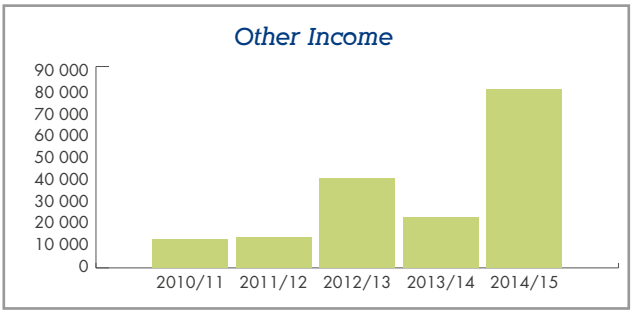
Despite the reduction of the Parliamentary grant, TIA was able to maintain the contribution level of funding projects to improve the quality of life for all South Africans. The contribution towards project funding was R371 million for the 2014/15 financial year, in comparison with an amount of R358 million in the previous year.

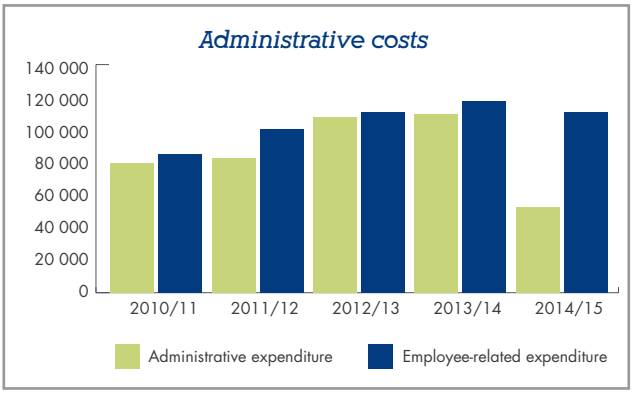
## 4. Efficiency Ratio

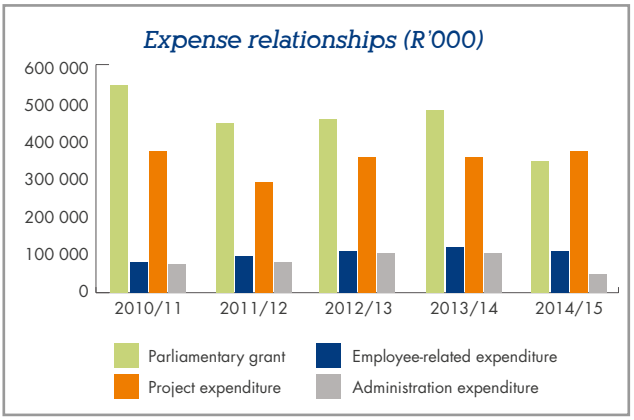
The Board set certain targets for the administration costs as a percentage of total costs. This is demonstrated by the efficiency ratio. The ratio improved considerably by 17% to reach the target set of 30% (2013/14: 36%).

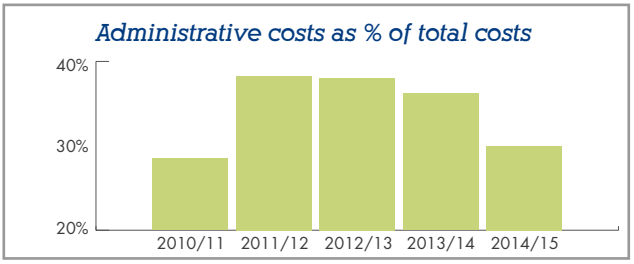
## 5. Surplus/(Deficit)

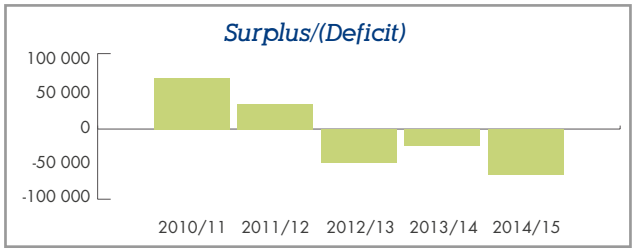
For the third year in a row, TIA incurred a deficit and for 2014/15 this amounted to R62 million (2013/14: R17 million), a clear demonstration that TIA is utilising their allocation.



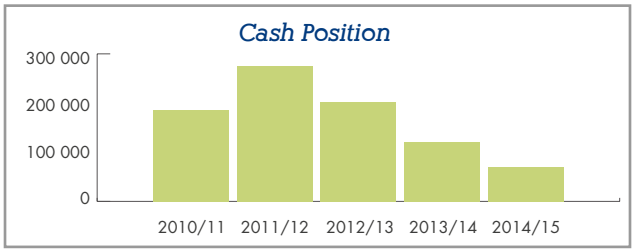



## 6. Cash Position

TIA was able to reduce the cash surplus to R66 million (2013/14: R162 million).




## Statement of financial performance – 5 year review

| | 2010/11 R'000 | 2011/12 R'000 | 2012/13 R'000 | 2013/14 R'000 | 2014/15 R'000 |
|---|---|---|---|---|---|
| Total revenue | 610 604 | 503 799 | 522 106 | 568 725 | 472 698 |
| Parliamentary grant | 544 189 | 442 688 | 456 350 | 481 081 | 338 386 |
| Specific contracted income | 50 677 | 44 246 | 24 062 | 61 992 | 50 984 |
| Other Income | 15 738 | 16 865 | 41 694 | 25 652 | 83 328 |
| Total expenditure | 572 882 | 478 340 | 575 844 | 585 595 | 534 945 |
| Employee costs | 85 202 | 101 107 | 110 865 | 117 571 | 110 512 |
| Project funding disbursements | 409 003 | 294 465 | 356 604 | 374 406 | 373 482 |
| Administration costs | 78 677 | 82 768 | 108 375 | 93 618 | 50 951 |
| Surplus/(Deficit) | 37 722 | 25 459 | (53 738) | (16 870) | (62 247) |
| | | | | | |
| Statement of financial position | | | | | |
| Total assets | 332 617 | 387 901 | 330 007 | 281 540 | 244 307 |
| Property and equipment | 28 878 | 24 156 | 23 746 | 22 560 | 13 640 |
| Investment and funding assets | 96 922 | 72 260 | 73 179 | 88 090 | 100 347 |
| Cash and cash equivalents | 201 822 | 287 789 | 228 712 | 162 194 | 66 281 |
| Receivables | 4 995 | 3 696 | 4 370 | 8 696 | 64 039 |
| Total Liabilities | 84 833 | 64 150 | 59 994 | 28 398 | 53 148 |
| Committed conditional grants | 29 170 | 44 310 | 27 274 | 9 387 | 16 222 |
| Current liabilities | 55 663 | 19 840 | 32 720 | 19 011 | 36 926 |
| Net assets | 247 784 | 323 751 | 270 013 | 253 142 | 191 159 |
| | | | | | |
| Employee costs as % of total expenditure | 15% | 21% | 19% | 20% | 21% |
| Project funding as % of total expenditure | 71% | 62% | 62% | 64% | 70% |
| Other income as % of total income | 3% | 3% | 8% | 5% | 18% |
| Efficiency ratio | 29% | 38% | 38% | 36% | 30% |

Werner van der Merwe
Chief Financial Officer

# CORPORATE GOVERNANCE

# Corporate Governance

## TIA Board

The Technology Innovation Agency ("TIA" or "the Agency") is established by the Technology Innovation Agency Act, 2008 (Act No. 26 of 2008) ("TIA Act"). Section 5 of TIA Act establishes TIA Board. The current Board was appointed in 2013 and are accordingly in their second term of office. The membership is a complement of highly accomplished members tasked with a fiduciary duty to ensure that TIA meets the interests of the shareholder and all its stakeholders. In discharging its responsibilities, the Board ensures a high standard of corporate governance and corporate ethics, through effective implementation of strategy and policies.

### Members of TIA Board

The members of the Board serving in the year under review, were:

- Ms Khungeka Njobe – (Chairperson) appointed in May 2013
- Ms H Brown – re-appointed in May 2013
- Mr Fadl Hendricks – appointed in May 2013 and resigned in January 2015
- Prof David Ellis Kaplan – appointed in May 2013
- Dr Steve Lennon – appointed in May 2013
- Dr Bonakele Mehlomakulu – appointed in May 2013
- Adv Motlatjo Josephine Ralefatane – appointed in May 2013
- Dr Petro Terblanche – appointed in May 2013
- Ms Rosetta Xaba – appointed in May 2013
- Mr Mahomed Moolla – appointed in May 2013

### Responsibilities of the Board

The Board of TIA is established in terms of Section 5 of TIA Act and is responsible for the management and control of the Agency. In undertaking this mandate, the Board is subject to the provisions of the Technology Innovation Agency Act, 2008, the Public Finance Management Act, 1999, and any other applicable law or regulatory provision.

These include the following: To be the Accounting Authority; to approve of the corporate business plan, strategic plan and the policies of TIA; and accordingly set the performance targets for the organisation.

The Board is responsible inter alia for preparing the Annual Financial Statements that accurately reflect TIA's financial position and results at the end of the financial year, which is set at 31 March each year.

In the year under review, applicable accounting standards were adhered to and adequate accounting records for an effective system of internal control, were maintained. Appropriate accounting policies, supported by reasonable and prudent judgements and estimates, were applied on a consistent basis. Detailed delegations of authority as required by the Public Finance Management Act (Act No. 1 of 1999) were in place.

## Board Members' Remuneration

Eligible Board members receive fees for the services they render to the Board in accordance with the relevant tariffs as determined by National Treasury and approved by the Minister of Science and Technology. There are some Board members who are in the employ of National, Provincial, Local Government or agencies and entities of Government serving on TIA Board who were appointed in their personal capacity and signed approval was granted by their employers for TIA to remunerate them for their services rendered to the Board.

## Board Members' Interest in Contracts

Employers of Board member's entered into a contract with TIA prior to their appointment to TIA Board. The declaration of interest record duly recorded this.

## Public Finance Management Act

TIA is fully committed to comply with the provisions of the Public Finance Management Act ("PFMA"). The internal and external auditors continue to provide the Board with assurance on the degree of compliance with the PFMA.

## Materiality Framework

In accordance with the PFMA and the Treasury regulations 28.1.5, TIA has developed a framework of acceptable levels of materiality and significance.

During the year under review, the following Board members attended eleven scheduled Board meetings:

| Board Member | Number of meetings attended | 24/4/14 | 28/5/14 | 2/7/14 | 30/7/14 | 5/8/14 | 29/8/14 | 9/10/14 | 11/11/14 | 25/11/14 | 27/1/15 | 26/2/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ms Khungeka Njobe | 11 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ms H Brown | 10 | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mr Fadl Hendricks | 6 | ✓ | ✓ | ✓ | ✓ | X | X | ✓ | X | ✓ | Resigned | Resigned |
| Prof David Ellis Kaplan | 9 | ✓ | ✓ | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X | ✓ |
| Dr Steve Lennon | 9 | ✓ | ✓ | ✓ | X | ✓ | X | ✓ | ✓ | ✓ | ✓ | ✓ |
| Dr Bonakele Mehlomakulu | 7 | ✓ | ✓ | X | ✓ | ✓ | X | ✓ | ✓ | X | ✓ | X |
| Adv Motlatjo Josephine Ralefatane | 8 | X | X | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Dr Petro Terblanche | 8 | ✓ | ✓ | ✓ | X | ✓ | ✓ | ✓ | X | ✓ | X | ✓ |
| Ms Rosetta Xaba | 7 | ✓ | X | X | X | ✓ | X | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mr Mahomed Moolla | 9 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X | ✓ | ✓ | X | ✓ |

## Human Resources and Remunerations Committee

During the year under review, the following Committee Members attended six scheduled HR Committee meetings:

| HR Member | Number of meetings attended | 13/5/14 | 27/6/14 | 21/7/14 | 15/8/14 | 5/11/14 | 16/2/15 |
|---|---|---|---|---|---|---|---|
| Dr Petro Terblanche (Chairperson until July 2014) | 3 | x | x | x | ✔ | ✔ | ✔ |
| Adv Motlatjo Josephine Ralefatane (Interim Chairperson from July 2014 to November 2014) | 6 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Ms Helen Brown (Chairperson from January 2015) | 5 | ✔ | ✔ | ✔ | x | ✔ | ✔ |
| Ms Rosetta Xaba | 0 | x | x | x | x | x | Reshuffled |
| Mr Fadl Hendricks (resigned in January 2015) | 4 | ✔ | ✔ | ✔ | ✔ | x | Resigned |
| Ms Khungeka Njobe (appointed as member from January 2015) | 1 | N/A | N/A | N/A | N/A | N/A | ✔ |

## Investment and Finance Committee

During the year under review, the following Committee Members attended nine scheduled IFC meetings:

| IFC member | Number of meetings attended | 6/5/15 | 20/5/14 | 13/8/14 | 6/11/14 | 10/12/14 | 29/1/15 | 24/2/15 | 10/3/15 | 26/3/15 |
|---|---|---|---|---|---|---|---|---|---|---|
| Dr Bonakele Mahlomakulu (Chairperson) | 6 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | x | x | x |
| Adv Motlatjo Josephine Ralefatane (reshuffled from the Committee since January 2015) | 4 | ✔ | ✔ | ✔ | ✔ | x | Reshuffled | N/A | N/A | N/A |
| Mr Mahomed Moolla | 7 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | x | x | ✔ |
| Prof David Kaplan | 8 | ✔ | ✔ | ✔ | x | ✔ | ✔ | ✔ | ✔ | ✔ |
| Mr Fadl Hendricks (resigned in January 2015) | 2 | ✔ | x | ✔ | x | x | Resigned | N/A | N/A | N/A |
| Dr Petro Terblanche (appointed as of January 2014) | 3 | N/A | N/A | N/A | N/A | N/A | x | ✔ | ✔ | ✔ |
| Ms Rosetta Xaba (Co-opted member since March 2015) | 1 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | ✔ | x |

## Audit and Risk Committee

During the year under review, the following Committee Members attended five scheduled ARC meetings:

| ARC Member | Number of meetings attended | 30/5/14 | 21/7/14 | 24/11/11 | 10/12/14 | 11/2/15 | 31/3/15 |
|---|---|---|---|---|---|---|---|
| Dr Steve Lennon (Chairperson) | 6 | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Adv Motlatjo Josephine Ralefatane (appointed in January 2015) | 2 | N/A | N/A | N/A | N/A | ✔ | ✔ |
| Mr Mahomed Moolla | 4 | ✔ | ✔ | X | ✔ | ✔ | ✔ |
| Ms Helen Brown (reshuffled as of January 2015) | 3 | ✔ | ✔ | ✔ | X | N/A | N/A |
| Ms Rosetta Xaba | 4 | X | X | ✔ | ✔ | ✔ | ✔ |
| Prof David Kaplan | 4 | ✔ | X | ✔ | X | ✔ | ✔ |

## Chairpersons' Committee

During the year under review, the following Committee members attended the four scheduled Chairpersons' Committee meetings:

| Chairperson | Number of meetings attended | 21/7/14 | 28/8/14 | 29/8/14 | 11/11/14 |
|---|---|---|---|---|---|
| Ms Khungeka Njobe | 4 | ✔ | ✔ | ✔ | ✔ |
| Dr Bonakele Mehlomakulu | 4 | ✔ | ✔ | ✔ | ✔ |
| Dr Steve Lennon | 4 | ✔ | ✔ | ✔ | ✔ |
| Adv Motlatjo Josephine Ralefatane | 4 | ✔ | ✔ | ✔ | ✔ |

# TIA Board

## Ms Khungeka Njobe

**Position/Affiliation:** Managing Director: Aveng Water
**Qualifications:** BSc Hons in Biology, MSc in Zoology
**Field of Expertise:** IP Management and technology transfer, establishment of an R&D and innovation function, leadership of marketing and business development functions, strategic management
**Board Memberships & Committees:** Chair of the Boards of Sasol Inzalo Public Limited and Sasol Inzalo Public Funding Limited, Director of Safcol and chair on the Human Resources and Remuneration Committee

## Ms Helen Brown

**Position/Affiliation:** Programme Manager: Artisan Innovation and Development at the Manufacturing Engineering and Related Education Authority (merSETA)
**Qualifications:** BA (Social Sciences) HD Personnel Management.
**Field of Expertise:** SME and innovation challenges
**Board Memberships & Committees:** Member of the Qualifications Subcommittee of the Umalusi Board

## Prof David Ellis Kaplan

**Position/Affiliation:** Professor of Business and Government Relations, University of Cape Town
**Qualifications:** BA, BComm, MA and D.Phil
**Field of Expertise:** Public Research Performing Institutions (Innovation Policies)
**Board Memberships & Committees:** None

## Adv Motlatjo Josephine Ralefatane

**Position/Affiliation:** Conciliator and Arbitrator Panelist: General Public Services Sector Bargaining Council (GPSSBC)
**Qualifications:** B.Proc, LLB, Admitted Advocate of the Supreme Court
**Field of Expertise:** Legal Human Resource
**Board Memberships & Committees:** Non-Executive Director: Road Accident Fund (RAF) and Chairman of the Human Capital and Remuneration Committee of the RAF, Member of the Regulating Committee for Meteorological Services

## Dr Steve Lennon

**Position/Affiliation:** Group Executive (Sustainability) at ESKOM
**Qualifications:** BSc, MSc (Engineering), PhD
**Field of Expertise:** Private sector research and development
**Board Memberships & Committees:** Chairperson of the National Advisory Council on Innovation, Chairman of the Technology Services International (TSI) Ltd, member of the Coal Industry Advisory Board

## Dr Bonakele Mehlomakulu

**Position/Affiliation:** CEO: South African Bureau of Standards (SABS)
**Qualifications:** PhD (Chemical Engineering), MSc (Organic Chemistry), BSc Hons (Chemistry)
**Field of Expertise:** Strategic Leadership and management; Intellectual Property Rights; Research, Development and Innovation, Legislative processes, development and implementation
**Board Memberships & Committees:** Member of the Eskom Holdings SOC (Ltd) and SABS Commercial SOC (Ltd)

## Dr Petro Terblanche

**Position/Affiliation:** Managing Director: Pelchem SOC Ltd
**Qualifications:** BSc, BSc Honours, MSc, DSc
**Field of Expertise:** Biotechnology policy or finance
**Board Memberships & Committees:** None

## Ms Rosetta Xaba

**Position/Affiliation:** Director: R NO 98 (Pty) Ltd
**Qualifications:** BSc, BCompt and BCompt Honours, Post Graduate Diploma in Accounting, CA (SA)
**Field of Expertise:** Finance
**Board Memberships & Committees:** Chairperson of the Little Eden Society for the Care of Persons with Intellectual Disability, Chair of the audit committee and Board member of the FINBOND Limited, Non-Executive Director of the CIDA Empowerment Trust and CIDA Empowerment (Pty) Ltd

## Mr Mohamed Ahmed Moolla

**Position/Affiliation:** Head: ICT Strategic Business Unit: Industrial Development Corporation (IDC)
**Qualifications:** MBA, BCom, BSc Engineering
**Field of Expertise:** Innovation Chasm/ Solutions – Venture Capital
**Board Memberships & Committees:** None

## Mr Fadl Hendricks

**Position/Affiliation:** Consultant
**Qualifications:** BSc (Chemical Engineering)
**Field of Expertise:** Biotechnology policy
**Board Memberships & Committees:** Non-Executive Director of Pelchem (Pty) Ltd, Litha Healthcare Group Limited and Centre for Proteomics and Genomic Research (CPGR). Resigned January 2015.

# Executive Committee

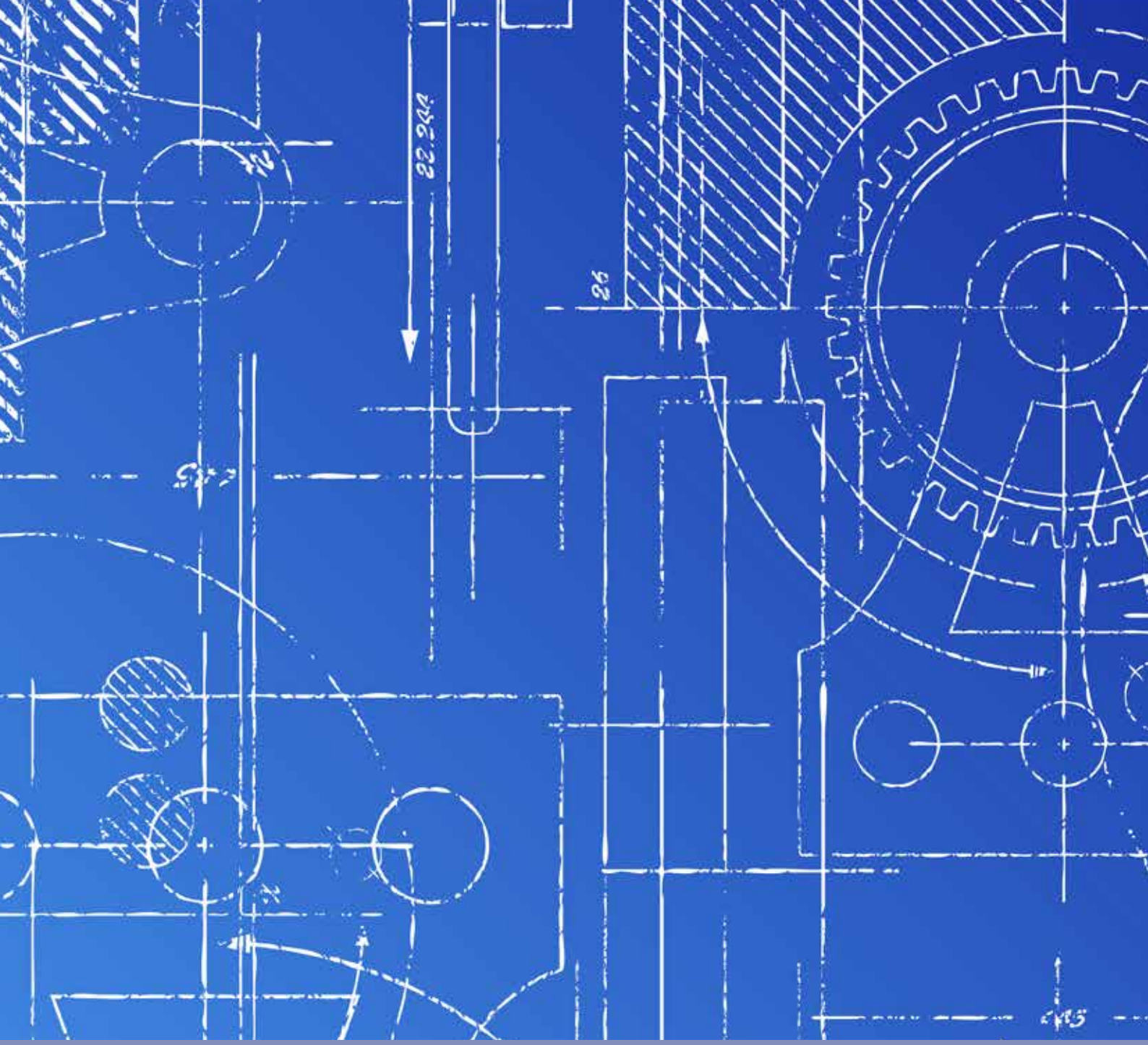
Prof Rivka Kfir
*Interim CEO*

Mr Werner van der Merwe
*CFO*

Ms Corlette Mamabolo
*Acting GE: Corporate Affairs*

Dr Sibongile Gumbi
*GE: Biotechnology*

Ms Pontsho Maruping
*GE: Industrial Sectors*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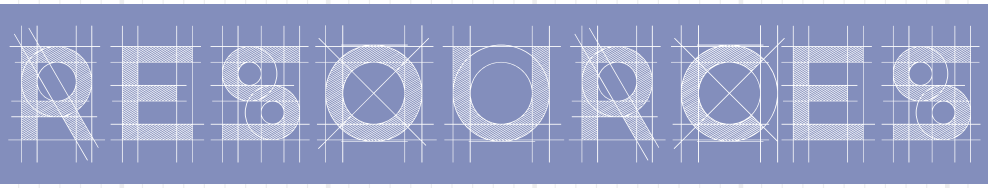
# HUMAN



# Human Resources

## Introduction

People are the heart and soul of any organisation. No organisation can become a high-performance organisation without high-performance individuals. The purpose of the Human Resource division is to partner with the organisation in creating an environment that is conducive to high performance. This is done through job planning and design, recruitment and selection, compensation and reward, training and development and performance appraisal. All these areas were enhanced during this financial year, with the restructuring process as the central theme.

## Priorities for the Year

The HR priorities for 2014/15 was the redesign and capacitating of a new organisational structure in support of the new strategic focus of TIA, as defined by the leadership, in response to the ministerial review. Continuation of HR improvement initiatives that were started in 2013/14 gained momentum and provided a stable baseline in HR operations for the restructuring process. Job profiles were updated and graded in line with the new organisational structure; matching and placement, including recruitment of specific executive positions were completed; and remuneration benchmarks were completed.

## Restructuring

Structure follows strategy and hence TIA needed to redesign the organisational structure in support of the newly defined strategy. Two critical objectives were to be achieved by the organisational re-design:

i) Improving efficiencies and effectiveness in the organisation in both the core and support business areas; and

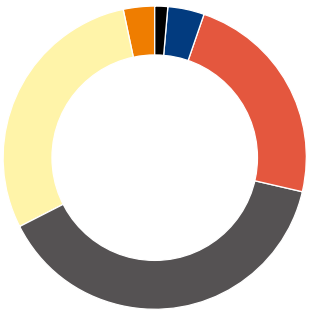
ii) reducing the cost of doing business in line with the National Treasury directive under the newly elected administration of 2014.

During the restructuring process, TIA ensured full participation and involvement of leadership, staff and organised labour represented by NEHAWU, Solidarity and the non-unionised employee forum. As a collective, a settlement agreement was concluded defining the principles applicable during the restructuring process.

37 staff members took the Voluntary Severance Package (VSP) offered and 143 staff members had to be matched and placed in the new structure. This process will be completed by the end of July in the 2015/16 financial year.

| Number of employees that took a VSP per level of employment | |
|---|---|
| Level of employment | Number of Employees: |
| Top management | 1 |
| Senior management | 4 |
| Professionally qualified | 12 |
| Skilled | 14 |
| Semi-skilled | 3 |
| Unskilled | 3 |
| Total | 37 |

*Value of VSP per employment level*



| | |
|---|---|
| Top Management | R283 679 |
| Senior Management | R1 613 475 |
| Professional Qualified | R2 670 951 |
| Skilled | R2 034 030 |
| Semi-Skilled | R211 444 |
| Unskilled | R96 572 |

TIA acknowledged the impact of a restructuring process and initiated a change management process to be implemented concurrent with the restructuring. As part of the project, all employees had an opportunity to participate in facilitated sessions where they identified their ability to change and their specific need for support during the change process. Open communication across the organisation was core to this process. The final outcome of the process was the nomination of a change activist that will take the change process forward into the new financial year.

## Organisational Structure

TIA is an organisation that resulted from the merger of seven different innovation entities in 2009/10 with the mandate to promote the development and exploitation, in the public interest, of discoveries, inventions, innovations and improvements.

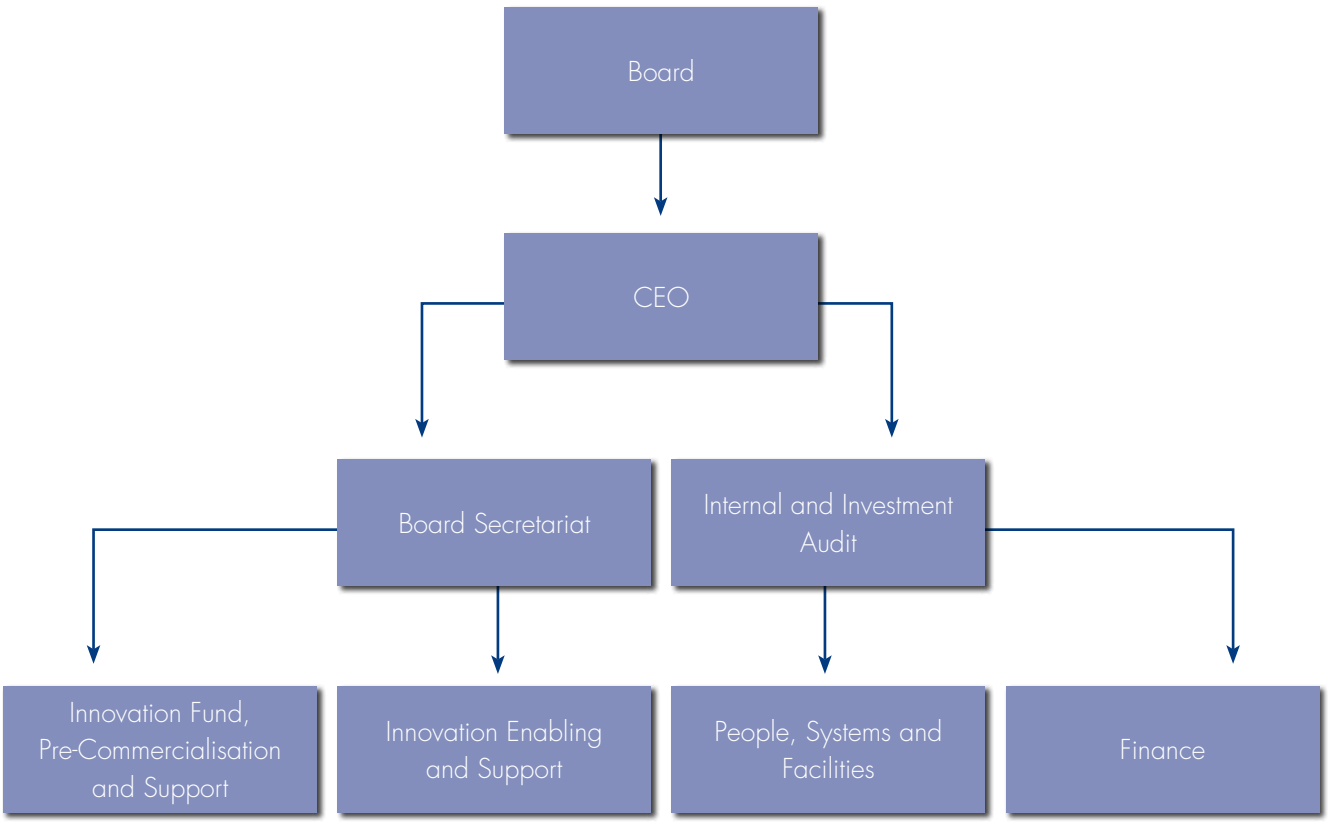
A strategic review was done during 2013/14 which resulted in an enhanced strategic focus for the Agency articulated through the following three strategic objectives:

a) To provide technology development funding and support in strategic high impact areas;
b) to provide thought leadership and an enabling environment for technology innovation in collaboration with others; and
c) to develop an effective and efficient internal environment to successfully execute the strategy.

In order to ensure that the organisation will be able to achieve the strategic objectives, a new organisational structure was designed linked to the above strategic objectives with two core divisions being established:

a) Innovation Funding and Pre-commercialisation Support; and
b) Innovation Enabling and Support.

The following high-level organisational structure has been implemented as part of the restructuring process.



## HR Operations

During the 2013/14 financial year, various HR improvement initiatives that focused on the automation of HR processes were initiated and during 2014/15, the focus was on maintenance and enhancement of the implemented support systems. This included rolling out the Performance Management System, which is the backbone for improving performance and employee development.

### Employee Benefits

As part of the restructuring process all job profiles were reviewed and graded. TIA participated in a national salary survey and the results were used to review the existing pay scales for alignment with the market and the new grading of positions. One of the critical elements of retention is ensuring that TIA employees are paid salaries that are market-related.

Another area critical to attraction of key skills, is the benefits offered by the Agency. These are reviewed annually and during the year under review the organisation migrated to a Total Cost to Company (CTC) remuneration approach in order to provide the employees the flexibility to structure their remuneration in accordance with their individual needs.

### Employee Development

In order to retain an innovative and professional workforce that plays an active role in the NSI, TIA is committed to the training and development of all employees. As part of the performance management process in TIA, all employees are also required to define an Individual Development Plan (IDP). TIA has spent 2,6% of its total labour cost on training and development.

### Employee Wellness Programmes

There are several initiatives focusing on employee wellness. These include bi-annual wellness days which give employees an opportunity to undergo health assessments and to use those results to develop a health improvement plan.

Independent Counselling and Advisory Services (ICAS) is contracted to provide additional, confidential assistance by qualified professionals ranging from legal to financial, psychological support and guidance. This service is extended to the immediate family members of the Agency's employees at no cost to the employee. During this period, ICAS observed an increase of 3,5% in total engagements from the previous year, which can mainly be ascribed to the restructuring process.

**Personnel Cost by Salary Band**

| Level | Personnel expenditure (CTC) | Personnel exp. as a % of total expenditure | Number EEs YTD+ | Average personnel cost per year |
|---|---|---|---|---|
| 1. Top management | R8 428 839 | 8,00% | 5 | R1 685 768 |
| 2. Senior Management | R24 417 212 | 23,19% | 24 | R1 017 384 |
| 3. Professional qualified | R42 158 334 | 40,03% | 75 | R562 111 |
| 4. Skilled | R24 641 359 | 23,40% | 80 | R308 017 |
| 5. Semi-skilled | R4 754 870 | 4,52% | 32 | R148 590 |
| 6. Unskilled | R910 478 | 0,86% | 13 | R70 037 |
| **Total** | **R105 311 092** | **100,00%** | **229** | |

**Employment Changes**

| Level | Employment at start of period | Appointments | Terminations | Employment at end of period |
|---|---|---|---|---|
| 1. Top management | 4 | 2 | 3 | 3 |
| 2. Senior management | 22 | 1 | 5 | 18 |
| 3. Professional qualified | 74 | 1 | 25 | 50 |
| 4. Skilled | 80 | 0 | 23 | 57 |
| 5. Semi-skilled | 30 | 2 | 6 | 26 |
| 6. Unskilled | 13 | 0 | 5 | 8 |
| **Total** | **223** | **6** | **67** | **162** |

| The Employee Equity Status | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Occupational Levels | Male | | | | Female | | | | Foreign Nationals | | Total |
| | A | C | I | W | A | C | I | W | Male | Female | |
| Top management | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| Senior management | 8 | 0 | 1 | 2 | 4 | 0 | 2 | 1 | 0 | 0 | 18 |
| Professionally qualified and experienced specialists and mid-management | 14 | 2 | 0 | 4 | 13 | 0 | 8 | 6 | 3 | 0 | 50 |
| Skilled technical and academically qualified workers, junior management, supervisors, foremen and superintendents | 18 | 2 | 1 | 2 | 29 | 2 | 1 | 2 | 0 | 0 | 57 |
| Semi-skilled and discretionary decision making | 1 | 0 | 0 | 0 | 16 | 4 | 1 | 4 | 0 | 0 | 26 |
| Unskilled and defined decision making | 2 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 8 |
| **Total Permanent** | **43** | **4** | **2** | **9** | **70** | **6** | **12** | **13** | **3** | **0** | **162** |
| Temporary employees | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Grand Total** | **43** | **4** | **2** | **9** | **70** | **6** | **12** | **13** | **3** | **0** | **162** |

* The above table excludes the Interim CEO

| Organisational Structure | | |
|---|---|---|
| Executive Unit | % Employees in the Unit | Departments |
| Office of the CEO | 8,73% | · Business Strategy Management<br>· Special Projects<br>· Audit and Enterprise Risk<br>· Board Secretariat<br>· Legal Services |
| Office of the CFO | 13,54% | · Finance<br>· Supply Chain Management<br>· Investment Finance Management<br>· Fund Management<br>· Investment Audit and Compliance |
| Office of the COO | 22,71% | · Investment Management Services<br>· Marketing and Branding<br>· Business Development and Strategic Partnerships<br>· International Business Development |
| Industrial sectors | 14,85% | · Mining and Minerals<br>· Energy<br>· Advanced Manufacturing<br>· Information and Communication Technology<br>· Technology Stations |
| Biotech sectors | 20,09% | · Agricultural Biotechnology<br>· Health Biotechnology<br>· Industrial Biotechnology<br>· Biotechnology Platform |

| Organisational Structure | | |
|---|---|---|
| Executive Unit | % Employees in the Unit | Departments |
| Corporate affairs | 20,09% | · Human Resources<br>· Security and Facilities<br>· Innovation Skills Development<br>· Information Technology and Information and Knowledge Management<br>· Communications and Events Management |
| | | · Business Performance Monitoring and Evaluation |
| **Total** | **100,00%** | |

| Reasons for staff leaving: | | |
|---|---|---|
| Reason | Number | % of total number of staff leaving |
| Death | 1 | 1,49 |
| Resignation | 23 | 34,33 |
| Dismissal | 2 | 2,99 |
| Retirement | 0 | 0 |
| End of contract | 4 | 5,97 |
| Retrenchment (voluntary) | 37 | 55,22 |
| Retrenchment | 0 | 0 |
| **Total** | **67** | **100** |

# BUSINESS PERFORMANCE

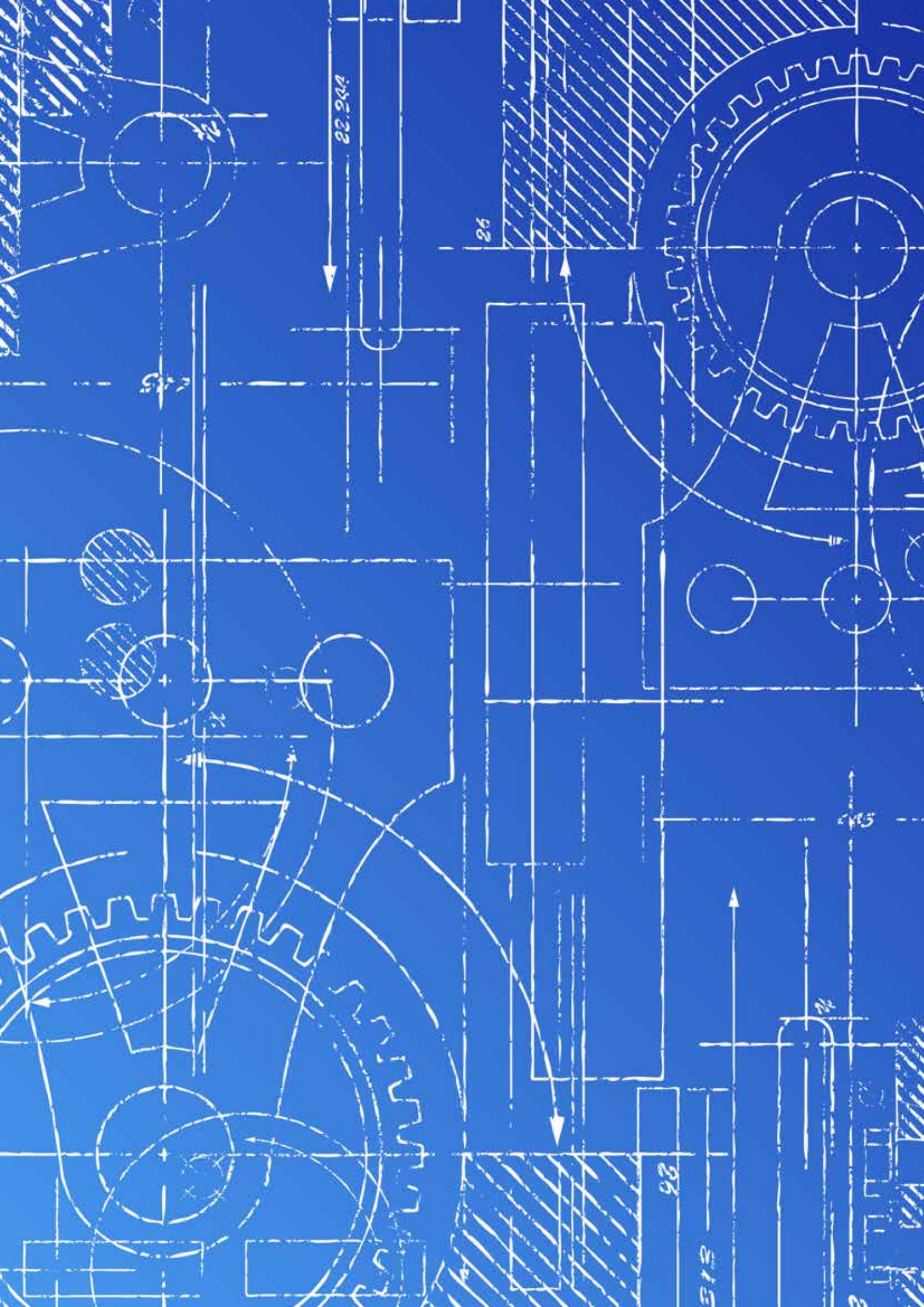
# Business Performance

During the reporting period of 2014/15, the organisation achieved 73% of its overall target. The organisation has a total of eleven Key Performance Indicators (KPIs) with six of them measuring the organisational impact on the external environment and the remaining five on the internal environment. All the external impact measures have been achieved and three of the internal environment have not been achieved. While all indicators are key to the organisational performance measurement, those externally focused are considered core indicators as they measure the extent to which the organisation impacts the National System of Innovation (NSI).

| **Strategic objective 1: To provide customer-centric technology development funding and support** | | | | | | |
|---|---|---|---|---|---|---|
| | Performance Indicator | Annual Target | Actual Achievement 2014/15 | Deviation from Planned to Actual Achievement for 2014/15 | Comments | Rating |
| 1.1 | Number of technologies, products, processes and services reaching demonstration stages | 5 | 8 | 3 | Extra effort in supporting a number of projects to progress along the TRL scale. As a result certain projects that had not been expected to reach demonstration, reached TRL7. | A |
| 1.2 | Number of technologies, products, processes and services taken up in the market (commercialised) | 3 | 6 | 3 | Effort was made by portfolio teams to provide better management and project support. | A |
| 1.3 | Amount of third-party funding attracted in TIA's portfolio | R30m | R200m | R170m | Continued efforts to leverage more funds, resulted in more third-party funding being attracted. | A |

| **Strategic objective 2: To provide an enabling environment for technology innovation in collaboration with other role players** | | | | | | |
|---|---|---|---|---|---|---|
| | Performance Indicator | Annual Target | Actual Achievement 2014/15 | Deviation from Planned to Actual Achievement for 2014/15 | Comments | Rating |
| 2.1 | Number of knowledge innovation products supported (prototypes developed patents registered) | 30 | 38 | 8 | A more effective method of data collection was implemented which enabled the organisation to capture more data. | A |
| 2.2 | Number of knowledge innovation products supported (prototypes developed patents registered), receiving follow-on funding | 7 | 8 | 1 | | A |
| 2.3 | Number of Small and Medium Enterprises receiving technology support from the Technology Stations and Institute for Advanced Tooling (IAT) | 2 000 | 2 188 | 188 | The mechanism of apportioning the funds, together with the funds allocated to the stations, based on performance-triggered competition between the stations which led to the over-achieved target. | A |

| Strategic objective 3: To develop an effective and efficient internal environment to successfully execute the strategy | | | | | | |
|---|---|---|---|---|---|---|
| Performance Indicator | | Annual Target | Actual Achievement 2014/15 | Deviation from Planned to Actual Achievement for 2014/15 | Comments | Rating |
| 3.1 | Investment approval turnaround time | 15 weeks | 0 | (0) | Due to funding constraints, teams decreased their efforts in encouraging new applications, and instead the focus was on clearing all the previous applications. | N |
| 3.2 | Improved adequacy and effectiveness on control environment | Unqualified audit opinion | 1 | 1 | Unqualified audit opinion achieved. | A |
| 3.3 | Amount of funds spent on investments as a percentage of the MTEF | 54% | 88% | 34% | The accumulated surplus was 100% used to make investments and project payments and thereby significantly exceeding its target. | A |
| 3.4 | To maintain staff turnover to market norms | Below 10% | 11,12% | (1,12%) | Due to the organisational design process more staff left than anticipated. The process is finalised and it is expected that the staff turnover rate will stabilise. | N |
| 3.5 | Maintain a high level of employee engagement index | 3,9 | 0% | (0) | The survey which measures employee engagement will, as a result of the change management initiative, only be undertaken in the 2015/16 financial year. | N |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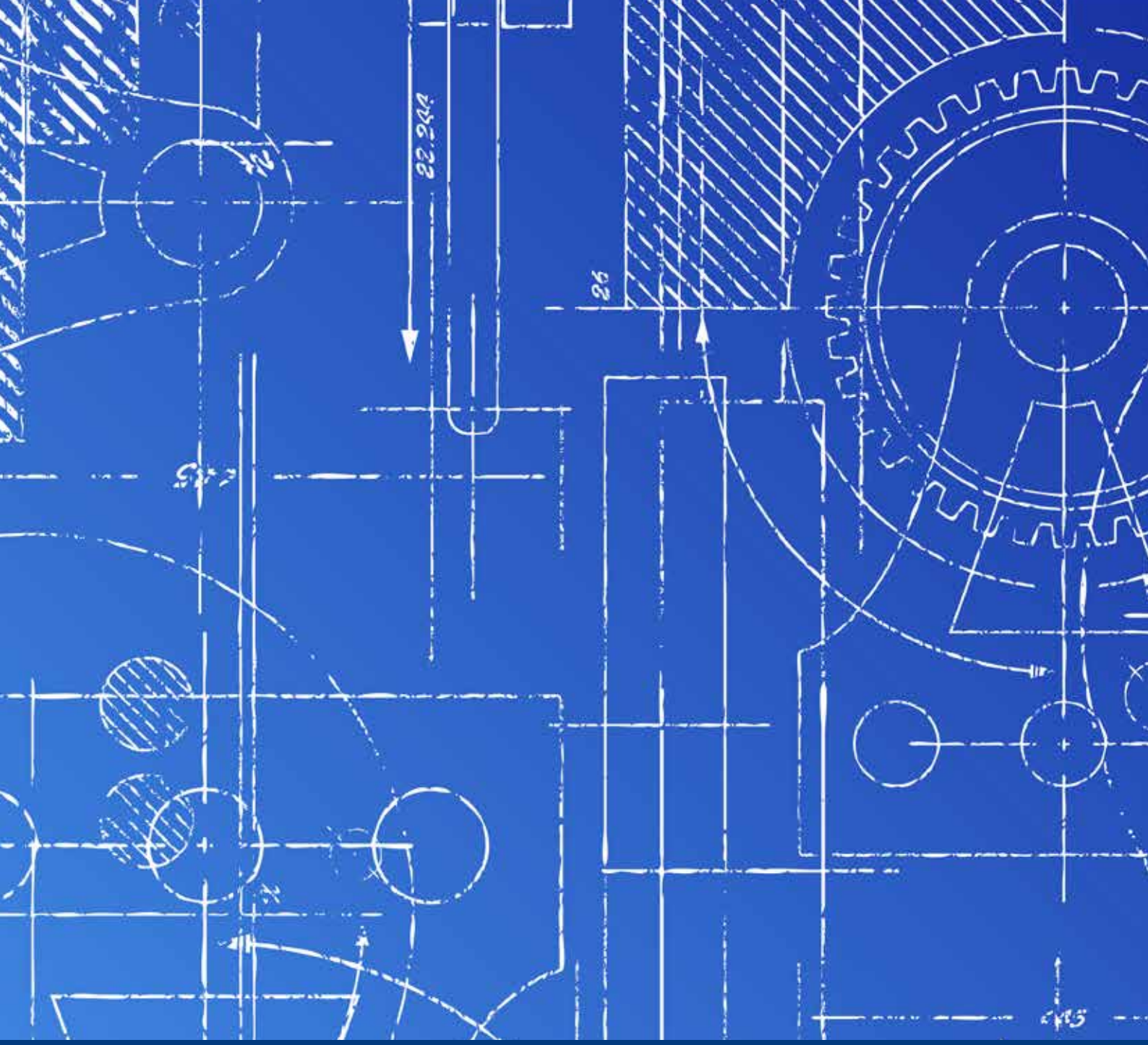
# TECHNOLOGY INNOVATION : SECTORS & PROGRAMMES

## Introduction:

TIA's main focus is on technology development; starting from proof of concept to technology development stage. To allow for seamless progression of technologies along this innovation value chain TIA has three main funds. These are the Seed Fund, the Technology Development Fund and the Commercialisation Support Fund. In addition to establishing funding mechanisms that are responsive to clients' needs, TIA has positioned itself to support technology innovations in four different roles, again servicing the innovation value chain: the CONNECTOR where TIA uses networks to link and connect opportunities; the ACTIVE FUNDER where we directly invest in technology ideas; the FACILITATOR involves working through other stakeholders to ensure the adoption and commercialisation of technology innovations and the SERVICE PROVIDER where we provide access to high-end skills and equipment through programmes that enable a culture of innovation. The outcome of TIA's funding mechanisms, together with putting into effect the strategic roles, showcases an organisation that has greater capability to deliver on its strategic objectives and annual performance targets, namely:

- To provide technology development funding and support in high impact areas;
- To provide thought leadership and an enabling environment for technology innovation in collaboration with other role players.

The following section reports on projects that have assisted the organisation to deliver on these two strategic objectives in particular and therefore, on its mandate to stimulate and intensify technological innovation in order to improve economic growth and the quality of life of all South Africans by developing and exploiting technological innovations.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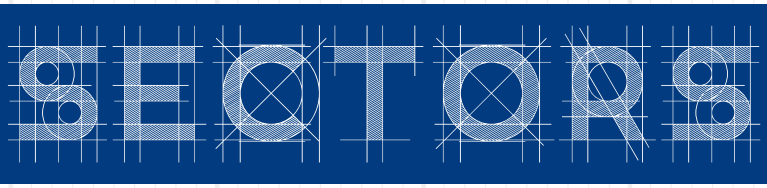
# TECHNOLOGY INNOVATION



# Advanced Manufacturing Technologies

Advanced manufacturing has been recognised globally as important to economic growth, employment and international competitiveness. The Advanced Manufacturing Unit promotes investment in innovations that will enhance the knowledge intensity of manufacturing in South Africa. Advanced manufacturing industries are defined as those that have the following characteristics or are positioned to transition towards:

- Increasingly integrating new innovative technologies in products and processes; and
- Adopting new technologies and are able to use the technology to remain competitive and add value.

| Purpose | Operational Objectives |
|---|---|
| The Advanced Manufacturing Unit exists to support the development of a knowledge economy in manufacturing by accelerating both the manufacturing capability and the knowledge intensity of the industry, and to increase and sustain the competitiveness and innovation in South Africa's manufacturing industry. | a) Technology – building on existing manufacturing capabilities to increase and create new competitive advantages.<br>b) Industry – facilitate development of competitive advanced manufacturing industry.<br>c) Knowledge networks – foster the development of advanced manufacturing networks to co-ordinate and direct research activities in the sector.<br>d) Green manufacturing – facilitate the greening of the brown economy to position the advanced manufacturing industries to take advantage of the increasing demand for environmentally-friendly products. |
| **Portfolio Summary** | |
| Total number of projects | 36 |
| Portfolio exposure | R299 million |

## Unit Performance

### Providing Customer-centric Technology Development Funding and Support

Manufacturing remains a critical sector in South Africa's economy and fulfills two important roles for the country. Firstly, it is a vital pathway from being resource-based to becoming knowledge-based and, secondly, is an important source of innovation, productiveness and competitiveness.

The following two projects contributed towards achieving the organisation's targets. Rubber Nano Products – this project set out to develop a production-ready "ZR6" additive for use in the automotive OEM tire manufacturing industry. The outcomes of this project include the development of emerging high technology industry for the manufacturing sector and, more importantly, a contribution towards a positive balance of accounts by generating revenue in foreign currency.

Arcaqua is a unique innovation that is set to make a difference in the food processing industry through the development of a system for commercial applications in sanitisation of food and vegetables, without using toxic cleaning agents. The technology will not only contribute to the sustainability of the food processing industry, but potentially increase quality acceptance levels for export produce. The desired outcome is to improve the competitiveness of the food processors by adopting this cost-effective and efficient new system.

## Stakeholder Engagement Activities

The unit constantly and actively seeks alignment with DST's Advanced Manufacturing directorate in order to participate in and influence policy-making.

TIA's AM Unit is part of the steering committees that is overseeing the evaluation of the impact of the "National Advanced Manufacturing Technology Strategy (AMTS)".

Looking forward, TIA AM Unit is also part of the steering committee that is overseeing the development of Advanced Manufacturing Roadmaps that will inform policy and investment decision for the future.

The AM Unit also actively participates in the "Joint Aerospace Steering Committee (JASC) that is chaired by the DST and the Department of Trade and Industry. This is a sector-specific intervention that is aimed at improving the co-ordination and output of this sector, which is considered a key sector for the proliferation of advanced manufacturing technologies.

## Advanced Manufacturing

# Diagnostic Multicamera

| | |
|---|---|
| Project location | Gauteng (Pretoria) |
| Investment opportunity | R12,1 million |

A major component of power distribution is to ensure that power lines are maintained and potential faults are detected before they occur. The cost and time associated with power line inspection and fault detection runs up to tens of millions of rands per year. The Diagnostic Multi-camera (transmission lines fault detection and diagnosis) is a multi-functional diagnostic camera system used for fault detection on high voltage power lines. This new high technology will be used to support companies like Eskom and Transnet to maintain high voltage power line infrastructure more effectively and efficiently.

The project is a joint collaboration between TIA, the CSIR and Eskom, who have come together to develop world-class technology for the monitoring of potential power line failure from a phenomenon known as corona discharge.

It will be an important tool in the utilities' preventative maintenance activities by drastically simplifying the user's abilities to quickly detect and quantify the nature of the possible failure. The camera will be produced by a hi-tech spin-off company of the CSIR, called UViRCO.

A proudly South African Science and Technology success story – is the world-renowned corona detection camera system, the "CoroCAM". Initially funded and developed as a joint partnership between Eskom and the CSIR, this overhead power line inspection camera has evolved drastically in functionality from its initial design in the 1990s to present day.

During maintenance power line inspection, electrical utilities typically need to locate potential insulator and structural/component failures timeously. If these are not detected sufficiently early with proper diagnoses and understanding of the severity of such line faults, incomplete or inappropriate maintenance action could be taken, which, in turn, could lead to a complete power line outage.

The latest model, the "MultiCAM", incorporates novel patented quantification and image processing technologies and is classified as state-of-the-art in its class of cameras. TIA is currently funding the development of these latest technologies that are to be incorporated into the camera. Once the development is concluded, the camera will be able to interpret images of the power line fault and, in addition, it will be able to scientifically quantify the severity of the corona discharge in the visual, infrared and ultraviolet channels/spectrums.

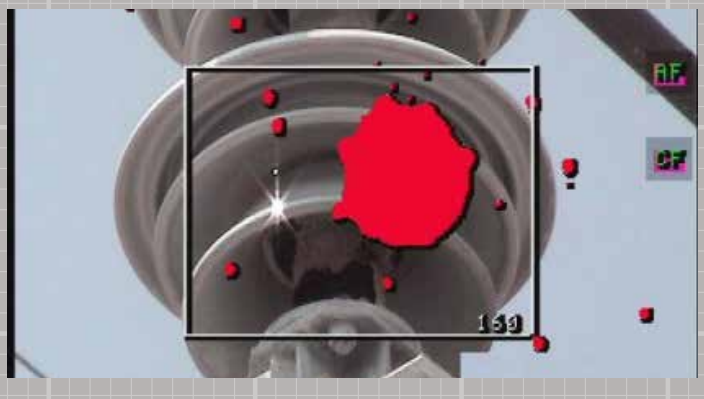
## A Word from the Innovator:

*"The CSIR and TIA collaboration adds great wealth and synergy to our research and development in power line inspection technologies. The agency's financial input, passion and tenacity to develop and commercialise the best camera product, continues to drive us to outperform. We look forward to further collaborate with TIA in the commercialisation of patented technologies."*

*– Roel Stolper, Principal Researcher Electro-Optics, CSIR*

*"The success of the Eskom/CSIR partnership can be attributed to the highly driven and passionate team members at both organisations. The most recent partnership with TIA can be seen as taking the relationship to the next level in terms of firmly stamping South Africa's footprint on corona cameras and associated quantification in the global market. It has been most gratifying to see TIA's forward thinking approach to the latest version of the camera, and its support through the funding made available. We look forward to another great success story together with TIA, CSIR and UVIRCo, and to future successful developments that are on the cards."*

*– Nishal Mahatho, Senior Consultant, Eskom Holdings SOC Ltd.*

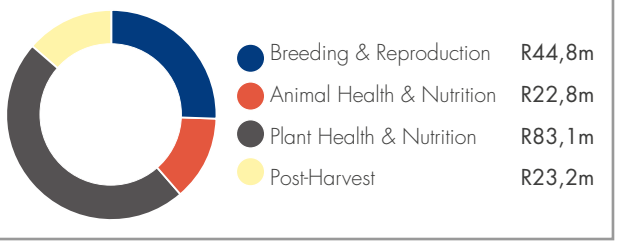


# Agricultural Biotechnology

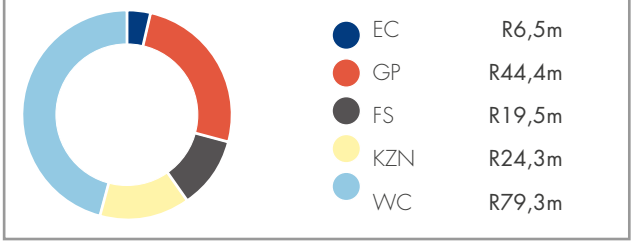
Agriculture in South Africa still forms a critical part of the country's socio-economic and socio-political stability, with a large percentage of the population's livelihood dependent on the need to build a globally competitive sector that will be able to withstand incoming agricultural produce from the rest of the world. This sector is central to the National Development Plan where Government aims to eliminate income poverty from 39% to 0% and reduce inequality by reducing the Gini Coefficient from 0,69 to 0,6. Core to delivering on these aspirations, is the need to develop and support an inclusive agricultural economy that should create new direct and indirect jobs and to maintain a positive trade balance from primary and processed agricultural products. For agriculture to contribute to these aspirations, the country has developed a multiple policy instrument with technology innovation playing a significant role towards a globally competitive sector.

| Purpose | Operational Objectives |
|---|---|
| To build a portfolio of agriculture technologies with potential for commercialisation and to contribute towards competitive, sustainable and inclusive agriculture and agri-business value chains. | In our endeavour to support a competitive, sustainable and inclusive agriculture and agri-business value chain, the STA funds opportunities with the objectives of:<br>a) Supporting the creation of an enabling environment for agricultural technology innovation;<br>b) Supporting the development and demonstration of attractive agricultural technology innovations;<br>c) Facilitating commercialisation of de-risked technologies; and<br>d) Improving the diffusion of appropriate agricultural technologies to small-scale and emerging farmers. |
| **Portfolio Summary** | |
| Total number of projects | 29 |
| Portfolio exposure | R200.2 million |

*Composition of Portfolio*




*By Region*



## Agricultural Biotechnology

# AgriProtein

| | |
|---|---|
| Project location | Western Cape (Cape Town) |
| Investment opportunity | R11,9 million |

### AgriProtein successfully secures R91,5 million in investment commitments for the commercialisation phase

AgriProtein Technologies (Pty) Ltd is a technology start-up company located in Philippi, one of the economically depressed areas of Cape Town. The company has already created 30 new job opportunities for the community. Since 2009, the company has, at their own cost, successfully developed and piloted a nutrient recycling technology (converting organic waste to animal feed protein) as part of their goal to commercialise an insect-based protein feed in the animal feed industry. This is in response to an unmet market need in the animal feed and livestock industries to bring to the market, sustainable and affordable alternatives to fishmeal and soymeal.

In March 2014, TIA committed R11,9 million to support the demonstration and market testing and validation of this technology. AgriProtein has committed another R11,9 million as co-funding towards the same milestones. The company is currently finalising its 2 500 tons per year commercial scale facility that will enable it to demonstrate the technology with the intent to start commercial sales in October 2015. It is noteworthy that the company has already sold up to 80 tons of the two main products, namely an animal feed protein, i.e. Magmeal (50 tons) and MagOil (30 tons).

To enter the last phase in its innovation journey, the company has plans to scale its production capacity to meet demand from the market (animal feed manufacturing) over the next five years by commissioning seven production factories in South Africa, Africa and Europe. In preparation for this phase, AgriProtein has successfully approached local and international investors, who have committed R91,5 million towards three production factories in South Africa on successful completion of the technology demonstration, market testing and validation milestones, funded by TIA.

### Afrikaans:

AgriProtein Technologies (Edms) Bpk is 'n nuutgestigde tegnologiemaatskappy in Kaapstad. Die maatskappy het 'n voedingherwinningstegnologie (die omskakeling van organiese afval in dierevoer-proteïen) suksesvol ontwikkel en in werking gestel as deel van hul doelwit om 'n insekgebaseerde proteïenvoedingstof kommersieel aan die dierevoerbedryf beskikbaar te stel. Hul aanleg is in Philippi, een van die ekonomies-agtergeblewe gebiede in die Kaapse Skiereiland, sodat nuwe werkgeleenthede vir die gemeenskap daar geskep kon word. Hulle het reeds 30 mense, meestal van Philippi, in diens as deel van die voorbereidingsfase vir volle kommersialisering. Die aanleg sal 70 mense in diens hê wanneer volle produksie bereik word.

## Unit Performance

### Stimulating the Development and Demonstration of Technology-based Products and Processes

South Africa's local fruit industry is continuously seeking greener pest control solutions that will enable continued access to market and growth in export sales and thus contributing to increased export earnings for the country. One company that is addressing this need in industry is Nema Bio (Pty) Ltd. With funding of R11,2 million from TIA, Nema Bio has developed, demonstrated and conducted field trials of entomopathogenic nematode (EPN)-based biological control products based on unique and endemic isolates.

Agrachem (Pty) Ltd was funded R9,5 million over four years to further develop their novel agapanthus-based bio-fungicide technology. The specific objective of the funding was to pilot, demonstrate and conduct field trials in key crops in the local market. The successful commercialisation of the technology will contribute towards the beneficiation of a local biological resource for the benefit of the global agricultural economy. Agrachem committed R3,1 million as co-funding to share the risk with TIA.

There are growing pressures for modern economies to adopt cleaner and environmentally-friendly energy sources in a bid to limit global warming.

The Sweet Sorghum as Bioethanol feedstock project of the University of KwaZulu-Natal is looking at further developing selected sweet sorghum lines from phase 1 of funding into commercially viable hybrids. The successful development of sweet sorghum hybrids will expand feedstock options for bioethanol production. This is a three-year project funded for R3,7 million.

### Supporting the Commercialisation of Technology Innovations

The Beef Breeding Technology Innovation Programme is funded over three years under TIA's Technology Innovation Programme's initiative to support the co-operative and collaborative effort between the beef industry, science councils and universities in the development, commercialisation and diffusion of livestock genomics to effectively measure and trade in economically important breeding traits.

The objective of the programme is to develop technologies that support the commercialisation of difficult to measure traits, i.e. feed conversion and carcass quality. The total cost of the programme is R70 million over the three years, where TIA has committed R30 million and industry partners committing a total of R40 million. This will contribute towards a globally competitive, sustainable and profitable beef industry, able to respond to local and global beef product demand.

## Stakeholder Engagements

### Establishment of the Beef Breeding Technology Innovation Programme

As part of the process to establish a multi-stakeholder, collaborative initiative to support the development and adoption of genomic tools in livestock production in South Africa, TIA interacted with a number of stakeholders to build business cases for consideration of support as defined by TIA's Technology Innovation Programmes. The table below presents the categories and names of stakeholders:

| Stakeholder Category | Role Players |
|---|---|
| Public institutions | Agricultural Research Council, University of Pretoria, University of the Free State |
| Industry partners | Red Meat Producers Organisation (RPO), National Emergent Red Meat Producers Organisation (NERPO), Studbook, BreedPlan |
| Breed societies | Bonsmara, Brahman, Nguni, Beefmaster, Simbra, Boran, Simmentaler, Brangus, Santa Gertudis, Drakensberger, Angus, Tuli, Sessex, Hereford, Limousin, Afrikaner, Charolais, Bradford, Hugenoot, Brauncieh, Pinzgauer, South Deven, Afrisim, Gelbvieh, Red poll |

## Agricultural Biotechnology

### Mabu Casing Soils (Pty) Ltd

| | |
|---|---|
| Project location | Gauteng (Johannesburg) |
| Investment opportunity | R4,2 million |

**Mabu Casing Soils (Pty) Ltd secures R4,32 million in commercialisation funding of the innovative alternative Casing Soil Technology for use in mushroom production**

Mabu Casing Soils (Pty) Ltd is a technology start-up company located in Bapsfontein, in the Gauteng province. This start-up company offers 100% natural casing soil that has been developed from a process by which pith from sugarcane bagasse can be used as substitute for imported peat in mushroom cultivation. Pith casing is cost effective and sustainable.

Since 2010, the company has been involved in the further development of intellectual property from the University of Pretoria (UP) under an exclusive commercial license. This is a greener alternative casing soil for the button mushroom farming industry. The technology was formulated at the University of Pretoria under funding from the South African Mushroom Farmers' Association (SAMFA). Mabu is owned by two female scientists, Dr Linda Meyer, who was part of the technology development team at UP and Anne van Heerden.

Since the middle of 2014, Mabu has expanded into the horticultural industry, developing seedling and plant growth medium from sugarcane pith. Peat usage in the horticultural sector is also under scrutiny and is being phased out by environmentally-conscious growers. Peat was the preferred medium in both the mushroom and horticultural industries, but is a classified fossil fuel and therefore the use of it is a non-sustainable practice.

By September 2014, the company had successfully completed all funding objectives and started transporting their first commercial product to mushroom farmers. This was possible because the company secured R1,75 million from AFGRI to finance acquisition of the Bapsfontein property. To sustain sales growth, Mabu approached the IDC and was able to secure an additional R2,57 million in working capital and equipment finance.

"Mabu Casing Soils was granted technology development funds from TIA, principally to "bridge the gap" between the University of Pretoria's research and commercialisation. With TIA's financial help and business support, Mabu was in a position to make the step-up from small-scale processing to full-scale commercial production."
– Dr Linda Meyer, Owner, MABU

### Small-scale and Emerging Farmer Technology Diffusion Initiative

The challenge for TIA, as the agency that has been tasked with supporting Government in stimulating and intensifying technological innovation in order to improve economic growth and the quality of life of all South Africans, is to develop solutions through which innovation can be utilised to improve the conditions of life of the lower income groups. Any activity in this area needs to be aligned to the aspirations of the Agency to contribute not only to the economy in general, but to socio-economic impact in marginalised and rural communities.

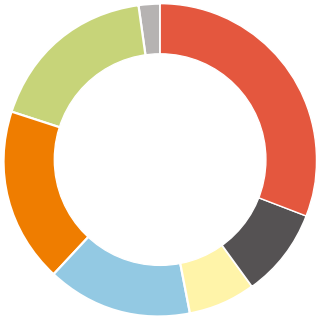
In this regard, TIA has identified the sustainable diffusion of appropriate technologies to small-scale and emerging farmers as a way to contribute directly to inclusive development of the sector. During the financial year, the Agency has interacted with various Government Departments that have instruments targeted at rural agriculture, with specific focus on small-scale and emerging farmers. These include the Department of Trade and Industry, the Department of Agriculture, Forestry and Fisheries and the Department of Rural Development and Land Reform. As part of the "Cassava as an industrial starch" initiative, the Agency also interacted with private industry (Tongaat Hulett Starch, Ingredion South Africa and Mondi Zimele) as part of value chain development.

# Energy

The South African energy landscape is changing rapidly to increase, at unprecedented levels, the contribution of renewable energy sources onto the grid, propelled by the Government's Renewable Energy Independent Power Producers Programmes (REIPPP), led by the Department of Energy. Critical for South Africa in the short to medium term, is stabilising security of supply, balancing the green economy agenda with the developmental needs of the country, as well as improving energy access to the masses.

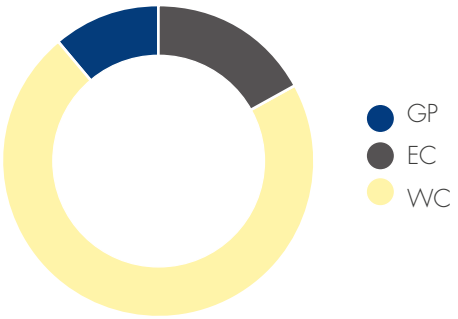
| Purpose | Operational Objectives |
|---|---|
| To support the development of an innovative, competitive and sustainable energy industry that supports South Africa's transition to a low carbon economy, contributing to the energy security of supply and the creation of emerging industries. | To fund technologies that contribute towards:<br>a) Strengthening security of supply; and<br>b) Supporting the Government's efforts of transition to a low carbon economy through proliferation of clean energy and climate change adaptation and mitigation technologies. |
| **Portfolio Summary** | |
| Total projects | 18 |
| Total portfolio exposure | R164 million |

*Contracted Funds*

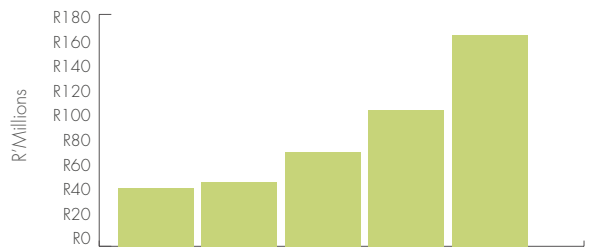


| | |
|---|---|
| Renewables (SWH) | R0,3 m |
| Renewables (Solar PV) | R50,9 m |
| Renewables (Solar CSP) | R14,9 m |
| Renewables (Wind) | R11,0 m |
| Alternative Energy (Fuel Cells) | R24,9 m |
| Bio-energy (Biofuels) | R29,2 m |
| Energy Management (Efficiency and Storage) | R28,9 m |
| Renewables (wave/ocean) | R3,7 m |

*Regional Split*




*Energy Investment Portfolio*




| | Pre-March 2011 | 2011/12 | 2012/13 | 2013/14 | 2014/15 |
|---|---|---|---|---|---|
| Growth Rate | | 17% | 54% | 54% | 49% |
| Number of projects/ investments | 4 | 2 | 4 | 5 | 5 |
| Total portfolio size | R39 786 328 | R46 644 210 | R71 732 255 | R110 178 288 | R164 560 280 |

## Unit Performance

### Providing Customer-centric Technology Development Funding and Support

The energy landscape is shifting in a dramatic way. The utilisation of fossil fuels, renewables and energy efficiency, are topical subjects in the sector. Central to these issues is the role that technology plays in ensuring that constantly changing energy needs can be met. TIA has played a critical role in supporting the development of a number of critical technologies designed to contribute to strengthening South Africa's energy security.

The technology holds immense benefits for the South African energy sector as it will reposition South Africa as a key player in the battery technology space that was lost years ago after the CSIR developed the Zebra battery technology, now commercialised globally in Europe. It will also lead to the creation of local high value manufacturing capability and support the beneficiation of the locally abundant manganese resources.

The proliferation of hydrogen fuel cells has been limited to the logistical challenges around transportation of hydrogen. Whereas the supply chain and logistics for diesel is widely accepted, the ability to use the latest catalysts in hydrogen fuel cells would enable the conversion of diesel on site, to hydrogen to power fuel cells. The University of Cape Town's (UCT) Hydrogen SA (HySA) catalysis project, funded for just under R10 million, involves the demonstration of membrane electrode assemblies and catalysts that would be tested on commercial fuel cell units to be deployed in cellular phone towers. While the fuel cells will contribute towards strengthening the security of supply, demand for platinum group metals will be stimulated, in support of the minerals beneficiation strategy.

Fossil fuels continue to be the primary source of energy in South Africa. Efforts are underway to minimise the national carbon footprint arising out of this form of energy source by industries that rely on it.

InnoVenton: The Institute for Chemical Technology is a formally registered Research Institute at the Nelson Mandela Metropolitan University, whose principal research focus is on Applied Chemistry in Product and Process Development. The institution was approved for funding to investigate the possibility of generating biofuels, using a colony of micro-algae strands and cyano-bacteria as feedstock.

The Micro-algae demonstration, funded to a total amount of R24,4 million under the Biofuels Technology Demonstration Programme, sponsored by the Department of Science and Technology, is developing novel procedures for growing, harvesting and agglomerating micro-algae biomass with coal fines to create coal-algae briquettes as well as bio-crude oil. The success of the project will see micro-algae biomass-infused coal briquettes that could be sold to Eskom and the biofuel used as additives to fossil-based fuel, potentially further reducing greenhouse gases from fuels. This project is based at the Nelson Mandela Metropolitan University.

### Creating an Enabling Environment for Technology Innovation in Collaboration with other Role Players

Tiisetso Development Solutions (TDS): TIA funded TDS to develop and run pilot installations of their electric power circuit, incorporated into residential electrical readiness boards, for low cost houses. Following a successful exhibition of the technology at the Innovation Bridge in February 2015, the SABC visited Soshanguve and interviewed a number of people from households benefitting from the technology, resulting in promoting and raising the profile of TDS.

## Energy

### Manganese-based Cathode Materials

| | |
|---|---|
| Project location | Gauteng (Pretoria) |
| Investment opportunity | R15,3 million |

The Council for Scientific and Industrial Research (CSIR) has developed a novel technology in the form of a micro-waved-based process for the production of cathode materials for lithium ion batteries. The proposed new manufacturing process addresses the high energy costs and long manufacturing time challenges associated with manufacturing batteries. This development is critical to the success of renewable energy technologies and, increasingly, the electric vehicle sector.

**NDEBELE:**

ISayensi yezoMatheriyali nokuKhiqhiza eKorweni ye-CSIR bujamo obuhlukileko nobungakavami bokufaka amandla nomthelela ebubulweni lemetheriyalini nemikhiqizo e-Afrika begodu nokuthuthukisa umnotho wabantu ngomnqopho wokuthuthukisa izinga lepilo yawowoke amaSewula Afrika.

### Hydrogen SA Catalysis

| | |
|---|---|
| Project location | Western Cape (Cape Town) |
| Investment opportunity | R9,9 million |

The HySA project aims to develop Membrane Electrode Assembly (MEA) that will meet the specifications, advance the manufacturability of the reformer design, develop improved diesel reforming operating conditions and conduct field trials in order to obtain data on performance areas and areas of improvement. HySA is a funded programme of the Department of Science and Technology (DST) consisting of three distributed centres of competencies and hosted by several universities (North West, Western Cape and Cape Town). One of the key objectives of the HySA Catalysis Centre is to enable South Africans to participate in the commercialisation of fuel cell technologies, where after Key Programme 2 will focus on the Portable Power market to deliver commercially viable portable power systems in the 50 W to 5 kW power range.

# InnoVenton: Micro-Algae

| | |
|---|---|
| Project location | Eastern Cape (Port Elizabeth) |
| Investment opportunity | R28,6 million (ring-fenced funding) |

InnoVenton (Institute for Chemical Technology) is a formally registered Research Institute at the Nelson Mandela Metropolitan University in Port Elizabeth, whose principle research focus is on Applied Chemistry in Product and Process Development. The institute has received funding to investigate the possibility of generating biofuels, using a colony of micro-algae strands and cyano-bacteria as feedstock. Mainly intended to produce biofuels as a blend with existing transport fuels, NMMU then discovered the benefits of coal-algae agglomerates, a blend of micro-algae with coal fines to produce a cleaner coal which incorporates a biomass component. The agglomerated material can be used to generate electricity or produce transport fuels. The institute is in the process of concluding independent verification tests with international and local companies in order to determine marketability of its product as it promotes the use of environment-friendly transport fuels and addresses the environmental pollution problem associated with high mineral particles in the atmosphere.

# PST Sensors

| | |
|---|---|
| Project location | Western Cape (Cape Town) |
| Investment opportunity | R18 million |

PST sells the ability to put temperature sensing into everything and anywhere. It is a multiple award-winning start-up company expanding out of Cape Town, South Africa. Working with its global customers, PST Sensors has developed a suite of temperature sensing systems which cannot be manufactured using other technologies. These include not only fully flexible and large area temperature sensing systems, but also sensor arrays. At the heart of PST Sensors' product range, is a silicon nanoparticle negative temperature coefficient (NTC) thermistor which can be printed on almost any material including paper, fabric and polymer film, with an almost infinite choice of form factors.

"As a technology company, a focused well-protected IP portfolio is essential to the security and growth of our business. In the growth stage of the company, it would be impossible to maintain this without the financial assistance of TIA."
– David Britton, PST Sensors

# Tsiisetso Development Solutions (Pty) Ltd - eSentry

| | |
|---|---|
| Project location | Gauteng (East Rand) |
| Investment opportunity | R3,2 million |

Currently 36% of fires in South Africa, each year, are caused by electrical faults. The result is a financial loss of more than R73 million and does not take the loss of human life into account. Research revealed that people still use electricity in a manner that results in electrical circuits being overloaded, often ending up with electrical fires. Tiisetso Development Services developed a patented SABS-NRCS compliant and authorised eSentry which is an addition to existing ready boards. This gives the user immediate feedback on the instantaneous power being consumed, by an LED above each plug point that gives an indication of the power consumed by way of a varying flash period.

This won the company a dti Technology Award. The market validation of the eSentry pilot project conducted in one of the townships within the City of Tshwane, revealed behavioural changes that resulted in users avoiding the overloading of electrical circuits. The eSentry is available to new installations as an already added fixture to ready boards prior to installation, or as retrofit to existing installed ready boards.

"TIA indeed played a crucial role in support of the development of the eSentry, not only in the form of funding assistance, but also availing a whole range of resources and expertise that led to a successful market validation pilot project".
– Popo Jada, CEO, TDS

# Health Biotechnology

The Health Biotechnology Unit 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 diagnosis, prevention and/or treatment of priority disease areas in South Africa. 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 goal of the Health Biotechnology Unit is to stimulate and support the development, registration, manufacture and commercialisation of products and services which address the healthcare needs of the country. The priority investment areas include drug development (including phytomedicine), medical devices and diagnostics, and vaccines and biologicals.

| Purpose | Operational Objectives |
|---|---|
| The Health sector 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 diagnosis, prevention and/or treatment of priority disease areas within South Africa. | a) Invest in projects that focus on the development of affordable and adaptable novel health products that address the high burden of disease in Southern Africa.<br>b) Focus on the development of capacity within drug development, including building critical mass in areas of HIV, malaria and TB, as well as phytomedicines.<br>c) Strengthen the current portfolio of medical devices and diagnostic products, develop point of care diagnostics with a focus on TB, and exploit South Africa's expertise in cardiac and orthopaedic devices.<br>d) Develop local vaccine manufacturing capability for pandemic response and address Africa's disease burden.<br>e) Support local API manufacturing efforts. |
| **Portfolio Summary** | |
| Total number of projects | 42 |
| Portfolio exposure | R710 million |

## Unit Performance

South Africa has the world's highest burden of HIV disease, with an increasing incidence of TB co-infection. The National Biotechnology Strategy seeks to contribute towards addressing this challenge by providing technology platforms that transform the local industry into a value-driven, innovative sector.

### Providing Customer-centric Technology Development Funding and Support

CPT Pharma (Pty) Ltd contributed R3,3 million in land and administrative services and attracted co-funding from IDC of R22,7 million. The funds are geared towards designing and building a pilot plant for the proof of concept manufacturing of four active pharmaceutical ingredients (APIs) and to obtain GMP approval for CPT Pharma (Pty) Ltd, as manufacturer of these APIs by the South African Medical Control Council (MCC). The pilot plant is critical for the implementation of a larger manufacturing project which will comprise a prefeasibility study and the construction and commissioning of a commercial API plant.

Research done by the CPT research and development team resulted in the development of competitive processes which synthesised two human (Isoniazid and Terizidone) and two animal (Niclosamide and Closantel) pharmaceutical actives.

The pilot plant will be used for the production of pilot batches under GMP conditions. Three pilot batches of each product will undergo stability tests. The stability studies will be used to generate the required data to enable the MCC registration of CPT as a manufacturer, as well as to access export markets.

ACRO is a locally-owned, full-service clinical research organisation based in South Africa whose services include the management of phase I-IV clinical trials, research training, capacity building and clinical trial auditing. With a strong South African focus and presence, ACRO works across the African continent with staff in both East and West Africa. ACRO employees all have multinational experience guaranteeing clients that their trials will be conducted to international standards with competitive costing. The company is committed to capacity building across the Southern African region and has formed strategic development partnerships with a solid base in South Africa and an Africa focus.

TIA has funded ACRO towards the FACTS 001 study. The study is a Phase III, multi-centre, randomised controlled trial to assess the safety and effectiveness of the vaginal microbicide 1% Tenofovir gel in the prevention of Human Immunodeficiency Virus Type I infection in young women; and to examine the effects of the microbicide on the incidence of Herpes Simplex Virus Type II infection. To date, the monitoring of the project has also received co-funding from CONRAD, for monitoring activities. Additionally CONRAD committed to support a funding shortfall of R13,05 million by up to R8,38 million, while DST committed to fund the remainder of R4,67 million.

The Nuclear Energy Corporation SOC Limited (NECSA) has committed to contribute R957 600 co-funding costs for the development of companion diagnostics for Cisplatin-based cancer therapy. Cancer prevalence is on the increase in South Africa and globally. Cancer treatment can be extremely expensive and have severe side effects and therefore has a huge impact on the quality of life of patients. Cisplatin, a very commonly used chemotherapeutic pharmaceutical, is a product that has demonstrated efficacy in the treatment of ovarian, cervical, testicular, bladder and head and neck carcinomas.

The side effects of administrating the drug, can be serious. It is therefore necessary that the dosage of the drug be determined and administered in a manner that is appropriate for each individual patient. Currently, the accepted standard relies on surface area and mass calculations, rather than uptake of the drug at the tumour site. However, this vital information could be obtained if minute amounts of the drug, 'tagged' with a radioactive compound, could be administered to each patient and then the patient could be scanned and evaluated to determine uptake of the drug.

A team of scientists at the South African Nuclear Energy Corporation SOC Limited (NECSA) have optimised the process to attach radioactive $^{195m}$Platinum (Pt) to Cisplatin which could assist oncologists to tailor the subsequent Cisplatin treatment regimen for each patient. This project, co-funded by TIA and NECSA, aims to conduct clinical studies to prove the validity and efficacy in this approach so that ultimately $^{195m}$Pt-cisplatin can be used as a companion diagnostic to Cisplatin treatment in order to obtain maximum therapeutic effect, whilst reducing costs and side effects.

## Provide an Enabling Environment for Technology Innovation in Collaboration with other Role Players

Three health innovation products were produced in the reporting period.

a) SA Cardiosynthetics produced the first round of working prototypes for use in benchtop pulse duplicators that have shown early validation that the new design functions as anticipated.
b) SA Cardiosynthetics was assigned patent PCT/GB12/000165 (CIPC app # 2013/05801) on 6 April 2014.
c) SAT filed patent for a stent for prosthetic valve on 17 April 2014. Not directly part of funded project, however (PCT/IB2014/060816).

# Exciting Innovations

## Health Biotechnology

## Altis Biologics (Pty) Ltd

| | |
|---|---|
| Project location | Gauteng (Pretoria) |
| Investment opportunity | R35,4 million |

Altis Biologics (Pty) Ltd is a regenerative medicine development company focused on developing and bringing to market, new biomaterials and regenerative biological products, with a particular emphasis on orthopaedic and dental tissue regeneration. Altis has developed the world's first injectable porcine derived bone morphogenetic protein (BMP) medical device – Altis Osteogenic Bone Matrix ("Altis OBM"). The innovative Altis OBM product is used for the treatment and healing of fractures or bone voids (resulting from injury or bone degradation) and is an alternative to traditional bone graft products, which usually involve harvesting of bone material from the patient's own hip (autograft) or use of donated bone from bone tissue banks (allograft). Altis OBM is injected into the site requiring bone regeneration and may offer a safe, effective and less costly alternative to bone graft products currently in use. TIA has funded various stages of the product development and continues to fund certain activities for the commercialisation of the product.

In May 2014, Altis' Executives, Nicolaas Duneas and Nuno Pires, were announced as the winners of the prestigious Innovation Prize for Africa (IPA) award, run by the African Innovation Foundation, based in Switzerland. They emerged as winners from a pool of over 900 innovations from 42 countries and received US $100 000 for the Altis OBM innovation. The Altis team was also invited to the USA in September 2014, as part of a South African delegation, sponsored by Pfizer, allowing exposure to funders, licensees and contacts in the USA. The company continues its efforts to conduct studies, secure regulatory and reimbursement approvals, and to boost local manufacturing capabilities in order to commercialise this revolutionary product and ensure it is readily available to patients in need.

### Sepedi:

Ka Mei 2014, bakhuduthamaga ba Altis, Nicolaas Duneas le Nuno Pires, ba ile ba tsebagatšwa bjale ka bathopadifoka ba seala sa go tsongwa ke bohle sa Innovation Prize for Africa (IPA), seo se sepetšwago ke African Innovation Foundation yeo e lego kua Switzerland. Ba itšweleditše e le bathopadifoka go tšwa go palo ya ditlabela tša boitlhagišetšo tša go feta tše 900 go tšwa dinageng tše 42 gomme ba amogela USD 100 000 bakeng sa boitlhagišetšo bja Altis OBM.

Sehlopha sa Altis se ile gape sa mengwa gore se ye USA ka Setemere wa 2014, bjale ka karolo ya baemedi ba Afrika Borwa, gomme ba thekgilwe ke Pfizer, gomme se se kgonagatša gore ba iponagatše go balefeledi, boradilaesense le baikgokaganyi kua go la USA.

## SA Cardiosynthetics

| | |
|---|---|
| Project location | Gauteng (Johannesburg) |
| Investment opportunity | R12 million |

SA Cardiosynthetics, is a medical device start-up company that has succeeded in developing robust prototypes of synthetic heart valves aimed at replacing metal or tissue-based alternatives currently on the market. The polymer material, along with a novel and patented leaflet design, will have the natural behaviour of tissue, but with the longevity of metal valves. This is particularly important in developing economies where a high prevalence of rheumatic heart disease affects up to 400 000 young adults, many of whom go on to need a heart valve replacement. If successful, the synthetic valve will be cheaper to produce and lends itself to higher production levels, both of which will increase accessibility to underprivileged sufferers needing heart valve replacement. The inventor, Professor David Wheatley, is a renowned heart surgeon and entrepreneur, while the CEO, Dr Murray Legg, holds a PhD in bio-engineering and has experience in finance and entrepreneurship. Dr Murray recently won a Mavericks Innovation Award on behalf of the company as a young entrepreneur in a technology start-up. The company intends to establish manufacturing capacity in South Africa once the valve is approved for the market, helping to support the employment and retention of critical, scarce skills in the biomedical technology sector.

### Sesotho

SA Cardiosynthetics, ke khampani ya qalo ya disebediswa tsa bongaka e atlehileng ho hlahiseng meralo e matla ya divalefo tsa pelo tsa sinthethiki tse reretsweng no nka sebaka sa tse fapaneng le tsona tse entsweng ka metale kapa nama tse fumanehang hajwale mmarakeng

# Strait Access Technologies (Pty) Ltd

| | |
|---|---|
| Project location | Western Cape (Cape Town) |
| Investment opportunity | R11,4 million |

Strait Access Technologies (Pty) Ltd – "SAT", is one of our rising stars, whose team is developing a number of cardiac medical devices, including a novel device for replacing diseased heart valves in low resource settings. They recently held a symposium titled "The New Frontier of Heart Valve Surgery: A Majority in Need". The symposium attracted internationally recognised heart surgeons and medical device entrepreneurs, and demonstrates the increasing attraction of SAT's heart valve deployment device that is funded by TIA. The inventor, Professor Peter Zilla, is a renowned heart surgeon and is Director of the Chris Barnard Division of Cardiothoracic Surgery at UCT. SAT already employs a number of skilled specialists, from biomedical engineers to polymer chemists, and also provides training and experience for medical specialists in cardiovascular surgery.

Compared to HIV, which affects 34 million people worldwide, Rheumatic Heart Disease (RHD) affects between 70 million and 78 million people worldwide. RHD starts with a simple strep throat infection and, if left untreated, may cause an autoimmune response. This results in the body starting to attack the leaflets of the heart valves and the only treatment option is to replace the aortic valve.

In first-world countries, where open-heart surgery is readily available, it is not a problem, but for poorer nations, nothing is available. With only thirteen cardiac operating centres available in the whole of Africa (outside of South Africa) – there is currently no solution to this epidemic.

Strait Access Technologies (Pty) Ltd is a spin-off company from the University of Cape Town, focusing on developing heart valve therapies specifically aimed at the emerging and developing markets. Their aim is to develop simple-to-use devices that a general surgeon can place, negating the need for highly specialised skills, a device that does not require the chest to be opened to eliminate the need for a highly sophisticated cardiac theatre, as well as cheaper products, making delivery devices re-sterilisable which, reduces the costs per patient significantly.

Without the assistance of the Technology Innovation Agency's funding of R11,4 million, Strait Access Technologies would not be where it is today. This funding helped SAT, and its parent company SATH, to secure a further R52 million from Bidvest and the projects are developing at a rapid rate.
Heather Coombes, COO, SAT

# TIA, CPT and IDC Collaboration

TIA has also partnered with the IDC and CPT Pharma to develop and strengthen the API manufacturing capacity in South Africa. These partners have collaboratively funded the establishment of a Cyclic guanosine monophosphate (cGMP) API pilot plant. The facility aims to initially manufacture and register with the MCC pilot scale API, for both tuberculosis and animal health, with the aim to attract further funding from the IDC to construct a full-scale cGMP API manufacturing plant.

The pharmaceutical and animals medicines industries currently import almost all of the active pharmaceutical ingredients (API) used in the manufacture of medicines. Currently there is only one manufacturer of pharmaceutical actives in South Africa. CPT Pharma, a privately-owned company, driven by the development of competitive chemical synthesis technology, will offer an alternative for specific APIs.

The company prides itself on its capacity and ability to develop and commercialise alternative organic synthetic routes. The combined capacity to synthesise and formulate products, positions CPT uniquely in the South African context to supply quality formulated products which, in some key cases, are backward integrated to include the manufacturing of actives. CPT is a major supplier of animal health products, both actives and final product. In addition, the company also supplies intermediates to the pharmaceutical industry and fine chemicals to various other industries. All the projects originate from local opportunities and in many cases have resulted in export markets. Various products are currently exported to more than fifteen countries in Europe, North America, South America, Africa and Asia.

## Setswana:

Madirelo a melemo le melemo ya diphologolo ga jaana a reka kwa dinageng di sele mo e ka nnang metswako yotlhe ya dikhemikhale e e bidiwang active pharmaceutical ingredients (API) e e dirisiwang fa go dirwa melemo. Ga jaana go na le modiri a le mongwe fela wa metswako ya dikhemikhale ya melemo mo Aforikaborwa. CPT Pharma, setlamo se e seng sa puso se se rotloediwang ke go tlhamiwa ga thekenoloji e e gatetseng pele ya go tlhakanya dikhemikhale, e tla dira dikumo tse dingwe tse di ka dirisiwang mo boemong jwa di-API tse di totobetseng. Bokgoni jwa go tlhakanya dikumo le go di tlhama, bo baya CPT ka tsela e e kgethegileng mo seemong sa Aforikaborwa go rekisa dikumo tsa boleng tse di tlhamilweng tse, mo maemong mangwe a konokono, di tsenngwang ka tsela e e fapaaneng le e e tlwaelegileng go akaretsa go dirwa ga metswako ya dikhemikhale.

# Industrial Biotechnology

The Industrial Biotechnology Unit endeavours to enable and anchor the emerging bio-economy by enhancing the global competitiveness of industrial sectors. It aims to promote the use of renewable resources as raw material for industrial applications and the utilisation of biotechnology in the manufacture of products across various industries. It therefore focuses on stimulating and supporting the development of environmentally-friendly manufacturing processes and products with a view to deliver socio-economic value. Thematic areas that have been identified as having the greatest impact on socio-economic development, include biochemicals (such as biopharmaceuticals, cosmeceuticals, nutraceuticals, industrial enzymes), biofuels, bioremediation (such as waste water treatment), and biominerals.

| Purpose | Operational Objectives |
|---|---|
| The purpose of the Unit is to support TIA in fulfilling its mandate, mission and vision, by supporting the development and exploitation of industrial biotechnology innovations that will enhance the competitiveness and sustainability of South African firms and deliver socio-economic value to South Africa. | a) Act as a catalyst for industrial biotechnology innovations;<br>b) improve South Africa's global competitiveness;<br>c) support sustainable beneficiation of indigenous resources and demonstrate the value of indigenous knowledge systems;<br>d) reinforce the links between basic research, applied research and industrialisation;<br>e) increase bio-manufacturing capability by facilitating the establishment of appropriately accredited facilities; and<br>f) leverage funding for the high capital outlay required for technology innovation through attracting complementary funding and investment from stakeholders. |
| **Portfolio Summary** | |
| Total project | 39 |
| Portfolio exposure | R27 million |

## Unit Performance

### Providing Customer-centric Technology Development Funding and Support

BiODX (Pty) Ltd (DecontX project) has signed a supply agreement with Westerblend BV (Netherlands). This will enable the DecontX project products to reach European Union markets.

Two new Industrial Biotech investments received co-funding totalling R17,3 million. These are:

a) The GR Active project received R13 million co-funding from the Department of Science and Technology.
b) Enzyme Technologies received R4,3 million co-funding from its shareholders through recruitment of new investors.

### To Provide an Enabling Environment for Technology Innovation in Collaboration with Other Role Players

One Industrial Biotech investment generated a knowledge innovation product.

a) The LEAF filed two patent applications in Oct 2013 (Lignocellulosic cellulose and Lignocellulosic xylanase).

# Exciting Innovations

## Industrial Biotechnology

## Kapa Biosystems (Pty) Ltd

TIA has successfully exited the Kapa Biosystems (Pty) Ltd investment. Kapa Biosystems is focused on the research, development and manufacturing of next generation polymerase enzymes for the diagnostics market. The sale of TIA shares in the South African-based Kapa Biosystems (Pty) Ltd to the USA-based holding company, Kapa Biosystems Inc, was finalised in March 2015 and the Sale of Shares Agreement was signed by both parties in March 2015. TIA shares in Kapa Biosystems were sold for US $4,9 million.

## The Innovator's Story

Three Industrial Biotech investments won awards at the inaugural Innovation Bridge Conference in February 2015:

### BioDx (Pty) Ltd

| | |
|---|---|
| Project location | Gauteng (Johannesburg) |
| Investment opportunity | R10,7 million |

"We are big proponents of TIA. Apart from the R10,7 million funding received, the Agency also provided us with crucial business support in the form of valuable human resources. This is an important part of why we have shown the tremendous growth of today."
– Huberto Rodriques, CEO, BiODX

BiODX (Pty) Ltd won an award as the innovation most likely to find widespread markets internationally. BiODX is implementing the DecontX project that is aimed to develop biocides for supply to industrial clients. Through TIA funding, BiODX has been able to progress the project and this has enabled the company to sign a supply agreement with Westerblend (Europe). BiODX Biological Chemical Technologies (Pty) Ltd is a proudly South African technology-based company that has developed a proprietary technology (DECONT-X) based on citrus extracts. The technology is used to develop environmentally-friendly, safe and non-toxic biocides that do not contain any metals, formaldehyde or phenol groups and that is biodegradable, non-toxic and non-corrosive.

The current TIA-funded project is in response to the need identified by the local industrial market for a technology specifically tailored for applications in cooling tower water management. The project was initiated in 2014 and several formulations have been successfully developed since then. SABS certification and accreditation was recently awarded to BiODX for this technology. The company is also in the process of European Union product registration and filing of patent applications in South Africa, the European Union and North America.

### Siswati:

I-BioDx (Pty) Ltd itfole umklomelo ngoba loku lokucanjiwe lokusha kungenteka kutsi kutfole timakethe letinkhulu emhlabeni wonkhe. I-BioDx iphumelelisa lomklamo we-DecontX lokuhloswe ngawo kutfutfukisa emakhemikhali latiwa ngekutsi pheceleti biocides latawunikwa emakha-simende etimboni. Ngekusetjentiswa kwetimali te-TIA , i-BioDx seyikhonile kuchuba lomklamo futsi loku sekwente lankampani yakhona kusayina sivumelwane sekwetfula neWesterblend (iYurophu).

## SLIEK (Pty) Ltd

| | |
|---|---|
| Project location | Gauteng (Johannesburg) |
| Investment opportunity | R6,5 million |

"TIA has added considerable value to the project by providing not only financial support, but also non-financial support through various platforms, such as sourcing a sponsor for SLIEK to take part in the Innovation Bridge where we were exposed to prospective investors and sending us on an 8-day intensive Business Training Programme in the UK (Cambridge University and Engineering Royal Academy).
– Khanya Vilakazi , CEO and founder, SLIEK

At the Innovation Bridge Conference, SLIEK (Pty) Ltd won an award as the company that presented the best pitch. SLIEK is a company involved in developing processes to produce lactose-free dairy products. SLIEK is making progress in securing funding to purchase a farm that will enable commercialisation of their

lactose-free products and securing funds that will enable it to progress the innovation and operate.

SLIEK (Pty) Ltd was founded in 2008 by LIFElab (now TIA) for research and development of the product. eGoliBio Life Sciences incubators also came on board in 2010 to incubate the commercialisation. SLIEK's core business is to research and produce enzyme biotechnological products used as remedies for food intolerance, i.e. lactose intolerance. More than half of South Africa's population suffers from one or more common food intolerance conditions. SLIEK (Pty) Ltd reacted to address this public health concern and is working to bring products to the market that can address a number of these various conditions. The company is also creating space in the market for digestive aids which will allow people to derive nutritional benefit from foods they would normally avoid. The company hopes to move into more specialised functional and medicinal foods at a later stage.

## Enzyme Technologies (Pty) Ltd

| | |
|---|---|
| Project location | KwaZulu-Natal (Durban) |
| Investment opportunity | R3,1 million |

Enzyme Technologies (Pty) Ltd (ET) won an award as the company that developed the best prototype. ET is developing superior quality, highly active and stable bromelain products for use in animal nutrition and veterinary health and for the alleviation of diseases associated with agricultural livestock. ET is collaborating with Virbac (Pty) Ltd, a global veterinary pharmaceutical company, for further development of its products.

ET is an SMME that is concerned with the development and commercialisation of enzymes for use in veterinary nutrition and health. ET has developed a process of extracting high quality bromelain from waste pineapple stumps resulting in a product with an exceptional enzyme activity and shelf-life. The bromelain produced by ET is superior in performance and is far more superior in quality and stability than any commercially available bromelain enzyme. In trials conducted, the bromelain product demonstrated to be a more effective anti-diarrhoeal cure than antibiotics utilised and one farmer attested that he has never used a product before that is more effective than the one provided by ET.

ET received follow-on funding of R8,9 million for the purpose of upscaling and optimising the bromelain extraction technology at a larger scale in order to get the product ready for commercialisation and to also produce feather meal, utilising the bromelain produced. ET has also secured collaboration with Virbac (Pty) Ltd, a global veterinary pharmaceutical company, for the further development of ET's product and for Virbac (Pty) Ltd, to ultimately take it up for commercialisation.

SLIEK (Pty) Ltd – Conducting research to produce bio-technological products that remedies food intolerance.

"Our project would never have progressed and reached this stage without the financial support from TIA. In addition to financial support, TIA has also provided the project with a laboratory and office space as well as technical staff, project management and business support. Our project manager at TIA was hugely valuable to the project, always encouraging and supporting us. We are very proud of our achievements and how far we have come, and acknowledge that TIA has had a significant part to play in our triumph."
– Candice Eades, Project Leader, Enzyme Technologies

Enzyme Technologies (Pty) Ltd – Developing enzymes for use in veterinary nutrition and health.

# Information and Communication Technologies

The aim of the ICT Business Unit is to support South African innovators in applying their skills to create new ICT services and products that present high potential of establishing sustainable social or commercial enterprises.

A useful definition of ICT, in the context of the objectives of the ICT sector, is provided by the OECD, i.e. "ICT goods are those that are either intended to fulfil the function of information processing and communication by electronic means, including transmission and display, or which use electronic processing to detect, measure or record physical phenomena or to control physical process". This definition accommodates the characterisation of ICT innovations as seeking to produce ICT goods as products in their own right, or seeking to apply ICT goods to enhance physical or social phenomena and processes.

In previous years, TIA's investments in the ICT sector have traditionally focused on projects that are developed and completed in a laboratory type of environment. During the financial year, the ICT Business Unit changed its approach and had two projects in the form of internet start-ups.

| Purpose | Operational Objectives |
|---|---|
| To source and support information and communication technology (ICT) projects that offer high potential of contributing to TIA objective of stimulating and intensifying innovation, so as to enable improved economic growth and quality of life for all South Africans. | The objective of the ICT Sector Unit, with regards to sourcing and supporting innovation, is as follows:<br>a) Build a pipeline of ICT investment opportunities for TIA to support;<br>b) assist potential innovators with development of fundable investment recommendations;<br>c) perform value-adding investment portfolio management on behalf of TIA and in support of individual investments; and<br>c) facilitate commercialisation of TIA technology development investments. |
| **Portfolio Summary** | |
| Total number of projects | 6 |
| Portfolio exposure | R50,7 million |

## Unit Performance

### Providing Customer-centric Technology Development Funding and Support

The ICT sector has seemingly low barriers of entry to innovation ventures. To this extent, anyone who has an idea to develop new technology products or services may seem suitable for TIA-funding. However, validating ideas by demonstrating viability of envisaged products or services, soundness of value proposition, as well as novelty thereof, remain key considerations for TIA. Such validations require various resources, which potential innovators may not have.

In this regard, TIA funded the Tshimologong Precinct Makerspace at the Joburg Centre for Software Engineering (Wits University) to the amount of R2,6 million. The Makerspace will provide potential innovators the resources and skills to develop and validate ideas so as to prepare them for funding by either TIA or other enterprise development funders.

The Tshimologong Precinct Makerspace is a particularly important project for the ICT Sector Unit because it will enable TIA to establish a model for funding entrepreneurship in the mobile applications industry across the entire country. This is an industry where young people can be encouraged to become innovators, while acquiring skills that are applicable in areas of employment.

Two ICT Business Unit technology development projects were funded during the reporting year.

One project is undertaken by InfoInteg (Pty) Ltd, which is developing technology to protect brand icons (e.g. logos) from abuse on the internet and various communication media. The project is funded to the tune of R6,8 million over a period of two years. It is envisaged that this project will make the brand protection services more accessible.

Another start-up company, Contactable (Pty) Ltd, received funding of R9,8 million over a period of two years to develop a technology to provide customer relationship management services that are based on dynamic contact information management solutions. This project is envisaged to empower owners of identification information (e.g. address, telephone data, etc.) to have full control of such information, whilst enabling service providers and contacts that rely on the information, to use it in the most productive ways.

## The Innovator's Story

### IntelliCred

| | |
|---|---|
| Project location | Gauteng (Johannesburg) |
| Investment opportunity | R6,8 million |

IntelliCred is an online brand protection and White Label product for businesses to protect their brands, control their affiliates and increase their revenues through secure, traceable channels. This technology provides an easier way to manage official affiliations between companies and their members or businesses and their customers. It is an innovative product which solves the problem that companies currently have when trying to monitor, track and control affiliations, associations and memberships via the web.

The basic function of IntelliCred is to change the way companies issue corporate logos by providing a service of incorporating Trust Seal features into the logos, and its purpose is to give credibility to the logos. Trust Seal enhancements deter copying of logos by ensuring that legitimately placed logos (e.g. on the web, in e-mails, brochures, letterheads, etc.) incorporate verifiable detailed information about the authority to place such logos.

**Tsonga:**

Ntirhonkulu wa IntelliCred i ku cinca ndlela leyi tikhamphani ti humesaka mifungho ya mabidzu hayona hi ku nyika vukorhokeri byo katsa swihlawulekisi swa Trust Seal eka mifungho, naswona xikongomelo xa yona i ku nyika xiyimo xa kahle eka mifungho.

### Contactable

| | |
|---|---|
| Project location | Gauteng (Johannesburg) |
| Investment opportunity | R9,8 million |

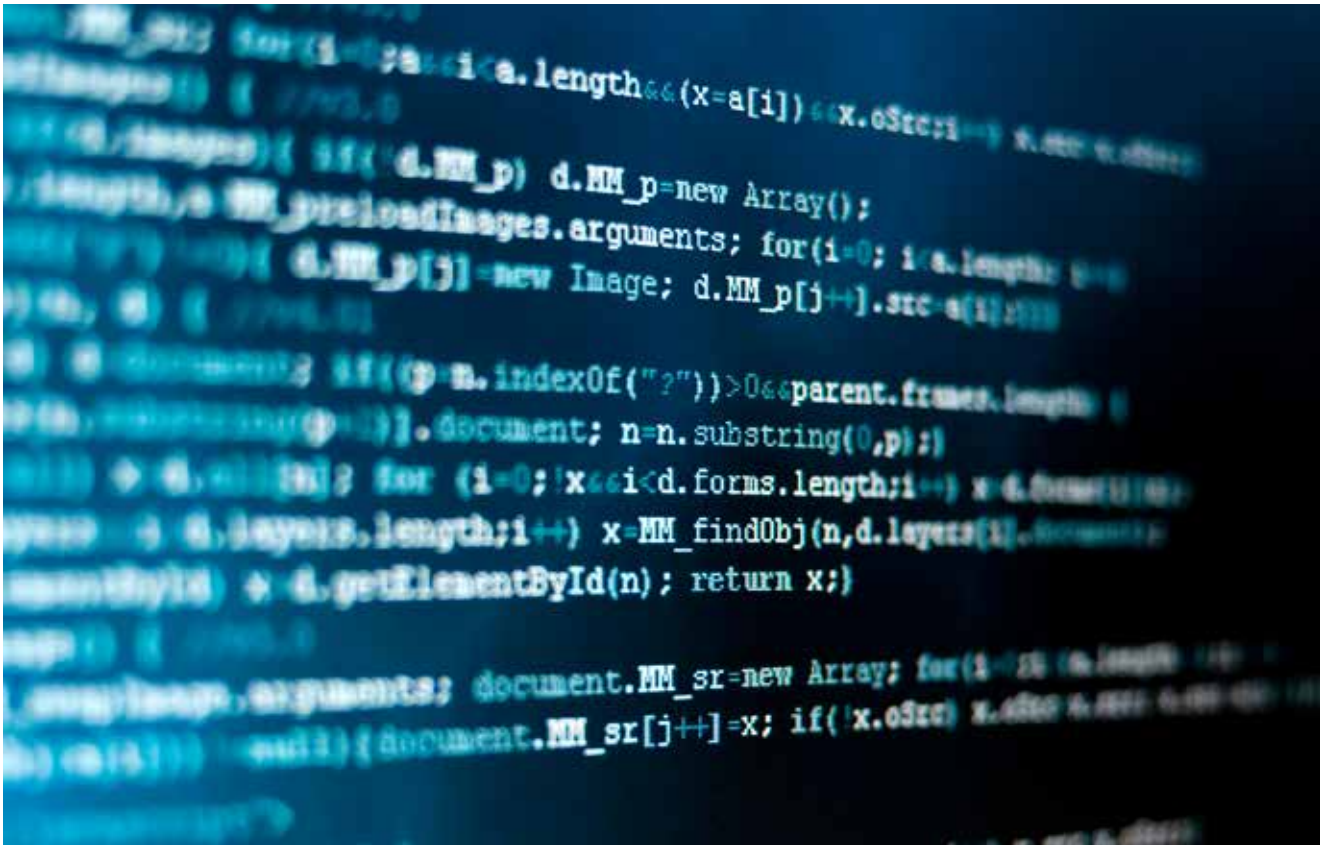
Contactable is an enterprise mobility-based technology that allows individuals and organisations to remain interconnected by ensuring that their contact details are never outdated. It is a unique software technology solution that is capable of addressing a number of key needs in the current business arena, the least of which relates to outdated and redundant database information.

The product is a generic technology platform that offers the new generation address book and CRM (customer relationship management), with the basic capabilities of dynamically exchanging contact information amongst users and organisations.

The fundamental problem that Contactable seeks to solve, involves the technological challenges of enabling owners of contact data (e.g. telephone number, address, etc.) to have full control of their data, even when such data is in third parties' electronic communication devices or platforms. It is the ability to place the control of updates to personal and business contact information in the hands of the owner of such information that makes the Contactable proposition an appealing innovation. In addressing such challenges, Contactable will essentially establish the owner of contact data as a single point of truth about such data.

### Supporting the Commercialisation of Technology Innovations

The ICT Business Unit managed two projects that have concluded the technology development phase and are in the commercialisation phase. These projects are the Adaptive Real-Time Internet Streaming Technology Project (ARTIST) developed by the CSIR and the Electromechanical Price Labelling (EPL) project developed by a start-up company, Integrated Pricing Technologies (Pty) Ltd.




IntelliCred is an online brand protection and White Label product for businesses to protect their brands, control their affiliates and increase their revenues through secure, traceable channels.

# Mining

South Africa's economic growth has been and will continue to be closely linked to the mining industry. The country is one of the world's most important mining countries in terms of the variety and quantity of minerals produced. However, there is acknowledgement that, as a nation, South Africa has under-invested in the development of commercially viable mining technologies over the past several decades. South Africa relies on the commodities produced by the mining industry, for both a significant fraction of its GDP and as a major source of export earnings. The country is under pressure to recover and maintain its competitiveness.

The reason for this under-investment is due to the real price of mineral commodities declining steadily throughout the 20th century. The mining industry was, and remains, a price-taker. The name-of-the-game for mining companies during this period was to cut costs in line with the continually falling prices they received for the commodities that they were producing. This was generally achieved by developing ever-larger open pit mines and by using increasingly bigger pieces of equipment to mine these deposits – not by developing new technology. Consequently, mining technology did not change in any significant way during that century. Mining was carried out using drills and explosives to break the rock, shovels and other diggers to load it into trucks which then transported the ore to processing plants and the waste to rock dumps. This was the era of high volume batch mining.

In South Africa, where important deposits, including gold and platinum are mined underground, the mining technology also did not change in any fundamental way during the century. These ores are, by and large, still mined by hand-drilling in narrow stopes, blasting and then scraping the often heavily diluted ore into gullies, transporting through ore passes to haulage levels and from there in rail cars to skips where it is hoisted to the surface. The valuable mineral is extracted expensively from the diluted ore in a processing plant.

| Purpose | Operational Objectives |
|---|---|
| The role of the focus area in the strategic term, would be to improve the competitiveness of the existing economic sectors through supporting innovation and commercialisation of technologies and processes. In the long term, the interventions would support the development of new cutting-edge and knowledge-intensive economic sectors and firms. | a) Efficient, safe and competitive production: Use advanced technologies to improve process efficiencies from exploration to final product and reduce worker exposure to hazards as well as maintain a competitive mining sector.<br>b) Environmental and health management: Support the development of technologies to minimise the impact from mining activities on its workforce, the environment and the community.<br>c) Minerals upgrading and value addition: Support the upgrading and value addition of South Africa's minerals, also by encouraging local manufacturing and production.<br>d) Lateral migration: Exploit the knowledge and capacity in the mining sector to create new high value economic sectors.<br>e) Innovation culture through skills development: To facilitate the development of innovation skills to support technology innovation and commercialisation. |
| **Portfolio Summary** | |
| Total number of projects | 5 |
| Portfolio exposure | R127,2 million |

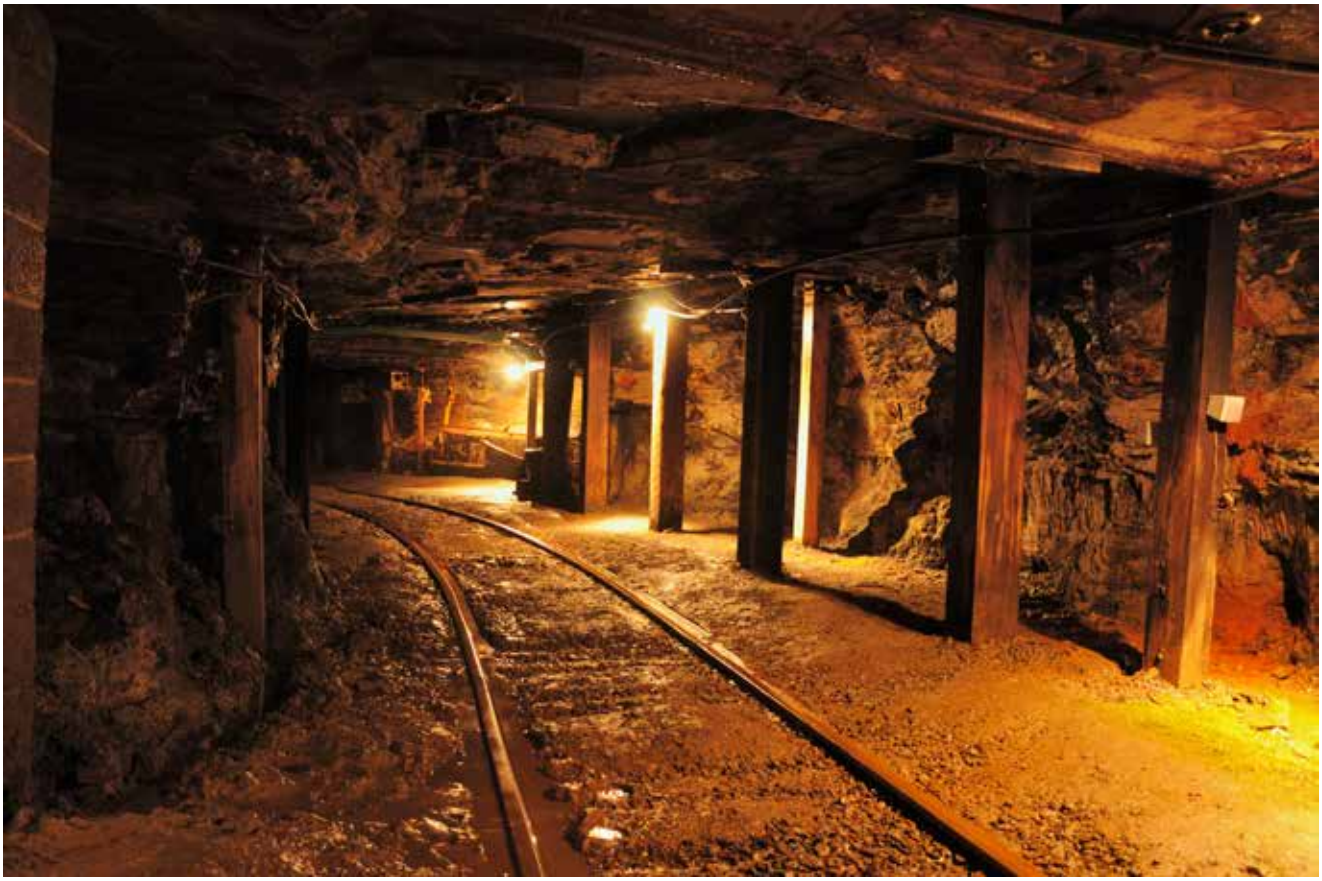
## Unit Performance

### Stimulating the Development and Demonstration of Technology-based products and processes

South Africa's abundance of natural capital is a crucial source of jobs and economic growth. The focus of TIA's investment in this area is to consider how best to harness this resource to increase the country's competitiveness through technology innovation. Because natural resources have no borders, the gains that South Africa makes will benefit the region as a whole.

Large zircon resources are currently being exported as raw material. South Africa re-imports finished zirconium metal alloys at a high cost to the country. The Beneficiation of Zircon Mineral project sets out to construct an ASP test bench facility with its related analytical facility to optimise the separation and measurement of zirconium isotope streams. The main aim is to enrich the zirconium-90 isotope component for the production of Zr-90 metal for use in the nuclear industry. The results obtained, will inform parameters for a commercial plant. The funding is to an amount of some R20 million which also includes a marketing strategy. The success of the project will potentially position South Africa as a supplier of the Zr-90 isotope metal or the ASP technology.

Green Iron Technologies has been funded R10 million to acquire and install suitable control instrumentation (for a furnace with no moving parts to process iron-ore fines/waste/discards and high titanium ores). The control instrumentation will ensure that optimal conditions are maintained in an automated and process-controlled environment. The related materials of construction will also be established during the project. This technology will potentially unlock value in billions of tons of waste dump material and high titanium ores, while addressing the environmental liabilities associated with these dumps.



In South Africa, where important deposits such as gold and platinum are mined underground, mining technology has not changed significantly during the last century.

# Exciting Innovations

## *Mining*

### Blue Cube (Pty) Ltd

| | |
|---|---|
| Project location | Western Cape (Cape Town) |
| Investment opportunity | R10 million |

Blue Cube Systems (Pty) Ltd is a technology company that designs, manufactures, distributes and supports in-line mineral quantification instrumentation. The company recently introduced state-of-the-art instrumentation for the in-line measurement of mineral grades in froth flotation concentrator plants. This technology is now helping mining companies to extract more and be more profitable. The technology used in the flotation applications is based on diffuse reflective spectroscopy combined with proprietary chemo metric techniques, adapted for the measurement of froth slurries. The technology can be applied to a range of minerals, from heavy mineral sands to various base metals (copper, nickel, silver, platinum and mineral sands). The Blue Cube MQi technology is currently operating in a variety of locations across Southern Africa and in Australia. The system has been independently evaluated by leading platinum producers.

The product was commercialised and TIA has 25% equity stake in the company. The investment has already provided financial returns to shareholders with the potential for further expansion. Key lessons here are that successful technology development takes time and requires all NSI stakeholders to be mobilised early, during the technology development stage.

#### Venda:

Blue Cube Systems (Pty) Ltd ndi khamphani ya thekinoḽodzhi ine ya sika, u bveledza, u phaḓaladza na u tikedza u vhala zwishumiswa zwa mineraa nga mutevhe. Khamphani zwa zwinoyo ḓivhadza zwishumiswa zwa maimo a nṱhau itela u ela nga u tevhekana ha gireidi dza mineral ka piḽanti dza u khetheka nya mineral. Thekinoḽodzhi iyi zwino i khou thusa khamohani dza zwa migodi u bvisa zwinzhi na u wana mbuelo nnzhi.

### Settled Bed Detector

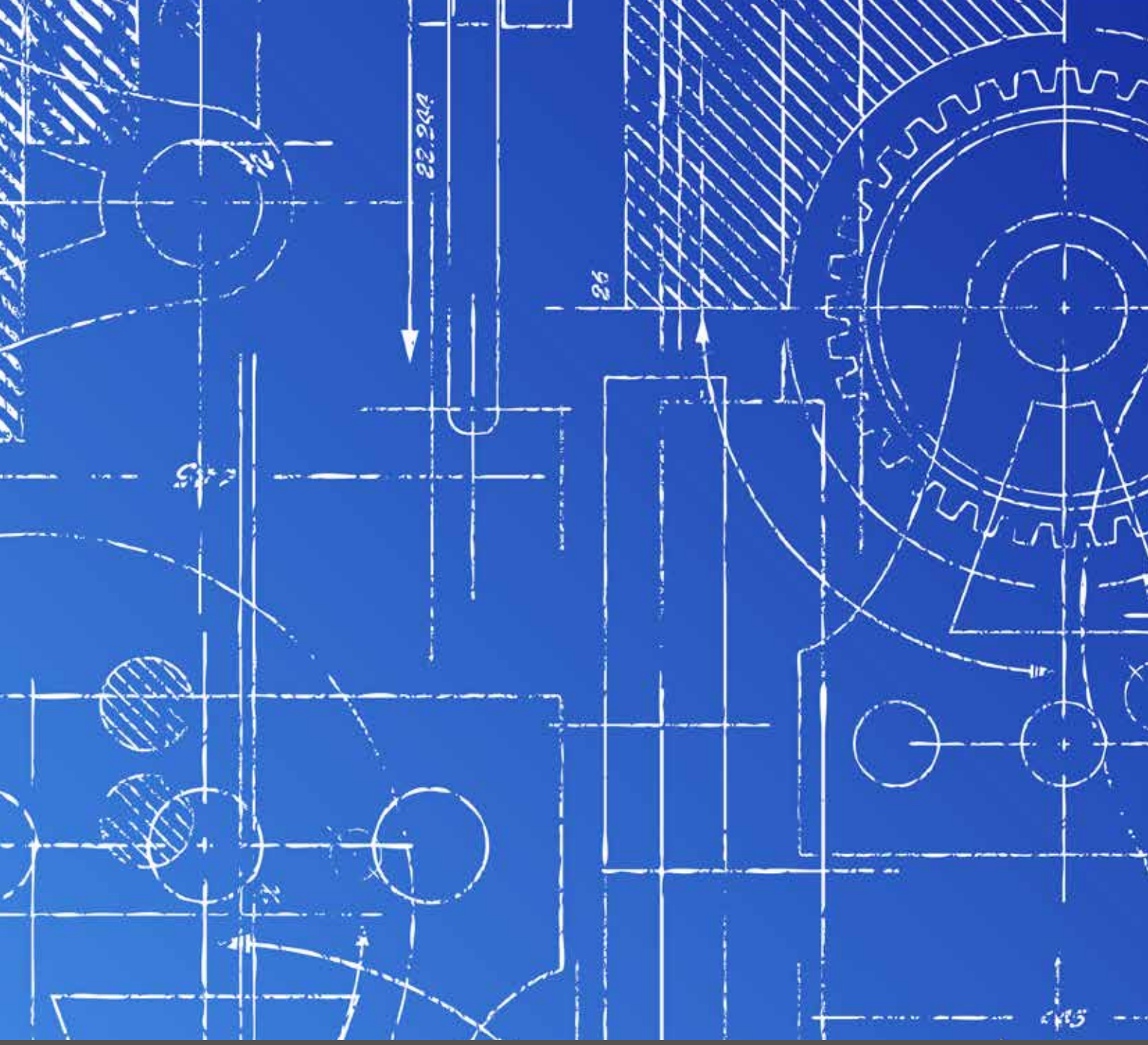
| | |
|---|---|
| Project location | Gauteng (Johannesburg) |
| Investment opportunity | R6,5 million |

The Settled Bed Detector is being developed by Settec Mining and Industrial Solutions (Pty) Ltd, to develop and perform trial tests of the Settled Bed Detection Probe for the identification of slurry settlement on mines and oil sands industries. The main objective of this technology is to detect slurry settlement in pipes, and electronically relay a message to inform the pump control system to vary the pump speed, thus help avoid and prevent possible pipe blockages from occurring.

In South Africa alone, about 150 million tons of gold and platinum ore mine tailings material is pumped in slurry form to tailings dams per year, often a few kilometres away from the metallurgical plant. To avoid settlement of the tailings during hydraulic transportation, the pipelines are operated with a safety margin above the critical deposition velocity, hence the development of the energy optimiser that this project was based on. During the testing phase of the energy optimiser, the need for a technology that would minimise or eliminate blockages in slurry pipelines, was established to be more pressing and much desired. While the energy and the water savings that the energy optimiser would bring to the industry, were welcome, it ranked lower in the industry list of operational improvement needs. The energy optimiser was therefore modified into a Settled Bed Detector (SBD) to address the industry need to eliminate pipe blockages in slurry pipelines and similar applications.

"TIA is funding the development of the SBD gadget which is now almost at commercialisation stage. This gadget will make pipeline blockages a thing of the past. These blockages lead to plant stoppages and huge associated downtime costs."
Stanford Dumbu, CEO, Settec


Settled Bed Detection Probe for the identification of slurry settlement on mines and oil sands industries.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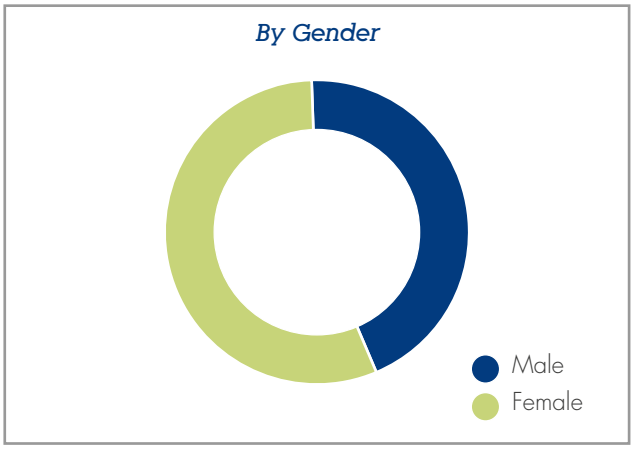
# TECHNOLOGY INNOVATION PROGRAMMES

# Innovation Skills Development

The focus of the Innovation Skills Development Unit is on strengthening critical thinking capabilities within the National System of Innovation to enable the progression of technologies from proof of concept stage, through to pre-commercialisation. Notably the critical thinking capability must span across multiple disciplines as the progression of industry steers towards a more optimum platform in the future. The key competency elements of critical thinking consist of:

a) Innovative thinking (creative and design thinking);
b) Collaborative thinking (knowledge sharing and transfer); and
c) Entrepreneurial thinking (business risk reduction).



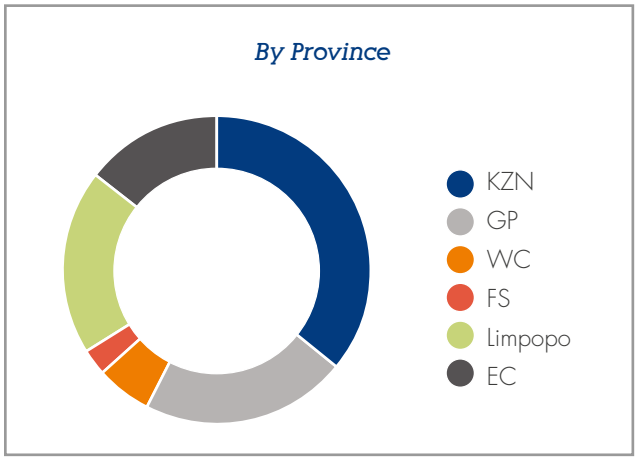

## Unit Performance

## The Internship Programme

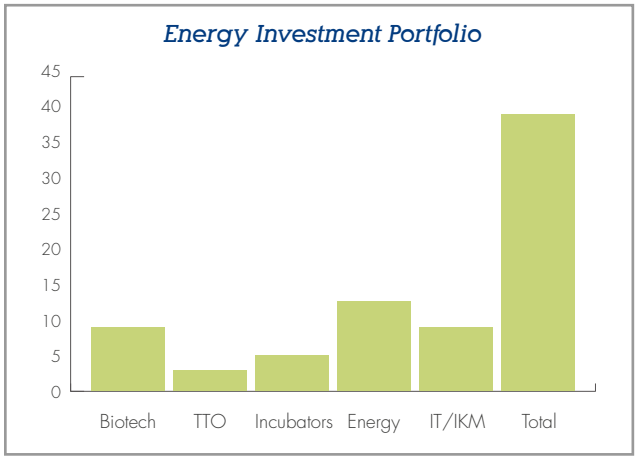
A total of 41 interns were placed for capacity building opportunities within the NSI space. The projects they worked on, varied from smart grid and energy efficiency projects, fibre optics technologies, bioprocessing projects, intellectual property projects, IT and knowledge management. The areas of placement included TIA platforms, the IT, Biotech and Mining sectors and the incubators, Technology Transfer Offices (TTO) and energy companies. Bioprocessing projects hosted ten interns, TTOs two, renewable energy projects fourteen, fibre optics and IT nine, and incubators six. Of these interns, a total of 60% have been retained by the host companies on fixed-term contracts or found permanent employment in industry, while 20% went back for further studies and registered for post-graduate degrees.

| Discipline/ Placement | Total | Male | Female |
|---|---|---|---|
| Biotech | 10 | 2 | 8 |
| TTO | 2 | - | 2 |
| Incubators | 6 | 4 | 2 |
| Energy | 14 | 8 | 6 |
| IT/IKM | 9 | 4 | 5 |
| Total | 41 | 18 | 23 |

In addition to experiential placement with the host companies, TIA took the interns through various skills training programmes, such as life skills training, idea to product and entrepreneurship training, idea pitching, energy efficiency and energy auditing training. The 2013 and 2014 interns were also put through a six-month mentorship and coaching process with their mentors and formal coaching assessments were carried out. The internship programme and the mentorship have proven to be successful in building young leaders with cross-disciplinary skills. Some of the key partners that supported the internship programmes include, among others, incubators like Invotech, Smart Xchange, Technology Transfer Offices, Sky Power, South African National Energy Development Institute (SANEDI), Fibreco, University of KwaZulu-Natal and the University of the Free State.




| Province | Total |
|---|---|
| KZN | 15 |
| GP | 9 |
| WC | 2 |
| FS | 1 |
| Limp | 8 |
| EC | 6 |
| Total | 41 |




Interns placed at FibreCo and SANEDI with their mentors

# The Swiss South African Technology Entrepreneur Programme

The Swiss South African Technology Entrepreneur programme aims to make an impact, through the development of entrepreneurial capacity, and in so doing supports the development and commercialisation of new ideas and creates new start-ups.

The programme forms part of the broader Swiss South Africa Joint Research Programme (SSAJRP) which commenced in 2010 with the signing of the Science and Technology Agreement between the South African Department of Science & Technology (DST) and the Swiss State Secretariat for Education, Research and Innovation (SERI), leading to the support of joint projects in the areas of biotechnology, life sciences and public health.

The programme, now in its fifth year, showed tremendous successes – not only with the 2013/14 programme, but also with the previous years' delegates of whom some have started companies and sold off their companies to global competitors. Others initiated start-up companies which are showing growth.

During the 2014 Swiss SA Venture leader workshop, ten of the South African entrepreneurs competed against 21 Swiss start-ups from the Swiss Boston and China Venture leaders at the Google Pitch fest. The South Africans took three of the five finalist spots and Marlize Holtzhauzen, walked away with top honours for her mobile application for emergency situations. The application activates emergency services and notifies the family members of the person involved in the emergency situation.

The other two South African finalists were Drew van der Riet (University of KwaZulu-Natal: Advanced Prosthetics Engineering), and Gavin Jones (a CHUMA technology commercialisation practitioner candidate working on the commercialisation of a UCT innovation for the rehabilitation of stroke patients).

The programme has been classified as a successful intervention in the commercialisation of technology innovation and is yielding positive results according to evaluations done since the inception of the programme. To date, a total of 885 delegates have been up-skilled by the programme. It has led to more than thirteen companies, resulting in more than thirty direct high skilled jobs, and can be seen as a direct outcome of the programme.

## Feedback from entrepreneurs on the programme:

"TIA entrepreneurship programme has completely changed my life. For the first time, I am able to make a real difference/ impact to our beloved country. Your programme gave me the belief that I can go and do what seems to be impossible."
– Marlize Holtzhausen

"All I can say is WOW. Thank you so much for the opportunity. Entrepreneurship is a lonely journey. I was truly humbled to know there are people who are committed to seeing us succeed. YOU HAVE NO IDEA HOW ENCOURAGING THAT IS.
– Kekeletso Khena

| The 2014 Swiss South African Venture Leaders | | | |
|---|---|---|---|
| 2014 Delegates | Project | Progress | Status |
| Carl Baumeister | MARTI TB Diagnostics | Raised partial funding. Requires more funding for full-scale clinical trials. | Demonstration phase |
| Khilona Radia | TB Rapid Diagnostic Tools | Nominated for SA National Science & Technology Awards (2014/15). | Demonstration phase |
| Lester Davids | AfriSkin | Participated in SA Dragons' Den. Currently busy with an application for a pilot study with burn victims at Red Cross Children's Hospital. | Demonstration phase |
| Marlize Holtzhausen | Rapid Response | Application has been white labelled by ER24 (SA's biggest emergency response company) and linked to the MediClinic hospitals. Currently rolling out in East Africa and Kenya. | Demonstration and commercialisation |
| Phiyani Lebea | Point of Care Animal Diagnostics (PhiCo Labs) | First mobile laboratory will be ready by Sept 2015. | Demonstration and commercialisation |
| Matt Pretorius | Stroketech | Received R500 000 funding from the CCDI (Design Innovation Seed Fund) for further product development. Participated in the Royal Academy of Engineering (UK) and Newton Fund Leaders in Innovation Fellowship. Plan to launch internationally beginning of 2016. | Demonstration phase |
| Willem Botha | Cairo Suspension | Performing simulation tests as part of the due diligence for further funding. | Demonstration phase |
| Drew van der Riet | Touch Prosthetics | Registered a company. Received R500 000 TIA Seed Fund. Received R100 000 from GAP BioScience programme as finalist. | Demonstration phase |

# Leaders in Innovation Programme

A cohort of fifteen innovators from various South African universities and independent technology entrepreneurs departed South Africa for the UK in March this year to expose their innovation projects to a team of experienced academics from the Royal Academy of Engineering and the Cambridge University, as part of a Leaders in Innovation Programme.

As the UK's national academy for engineering and a registered charity, the Royal Academy of Engineering brings together the most successful and talented engineers from across the engineering sectors to advance and promote excellence in engineering and innovation, both in the UK and globally.

The Leaders in Innovation Fellowship (LIF) programme is hosted by the Academy and funded by the UK Government Department of Business, Innovation and Skills under the Newton Fund programme. The Fellowship brings the leading technology entrepreneurs from thirteen Newton Fund partner countries, including South Africa, to the UK for an intensive training course on innovation, whilst also building business-to-business networks with similar enterprises in the UK. TIA has partnered with the Royal Academy of Engineering to deliver this fellowship.

The first element of the programme was a 5-day training programme hosted by the Royal Academy of Engineering. The course covered a variety of commercialisation skills, including business modelling, customer development and presentation/ pitch training. The cohort benefited from the experience of Academy Fellows during an hour Masterclass presentation, where new technology businesses and the various keys to success in taking new innovations to market, was discussed. In addition, the fellows had the opportunity to work on their own business plans with the support of expert coaches. The week culminated in a final pitch competition, where fellows presented their business plans to a panel of expert judges.

The second element was a 3-day group project, which was hosted by ISIS Innovation at the University of Oxford or the Centre for Entrepreneurial Learning at the University of Cambridge. The group project activity allowed the fellows to apply the skills and knowledge they have developed during the previous week's training programme, to problem-solving exercises. At the same time, they gained direct experience of the challenges and opportunities faced by businesses in bringing new technologies to market.

During the eight days, our innovators benefited from opportunities to network with mentors, representatives of technology-driven organisations, and each other. These two weeks of training and research were complemented by further short periods focusing on building links with UK peers and innovation funders. It consisted of short placements, complemented by networking and buddying activities. All participants in the LIF programme will automatically join an international network of innovators and mentors clustered around the Academy's Enterprise Hub. Back in South Africa, TIA has developed a programme for further support through incubation and prototype development.

## "Vula Innopreneur E Mobility Programme"

TIA successfully launched the "Vula Innopreneur E Mobility" programme in partnership with IBA Global and our local partner "UYilo" at the Nelson Mandela Metropolitan University (NMMU) to stimulate a culture of innovation, whilst developing their "Critical Thinking Skills".

The programme aims to identify talent, groom and develop the top "Next Generation" 100 innovators and "future" 500 innovation leaders for South Africa. This programme is supported by university partners like the University of Stuttgart, together with Fraunhofer Society, Europe's largest applied research institute. Fraunhofer is among the top 100 Global Innovators 2014, together with BASF, Bosch and Siemens, performing research efforts that are geared entirely at people's needs, including health, security, energy, communication and the environment. For this purpose, one hundred young Innopreneurs were selected to kick-start the programme nationally, focusing on black candidates from rural areas travelling to Germany.

# Technology Platforms Programme

The lack of access to appropriate scientific infrastructure for technological innovation, remains an ongoing systemic weakness in the South African National System of Innovation. The scale of the challenge requires both strategic focus and collaborative effort among players in the NSI. The Technology Platforms Programme forms a part of the contribution that TIA makes to address the infrastructure gaps in partnership with other role players in industry and academia.

The purpose of the Technology Platforms Programme is to provide funding to facilitate access to key technical infrastructure and expertise that enables technological innovation in strategic technology areas. TIA funding ensures that Technology Platforms acquire cutting-edge research equipment and facilities and associated world-class expertise to lower barriers for public and private users to engage in technology innovation.

## Operational Objectives

In 2014/15, the existing portfolio of Technology Platforms was envisaged to deliver primarily on TIA's Strategic Objective 2, namely, to provide an enabling environment for technology innovation in collaboration with other role players, and to contribute to the realisation of the bio-economy strategy in general.

The Technology Platforms Programme pursued the following objectives:

a) Funding the core operations and monitoring of the performance of the existing portfolio of Technology Platforms to support the development of biotechnology-based knowledge innovation products;
b) support promising projects supported by the various Technology Platforms and facilitate access to receive follow-on funding;
c) exploring the feasibility of establishing new Technology Platforms; and
d) raising funds to support core operations, projects, infrastructure, and/or human capital development initiatives of Technology Platforms from beneficiaries of the MTEF allocation, and from funding sources other than TIA.

## Portfolio Summary

| | |
|---|---|
| Number of Technology Platforms | 8 |
| Total funds disbursed | R41,3 million |
| Funds disbursed as a proportion of the bio-economy ring-fenced allocation | 35% |

## Unit Performance

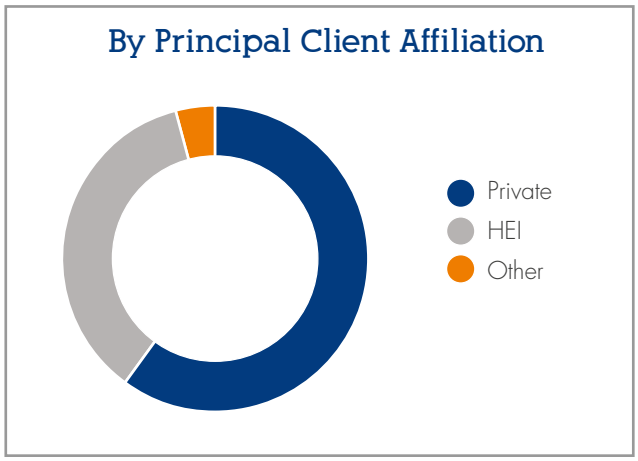
The Technology Platforms Unit disbursed R41,3 million to fund the core operations of the existing platforms in order to support the development of biotechnology-based knowledge innovation products. This funding enabled the platforms to deliver 26 knowledge innovation projects on behalf of clients, and one provisional patent application.

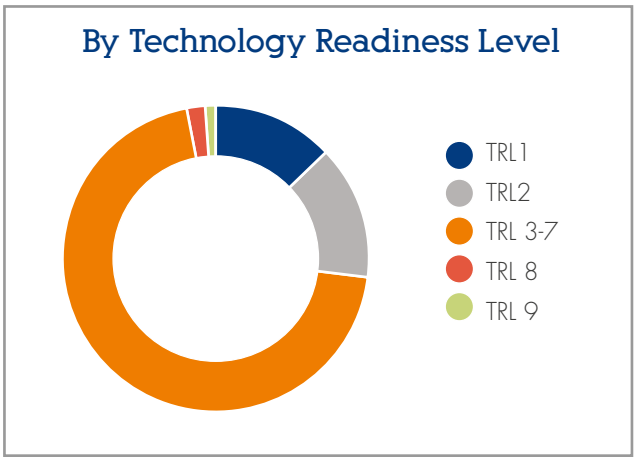
The portfolio contributed four knowledge innovation products (prototypes developed and patents registered) that received follow-on funding. Furthermore, the portfolio attracted R48,5 million from sources other than TIA. This matches TIA contribution towards funding the operations, infrastructure and project support.

## Project Support – Creating Value for Clients and Partners

The total number of projects hosted by the portfolio has increased from to 75 in 2014/15 (2013/14: 70). This increase reflects the ongoing relevance and the success of the business development activities undertaken by platform management. The following graph indicates a healthy spread of technology development stages of these projects within TRL 3 to 7.

### Project spread (n=75) by principal client affiliation and technology readiness levels (TRL) in 2014/15



# Exciting Innovations

## *Technology Platforms Programme*

### Protecting Livelihoods and the Environment

The Centre for Proteomic and Genomic Research (CPGR) is a Technology Platform that received TIA funding in the period under review. This funding enabled the CPGR to service over 65 clients in 2014/15. One such client is Amanzi Biosecurities, a non-profit company providing veterinary services to the small-scale aquaculture industry in South Africa. CPGR validated and implemented a qRT-PCR assay to test for the presence of oyster herpes virus for Amanzi Biosecurities.

The presence of this virus can lead to death of oysters and abalone reared in aqua farms. The reliable and affordable diagnostic test enabled small-scale abalone farmers to test their stocks, comply with regulatory requirements and to maintain access to export markets. This is critical for a sector that employs an estimated 15 000 people. Future work includes projects with Amanzi Biosecurities and the Abalone Farmers Association of South Africa (AFASA) to develop a broader set of tests for other disease areas and as part of a regular testing programme to control the spread of diseases in the industry.

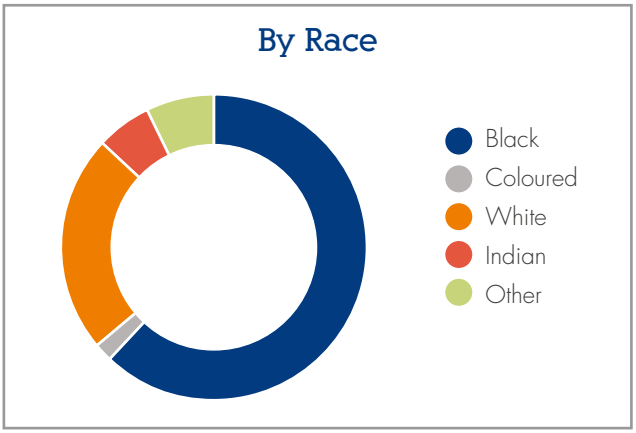
The activities of the Metagenomics Platform continued in 2014/15 to cement its reputation as a leading provider of in situ environmental bioremediation solutions to industry. First is the remediation of Acid Mine Drainage (AMD) contamination for a large coal mining company at a site in Newcastle. The technology is demonstrated as a pre-treatment facility alongside a commercial-scale reverse osmosis plant. Eskom also contracted the platform to demonstrate a 20 000 litre reactor with a filtration system at the Kilbarchan in Newcastle, and a 6 000 litre per day bioreactor to treat complex nitrates, chromium, sulphates, salt and other metals at an ash dump in Mpumalanga. These projects have progressed from successful proof of concept demonstration and will undergo pre-commercial scale testing and evaluation over the next 18 to 24 months, with the potential to roll them out to other sites. Another output of the first phase of the AMD technology, was the submission of a provisional patent for the remediation Acid Mine Drainage (AMD) and/or environmental media contaminated with a source of AMD.

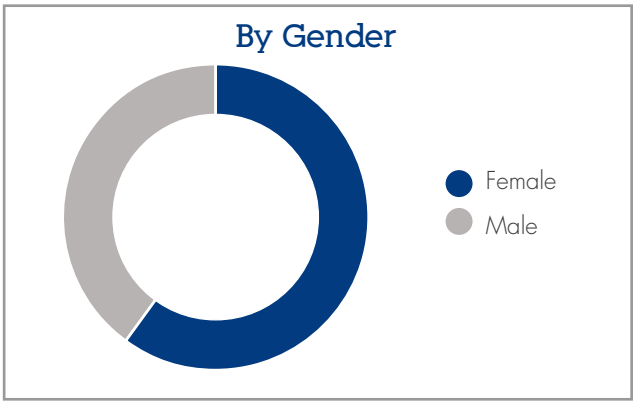
### Human Capacity Development

The capability of the infrastructure is also deployed towards training and the development of an industry-ready core of students who gain exposure to the development of technology-based solutions to real-life problems. The demographics of the students and/or interns are summarised in the tables and figures below:

#### Number of Students Supported

| | 2014/15 |
|---|---|
| Total number of students/interns supported | 79 |
| Undergraduate | 15% |
| Honours | 19% |
| Masters | 34% |
| PhD | 26% |
| Post-doctoral | 6% |




*Demographics for students and interns supported during 2014/15 by race and gender*

CPGR implemented a diagnostic test that enables small scale farmers to test stock for the presence of the oyster herpes virus that leads to the death of oysters and abalone reared in aqua farms.

The Metagynomics Platform provides in situ environmental bioremediation solutions for acid mine drainage.

# Technology Stations Programme

The Technology Stations Programme (TSP) was established to enable Universities of Technology to provide technology development services to small and medium enterprises (SME). The Technology Stations (TS) provide innovative Science, Engineering and Technology (SET) solutions for complex engineering challenges within the relevant industrial sectors aimed at supporting Government's socio-economic priorities.

The Department of Science and Technology provides financial support through TIA, to Higher Education Institutions (HEI) which house technology stations to provide technical support to SMEs in terms of solutions for services and training.

The stations are well positioned to support industry, particularly SMEs and higher education institutions. The stations' activities offer an opportunity to bridge the gap between the local suppliers to take advantage of the recapitalisation and expansion programme, by enhancing competitiveness of local suppliers through technology improvement. They provide technology transfer infrastructure that plays a critical role for transferring technologies from higher education institutions to technology users.

There are 18 Technology Stations based at 11 Higher Education Institutions (HEIs) in South Africa, managed by the Technology Stations Programme Unit. The TSP is a management and systems-wide support unit responsible for all technology stations across the country. The mission of TSP is to assist the Technology Stations and higher education institutions in the core, by performing the following functions:

a) Ensure that funds allocated to the TSP have impact and are aligned with TIA/DST national strategic objectives and performance measures;
b) reduce transaction and co-ordination costs of activities that involve or benefit multiple TSs to promote synergies and network benefits;
c) monitor and evaluate the performance of TSs SME-related projects, and initiate interventions where required;
d) identify opportunities to upgrade and/or expand the TSs high-end technology infrastructure;
e) facilitate opportunities for technology knowledge transfer and innovation support to TIA's stakeholders; and
f) promote the network of Technology Stations to other Government programmes and ensure that the stations are aware of and participating in related national priorities and industry programmes.

## Operational Objectives

The TSP has contributed towards the achievement of the DST and national objectives relating to technology innovation, enabling and support. The TSP network offered sophisticated and effective technological solutions to more than 2 000 enterprises and individuals in targeted communities. The TSP has also directly contributed to the indicators of the DST on the knowledge-based indicators by becoming a critical enabler in eight prototypes and technology transfer packages onto the regional innovation system with HEIs.

The core goal of the TSP is to contribute towards improving the competitiveness of industry through the application of specialised knowledge and technology and facilitating the interaction between industry, especially SMEs and academia, in order to enable innovation.

The Technology Stations use the two strategic objectives listed below:

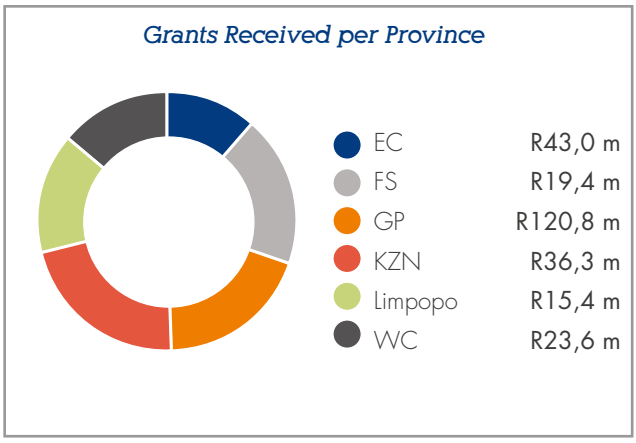
a) Align with national objectives for socio-economic impact;
b) reduce transaction costs and co-ordination costs of activities that involve or benefit multiple key enabling technologies;
c) facilitate opportunities for networking, knowledge transfer and capacity building for competitiveness towards manufacturing growth;

d) promote innovation initiatives for environmental technology, green technology or clean technology for sustainable industries; and

e) identify opportunities to upgrade and/or expand the technology location infrastructure.

## Strategic Objective 1

Contribute to HEIs being more responsive to the needs of the industry.




## Strategic Objective 2:

Enable industry, SME in particular, to benefit from specialised knowledge and innovative technology of the universities.

Additionally, the TSP increases student exposure through a SET internship programme to real industry projects which provide opportunities for students to secure employment.

| Province | Technology Focus | Enterprise Supported |
|---|---|---|
| EC | Chemical product and process development | 2 188 |
| | Automotive Components | |
| | Tool Design, Tooling Technology Transfer and Advanced Manufacturing | |
| FS | Product Development, esp. enclosures | |
| GP | Specialised Chemical testing services | |
| | Process Energy, Water and Environment | |
| | Composites and metals based products | |
| | Electronic, electrical, and ICT | |
| | Composites and Materials based products | |
| | Tool Design, Tooling Technology Transfer and Advanced Manufacturing | |
| | Foundry & Sand Technology | |
| KZN | Technology nursery for SMME's in Chemicals | |
| | Reinforced and Moulded Plastics | |
| Limpopo | Agro-food processing | |
| WC | Agricultural and Food Industries | |
| | Clothing and Textiles | |
| | Advanced Manufacturing | |
| | Tool Design, Tooling Technology Transfer and Advanced Manufacturing | |

## Unit Performance

In the Priority Area 1, which is Applied Research and Technology Innovation, the TSP had to prioritise applied research output from HEIs and the development of innovative products. The TSP increased the ratio of high-end equipment by TS and SME-related projects and university research.

For Human Capital Development, which is Priority Area 2, the TSP had to address knowledge and skills for building technology capacity in line with localisation and beneficiation priorities of Government. To this extent, the TSP placed 33 students in a structural practical work exposure and training programme. 25 Students were provided with structured practical work experience acquired from industry-related projects and 6 interns were placed in niche areas around critical fields of SET. This ultimately increases the employability of students in the SET arena. The TS further provided Short Learning Programmes and Tailor-made Training to multiple and single client/s to enhance their competitiveness in industry.

Priority Area 3 dealt with Technology Transfer and support. The TSP had to develop SET solutions to support SME competitiveness. The result is that the 18 TSs provided testing, quality assurance and analytical services to more than 5 200 SMEs. Further to this, the TSP developed and/or improved processes for over 700 SMEs. Of prototypes completed on behalf of enterprises, 32 complied with SABS standards.

The narrative above is an indication of the TSP support to HEIs, by assisting them to be more responsive to the needs of the industry, providing an enabling environment for industry, and SMEs, in particular, to benefit from specialised knowledge and innovative technology of the HEI.

## Technology Station Programme Impact at Client Level

The Technology Station Programme (TSP) is an efficient and client-relevant programme striving to improve the quality of life for all South Africans through socio-economic impact measures. We have impacted on a total of 2 188 SME clients during the 2014/15 financial year, by way of, among others, face-to-face meetings or telephonic interviews and a response rate of 89% (n=59) was achieved in the period under review. In the process we gathered socio-economic indicators on small-sized and medium-sized companies in selected sectors, including data on the clients' profiles, their needs that TSP will use to further improve on innovation enabling and support instruments and also the impact of TSP at client level.

| | Electronics | | Textiles | | Tooling and Advanced Manufacturing | |
|---|---|---|---|---|---|---|
| % Registered SME | 58 (Pty) Ltd<br>32 CC<br>10 Other | | 55 (Pty) Ltd<br>30 CC<br>15 Other | | 75 (Pty) Ltd<br>20 CC<br>5 Other | |
| % Non–registered SME (Start-ups, Techno - Entrepreneurs and Individuals) | 47 | | 20 | | 25 | |
| % Full-scale production | 37 | | 95 | | 70 | |
| Age of business | ~9 years | | ~19 years | | ~17 years | |
| % Management/highly skilled staff | 58 | | 29 | | 35 | |
| % Female staff | 34 | | 88 | | 36 | |
| % Non-white staff | 50 | | 91 | | 82 | |
| Staff with disability/firm | 1 employee | | 7 employees | | 4 employees | |
| % Main markets | National | 68 | National | 70 | National | 70 |
| | Province/Local | 32 | Province/Local | 30 | Province/Local | 25 |
| | Export | 16 | Export | 5 | Export | 5 |
| Main obstacles/needs for SME success | Funding/Financial capacity<br>Market demand<br>Government policies | | Absence of skilled workers<br>Funding/Financial capacity<br>Mind-set/Social problems of workers | | Funding/Financial capacity<br>Absence of skilled workers<br>Competitive market | |
| % Clients that produce "green" products | 21<br>(Energy and fuel saving devices, electric vehicles) | | 15<br>(Bio-degradable fabrics, handwoven products) | | 10<br>(Using recycled plastic instead of plywood, generating electricity) | |

## Technology Stations Programme

### Technology Station in Textiles and Clothing (TSCT)

TSCT is associated with the Cape Peninsula University of Technology. The TSCT is located in Bellville in the Western Cape province, and was established in 2001/02. The TS services include providing innovation support to SMEs in the clothing, textile and related industries in the manufacturing and engineering technology cluster. The TS offers comprehensive training, covering technical and soft skills without comparable training providers in the region. It is a great benefit (Centre) at the Cape Town Fashion Council, especially for start-up designers with possibly no access to specialised machines.

The TS has had an impact on skills development and quality improvements regarding projects worked on with entrepreneurs and SMEs. Further to this, the TS has increased production volume to about 75% of local designer volumes.

#### Achievements

Faru Products: A 40-year old bag factory sent staff to TSCT for a two-year training in pattern making. The newly skilled pattern makers not only improved the quality of the patterns produced, but also developed 20 new products that have reformed the company, and significantly increased the production volume and subsequently created six additional permanent jobs.

### Technology Stations in Electronics (TSE)

TSE is associated with the Tshwane University of Technology. The TSE is located in Pretoria in Gauteng and was established in 2000/01. The TSE operates in the electronic, electrical and information and communication technology industries, and falls within the manufacturing and engineering technology clusters.

The affordable services provided by the TSE have removed the financial and technical barriers that exist from product idea, through to market entry for most clients. Approximately 50% of clients were serviced from start-ups and market-led innovations, clearly highlighting the innovativeness in this sector. Other clients have benefited from low volume jobs carried at the TS, at extremely low prices. An added advantage to the TSP, is that the services can be paid for at a later stage, thus companies can continue to innovate and retain jobs, while given a provision to make payments when their financial situation improves.

#### Achievements

Hybrid Tracking Systems: This start-up was supported to develop an innovative container tracking system despite the economic crisis faced. The company, as a result of the TSE intervention, now has customers lined up for orders. The production of these is expected now in 2015 with an anticipated annual turnover of US $15 million. It is expected that there will be 30 full-time job opportunities created by 2017 to meet the international demand.

The TSE-targeted elements of a decent standard of living, are focused on electricity, transport employment creation, education and skills transfer.

## Institutes of Advanced Tooling (IATs)

The TSP programme has, under its ambit, the Institutes of Advanced Tooling (IATs). These centres were established in 2006/07 and fall within the Advanced Tooling and Light Metals Technology Cluster. The IATs are affiliated with three different Higher Education Institutions, namely Walter Sisulu University in the Eastern Cape, Tshwane University of Technology in Soshanguve, Gauteng, and Stellenbosch University in the Western Cape. The main objective of the IAT is to increase the competitiveness of the South African tooling industry by increasing toolmakers' share in the total value chain.

IATs aim to change the tool manufacturing industry from a resource-driven process to a knowledge-driven process by offering a well-balanced combination of technology enablers for all steps of the extended product life cycle to SMEs in the tooling sector. IATs focus on tool design, tooling technology transfer, and research and innovation.

The most important service provided at the IAT is the 5-axis machining that most SMEs cannot afford. This comes with specific and specialist expertise and advice that are valued by IAT clients. The strongest impact of the IAT has been on productivity, with clients reporting 65% time savings from the IATs. Additionally, there has been a great impact on quality improvement of tools and products produced, resulting in better fitting moulds and, subsequently, a reduced number of rejected rates and an increase in the number of advanced products.

### Achievements

Aman Technology: The IAT assisted with the redesign, product improvements, prototyping and mould manufacturing for a 5-year old start-up firm manufacturing innovative anti-theft cables. Through switching from steel to plastic, the unit cost has been cut in half. The first two commercial contracts were signed in November 2014, worth R20 million for the next three years. This will create 30 new jobs in 2015.

## The Hybrid Tracking System (HTS)

The Hybrid Tracking System (HTS) device has been developed as a mobile, battery-operated, dual communications tracking system for shipping containers. The device utilises both GSM and Iridium for communication to a control room and it can accommodate 20 analogue-to-digital input allowing for customisation according to client needs. Battery power management has been crucial and current estimates are that the device will have power for up to 24 months, based upon six transmissions of data every day. Once fitted to the door of a container, the device is armed by the user and the container door is closed. In the event of the container door being opened, an alarm is activated by a proximity sensor that is incorporated into the device and is transmitted to the control room. Additional technologies such as passive infra-red sensors, Photocells and Geiger Counters for radiation detection, will be integrated to allow for client customisation.

E2E Logistics Consulting Inc., based in New York, will develop the tracking system hardware and software which will play a crucial role in a total international trade system, focused on supply chain management and security needs. The technology, that has reached end-stage prototype development, has already attracted international attention with several US companies demonstrating eagerness to procure the systems.

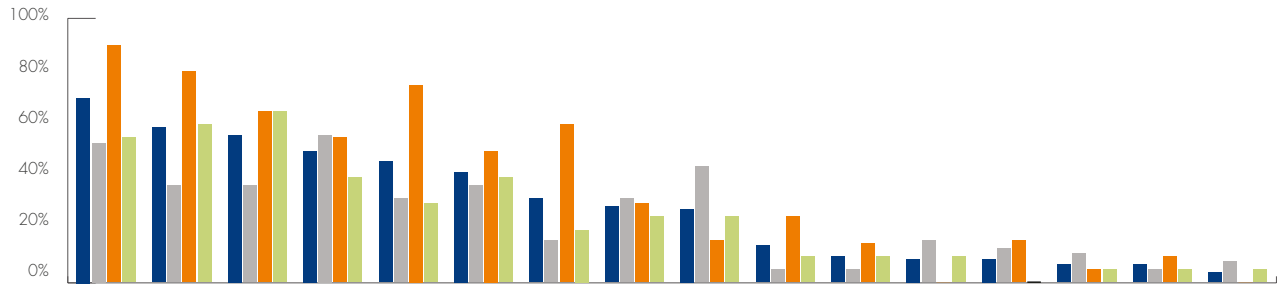
The current key objectives are to finalise the prototype testing, address potential challenges, conduct environmental stress testing and achieve certification of compliance for communication systems. This proudly South African-built technology, is a one of a kind solution with no other tracking company having the HTS s integrated dual modes of communication and augmenting technologies for the purpose of tracking containers or other modes of cargo transportation.

As a further direct consequence of the development, other industry applications have become evident, which include small aircraft tracking with tablet-enabled flight profilers and monitoring of ballot boxes, to mention a few. Our current technology platform, forming the basis of the tracking system, will allow for real-time tracking of aircraft, as well as monitoring ballot boxes to ensure deployment to correct locations, opening and sealing thereof at stipulated times and by designated officials.

The main impact of TSP at client level is that, overall, skills upgrade and knowledge transfer was found to be the most frequent impact on the programme for small-sized and medium-sized clients. 66% of the interviewed clients stated that their technical skills were improved through co-operation with the stations/institutes. Most were in agreement that TSP support has had a positive impact on the company in general (97%), with impact felt mainly on predefined categories, which are technical skills (66%), product/prototype quality improvements (59%), time savings (55%) and cost savings (50%).

Further impact indicators that measured strongly, are the improvement of the product quality (confirmed by 59% of the sample group) as well as productivity improvements (cost savings confirmed by 50% and time savings confirmed by 56% of the interviewees). The impact indicators with the lowest rate of affirmation were found to be "improved energy efficiency", "SABS certification" and "patent registration", each confirmed by less than 10% of the sample group.

*Overview of Impact Indicators Affirmed by Clients per Specific Sector*




| | Skills Develop-ment | Improved Quality | Time Savings | Cost Savings | Increased production volume | New Prod-uct (in the market) | Created/ secured jobs (indi-rectly) | Started a business | New product (in R&D) | Improved resource efficiency | Improved waste manage-ment | Registered a patent | Laid off workers (indirectly) | SABS certi-fication | Improved energy efficiency | Product failed in the market |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Average (%) | 66 | 59 | 56 | 50 | 46 | 42 | 32 | 29 | 28 | 14 | 10 | 9 | 9 | 7 | 7 | 4 |
| TSE (%) | 53 | 37 | 37 | 56 | 32 | 37 | 16 | 32 | 44 | 5 | 5 | 16 | 13 | 11 | 5 | 8 |
| TSCT (%) | 90 | 80 | 65 | 55 | 75 | 50 | 60 | 30 | 16 | 25 | 15 | 0 | 16 | 5 | 10 | 0 |
| IAT (%) | 55 | 60 | 65 | 40 | 30 | 40 | 20 | 25 | 25 | 10 | 10 | 10 | 0 | 5 | 5 | 5 |

The sector-specific analysis produced a clearer picture of how the sectors differ in regard to the most important impact: In the electronics sector, which is characterised by the highest rate of innovative start-up clients, the biggest impact indicators measured, are cost savings (56%), skills development (53%) and advancing the development of new products (44%).

In the textile sector there is contrast – skills development was rated highest (90%), while the main positive impact was confirmed on the quality of products (80%) and on the production volume (75%). In the tooling sector, clients rated time savings (65%) as the greatest impact, while the improvement of the product quality (60%) and skills development (55%) were also confirmed in many cases.

# Youth Technology Innovation Programme

The purpose of the Youth Technology Innovation Programme (YTIP) is to increase the understanding, meaning and value of technology innovation amongst young South Africans. The programme seeks to find innovative solutions by the youth between the ages of 18 to 30 years for various industries and communities. It also drives awareness initiatives used as vehicles to attract quality applications for TIA funding in areas of applied research.

## Operational Objectives

The YTIP has set out to achieve two main objectives:

a) To provide an enabling environment for technology innovation among young people; and
b) To accelerate development and increase the number of knowledge innovation products supported, (prototypes developed, patents registered) among the youth.

## Unit Performance

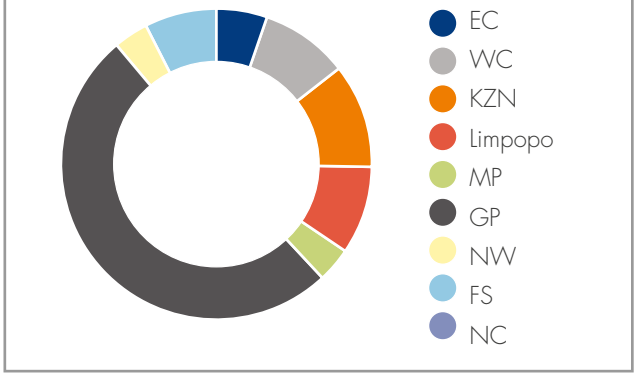
For the financial year 2014/15 a total amount of R1,8 million was disbursed in the form of a technology station voucher and R450 000 was spent on the Stipend voucher which amounts to a total amount of R2,2 million disbursed.

During the 2014/15 financial year, six prototypes were completed at various technology stations. Four youth-owned companies were assisted with the Stipend voucher for Enterprise Development. A full South African patent was filled for the Energy Theft Detection System.

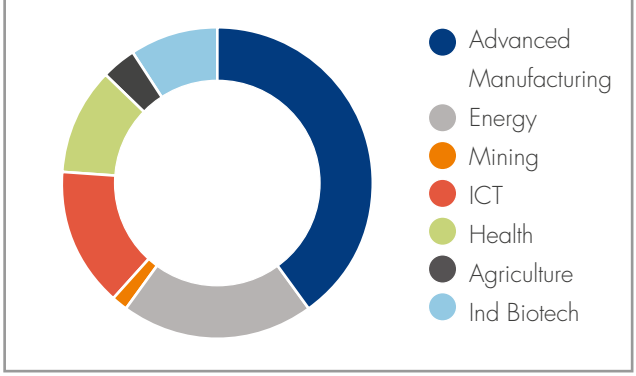
177 Applications were received, of which 13 were recommended for funding to an amount of R5 million. Regrettably, a greater number of applications fell outside of TIA's technology development space. Most applicants required support to start a retail business.

## Project Portfolio Composition

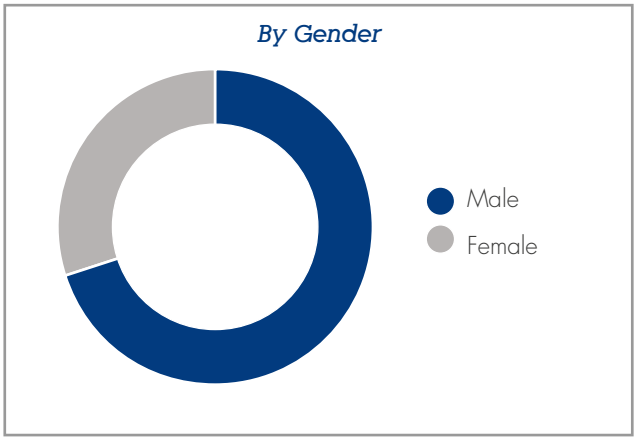
*By Province*



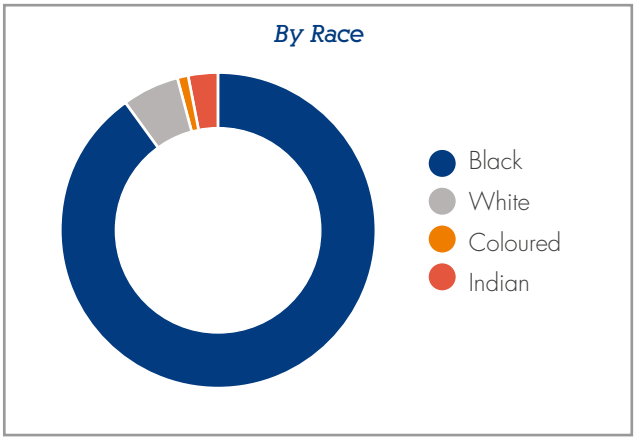

*By Sector*




*By Gender*




*By Race*



## The TodPod (Million Baby)

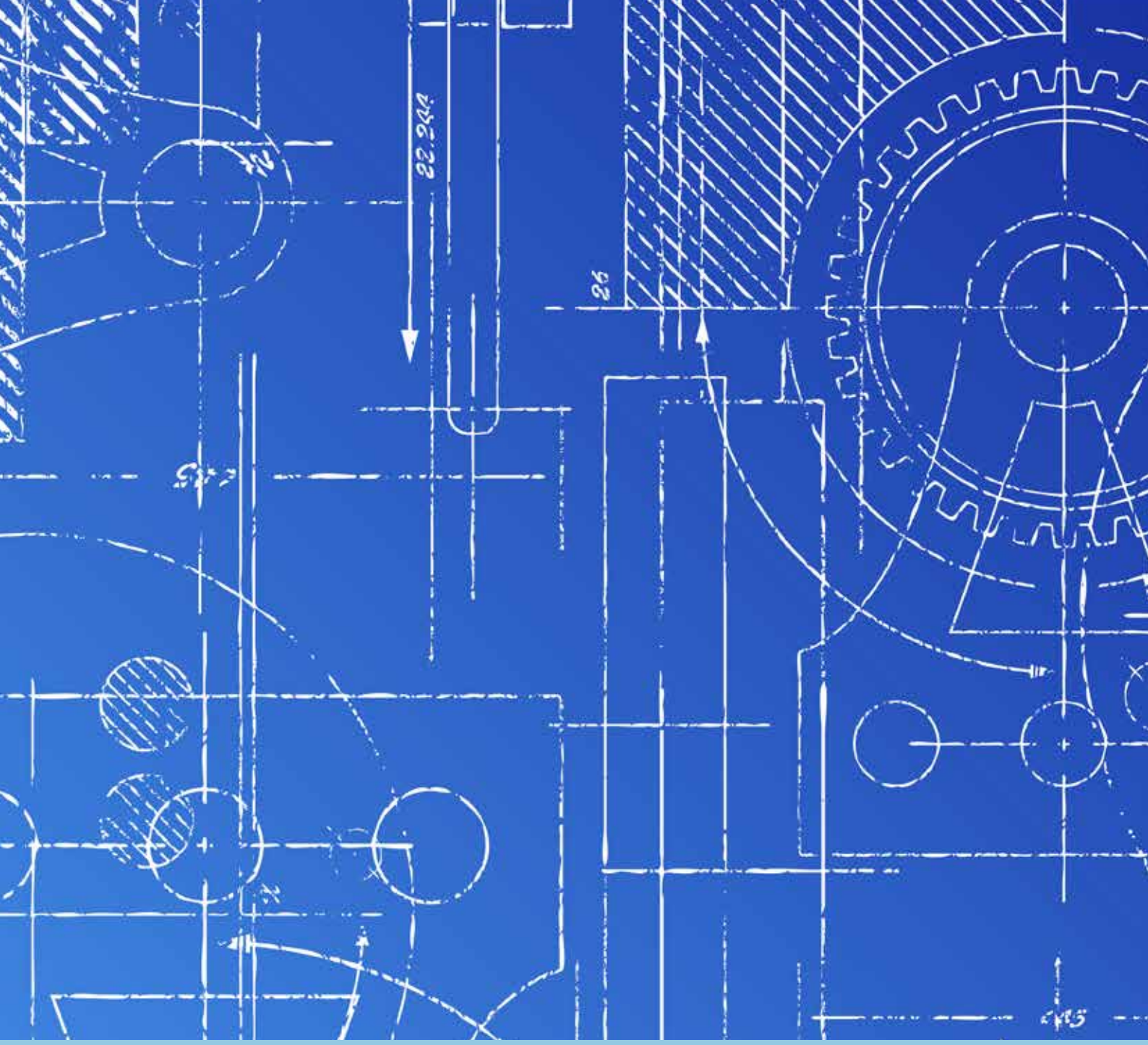
The TodPod (Million Baby) is a 3-in-1 multi-functional toddler bag that serves as a bag, table and a carrier. It converts into a child's personal play station that can be taken anywhere and used for a variety of purposes, such as playing, eating, writing, sitting and drawing. This project was approved for funding from the Youth Technology Innovation Programme Fourth Call for Proposals to an amount of R221 188. This funding was utilised for:

- Growing of CAD design and EOS machine
- Growing of master for casting
- Preparation of silicon moulds
- Development of 10 prototypes.

The project was completed in September 2014 and the official handover was done in October 2014. The YTIP fund recipient, Jared Pillai, entered the TV programme, Dragons Den, in November 2014. The TV show is about providing opportunities to South African entrepreneurs to pitch for investment to the five capitalists in the show who are willing to invest their own money in exchange for equity.

The recipient used the prototypes that were developed by TIA through the Technology Station voucher to enter for the TV show which enabled him to secure a commitment of R4 million for 60% equity in his business, subject to the filing of a PCT patent, an endeavour with which TIA is assisting.


Youth Technology Innovation Programme officially launched on 29 August 2012
14 business enterprises developed
1 full RSA patent filed
17 fully functional prototypes completed
40 projects are currently under development
57 applications approved for funding
9 YTIP calls made to date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# BUSINESS DEVELOPMENT

# Business Development

The purpose of the Business Development Unit is to facilitate the implementation of the Regional Innovation Programme that consists of Regional Development Agency Seed Fund and the Higher Education Innovation Seed Fund Programme.

## Regional Innovation Programme

The main goal of the Regional Innovation Programme is to bring the greatest possible range of assistance and resources to technology-based companies and university-based innovators at the earliest stage in their growth. On their own, such start-up companies and entrepreneurs are too small to establish strong relationships with banks, investors, venture capitalists, business consultants or other business development resources. This programme ensures that entrepreneurs are part of something larger and well-coordinated in their respective regions without sacrificing their independence. This is achieved by giving them access to enterprise support resources and to provide flexible support mechanisms that are designed to minimise cash-flow pressures and facilitate rapid growth.

Typical milestones were achieved by this TIA programme during the past year, including the development or expansion of business plans, formation of core management teams, the establishment of a customer base, development of products or services, raising seed or first round capital, establishing a network of professional service providers, incubation, etc. In addition, innovators, entrepreneurs and SMMEs that are part of this programme, have been able to leverage a network encompassing multiple helix partners through Regional Innovation Forums. Below are the various TIA-approved sub-programmes/initiatives which is the backbone of this programme.

## University Seed Fund

This Fund assists universities in bridging financing requirements to translate university research output into fundable ideas for commercialisation. The Fund is a limited resource made available to various HEIs. Assistance is provided to institutions for an agreed set of focused activities with clear deliverables, at least one of which will be a viable proposal/business plan for taking the idea forward.

The aim of the Seed Fund is to increase the quality and quantity of investment proposals geared for other TIA funds from Higher Education Institutions (HEI) and to increase the rate of commercialisation of viable intellectual property of South African technologies emanating from HEIs. The Fund is structured such that it provides for the commercial opportunity and proof of concept. The Fund is geared towards Technology Readiness Level 3 to 8 in line with TIA's new strategic approach, with specific focus on technical feasibility and business readiness by evaluating market and economic feasibility.

## Partnerships with Regional Development Agencies

TIA has established strategic partnerships with various Regional Development Agencies to implement a range of initiatives that are aimed at stimulating technology innovation. One such initiative is the Regional Seed Fund, established as a co-funding mechanism to support the development of technology start-up companies in the respective regions, especially SMMEs that seek to develop technology solutions. For this purpose, TIA has concluded agreements with seven agencies/incubators with a total commitment of R5 million per institution. These are the Cape Craft Design Institute, the Eastern Cape Development Corporation, Free State Development Corporation, the Innovation Hub, and Limpopo Economic Development Agency, Invotech and Smart Exchange.

The main objective of this Fund is to foster entrepreneurship and contribute to the establishment of innovation/knowledge-based companies in various provinces that respond to provincial

priorities and needs through access to finance. These companies will be geared towards the creation of sustainable jobs and thus contribute to the mainstream economy. The programme seeks to reduce the barriers experienced by other funders to invest, especially in high risk, early stage opportunities with commercialisation potential. Thus co-investment or syndication with these, is strongly preferred. The programme does not compete with such other existing funds or any other available start-up funds, etc., but strives to act in a synergistic fashion to facilitate early stage commercial uptake.

Each institution was evaluated on an individual basis as each partnership established differed from each respective agency. In addition, the total contribution and exposure per partner differed in line with both the financial and non-financial contribution agreed upon. The Regional Agencies and incubators have provided cash contributions as well as in-kind contributions estimated at R31 870 million which include competition programmes, management of the programme and incubation support services to support the initiative.

## Unit Performance

The output of the HEI Seed Fund demonstrates TIA's ability to use its risk funding positioning to implement appropriate early stage funding models to address the needs of innovators at their institutions. The impact of the model is that TIA is capable of providing earlier stage funding to qualifying projects in order to build TIA pipeline of fundable projects from the technology development fund as a second round where needed. Also, TIA and its HEI partners are enabling the project development by assisting qualifying projects to demonstrate proof of concept a lot sooner.

### Process 1 for FY 2014/15

| Region | Number of Projects | Amounts Disbursed | Number of Universities |
|---|---|---|---|
| FS | 14 | R6,8 million | 2 |
| KZN | 12 | R5,8 million | 3 |
| GP | 11 | R5,1 million | 1 |
| EC | 4 | R1,4 million | 1 |
| Total | 41 | R19,1 million | 7 |

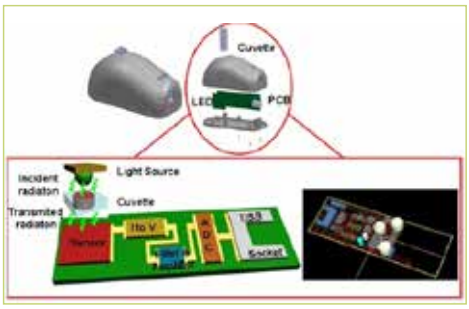
### Process 2 for FY 2014/15

| Region | Approved Applications | Approved Amounts | Number of Universities |
|---|---|---|---|
| KZN | 8 | R1,6 million | 3 |
| GP | 15 | R6,3 million | 4 |
| FS | 7 | R2,1 million | 2 |
| CP | 18 | R8,2 million | 5 |
| NW | 4 | R1,8 million | 1 |
| Total | 52 | R20 million | 15 |

## Naked-eye Detectable Nanoparticle-based Rapid Diagnostic Assay for Tuberculosis (M. tuberculosis)

### North-West University

This project has made good progress for initial proof of concept for a study aimed to develop diagnostic assay for early detection of tuberculosis in sputum samples at ultra-low concentrations of the bacteria, by using naked-eye detectable rapid tuberculosis and routine laboratory equipment such as UV-Vis spectrometer (illustrated in the figure below). The success of this project will negate the need for labour intensive techniques such as PCR and mass spectrometer or the need for highly skilled instrumental operators. The mechanism used for detection will be based on simple colour change (red, blue or red) in a gold-nanoparticle solution upon direct interaction with a biological sample, based on a novel TB metabolite biomarker.




*An optoelectronic tuberculosis gold-nanoparticle-based assay*

The progress made, includes successful production of the protein (by the German counter-part) to be used in the assay and tests to determine activity of the protein towards the M. tuberculosis metabolite mycothiol (MSM). Activity tests showed that the enzymatic assay can detect about 30ng/mL (~1mg of cells) of pure MSH within 30 minutes without incorporating any nanoparticle technology.

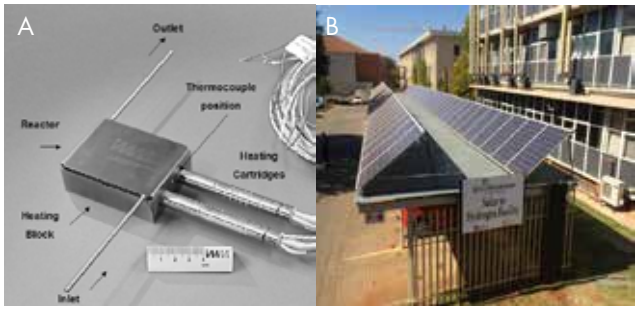
### Xhosa:

Le projekthi yenze inkqubela-phambili entle kuvavanyo loshicilelo lokuqala lwengqiqo yophononongo olujolise ekuphuhliseni ukucikida ukuxilonga ukuze kufunyanwe phambi kwexesha ubukho besifo sephepha kwiisampuli zesikhohlela esinezinga eliphantsi kakhulu lentsholongwane ngokuthi kusetyenziswe iliso lenyama kunye nesixhobo saselebhu sesiqhelo esifana ne-UV-Vis spectrometer ukubona isifo sephepha esikhawulezayo.

## On-site Methane Production

### North-West University

This project is part of HySA project that is conducting market research and assessment of technology options for the implementation of power to gas technology in South Africa. The overall purpose of this project is to develop a novel system that would include advanced hydrogen generation key sub-system, power electronics control, hydrogen storage and micro channel reactor, comprising PGM catalysts for the on-site production of methane via the Sabatier reaction (CO2 + 4H2 CH4 + 2H2O + energy). The technology being explored is the use of carbon dioxide (emissions from an existing facility) and renewable hydrogen as feed in a novel micro-channel reactor for methane generation via the Sabatier reaction. The hydrogen is being produced by the PEM electrolyser linked to photovoltaic (PV) energy and water, the set-up which is already available for the process (refer to the figure below).




*Novel micro-channel reactor (a) and the photovoltaic (PV) set-up (b) installed for renewable hydrogen production at the NWU*

Market research related to the current status of power to gas technology showed that demonstration plants for such technologies exist, but operational experience on the only commercial plant available, is still the major obstacle. There is also no proven economic model to help make investment decisions about a power-to-gas concept. The team is currently in a process of identifying industrial partners to advance early technology to commercialisation. This project was concluded in December 2014.

## Sharksafe Barrier

### Stellenbosch University

The Sharksafe barrier is an alternative technology to the traditional nets used as a physical barrier to keep sharks out of bathing areas on beaches. The challenge with traditional nets is that they often lead to the death of the entrapped sharks, and the indiscriminate killing of other marine animals that are trapped in them. Furthermore, they generally have higher maintenance costs. The Sharksafe barrier intends to alleviate these challenges by using a combination biomimicry to simulate kelp forests (which sharks naturally do not enter for fear of entanglement) and strategically placed static magnets to ward off sharks from a particular area. The potential impact is a safer beach for users that does not compromise the natural marine ecosystem by taking a key predator out of the food chain.

The Seed Fund project assisted the team to refine the prototype design, trial the new designs in rough waters and it assisted to trial the proof of concepts in Gansbaai. Data to prove the efficacy of the trial site, is being generated. A spinoff company has been formed to commercialise the technology in partnership with a private partner and the team have responded to a tender on the island of Reunion where shark attacks have escalated over the past two years and had negatively impacted the island's tourism sector.


*Bony fish feeding off the bait ball in the exclusion zone where the sharks were not capable of entering.*


*The exclusion zone created by the Sharksafe barrier.*

## Career Guidance Application

### Cape Peninsula University of Technology

Mr Mbavhelo Mabogo and his students have built and trialled an application that high school pupils could use to inform their choice of career and provide them with the required university entrance criteria and application process as well. The application has a proprietary algorithm that assists the user with career guidance information. The application already has 100 pre-loaded professions and it also has all the local university content loaded. The team tested the use of the application at two schools in Khayelitsha to gain user experience data. The team is also trialling the business model for the application which has proven to be a good information source for school leavers to inform them about their career choices.

### Zulu:

UMnu Mbavhelo Mabogo nabafundi bakhe basungule futhi bavivinya uhlelo olungasetshenziswa abafundi beSikole Esiphakeme ekutholeni ulwazi ngomsebenzi wokuziphilisa abawukhethayo futhi lubanike imibandela edingekayo yokungena emaNyuvesi kanye nenqubo yokufaka izicelo. Lolu hlelo lune-algorithm yezimfanelo ezisiza umsebenzisi ngolwazi lokukhetha umsebenzi. Kakade lolu hlelo lunemisebenzi yobuchwepheshe engu-100 efakiwe kulo futhi lunalo lonke ulwazi lwamaNyuvesi akuleli oselufakiwe. Leli thimba lahlola ukusebenza kwalolu hlelo ezikoleni ezi-2 eKhayelitsha ukuze liqongelele ulwazi lwabasebenzisi. Ithimba livivinya nemodeli yebhizinisi yalolu hlelo ebe umthombo omuhle wolwazi kwabaqeda isikole ukuze babe nolwazi ngemisebenzi yokuziphilisa abayikhethayo.

## Biological Ligament

### University of Cape Town

This project aims to trial a biological ligament, that when implanted correctly in a patient's mouth area, is capable of potentially alleviating chronic Obstructive Sleep Apnoea (OSA) in patients. OSA is a debilitating condition with significant morbidity and mortality, affecting approximately 2% to 4% of the adult population in western countries. Patients suffering from OSA have sleep fragmentation and deprivation, as they are unable to achieve adequate rapid eye movement sleep resulting in a non-refreshing sleep pattern. The major symptom of OSA is excessive daytime sleepiness (EDS). As a result, lack of concentration and memory, changes in mood and personality and an increase in workplace and traffic accidents have been linked to EDS.

Furthermore, co-morbidities with OSA include obesity, cardiovascular, endocrine complications and premature death. In South Africa, the incidence of OSA is increasing with a positive correlation to obesity. The prevalence of obesity has escalated to very high proportions in South Africa with rates as high as 57% in adult females and 29% in adult males. In the adult population, the prevalence of OSA is estimated at 25%, rising to 45% in obese individuals. The current gold standard in the management of OSA worldwide is Continuous Positive Airway Pressure Therapy (CPAP).

This therapy splints the airway and maintains an anterior position of the tongue. This modality, however, is poorly tolerated by a significant minority of patients and therefore has poor compliance in these individuals. A significant proportion (46%) of those so diagnosed, either does not initiate or eventually abandon therapy. Therefore, alternate methods of treatment have been investigated.

The project stemmed from a joint venture between a private physician and consortium of UCT researchers. The physician had proven the technology in proof of principle trials, but the collaboration with UCT staff aimed to establish alternative materials to further develop the product. The seed funding will assist the team to trial the ligament device in sheep to test the efficacy and longevity of the alternative materials used. New IP has already been generated as an outcome of the seed funded work. Discussions with various private companies have already been initiated, where they could provide commercialisation support along the device's value chain.

## Lumkani

### University of Cape Town

The Lumkani (previously "Khusela") project is a multi-award winning project where students at UCT developed a device that is capable of measuring quick increases in temperature and capable of alerting similar devices in a short radius via a mesh network. The problem that the device intends to solve, is the rapid spreading of fires in informal settlements and where inhabitants are caught unaware, often leading to the devastation of informal settlements and unfortunately, deaths. The device will be able to warn occupants of neighbouring dwellings of a fire close by and as such those occupants could respond quicker to contain the fire.

The fund paid for the manufacturing of hundreds of devices to trial in a simulated informal settlement. The fund also covers the cost of trialling the business model for the device, including the acceptable price point and the purchasing motivation for the device among potential users. A spinout company is planned to commercialise the device, new IP was created and protected, and partnerships with NGOs and local manufacturers are some of the expected deliverables of the project as well.

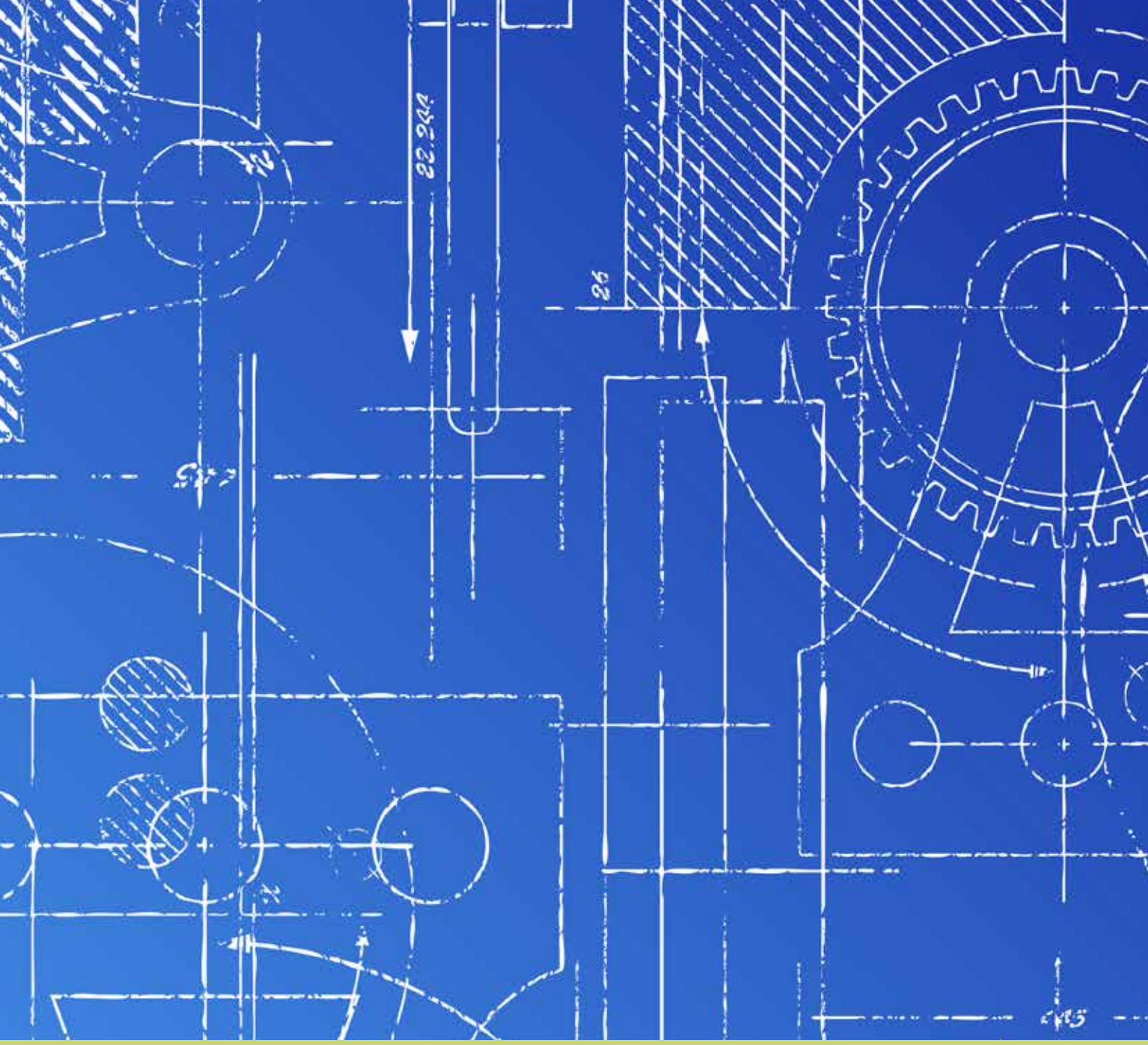
## Latex Zinc Reduction using ZR Technology of Rubber Nano Products

### NMMU

The application of ZR technology (previously developed at NMMU) in normal sulphur-based vulcanisation of rubber, has shown dramatic productivity advantages, whilst achieving at least 80% zinc oxide reduction. Latex manufacturing processes use a different method of rubber vulcanisation to formulate and mix the latex together, using water as a solvent. The purpose of this project supported through Seed Fund is to develop a modified ZR methodology to achieve the same performance improvements in latex manufacture, as those already seen in rubber manufacture.

The ZR technology needs to be modified as it is not suitable for use in water. This will be done by formulating a chemical form suitable for the accelerators used in latex applications while encapsulating the active chemical species of ZR technology to protect it from water during the processing of the latex. This will require testing of different wax encapsulation techniques to find the most suitable solvent.

The NMMU team has been able to register a new patent where they have been able to encapsulate the active species in wax and have shown it remains active for at least 24 hours. Success of the project would have commercial benefit for latex applications such as glove manufacturing and latex-backed carpets – reduction of zinc oxide use in the process has both environmental and cost-saving benefits.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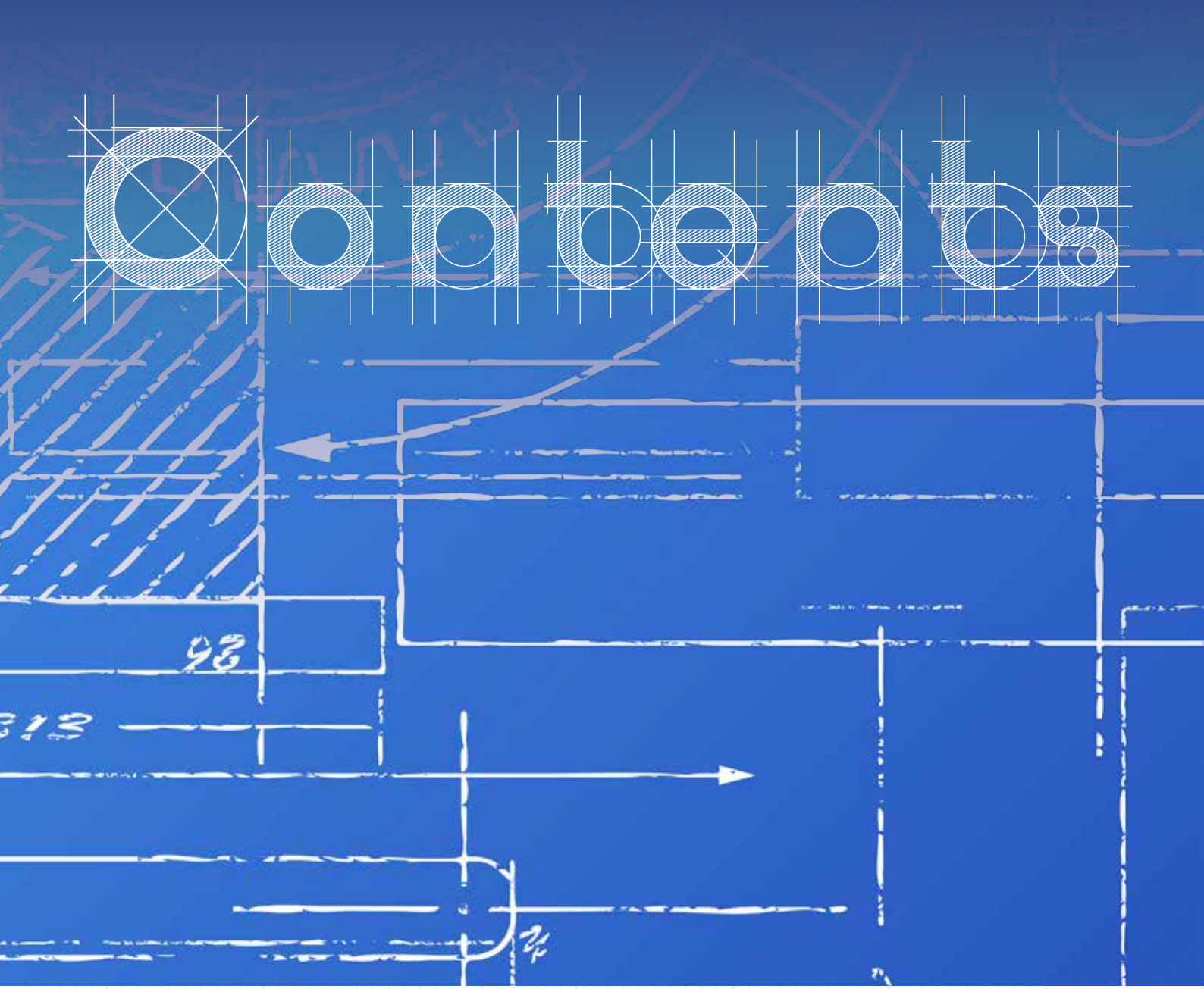
# ANNUAL FINANCIAL STATEMENTS



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## Board's Responsibilities and Approval

The Board is required by the Public Finance Management Act (Act 1 of 1999), to maintain adequate accounting records and is responsible for the content and integrity of the consolidated and separate financial statements and related financial information included in this report. It is the responsibility of the Board to ensure that the consolidated and separate financial statements fairly present the state of affairs of the entity and its controlled entities ("the economic entity") as at the end of the financial year and the results of its operations and cash flows for the period then ended. The external auditors are engaged to express an independent opinion on the consolidated and separate financial statements and were given unrestricted access to all financial records and related data.

The consolidated and separate financial statements have been prepared in accordance with Standards of Generally Recognised Accounting Practice (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.

The consolidated and separate financial statements are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgements and estimates.

The Board acknowledges that it is ultimately responsible for the system of internal financial control established by the economic entity and places considerable importance on maintaining a strong control environment. To enable the Board to meet these responsibilities, the Board sets standards for internal control aimed at reducing the risk of error in a cost effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties to ensure an acceptable level of risk. These controls are monitored throughout the economic entity and all employees are required to maintain the highest ethical standards in ensuring the economic entity's business is conducted in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the economic entity is on identifying, assessing, managing and monitoring all known forms of risk across the economic entity. While operating risk cannot be fully eliminated, the economic entity endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

The Board is of the opinion, based on the information and explanations given by management, that the system of internal control provides reasonable assurance that the financial records may be relied on for the preparation of the financial statements. However, any system of internal financial control can provide only reasonable, and not absolute, assurance against material misstatement or deficit.

The Board have reviewed the controlling entity's cash flow forecast for the year to 31 March 2016 and, in the light of this review and the current financial position, they are satisfied that the economic entity has access to adequate resources to continue in operational existence for the foreseeable future.

The financial statements set out on pages 104 to 145, which have been prepared on the going concern basis, were approved by the Board on 29 July 2015 and were signed on its behalf by:

Ms K Njobe
Chairperson

# AUDIT AND RISK COMMITTEE REPORT

## Governance, Risk Management and Internal Control Support

During 2014/15, the Audit and Risk Unit consisted of the Internal Audit and Enterprise Risk Management functions within TIA. These functions reported to the office of the CEO and provided the Agency with effective, integrated assurance against risk and value-added internal audit services.

The task of the Internal Audit and Risk function during 2014/15, was to determine whether the network of risk management, internal control and governance processes, as designed and applied by management, were adequate and functioned as intended. The Enterprise Risk Management function ensured efficient and effective risk management implementation by co-ordinating, administrating and maintaining the risk management system, processes and policies required for all functions.

A co-sourced model for the Internal Audit and Risk was applied during 2014/15 to address the capacity challenges. The contract for the service provider was not extended for 2015/16.

The Audit and Risk Committee approved the 2014/15 Risk-based Internal Audit Plan that was developed and approved by the Internal Audit and Risk Function. During 2014/15, this Unit completed a number of audits according to the approved plan and completed the review of various assignments which were requested by the Audit and Risk Committee and Management. The results of these additional requests were also reported to the Audit and Risk Committee. The assignments that were not undertaken during 2014/15 have been incorporated in the 2015/16 Integrated Internal Audit Plan (as discussed further below) which was approved by the Audit and Risk Committee during May 2015.

During 2014/15, the Investment Audit, Compliance and Monitoring Unit and the Internal Audit and Risk Unit were combined into one business unit, namely the Investment and Internal Audit Unit. The intention is that this newly combined unit will leverage off the learnings, experience and expertise garnered from the two previously separated units, in order to avoid any duplication of work and create synergies between the two functions. The Investment and Internal Audit Unit reports functionally to the Audit and Risk Committee and administratively to the CEO, with the primary purpose of providing an independent and objective level of assurance to TIA's Audit and Risk Committee, TIA's Board, and TIA's Management. This function is designed to add value and improve TIA's operations in an efficient and effective manner. This function also aims to provide value to TIA by partnering/collaborating with management and business units, as well as to provide advisory services, to improve TIA's operational control environment. In order to achieve this, the Unit brings a systematic, disciplined approach to evaluate and improve the effectiveness, efficiency and adequacy of TIA's governance, risk management and internal control processes.

## Risk Management Process

During 2015/16, the Risk Management function will be facilitated within the CEO's office. In this regard, risks will be monitored regularly (quarterly at least), with the objective of monitoring the progress on the committed mitigation action plans and identification of any further emerging risks. Additionally, we shall obtain support and collaboration from the Executive Authority/Board to ensure that alignment is obtained and appropriate strategic risks are identified for the organisation

## Irregular Expenditure

The Audit and Risk Committee tasked management to conduct a review on all historical investment contracts with a commitment for the 2015/16 financial year. The purpose of this exercise was to verify that all these investment contracts were approved in line with the approved and recent applicable delegation of authority. This process revealed a significant amount of irregular expenditure, which was disclosed under note 29 of the annual financial statements. Accordingly, as part of lessons learnt, improved processes were put in place to address these internal control weaknesses and as such it is anticipated that irregular expenditure will reduce significantly in the future.

## External Audit

Ngubane & Co was appointed as the new external auditors in the financial year under review, by way of a bidding process, which process accordingly satisfied the requirement set by the Auditor-General. The Audit and Risk Committee is pleased that TIA received an unqualified audit report whilst, however, acknowledging that there was significant room for improvement, particularly in the assurance of performance information which will be focused on in the coming year.

Dr Steve Lennon
Chairperson of the Audit and Risk Committee

# INDEPENDENT AUDITORS REPORT TO THE BOARD OF TECHNOLOGY INNOVATION AGENCY FOR THE YEAR ENDED 31 MARCH 2015

## REPORT ON THE FINANCIAL STATEMENTS

### Introduction

We have audited the accompanying consolidated annual financial statements and the annual financial statements of Technology Innovation Agency, which comprise the statements of financial position as at 31 March 2015, and the statements of financial performance, statements of changes in equity and statements of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information, as set out on pages 97 to 145.

### Directors' responsibility for the financial statements

The Board which constitutes the accounting authority, are responsible for the preparation and fair presentation of these consolidated and separate financial statements in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) and in the manner required by the Public Finance Management Act of South Africa and for such internal control as the accounting authority determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

### Auditor's responsibility

Our responsibility is to express an opinion on these consolidated and separate financial statements based on our audit. We conducted our audit in accordance with the Public Audit Act of South Africa, the General Notice issued in terms thereof and International Standards on Auditing. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated and separate financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion, the consolidated and separate financial statements present fairly, in all material respects, the consolidated and separate financial position of Technology Innovation Agency as at 31 March 2015, and its consolidated and separate financial performance and cash flows for the year then ended in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) and in the manner required by the Public Finance Management Act of South Africa.

### Report on other legal and regulatory requirements

#### Public Audit Act Requirements (PAA)

In accordance with the Public Audit Act of South Africa (PAA) and the General Notice issued in terms thereof, we report the following findings relevant to performance against predetermined objectives, compliance with laws and regulations as well as internal control. We performed tests to identify reportable findings as described under each sub heading but not to gather evidence to express assurance on these matters. Accordingly we do not express an opinion or conclusion on these matters.

### Predetermined objectives

We performed procedures to obtain evidence about the usefulness and reliability of the information in the Performance Information Report as set out on pages 32 to 33 of the annual report. The procedures performed were limited to the following selected objectives:

- Number of High Impact Investments (HIPs);
- Number of technology based products /process developed through investments;
- Number of technology based products/process developed or improved through technology stations;
- Number of products/process developed or improved through Technology Platforms;
- Number of Small and Medium Enterprises receiving technology support from TS and IAT's and;
- Number of knowledge innovation products supported: patents, prototypes, technology demonstrates and technology transfer packages.

The reported performance against predetermined objectives was evaluated against the overall criteria of usefulness and reliability.

The usefulness of information in the Performance Information Report relates to whether it is presented in accordance with the National Treasury annual reporting principles and whether the reported performance is consistent with the planned objectives. The usefulness of information further relates to whether indicators and targets are measurable (i.e. well defined, verifiable, specific, measurable and time bound) and relevant as required by the National Treasury Framework for managing programme performance information.

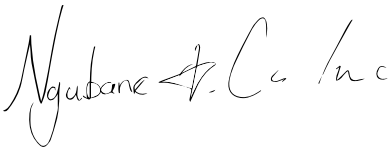
The reliability of the information in respect of the selected objectives is assessed to determine whether it adequately reflects the facts (i.e. whether it is valid, accurate and complete). We report that there were no material findings on the Performance Information Report concerning the usefulness and reliability of the information.

## Compliance with laws and regulations

We performed procedures to obtain evidence that the public entity had complied with applicable legislation regarding financial matters, financial management and other related matters. We did not identify any instances of material non compliance with specific matters in the key applicable laws and regulations, as set out in the General Notice issued in terms of the PAA.

## Internal control

We considered internal control relevant to our audit of the financial statements, Performance Information Report and compliance with legislation. We did not identify any deficiencies in internal control which we considered sufficiently significant for inclusion in this report.



Ngubane & Co (JHB) Inc

Director: Dawn Mbatha
Chartered Accountant (SA)
Registered Auditor
Midrand

31 July 2015

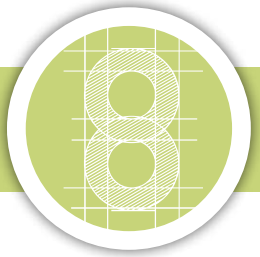
# STATEMENTS OF FINANCIAL POSITION

as at 31 March 2015

| | Note(s) | Economic entity 2015 R'000 | Economic entity 2014 R'000 | Controlling entity 2015 R'000 | Controlling entity 2014 R'000 |
|---|---|---|---|---|---|
| **Assets** | | | | | |
| Current Assets | | 140 012 | 181 795 | 130 320 | 170 890 |
| Trade and other receivables | 3 | 65 214 | 11 277 | 64 039 | 8 696 |
| Cash and cash equivalents | 4 | 74 798 | 170 518 | 66 281 | 162 194 |
| Non-Current Assets | | 119 432 | 130 420 | 113 987 | 110 650 |
| Property and equipment | 5 | 12 008 | 20 759 | 12 412 | 20 881 |
| Intangible assets | 6 | 1 236 | 1 692 | 1 228 | 1 679 |
| Investments in controlled entities | 7 | - | - | - | - |
| Investments in associates | 8 | 21 242 | 40 668 | 15 401 | 20 789 |
| Loans and receivables | 9 | 44 374 | 26 729 | 44 374 | 26 729 |
| Other financial assets | 10 | 40 572 | 40 572 | 40 572 | 40 572 |
| Total Assets | | 259 444 | 312 215 | 244 307 | 281 540 |
| **Liabilities** | | | | | |
| Current Liabilities | | 34 189 | 22 622 | 36 928 | 19 011 |
| Finance lease obligation | 11 | 188 | 458 | 188 | 458 |
| Operating lease liability | | 1 488 | 1 661 | 1 309 | 1 661 |
| Trade and other payables | 12 | 32 511 | 20 503 | 35 431 | 16 892 |
| Non-Current Liabilities | | 18 984 | 12 005 | 16 222 | 9 387 |
| Loans from shareholders | 13 | 2 762 | 2 618 | - | - |
| Committed conditional grants and receipts | 14 | 16 222 | 9 387 | 16 222 | 9 387 |
| Total Liabilities | | 53 171 | 34 627 | 53 150 | 28 398 |
| Net Assets | | 206 273 | 277 588 | 191 157 | 253 142 |
| **Net Assets** | | | | | |
| Net Assets Attributable to Owners of Controlling Entity | | | | | |
| Reserves | | | | | |
| Foreign currency translation reserve | | - | (340) | - | - |
| Accumulated surplus | | 213 603 | 284 564 | 191 157 | 253 142 |
| | | 213 603 | 284 224 | 191 157 | 253 142 |
| Non-controlling interest | | (7 330) | (6 636) | - | - |
| Total Net Assets | | 206 273 | 277 588 | 191 157 | 253 142 |

# STATEMENTS OF FINANCIAL PERFORMANCE

for the year ended 31 March 2015



| | Note(s) | Economic entity 2015 R'000 | Economic entity 2014 R'000 | Controlling entity 2015 R'000 | Controlling entity 2014 R'000 |
|---|---|---|---|---|---|
| **Revenue** | | 460 658 | 578 352 | 472 698 | 568 724 |
| Revenue from non-exchange transactions | 15 | 389 370 | 543 073 | 389 370 | 543 073 |
| Other income | 16 | 53 122 | 11 815 | 65 457 | 1 926 |
| Interest received | 17 | 18 166 | 23 464 | 17 871 | 23 175 |
| Dividends received | | - | - | - | 550 |
| **Expenditure** | | (542 612) | (609 087) | (534 945) | (585 595) |
| Employee related costs | 18 | (123 771) | (134 333) | (110 512) | (117 571) |
| Project funding expenditure | 19 | (363 354) | (343 829) | (371 530) | (358 609) |
| Depreciation and amortisation | | (7 885) | (11 097) | (7 460) | (10 711) |
| Finance costs | | (47) | (113) | (47) | (113) |
| Lease rentals on operating lease | | (10 348) | (10 051) | (9 657) | (9 275) |
| Debt impairment | 20 | (1 632) | (17 685) | (1 952) | (15 797) |
| Repairs and maintenance | | (254) | (414) | (249) | (407) |
| Other operating expenses | 21 | (27 647) | (77 609) | (26 414) | (59 605) |
| IT expenses | | (7 196) | (9 740) | (6 874) | (9 348) |
| Marketing | | (478) | (4 216) | (250) | (4 159) |
| Operating deficit | | (81 954) | (30 735) | (62 247) | (16 871) |
| | | 10 299 | 12 390 | 262 | - |
| Gain on foreign exchange | | 262 | - | 262 | - |
| Surplus from equity accounted investments | | 10 037 | 12 390 | - | - |
| Deficit before taxation | | (71 655) | (18 345) | (61 985) | (16 871) |
| Taxation | 22 | - | (281) | - | - |
| Deficit for the year | | (71 655) | (18 626) | (61 985) | (16 871) |

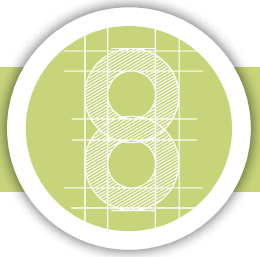
# STATEMENTS OF CHANGES IN NET ASSETS

for the year ended 31 March 2015

| | Foreign currency translation reserve R'000 | Accumulated surplus R'000 | Total attributable to owners of the economic entity/ controlling entity R'000 | Minority interest R'000 | Total net assets R'000 |
|---|---|---|---|---|---|
| **Economic entity** | | | | | |
| Balance at 1 April 2013 | (103) | 302 646 | 302 543 | (6 092) | 296 451 |
| Changes in net assets | (237) | (18 082) | (18 319) | (544) | (18 863) |
| Deficit for the year | - | (18 082) | (18 082) | (544) | (18 626) |
| Currency translation differences | (237) | - | (237) | - | (237) |
| Balance at 1 April 2014 | (340) | 284 564 | 284 224 | (6 636) | 277 588 |
| Changes in net assets | 340 | (70 961) | (70 621) | (694) | (71 315) |
| Deficit for the year | - | (70 961) | (70 961) | (694) | (71 655) |
| Currency translation differences | 340 | - | 340 | - | 340 |
| Balance at 31 March 2015 | - | 213 603 | 213 603 | (7 330) | 206 273 |
| **Controlling entity** | | | | | |
| Balance at 1 April 2013 | - | 270 013 | 270 013 | - | 270 013 |
| Changes in net assets | - | (16 871) | (16 871) | - | (16 871) |
| Deficit for the year | - | (16 871) | (16 871) | - | (16 871) |
| Currency translation differences | - | - | - | - | - |
| Balance at 1 April 2014 | - | 253 142 | 253 142 | - | 253 142 |
| Changes in net assets | - | (61 985) | (61 985) | - | (61 985) |
| Deficit for the year | - | (61 985) | (61 985) | - | (61 985) |
| Balance at 31 March 2015 | - | 191 157 | 191 157 | - | 191 157 |

# CASH FLOW STATEMENTS

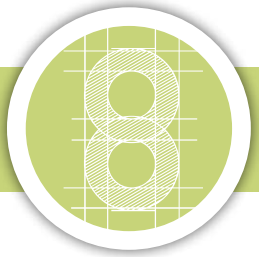
for the year ended 31 March 2015



| | Note(s) | Economic entity 2015 R'000 | Economic entity 2014 R'000 | Controlling entity 2015 R'000 | Controlling entity 2014 R'000 |
|---|---|---|---|---|---|
| **Cash flows from operating activities** | | | | | |
| Receipts | | 427 573 | 575 372 | 413 811 | 565 429 |
| Grants | | 389 370 | 543 072 | 389 370 | 543 072 |
| Interest income | | 14 622 | 22 097 | 14 327 | 21 807 |
| Dividends received | | - | - | - | 550 |
| Other receipts | | 23 581 | 10 203 | 10 114 | - |
| Payments | | (512 801) | (587 471) | (499 191) | (572 508) |
| Employee costs | | (123 771) | (134 333) | (110 512) | (117 571) |
| Project funding expenses | | (363 354) | (343 829) | (371 530) | (358 609) |
| Other payments | | (25 676) | (109 309) | (17 149) | (96 328) |
| Net cash flows used in operating activities | 23 | (85 228) | (12 099) | (85 380) | (7 079) |
| **Cash flows from investing activities** | | (17 329) | (41 720) | (17 368) | (41 532) |
| Purchase of property and equipment | 5 | (1 479) | (6 306) | (1 374) | (8 466) |
| Purchase of intangible assets | 6 | (261) | (1 421) | (261) | (1 404) |
| Purchase of other financial assets | | - | (8 398) | - | (8 398) |
| Repayment of loans received | | 167 | 1 895 | 167 | 4 595 |
| Loans granted | | (15 900) | (27 859) | (15 900) | (27 859) |
| Decrease in loans from small shareholders | | 144 | 369 | - | - |
| **Cash flows from financing activities** | | 6 837 | (17 906) | 6 835 | (17 906) |
| Ring fenced funding received | | 19 709 | 40 000 | 19 709 | 40 000 |
| Conditional grants paid | | (12 872) | (57 906) | (12 874) | (57 906) |
| Net decrease in cash and cash equivalents | | (95 720) | (71 725) | (95 913) | (66 517) |
| Cash and cash equivalents at the beginning of the year | | 170 518 | 242 243 | 162 194 | 228 711 |
| Cash and cash equivalents at the end of the year | 4 | 74 798 | 170 518 | 66 281 | 162 194 |

# STATEMENT OF COMPARISON OF BUDGET AND ACTUAL AMOUNTS for the year ended 31 March 2015

| | Approved budget R'000 | Adjustments R'000 | Final Budget R'000 | Actual amounts on comparable basis R'000 | Difference between final budget and actual R'000 | Note(s) |
|---|---|---|---|---|---|---|
| **Controlling entity** | | | | | | |
| Statement of Financial Performance | | | | | | |
| **Revenue** | | | | | | |
| Revenue from non-exchange transactions | 380 718 | - | 380 718 | 389 370 | 8 652 | 32.1 |
| Other income | - | - | - | 65 457 | 65 457 | 32.2 |
| Interest received | 12 000 | - | 12 000 | 17 871 | 5 871 | 32.3 |
| Total revenue | 392 718 | - | 392 718 | 472 698 | 79 980 | |
| **Expenditure** | | | | | | |
| Employee related costs | (122 406) | - | (122 406) | (110 512) | 11 894 | 32.4 |
| Project funding expenditure | (211 359) | (201 936) | (413 295) | (371 530) | 41 765 | 32.5 |
| Other operating expenses | (58 953) | (100) | (59 053) | (52 903) | 6 150 | 32.6 |
| Total expenditure | (392 718) | (202 036) | (594 754) | (534 945) | 59 809 | |
| Operating deficit | - | (202 036) | (202 036) | (62 247) | 139 789 | |
| Gain on foreign exchange | - | - | - | 262 | 262 | 32.2 |
| Profit/(Deficit) before taxation | - | (202 036) | (202 036) | (61 985) | 140 051 | |



## 1. Presentation of Financial Statements

The financial statements have been prepared in accordance with the Standards of Generally Recognised Accounting Practice (GRAP), issued by the Accounting Standards Board in accordance with Section 91(1) of the Public Finance Management Act (Act 1 of 1999).

These financial statements have been prepared on an accrual basis of accounting and are in accordance with historical cost convention as the basis of measurement, unless specified otherwise. They are presented in South African Rand. Amounts are rounded to the nearest thousand.

### 1.1 Consolidation

#### Basis of consolidation

The consolidated financial statements are the financial statements of the economic entity presented as those of a single entity.

The consolidated financial statements incorporate the financial statements of the controlling entity and all controlled entities, including special purpose entities, which are controlled by the controlling entity.

Control exists when the controlling entity has the power to govern the financial and operating policies of another entity so as to obtain benefits from its activities.

The results of controlled entities, are included in the consolidated financial statements from the effective date of acquisition or date when control commences to the effective date of disposal or date when control ceases. The difference between the proceeds from the disposal of the controlled entity and its carrying amount as on the date of disposal, including the cumulative amount of any exchange differences that relate to the controlled entity recognised in net assets in accordance with the Standard of GRAP on The Effects of Changes in Foreign Exchange Rates, is recognised in the consolidated statement of financial performance as the surplus or deficit on the disposal of the controlled entity.

An investment in an entity is accounted for in accordance with the Standards of GRAP on Financial Instruments from the date that it ceases to be a controlled entity, unless it becomes an associate or a jointly controlled entity, in which case it is accounted for as such. The carrying amount of the investment at the date that the entity ceases to be a controlled entity is regarded as the fair value on initial recognition of a financial asset in accordance with the Standards of GRAP on Financial Instruments.

When the reporting dates of the controlling entity and a controlled entity are different, the controlled entity prepares, for consolidation purposes, additional financial statements as of the same date as the controlling entity unless it is impracticable to do so. When the financial statements of a controlled entity used in the preparation of consolidated financial statements are prepared as of a reporting date different from that of the controlling entity, adjustments are made for the effects of significant transactions or events that occur between that date and the date of the controlling entity's financial statements.

Adjustments are made when necessary to the financial statements of the controlled entities to bring their accounting policies in line with those of the controlling entity.

All intra-entity transactions, balances, revenues and expenses are eliminated in full on consolidation.

Non-controlling interests in the net assets of the economic entity are identified and recognised separately from the controlling entity's interest therein, and are recognised within net assets. Losses applicable to the minority in a consolidated controlled entity may exceed the non-controlling interest in the controlled entity's net assets. The excess, and any further losses applicable to the non-controlling parties, are allocated against the controlling interest except to the extent that the non-controlling entity has a binding obligation to, and is able to, make an additional investment to cover the losses. If the controlled entity subsequently reports surpluses, such surpluses are allocated to the controlling interest until the non-controlling entity's share of losses previously absorbed by the majority has been recovered.

Non-controlling interests in the surplus or deficit of the economic entity is separately disclosed.

#### Investment in associates

An associate is an entity over which the controlling entity has significant influence and which is neither a controlled entity nor a joint venture. Significant influence is the power to participate in the financial and operating policy decisions of the investee but is not control or joint control over those policies.

## 1.1 Consolidation (continued)

An investment in associate is accounted for using the equity method. Under the equity method, investments in associates are carried in the consolidated statement of financial position at cost adjusted for post acquisition changes in the economic entity's share of net assets of the associate, less any impairment losses.

Distributions received from an investee reduce the carrying amount of the investment.

The most recent available financial statements of the associate are used by the economic entity in applying the equity method. When the reporting date's of the economic entity and the associate are different, the associate prepares, for the use of the economic entity, financial statements as of the same date as the financial statements of the economic entity unless it is impractical to do so.

When the financial statements of an associate used in applying the equity method are prepared as of a different reporting date from that of the economic entity, adjustments are made for the effects of significant transactions or events that occur between that date and the date of the economic entity's financial statements.

The economic entity's financial statements are prepared using uniform accounting policies for like transactions and events in similar circumstances.

Deficits in an associate in excess of the economic entity's interest in that associate are recognised only to the extent that the economic entity has incurred a legal or constructive obligation to make payments on behalf of the associate. If the associate subsequently reports surpluses, the economic entity resumes recognising its share of those surpluses only after its share of the surpluses equals the share of deficits not recognised.

Any goodwill on acquisition of an associate is included in the carrying amount of the investment, however, a gain on acquisition is recognised immediately in surplus or deficit.

Surpluses and deficits on transactions between the economic entity and an associate are eliminated to the extent of the economic entity's interest therein.

The controlling entity discontinues the use of the equity method from the date that it ceases to have significant influence over an associate and account for the investment in accordance with the Standards of GRAP on Financial Instruments from that date, unless the associate becomes a controlled entity or a joint venture, in which case it is accounted for as such. The carrying amount of the investment at the date that it ceases to be an associate is regarded as the fair value on initial recognition as a financial asset in accordance with the Standards of GRAP on Financial Instruments.

## 1.2 Significant judgements and sources of estimation uncertainty

In preparing the financial statements in conformity with GRAP, management is required to make judgements, estimates and assumptions that affect the amounts represented in the financial statements and related disclosures. Use of available information and the application of judgement is inherent in the formation of estimates. Actual results in the future could differ from these estimates which may be material to the financial statements. These estimates and underlying assumptions are reviewed by management on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods. Significant judgements include:

### Loans and receivables

The economic and controlling entity assesses its loans and receivables for impairment at the end of each reporting period. In determining whether an impairment loss should be recorded in surplus or deficit, the economic entity makes judgements as to whether there is observable data indicating a measurable decrease in the estimated future cash flows from a financial asset.

The impairment for loans and receivables is calculated on an individual basis, based on historical losses, financial position of the entity, repayment terms and the commercial viability of the business.

## 1.2 Significant judgements and sources of estimation uncertainty (continued)

### Impairment testing (non-financial assets)

The recoverable amounts of individual assets has been determined based on the higher of value-in-use calculations and fair values less costs to sell. These calculations require the use of estimates and assumptions. It is reasonably possible that the assumptions used may change which may then impact our estimations and may then require a material adjustment to the carrying value of tangible assets.

The economic and controlling entity review and test the carrying value of assets when events or changes in circumstances suggest that the carrying amount may not be recoverable. If there are indications that impairment may have occurred, estimates are prepared of expected future cash flows for each asset. Expected future cash flows used to determine the value in use of other assets are inherently uncertain and could materially change over time.

## 1.3 Property and equipment

Property and equipment are tangible non-current assets (including infrastructure assets) that are held for use in the production or supply of goods or services, rental to others, or for administrative purposes, and are expected to be used during more than one period.

The cost of an item of property and equipment is recognised as an asset when:

- it is probable that future economic benefits or service potential associated with the item will flow to the economic entity; and
- the cost of the item can be measured reliably.

Property and equipment is initially measured at cost.

The cost of an item of property and equipment is the purchase price and other costs attributable to bring the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Trade discounts and rebates are deducted in arriving at the cost.

Where an asset is acquired through a non-exchange transaction, its cost is its fair value as at date of acquisition.

Costs include costs incurred initially to acquire or construct an item of property and equipment and costs incurred subsequently to add to, replace part of, or service it. If a replacement cost is recognised in the carrying amount of an item of property and equipment, the carrying amount of the replaced part is derecognised.

Recognition of costs in the carrying amount of an item of property and equipment ceases when the item is in the location and condition necessary for it to be capable of operating in the manner intended by management.

Property and equipment are depreciated on the straight line basis over their expected useful lives to their estimated residual value.

Property and equipment is carried at cost less accumulated depreciation and any impairment losses.

The useful lives of items of property and equipment have been assessed as follows:

| Item | Useful life (in years) |
|---|---|
| Buildings | 20-25 |
| Furniture and office equipment | 3-6 |
| Motor vehicles | 4 |
| Leasehold improvements | Shorter of the period of the lease agreement or the useful life |
| Other property, plant and equipment | 5-10 |
| Laboratory equipment | 6-8 |

The residual value, and the useful life and depreciation method of each asset are reviewed at the end of each reporting date. If the expectations differ from previous estimates, the change is accounted for as a change in accounting estimate.

The depreciation charge for each period is recognised in surplus or deficit unless it is included in the carrying amount of another asset.

Items of property and equipment are derecognised when the asset is disposed of or when there are no further economic benefits or service potential expected from the use of the asset.

## 1.3 Property and equipment (continued)

The gain or loss arising from the derecognition of an item of property and equipment is included in surplus or deficit when the item is derecognised. The gain or loss arising from the derecognition of an item of property and equipment is determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item.

## 1.4 Intangible assets

An asset is identifiable if it either:

- is separable, i.e. is capable of being separated or divided from an entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, identifiable assets or liability, regardless of whether the entity intends to do so; or
- arises from binding arrangements (including rights from contracts), regardless of whether those rights are transferable or separable from the economic entity or from other rights and obligations.

An intangible asset is recognised when:

- it is probable that the expected future economic benefits or service potential that are attributable to the asset will flow to the economic entity; and
- the cost or fair value of the asset can be measured reliably.

The economic entity assesses the probability of expected future economic benefits or service potential using reasonable and supportable assumptions that represent management's best estimate of the set of economic conditions that will exist over the useful life of the asset.

Intangible assets are initially recognised at cost at the date of acquisition.

The amortisation period and the amortisation method for intangible assets are reviewed at each reporting date. Changes will be accounted for as a change in estimate.

Amortisation is provided to write down the intangible assets, on a straight line basis, to their residual values as follows:

| Item | Useful life (in years) |
|---|---|
| Computer software | 2-3 |

Intangible assets are derecognised:

- on disposal; or
- when no future economic benefits or service potential are expected from its use or disposal. The gain or loss is the difference between the net disposal proceeds, if any, and the carrying amount. It is recognised in surplus or deficit when the asset is derecognised.

## 1.5 Investments in controlled entities

### Controlling entity financial statements

In the entity's separate financial statements, investments in controlled entities are carried at cost less any accumulated impairment.

The cost of an investment in controlled entity is the aggregate of:

- the fair value, at the date of exchange, of assets given, liabilities incurred or assumed, and equity instruments issued by the entity; plus
- any costs directly attributable to the purchase of the controlled entity.

## 1.6 Investments in associates

### Controlling entity financial statements

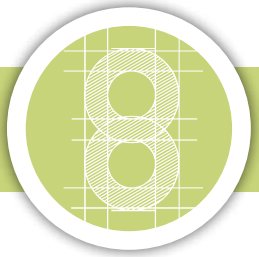
An investment in an associate is carried at cost less any accumulated impairment.

## 1.7 Financial instruments

### Classification

The entity has the following types of financial assets (classes and categories) as reflected on the face of the statement of financial position or in the notes thereto:

| Class | Category |
|---|---|
| Investment in controlled entities | Financial assets at cost |
| Investment in associates | Financial assets at cost |
| Other financial assets | Financial assets at cost |
| Cash and cash equivalents | Financial assets at amortised cost |
| Loans and receivables | Financial asset at amortised cost |



## 1.7 Financial instruments (continued)

The entity has the following types of financial liabilities (classes and categories) as reflected on the face of the statement of financial position or in the notes thereto:

| Class | Category |
|---|---|
| Trade and other payables | Financial liability measured at amortised cost |
| Finance lease obligation | Financial liability measured at amortised cost |
| Loans from shareholders | Financial liability measured at amortised cost |

### Initial recognition

The entity recognises a financial asset or a financial liability in its statement of financial position when the entity becomes a party to the contractual provisions of the instrument.

The entity recognises financial assets using trade date accounting.

### Initial measurement of financial assets and financial liabilities

The entity measures a financial asset and financial liability initially at its fair value plus transaction costs that are directly attributable to the acquisition or issue of the financial asset or financial liability.

The entity first assesses whether the substance of a concessionary loan is in fact a loan. On initial recognition, the entity analyses a concessionary loan into its component parts and accounts for each component separately. The entity accounts for that part of a concessionary loan that is a social benefit in accordance with the Framework for the Preparation and Presentation of Financial Statements, where it is the issuer of the loan.

### Subsequent measurement of financial assets and financial liabilities

The entity measures all financial assets and financial liabilities after initial recognition using the following categories:

- Financial instruments at amortised cost.
- Financial instruments at cost.

All financial assets are subject to an impairment review.

### Reclassification

The entity does not reclassify a financial instrument while it is issued or held unless it is:

- combined instrument that is required to be measured at fair value; or
- an investment in a residual interest that meets the requirements for reclassification.

### Gains and losses

For financial assets and financial liabilities measured at amortised cost or cost, a gain or loss is recognised in surplus or deficit when the financial asset or financial liability is derecognised or impaired, or through the amortisation process.

### Impairment and uncollectibility of financial assets

The entity assesses at the end of each reporting period whether there is any objective evidence that a financial asset or group of financial assets is impaired. The impairment is calculated on an individual basis, based on historical losses, financial position of the entity, repayment terms and the commercial viability of the business.

### Financial assets measured at amortised cost:

If there is objective evidence that an impairment loss on financial assets measured at amortised cost has been incurred, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. The carrying amount of the asset is reduced through the use of an allowance account. The amount of the loss is recognised in surplus or deficit.

If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, the previously recognised impairment loss is reversed by adjusting an allowance account. The reversal does not result in a carrying amount of the financial asset that exceeds what the amortised cost would have been had the impairment not been recognised at the date the impairment is reversed. The amount of the reversal is recognised in surplus or deficit.

### Financial assets measured at cost:

If there is objective evidence that an impairment loss has been incurred on an investment in a residual interest that is not measured at fair value because its fair value cannot be measured reliably, the amount of the impairment loss is measured as the difference between the carrying amount of the financial asset and the present value of estimated future cash flows discounted at the current market rate of return for a similar financial asset. Such impairment losses are not reversed.

## 1.7 Financial instruments (continued)

### Derecognition

### Financial assets

The entity derecognises financial assets using trade date accounting.

The entity derecognises a financial asset only when:

- the contractual rights to the cash flows from the financial asset expire, are settled or waived;
- the entity transfers to another party substantially all of the risks and rewards of ownership of the financial asset; or
- On derecognition of a financial asset in its entirety, the difference between the carrying amount and the sum of the consideration received is recognised in surplus or deficit.

If a transfer does not result in derecognition because the entity has retained substantially all the risks and rewards of ownership of the transferred asset, the entity continues to recognise the transferred asset in its entirety and recognise a financial liability for the consideration received. In subsequent periods, the entity recognises any revenue on the transferred asset and any expense incurred on the financial liability. Neither the asset, and the associated liability nor the revenue, and the associated expenses are offset.

### Financial liabilities

The entity derecognises a financial liability (or a part of a financial liability) from its statement of financial position when it is extinguished — i.e. when the obligation specified in the contract is discharged, cancelled, expires or waived.

The difference between the carrying amount of a financial liability (or part of a financial liability) extinguished or transferred to another party and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognised in surplus or deficit. Any liabilities that are waived, forgiven or assumed by another entity by way of a non-exchange transaction are accounted for in accordance with the Standard of GRAP on Revenue from Non-exchange Transactions (Taxes and Transfers).

### Presentation

Interest relating to a financial instrument or a component that is a financial liability is recognised as revenue or expense in surplus or deficit.

Dividends are recognised as revenue in surplus or deficit.

Losses and gains relating to a financial instrument or a component that is a financial liability is recognised as revenue or expense in surplus or deficit.

Distributions to holders of residual interests are debited by the entity directly to net assets, net of any related income tax benefit. Transaction costs incurred on residual interests is accounted for as a deduction from net assets, net of any related income tax benefit.

### Offsetting

A financial asset and a financial liability are only offset and the net amount presented in the statement of financial position when the entity currently has a legally enforceable right to set off the recognised amounts and intends either to settle on a net basis, or to realise the asset and settle the liability simultaneously.

## 1.8 Leases

A lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to ownership. A lease is classified as an operating lease if it does not transfer substantially all the risks and rewards incidental to ownership.

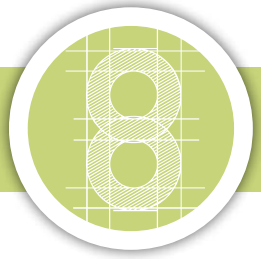
When a lease includes both land and building elements, the entity assesses the classification of each element separately.

### Finance leases - lessee

Finance leases are recognised as assets and liabilities in the statement of financial position at amounts equal to the fair value of the leased property or, if lower, the present value of the minimum lease payments.

The discount rate used in calculating the present value of the minimum lease payments is the interest rate implicit in the lease.

Minimum lease payments are apportioned between the finance charge and reduction of the outstanding liability. The finance charge is allocated to each period during the lease term so as to produce a constant periodic rate on the remaining balance of the liability.



## 1.8 Leases (continued)

### Operating leases – lessor

Operating lease revenue is recognised as revenue on a straight-line basis over the lease term.

Initial direct costs incurred in negotiating and arranging operating leases are added to the carrying amount of the leased asset and recognised as an expense over the lease term on the same basis as the lease revenue.

Income for leases is disclosed under revenue in statement of financial performance.

### Operating leases – lessee

Operating lease payments are recognised as an expense on a straight-line basis over the lease term. The difference between the amounts recognised as an expense and the contractual payments are recognised in the statement of financial position as an operating lease asset or liability.

## 1.9 Impairment of cash-generating assets

Cash-generating assets are those assets held by the economic entity with the primary objective of generating a commercial return. When an asset is deployed in a manner consistent with that adopted by a profit-orientated entity, it generates a commercial return.

Impairment is a loss in the future economic benefits or service potential of an asset, over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation (amortisation).

Carrying amount is the amount at which an asset is recognised in the statement of financial position after deducting any accumulated depreciation and accumulated impairment losses thereon.

### Value in use

Value in use of a cash-generating asset is the present value of the estimated future cash flows expected to be derived from the continuing use of an asset and from its disposal at the end of its useful life.

When estimating the value in use of an asset, the economic entity estimates the future cash inflows and outflows to be derived from continuing use of the asset and from its ultimate disposal and the economic entity applies the appropriate discount rate to those future cash flows.

## 1.10 Budget information

The controlling entity is typically subject to budgetary limits in the form of appropriations or budget authorisations which is given effect through authorising appropriation via a vote.

General purpose financial reporting by the controlling entity shall provide information on whether resources were obtained and used in accordance with the legally adopted budget. The standard applies to entities that are required or elect to make publicly available their approved budgets, in the economic entity's case this principle only applies to the budget of the controlled entity.

The approved budget is prepared on an accrual basis and presented by economic classification.

The approved budget covers the financial period from 1 April 2014 to 31 March 2015.

The financial statements and the budget are on the same basis of accounting therefore a comparison with the budgeted amounts for the reporting period have been included in the Statement of comparison of budget and actual amounts.
Comparative information is not required.

## 1.11 Related parties

The economic entity operates in an economic sector currently dominated by entities directly or indirectly owned by the South African Government. As a consequence of the constitutional independence of the three spheres of government in South Africa, only entities within the national sphere of government are considered to be related parties.

Management are those persons responsible for planning, directing and controlling the activities of the economic entity, including those charged with the governance of the economic entity in accordance with legislation, in instances where they are required to perform such functions.

## 1.12 Share capital/contributed capital

An equity instrument is any contract that evidences a residual interest in the assets of an economic entity after deducting all of its liabilities.

Ordinary shares are classified as equity. Mandatorily redeemable preference shares are classified as liabilities.

Incremental costs directly attributable to the issue of new shares or options are shown in equity as a deduction, net of tax, from the proceeds.

## 1.13 Employee benefits

Employee benefits are all forms of consideration given by an entity in exchange for services rendered by employees.
Termination benefits are employee benefits payable as a result of either:

- an entity's decision to terminate an employee's employment before the normal retirement date; or
- an employee's decision to accept voluntary redundancy in exchange for those benefits.

### Short-term employee benefits

Short-term employee benefits are employee benefits (other than termination benefits) that are due to be settled within twelve months after the end of the period in which the employees render the related service.

Short-term employee benefits include items such as:

- wages, salaries and social security contributions;
- short-term compensated absences (such as paid annual leave and paid sick leave) where the compensation for the absences is due to be settled within twelve months after the end of the reporting period in which the employees render the related employee service;
- bonus, incentive and performance related payments payable within twelve months after the end of the reporting period in which the employees render the related service; and
- non-monetary benefits (for example, medical care, and free or subsidised goods or services such as housing, cars and cellphones) for current employees.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs. The entity measures the expected cost of accumulating compensated absences as the additional amount that the entity expects to pay as a result of the unused entitlement that has accumulated at the reporting date.

The entity recognises the expected cost of bonus, incentive and performance related payments as accruals when the entity has a present legal or constructive obligation to make such payments as a result of past events and a reliable estimate of the obligation can be made. A present obligation exists when the entity has no realistic alternative but to make the payments.

### Post-employment benefits: Defined contribution plans

Defined contribution plans are post-employment benefit plans under which an entity pays fixed contributions into a separate entity (a fund) and will have no legal or constructive obligation to pay further contributions if the fund does not hold sufficient assets to pay all employee benefits relating to employee service in the current and prior periods. The entity contributes to a pension fund under this definition.

## 1.14 Contingencies

Contingent assets and contingent liabilities are not recognised in the statement of financial position, but are disclosed as a note to the financial statements.

## 1.15 Revenue from exchange transactions

Revenue is the gross inflow of economic benefits or service potential during the reporting period when those inflows result in an increase in net assets, other than increases relating to contributions from owners.

Exchange transactions are transactions in which one entity receives assets or services, or has liabilities extinguished, and directly gives approximately equal value (primarily in the form of cash, goods, services or use of assets) to another entity in exchange.

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

## 1.15 Revenue from exchange transactions (continued)

Revenue from exchange transactions include interest, royalties and dividends earned as well as profit on sale of assets.

### Measurement

Revenue is measured at the fair value of the consideration received or receivable, net of trade discounts and volume rebates.

### Interest, royalties and dividends

Revenue arising from the use by others of entity assets yielding interest, royalties and dividends is recognised when:

- It is probable that the economic benefits or service potential associated with the transaction will flow to the entity, and
- The amount of the revenue can be measured reliably.

Interest is recognised, in surplus or deficit, using the effective interest method.

Royalties are recognised in surplus or deficit, as they are earned in accordance with the substance of the relevant agreements.

Dividends, or their equivalents, are recognised in surplus or deficit, when the entity's right to receive payment has been established.

## 1.16 Revenue from non-exchange transactions

Revenue comprises gross inflows of economic benefits or service potential received and receivable by an entity, which represents an increase in net assets, other than increases relating to contributions from owners.

Non-exchange transactions are transactions that are not exchange transactions. In a non-exchange transaction, an entity either receives value from another entity without directly giving approximately equal value in exchange, or gives value to another entity without directly receiving approximately equal value in exchange.

Restrictions on transferred assets are stipulations that limit or direct the purposes for which a transferred asset may be used, but do not specify that future economic benefits or service potential is required to be returned to the transferor if not deployed as specified.

Stipulations on transferred assets are terms in laws or regulation, or a binding arrangement, imposed upon the use of a transferred asset by entities external to the reporting entity.

Transfers are inflows of future economic benefits or service potential from non-exchange transactions, other than taxes, such as transfer of government grants from the shareholder or recognition of revenue in line with expenses incurred on contitional grants received.

### Recognition

An inflow of resources from a non-exchange transactions recognised as an asset is recognised as revenue, except to the extent that a liability is also recognised in respect of the same inflow.

As the entity satisfies a present obligation recognised as a liability in respect of an inflow of resources from a non-exchange transaction recognised as an asset, it reduces the carrying amount of the liability recognised and recognises an amount of revenue equal to that reduction.

### Measurement

Revenue from a non-exchange transaction is measured at the amount of the increase in net assets recognised by the entity.

When, as a result of a non-exchange transaction, the entity recognises an asset, it also recognises revenue equivalent to the amount of the asset measured at its fair value as at the date of acquisition, unless it is also required to recognise a liability. Where a liability is required to be recognised it will be measured as the best estimate of the amount required to settle the obligation at the reporting date, and the amount of the increase in net assets, if any, recognised as revenue. When a liability is subsequently reduced, because the taxable event occurs or a condition is satisfied, the amount of the reduction in the liability is recognised as revenue.

## 1.17 Investment income

Investment income is recognised on a time-proportion basis using the effective interest method.

## 1.18 Finance costs

It is inappropriate to capitalise finance cost when, and only when, there is clear evidence that it is difficult to link the borrowings requirements of an entity directly to the nature of the expenditure to be funded i.e. capital or current. Finance cost are recognised as an expense in surplus or deficit in the period in which they are incurred.

## 1.19 Translation of foreign currencies

### Investments in controlled entities

The results and financial position of a foreign operation are translated into the functional currency using the following procedures:

- assets and liabilities for each statement of financial position presented are translated at the closing rate at the date of that statement of financial position;
- revenue and expenses for each surplus or deficit item are translated at exchange rates at the dates of the transactions; and
- all resulting exchange differences are recognised as a separate component of net assets.

Exchange differences arising on a monetary item that forms part of a net investment in a foreign operation are recognised initially in a separate component of net assets reserve and recognised in surplus or deficit on disposal of the net investment.

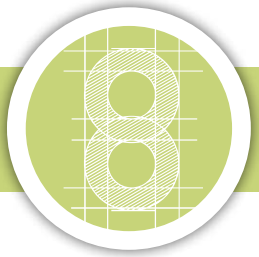
The cash flows of a foreign controlled entity are translated at the exchange rates between the functional currency and the foreign currency at the dates of the cash flows.

## 1.20 Irregular and fruitless and wasteful expenditure

Irregular expenditure means expenditure incurred in contravention of, or not in accordance with, requirements of any applicable legislation, including the PFMA.

Fruitless and wasteful expenditure means expenditure that was made in vain and would have been avoided had reasonable care been exercised.

All irregular and fruitless and wasteful expenditure are charged against the respective class of expenditure in the statement of financial performance in the period in which they are incurred and disclosed in a note in the period in which it is identified.



## 2. Standards and interpretations

### 2.1 Standards and interpretations issued, but not yet effective

The economic entity has not applied the following standards and interpretations, which have been published and are mandatory for the economic entity's accounting periods beginning on or after 1 April 2015 or later periods:

| Standard/ Interpretation: | Effective date: Years beginning on or after | Expected impact: |
|---|---|---|
| GRAP 18: Segment Reporting | 1 April 2015 | The adoption of this amendment has not had a material impact on the results of the company but has resulted in more disclosure than would have previously been provided in the financial statements |
| GRAP 20: Related parties | 1 April 2016 | The impact of the amendment is not material. |
| IGRAP 11: Consolidation – Special purpose entities | 1 April 2015 | The impact of the amendment is not material. |
| IGRAP 12: Jointly controlled entities – Non-monetary contributions by ventures | 1 April 2015 | The impact of the amendment is not material. |
| GRAP32: Service Concession Arrangements: Grantor | 1 April 2016 | The impact of the amendment is not material. |
| GRAP108: Statutory Receivables | 1 April 2016 | The impact of the amendment is not material. |
| IGRAP17: Service Concession Arrangements where a Grantor Controls a Significant Residual Interest in an Asset | 1 April 2016 | The impact of the amendment is not material. |
| DIRECTIVE 11: Changes in measurement bases following the initial adoption of Standards of GRAP | 1 April 2016 | The impact of the amendment is not material. |

## 3. Trade and other receivables

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Trade receivables | 4 283 | 4 849 | 2 834 | 2 421 |
| Prepayments | 558 | 2 468 | 558 | 2 465 |
| Deposits | 944 | 864 | 864 | 864 |
| Other receivables * | 59 429 | 3 096 | 59 783 | 2 946 |
| | 65 214 | 11 277 | 64 039 | 8 696 |

* Included in other receivables is the result of a sale of an investment in an associate that was concluded on 30 March 2015. The amount outstanding was received in April 2015.

### Fair value of trade and other receivables

The entity is of the opinion that the carrying value approximates the fair value of trade and other receivables at period end, due to the short term nature of these balances.

### Trade and other receivables past due but not impaired

Trade and other receivables which are less than 3 months past due are not considered to be impaired. At 31 March 2015, R nil (2014: R nil) was past due but not impaired.

The ageing of amounts past due but not impaired is as follows:

| | | | | |
|---|---|---|---|---|
| 1 month past due | - | 842 | - | 1 103 |
| 2 months past due | - | 209 | - | - |
| 3 months past due | 305 | 277 | 275 | 1 291 |

### Trade and other receivables impaired

The amount of the provision for impairment is R311 084 as of 31 March 2015 (2014: R311 084).

The ageing of these balances are as follows:

| | | | | |
|---|---|---|---|---|
| Over 6 months | 311 | 311 | 311 | 311 |

## 3. Trade and other receivables (continued)

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Reconciliation of provision for impairment of trade and other receivables | | | | |
| Opening balance | 311 | 311 | 311 | 311 |

The creation and release of the provision for impaired receivables has been included in operating expenses in the statement of financial performance. Amounts charged to the allowance account are generally written off when the recovery of such amounts is improbable.

No collateral is held as security.

## 4. Cash and cash equivalents

Cash and cash equivalents consist of:

| | | | | |
|---|---|---|---|---|
| Cash on hand | 11 | 11 | 11 | 11 |
| Bank balances | 74 787 | 170 507 | 66 270 | 162 183 |
| | 74 798 | 170 518 | 66 281 | 162 194 |

The R66 270 000 cash balance in the Controlling entity on 31 March 2015 is committed in full through funding agreements. Refer to note 26 for detail on these agreements.

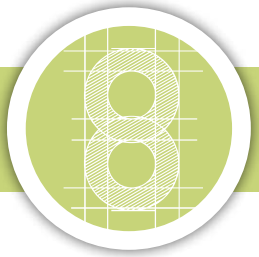
The entity is of the opinion that the carrying value approximates the fair value of cash and cash equivalents at period end, due to the short term nature.

## 5. Property and equipment

| | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| | Cost | Accumulated depreciation/ impairment | Carrying value | Cost | Accumulated depreciation/ impairment | Carrying value |
| | R'000 | R'000 | R'000 | R'000 | R'000 | R'000 |
| Economic entity | | | | | | |
| Land and Buildings | 1 676 | (742) | 934 | 1 676 | (692) | 984 |
| Furniture and office equipment | 21 303 | (15 968) | 5 335 | 21 136 | (11 774) | 9 362 |
| Motor vehicles | 312 | (296) | 16 | 312 | (240) | 72 |
| Leasehold improvements | 14 214 | (11 509) | 2 705 | 14 159 | (9 020) | 5 139 |
| Other property and equipment | 7 194 | (7 021) | 173 | 7 375 | (7 181) | 194 |
| Laboratory equipment | 11 693 | (8 848) | 2 845 | 11 529 | (6 521) | 5 008 |
| Total | 56 392 | (44 384) | 12 008 | 56 187 | (35 428) | 20 759 |
| Controlling entity | | | | | | |
| Land and Buildings | 2 700 | - | 2 700 | 2 700 | - | 2 700 |
| Furniture and office equipment | 19 818 | (14 901) | 4 917 | 19 747 | (10 843) | 8 904 |
| Motor vehicles | 308 | (293) | 15 | 308 | (237) | 71 |
| Leasehold improvements | 14 214 | (11 509) | 2 705 | 14 159 | (9 020) | 5 139 |
| Laboratory equipment | 12 854 | (10 779) | 2 075 | 12 518 | (8 451) | 4 067 |
| Total | 49 894 | (37 482) | 12 412 | 49 432 | (28 551) | 20 881 |

Reconciliation of property and equipment - Economic entity - 2015

| | Opening balance | Additions | Disposals | Depreciation | Closing balance |
|---|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 | R'000 |
| Land and Buildings | 984 | - | - | (50) | 934 |
| Furniture and office equipment | 9 362 | 681 | (80) | (4 628) | 5 335 |
| Motor vehicles | 71 | - | - | (55) | 16 |
| Leasehold improvements | 5 138 | 141 | (8) | (2 566) | 2 705 |
| Other property and equipment | 193 | 105 | - | (125) | 173 |
| Laboratory equipment | 5 009 | 552 | - | (2 716) | 2 845 |
| | 20 757 | 1 479 | (88) | (10 140) | 12 008 |



## 5. Property and equipment (continued)

Reconciliation of property and equipment - Economic entity - 2014

| | Opening balance | Additions | Disposals | Depreciation | Closing balance |
|---|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 | R'000 |
| Land and Buildings | 3 199 | - | (2 133) | (82) | 984 |
| Furniture and office equipment | 9 836 | 4 532 | (239) | (4 767) | 9 362 |
| Motor vehicles | 130 | - | - | (58) | 72 |
| Leasehold improvements | 7 430 | 500 | (155) | (2 636) | 5 139 |
| Other property and equipment | 427 | - | (55) | (178) | 194 |
| Laboratory equipment | 10 420 | 1 274 | (4 242) | (2 444) | 5 008 |
| | 31 442 | 6 306 | (6 824) | (10 165) | 20 759 |

Reconciliation of property and equipment - Controlling entity - 2015

| | | | | | |
|---|---|---|---|---|---|
| Land and Buildings | 2 700 | - | - | - | 2 700 |
| Furniture and office equipment | 8 905 | 681 | (80) | (4 589) | 4 917 |
| Motor vehicles | 71 | - | - | (56) | 15 |
| Leasehold improvements | 5 138 | 141 | (8) | (2 566) | 2 705 |
| Laboratory equipment | 4 067 | 552 | - | (2 544) | 2 075 |
| | 20 881 | 1 374 | (88) | (9 755) | 12 412 |

Reconciliation of property and equipment - Controlling entity - 2014

| | | | | | |
|---|---|---|---|---|---|
| Land and Buildings | - | 2 700 | - | - | 2 700 |
| Furniture and office equipment | 9 501 | 4 241 | (171) | (4 667) | 8 904 |
| Motor vehicles | 130 | - | - | (59) | 71 |
| Leasehold improvements | 7 430 | 501 | (155) | (2 637) | 5 139 |
| Laboratory equipment | 5 486 | 1 024 | (17) | (2 426) | 4 067 |
| | 22 547 | 8 466 | (343) | (9 789) | 20 881 |

Pledged as security

None of the assets above have been pledged as security or have restrictions on title.

The carrying value of assets included in furniture and office equipment under finance leases: R130 814 (2013: R130 655).

## 6. Intangible assets

| | 2015 | | | 2014 | | |
|---|---|---|---|---|---|---|
| | Cost | Accumulated amortisation/ impairment | Carrying value | Cost | Accumulated amortisation/ impairment | Carrying value |
| | R'000 | R'000 | R'000 | R'000 | R'000 | R'000 |
| Economic entity | | | | | | |
| Computer software | 4 083 | (2 847) | 1 236 | 3 822 | (2 130) | 1 692 |
| Controlling entity | | | | | | |
| Computer software | 3 457 | (2 229) | 1 228 | 3 196 | (1 517) | 1 679 |

Reconciliation of intangible assets - Economic entity - 2015

| | Opening balance | Additions | Amortisation | Total |
|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 |
| Computer software | 1 692 | 261 | (717) | 1 236 |

Reconciliation of intangible assets - Economic entity - 2014

| | | | | |
|---|---|---|---|---|
| Computer software | 1 200 | 1 421 | (929) | 1 692 |

Reconciliation of intangible assets - Controlling entity - 2015

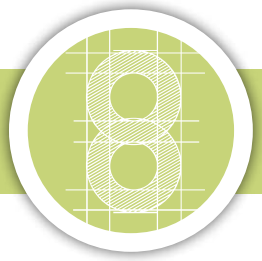
| | | | | |
|---|---|---|---|---|
| Computer software | 1 679 | 261 | (712) | 1 228 |

Reconciliation of intangible assets - Controlling entity - 2014

| | | | | |
|---|---|---|---|---|
| Computer software | 1 198 | 1 404 | (923) | 1 679 |

Restricted title

None of the above intangible assets have restrictions in title or have been pledged as security.



## 7. Investments in controlled entities

| Name of company | Reporting period end | % holding 2015 | % holding 2014 | Carrying amount | Carrying amount |
|---|---|---|---|---|---|
| | | | | R'000 | R'000 |
| Active Investments | | | | | |
| African Clinical Research Organisation (Pty) Ltd | 31 Mar | 81,67% | 81,67% | - | - |
| Bio2Biz (Pty) Ltd | 31 Dec | 58,75% | 58,75% | - | - |
| Genecare Molecular Genetics (Pty) Ltd | 30 Sep | 100,00% | 100,00% | - | - |
| Natural Carotenoids South African (Pty) Ltd | 31 Jul | 98,83% | 98,83% | - | - |
| Investments in Deregistration/Liquidation | | | | | |
| Capelands Nurseries (Pty) Ltd | 31 Mar | 100,00% | 100,00% | - | - |
| Ithemba Pharmaceuticals (Pty) Ltd * | 31 Dec | 50,10% | - | - | - |

* Due to a change in directorship during the financial year, iThemba is controlled by the controlling entity. The board of directors took a resolution to liquidate the company.

The carrying amounts of controlled entities are shown net of impairment losses.

### Controlled entities with different reporting dates from that of the controlling entity

A number of controlled entities have reporting dates that differ from the controlling entity. If the reporting date is within a 3 month period of the reporting period of the controlling entity, the annual financial statements for that period will be used in consolidating the results of the entity. The management accounts for the entities were reviewed in order to ensure that no significant changes took place between the reporting date and 31 March 2015.

Where the reporting dates differ with more than 3 months, a review of the financial affairs of the entity are performed up to the reporting date of the controlling entity and this is used for consolidation purposes.

## 8. Investments in associates

| Name of entity | Reporting period end | % holding 2015 | % holding 2014 | Equity accounted value 2015 | Equity accounted value 2014 | Carrying amount 2015 | Carrying amount 2014 |
|---|---|---|---|---|---|---|---|
| | | | | R'000 | R'000 | R'000 | R'000 |
| **Active Investments** | | | | | | | |
| Biogold Holdings (Pty) Ltd | 28 Feb | 33,30% | 33,30% | 2 088 | 2 099 | 3 000 | 3 320 |
| Blue Cube Systems (Pty) Ltd | 31 Dec | 25,00% | 25,00% | 3 456 | 3 181 | 3 013 | 3 013 |
| Centre of Proteomic & Genomic Research NPC | 31 Mar | 50,00% | 50,00% | - | 3 396 | - | - |
| Citrogold (Pty) Ltd | 31 Mar | 33,90% | 33,30% | 8 171 | 4 574 | 1 488 | 1 488 |
| Femtech (Pty) Ltd | 28 Feb | 69,00% | 69,00% | - | - | - | - |
| KAPA Biosystems (Pty) Ltd * | 31 May | 49,00% | 49,00% | - | 15 722 | - | - |
| LifeAssay (Pty) Ltd | 28 Feb | 26,00% | 26,00% | - | - | - | - |
| Ribotech (Pty) Ltd | 31 Aug | 35,00% | 35,00% | - | - | - | - |
| Stellenbosch Wind Energies Technologies (Pty) Ltd | 31 Mar | 26,00% | 26,00% | - | - | - | - |
| Varibox Holdings (Pty) Ltd ** | 28 Feb | -% | 26,00% | - | 5 067 | - | 5 068 |
| Xsit (Pty) Ltd | 31 Mar | 50,00% | 50,00% | 7 527 | 6 629 | 7 900 | 7 900 |
| **Investments in deregistration/liquidation** | | | | | | | |
| Adept Airmotive (Pty) Ltd | 28 Feb | 25,00% | 25,00% | - | - | - | - |
| Azitu Biotech (Pty) Ltd | 31 Mar | 60,00% | 60,00% | - | - | - | - |
| Bio Career Technology (Pty) Ltd | 28 Feb | 51,00% | 51,00% | - | - | - | - |
| Commercial Aquaculture (Pty) Ltd | 28 Feb | 34,00% | 34,00% | - | - | - | - |
| Control Maze Trading (Pty) Ltd | 28 Feb | 51,00% | 51,00% | - | - | - | - |
| Edgi Tech (Pty) Ltd | 28 Feb | 26,00% | 26,00% | - | - | - | - |
| Eyeborn (Pty) Ltd | 31 Mar | 25,00% | 25,00% | - | - | - | - |
| Geratech Zirconium Benefication (Pty) Ltd | 28 Feb | 48,02% | 48,02% | - | - | - | - |
| iThemba Pharmaceuticals (Pty) Ltd *** | 31 Dec | -% | 50,10% | - | - | - | - |
| Jerihsa Medical (Pty) Ltd | 28 Feb | 31,00% | 31,00% | - | - | - | - |
| Medupi Pharma (Pty) Ltd | 28 Feb | 59,60% | 59,60% | - | - | - | - |
| Mycoroot (Pty) Ltd | 28 Feb | 25,00% | 25,00% | - | - | - | - |
| Niocad (Pty) Ltd | 28 Feb | 22,00% | 22,00% | - | - | - | - |
| Nkomazi Chemicals (Pty) Ltd | 30 Jun | 35,74% | 35,74% | - | - | - | - |
| Nulane Investment 219 (Pty) Ltd | 28 Feb | 26,00% | 26,00% | - | - | - | - |
| Optimal Energy (Pty) Ltd | 28 Feb | 33,80% | 33,80% | - | - | - | - |
| Robonicca (Pty) Ltd | 31 Mar | 41,00% | 41,00% | - | - | - | - |
| Silver Lake Trading (Pty) Ltd | 28 Feb | 28,00% | 28,00% | - | - | - | - |
| Tenacent SA (Pty) Ltd | 28 Feb | 20,00% | 20,00% | - | - | - | - |
| | | | | 21 242 | 40 668 | 15 401 | 20 789 |

## 8. Investments in associates (continued)

The carrying amounts of investments in associates are shown net of impairment losses.

Although the controlling entity holds more than 50% of the voting powers in some of the entities, the investment is not considered a controlled entity because the controlling entity does not have control over the entity due to voting rights/appointment powers of directors. These investments are therefore classified as investments in associates.

* The controlling entity entered into a sale of share agreement with KAPA Biosystems (Pty) Ltd on 30 March 2015. The sale was effected subsequent to year end.
** Shareholding in this entity was converted to a Royalty funding agreement during the 2014/15 financial year.
*** Due to a change in directorship during the financial year, iThemba is controlled by the controlling entity. Refer to note 7 for disclosure.

### Movements in carrying value

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Opening balance | 40 668 | 22 824 | 20 789 | 14 098 |
| Share of surplus | 10 037 | 12 677 | - | - |
| Acquisition of investment in associate | - | 11 672 | - | 11 672 |
| Dividends received | - | (550) | - | - |
| Sale of Investment in associate | (29 463) | (3 309) | (5 068) | (2 339) |
| Impairment of investments in associates | - | (2 646) | (320) | (2 642) |
| | 21 242 | 40 668 | 15 401 | 20 789 |

### Principal activities

| Legal name | Principal activity |
|---|---|
| Biogold Holdings (Pty) Ltd | Commercialisation of PBRs of crop varieties |
| Blue Cube Systems (Pty) Ltd | Development of real-time IT systems for Mining applications |
| Citrogold (Pty) Ltd | Commercialisation of PBRs of crop varieties |
| Centre for Proteomic & Genomic Research | The provision of an omics ' technology platform |
| Femtech (Pty) Ltd | Production of recombinant proteins |
| Ribotech (Pty) Ltd | Manufacturing of rHOG-CSF. Product is used in cancer treatment |
| Stellenbosch Wind Energies Technologies (Pty) Ltd | Manufacturing unique high quality wind turbines for use in renewable energy electrical power systems |
| Xsit (Pty) Ltd | Biocontrol using sterile techniques in citrus industry |

All the above entities are incorporated in South Africa

## 8. Investments in associates (continued)

Summary of controlling entity's interest in associates

| | 2015 R'000 | 2014 R'000 |
|---|---|---|
| Total assets | 171 890 | 257 100 |
| Total liabilities | (281 126) | (384 527) |
| Net liabilities | (109 236) | (127 427) |
| Revenue | 264 213 | 205 411 |
| Surplus/(deficit) | 16 994 | 2 073 |

Associates with different reporting dates

A number of associate entities have reporting dates that differ from that of the controlling entity. If the reporting date is within a 3 month period of the reporting period end of the controlling entity, the annual financial statements for that period will be used in the results of the entity using equity accounting. The management accounts for the entities were reviewed in order to ensure that no significant changes took place between reporting date and 31 March 2015.

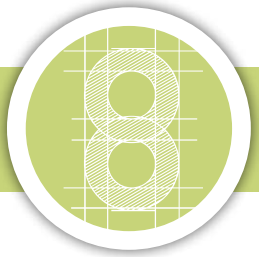
Unrecognised share of losses of associates

The economic entity has discontinued recognising its share of the deficits of associate companies, as the investment is held at R nil and the economic entity has no obligation for any deficits of the associate. The total unrecognised deficits for the current period amount to R6 084 818 (2014: R12 096 624). The accumulated unrecognised deficits to date amount to R144 818 430 (2014: R138 733 612).

## 9. Loans and receivables

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Associates | | | | |
| Azitu Biotech (Pty) Ltd<br>*The loan has no fixed repayment terms and accrues interest at prime less 4% for the first 5 years of the loan. After this the loan accrues interest at prime.* | 1 900 | 2 250 | 1 900 | 2 250 |
| Xsit (Pty) Ltd<br>*The loan has no fixed repayment terms and accrues interest at prime plus 1%* | 8 109 | 8 109 | 8 109 | 8 109 |
| | 10 009 | 10 359 | 10 009 | 10 359 |

Management does not intend to realise these loans within the next 12 months. Azitu Biotech (Pty) Ltd is in liquidation and the controlling entity expects to realise a liquidation dividend within the next 12 months.



## 9. Loans and receivables (continued)

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Other entities | | | | |
| Agriprotein (Pty) Ltd<br>*The loan bears interest at prime and is repayable on demand after 24 months from first disbursement over a period of 60 months.* | 10 512 | - | 10 512 | - |
| Balancell (Pty) Ltd<br>*The loan bears interest at prime and interest repayments will commence 18 months after first drawdown. Capital will become repayable 42 months after first drawdown.* | 7 642 | 3 104 | 7 642 | 3 104 |
| SA Cardiosynthetics (Pty) Ltd<br>*The loan bears interest at Prime plus 10% and is repayable on demand after 36 months, over a period of 60 months.* | 16 044 | 13 266 | 16 044 | 13 266 |
| Safe Eggs (Pty) Ltd<br>*The loan has no fixed repayment terms and accrues interest at prime.* | 167 | - | 167 | - |
| | 34 365 | 16 370 | 34 365 | 16 370 |

Management does not intend to realise the loans within the next 12 months, except for Safe Eggs (Pty) Ltd where a settlement agreement will be signed and executed within the next 12 months.

Carrying amounts of Loans and receivables are shown net of impairment losses.

Loans and receivables include the following categories:

| | | | | |
|---|---|---|---|---|
| Loans to associates | 10 009 | 10 359 | 10 009 | 10 359 |
| Loans to other entities | 34 365 | 16 370 | 34 365 | 16 370 |
| | 44 374 | 26 729 | 44 374 | 26 729 |

### Loans to associates and other entities impaired

As of 31 March 2015, loans to associates and other entities of R160 149 318 (2014: R122 311 000) were impaired and provided for. The movement from prior year to current year includes the deregistration of previously impaired investee companies as well as current year impairment.

The creation and release of provision for impaired receivables has been included in operating expenses in the statement of financial performance. Amounts charged to the allowance account are generally written off when the recovery of such amounts is improbable.

The maximum exposure to credit risk at the reporting date is the carrying amount of each class of loan mentioned above. The economic entity does not hold collateral as security.

## 10. Other financial assets

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Designated at cost | | | | |
| The Biologicals and Vaccines Institute of SA (Pty) Ltd | 40 572 | 40 572 | 40 572 | 40 572 |

## 11. Finance lease obligation

| | | | | |
|---|---|---|---|---|
| Minimum lease payments due | | | | |
| • within one year | 202 | 318 | 202 | 318 |
| • in second to fifth year inclusive | - | 202 | - | 202 |
| | 202 | 520 | 202 | 520 |
| Less: future finance charges | (14) | (62) | (14) | (62) |
| Present value of minimum lease payments | 188 | 458 | 188 | 458 |
| Present value of minimum lease payments due | | | | |
| • within one year | 188 | 270 | 188 | 270 |
| • in second to fifth year inclusive | - | 188 | - | 188 |
| | 188 | 458 | 188 | 458 |

It is the economic entity's policy to lease certain office equipment under finance leases.

The average lease term is 5 years and the average effective borrowing rate is 14% (2014: 14%).

Interest rates are linked to prime at the contract date. All leases have fixed repayments and no arrangements have been entered into for contingent rent.

## 12. Trade and other payables

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Trade payables | 22 612 | 9 629 | 26 190 | 7 432 |
| Employee related accruals | 7 480 | 7 244 | 6 841 | 6 918 |
| Other payables | 2 419 | 3 630 | 2 400 | 2 542 |
| | 32 511 | 20 503 | 35 431 | 16 892 |

## 13. Loans from shareholders

| | | | | |
|---|---|---|---|---|
| Loans from shareholders | 2 762 | 2 618 | - | - |

*These loans are non-interest bearing and have no fixed repayment terms.*

## 14. Committed conditional grants and receipts

Committed conditional grant balances comprise of:

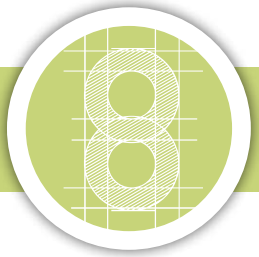
| | | | | |
|---|---|---|---|---|
| Unspent conditional grants and receipts | | | | |
| Advanced Manufacturing Technology Strategy | 1 594 | 1 594 | 1 594 | 1 594 |
| Alternative Energy | 258 | 258 | 258 | 258 |
| BIO Entrepreneurship Programme | 607 | - | 607 | - |
| Bio-fuels | 1 470 | 1 441 | 1 470 | 1 441 |
| Bio Safety | 1 939 | - | 1 939 | - |
| DST KZN Regional Innovation Strategy | 1 030 | - | 1 030 | - |
| ICT flagship program | 3 000 | 3 000 | 3 000 | 3 000 |
| Limpopo Agri Food Technology Station | 2 129 | 1 060 | 2 129 | 1 060 |
| NRF Newton fund | 2 000 | - | 2 000 | - |
| Sugarcane | 1 710 | 1 613 | 1 710 | 1 613 |
| Technology Station Program | 56 | 17 | 56 | 17 |
| Technology Station Expansion Program | 429 | 404 | 429 | 404 |
| | 16 222 | 9 387 | 16 222 | 9 387 |

## 15. Revenue from non-exchange transactions

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| DST allocation received during the year | 375 879 | 481 081 | 338 386 | 481 081 |
| Committed conditional grant funding recognised for: | - | - | - | - |
| Advanced Manufacturing Technology Strategy | - | 5 470 | - | 5 470 |
| Technology Stations Program | 6 274 | 7 588 | 6 274 | 7 588 |
| Bio-fuels | 6 151 | 5 676 | 6 151 | 5 676 |
| Sugarcane | - | 3 113 | - | 3 113 |
| Technology Station Expansion Program | - | 40 145 | 37 493 | 40 145 |
| Biosafety Communication strategy | 176 | - | 176 | - |
| BIO Entrepreneurship program | 890 | - | 890 | - |
| | 389 370 | 543 073 | 389 370 | 543 073 |

## 16. Other income

| | | | | |
|---|---|---|---|---|
| Royalties received | 517 | 645 | 517 | 644 |
| Sundry receipts | 12 703 | 10 014 | 640 | 126 |
| EWSETA funding received | 2 205 | 680 | 2 205 | 680 |
| NRF funding received | 1 385 | - | 1 385 | - |
| Profit on disposal of assets | 124 | - | 124 | - |
| Profit on sale of investment | 35 069 | 476 | 59 467 | 476 |
| UNIDO funding received | 1 119 | - | 1 119 | - |
| | 53 122 | 11 815 | 65 457 | 1 926 |



## 17. Investment income

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| **Dividends received** | | | | |
| Received from associates | - | - | - | 550 |
| **Interest received** | | | | |
| Interest earned - Loans and receivables | 3 544 | 1 187 | 3 544 | 1 187 |
| Interest earned - Bank | 14 023 | 21 506 | 13 728 | 21 217 |
| Interest received - Loans and receivables | 599 | 771 | 599 | 771 |
| | 18 166 | 23 464 | 17 871 | 23 725 |

## 18. Employee related costs

| | | | | |
|---|---|---|---|---|
| Remuneration | 116 668 | 127 293 | 103 409 | 110 531 |
| Defined contribution plans | 7 103 | 7 040 | 7 103 | 7 040 |
| | 123 771 | 134 333 | 110 512 | 117 571 |

Employee related costs for the controlling entity reduced significantly due to the fact that the entity embarked on an organisational redesign process resulting in a decrease of staff numbers from the previous financial year.

Employee costs for internal Technology Platforms is included in Project funding expenditure disclosed in note 19.

## 19. Project funding expenditure

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Project grants - third party | 363 354 | 343 829 | 371 530 | 358 609 |
| Project funding expenditure are made up of the following: | | | | |
| Technology Development | 145 510 | 79 245 | 153 686 | 94 025 |
| Technology Innovation programme | 9 832 | 2 221 | 9 832 | 2 221 |
| Technology Station programme | 86 684 | 56 966 | 86 684 | 104 698 |
| Technology Platform programme * | 41 368 | 69 683 | 41 368 | 69 683 |
| Youth Technology Innovation Programme | 4 573 | 6 588 | 4 573 | 6 588 |
| Seed fund | 43 710 | 26 871 | 43 710 | 26 871 |
| Regional Innovation programme | - | 35 000 | - | 35 000 |
| Contracted conditional grant spend | 13 491 | 57 906 | 13 491 | 10 174 |
| Other | 18 186 | 9 349 | 18 186 | 9 349 |
| | 363 354 | 343 829 | 371 530 | 358 609 |

* Included in the Technology Platform programme expenditure is operational costs associated with internal platforms such as salaries and depreciation.

## 20. Impairment of investments

| | | | | |
|---|---|---|---|---|
| Impairment of Financial assets at cost | - | 4 115 | 320 | 2 642 |
| Impairment of Financial assets at amortised cost | 1 632 | 13 570 | 1 632 | 13 155 |
| | 1 632 | 17 685 | 1 952 | 15 797 |

## 21. Other operating expenses

Other operating expenses include expenditure such as:

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Auditors remuneration | 1 679 | 1 477 | 1 584 | 1 274 |
| Consulting and professional fees | 8 655 | 26 117 | 7 311 | 23 837 |
| Telephone and fax | 1 694 | 1 702 | 1 438 | 1 629 |
| Training | 3 000 | 5 099 | 2 913 | 4 968 |
| Travel and accommodation | 3 845 | 13 808 | 3 843 | 13 694 |
| Electricity | 1 653 | 1 868 | 1 491 | 1 704 |
| Sponsorships | 2 029 | 2 485 | 2 029 | 2 485 |

## 22. Taxation

The controlling entity is exempt from income tax in terms of the provisions of section 10(1)(cA)(i) of the Income Tax Act.

## 23. Net cash flows used in operating activities

| | | | | |
|---|---|---|---|---|
| Deficit | (71 656) | (18 624) | (61 986) | (16 871) |
| Adjustments for: | | | | |
| Depreciation and amortisation | 10 859 | 11 096 | 10 471 | 10 711 |
| Assets written off | - | - | - | - |
| Loss on foreign exchange | 340 | - | - | - |
| Income from equity accounted investments | (10 037) | (12 390) | - | - |
| Assets written off | 88 | 6 824 | 88 | 345 |
| Restructuring on financial asset | 5 065 | - | 5 068 | - |
| Dividends received | - | 550 | - | - |
| Impairment on investments | 1 632 | 17 685 | 1 952 | 15 797 |
| Taxation | - | 281 | - | - |
| Interest on loan accounts | (3 544) | (1 366) | (3 544) | (1 368) |
| Changes in working capital: | | | | |
| Trade and other receivables | (29 541) | (1 611) | (55 343) | (1 986) |
| Trade and other payables | 11 566 | (14 544) | 17 914 | (13 707) |
| | (85 228) | (12 099) | (85 380) | (7 079) |

## 24. Related parties

| Relationships | |
|---|---|
| Members | Refer to members' report note |
| Controlled entities | Refer to note 7 |
| Associates | Refer to note 8 |
| National Department | Ministry of Science and Technology |
| National Government Business Enterprise | Council for Scientific and Industrial Research |
| National Public Entities | Agricultural Research Council/Onderstepoort Biological Products SOC |

| | 2015 R'000 | 2014 R'000 |
|---|---|---|
| **Related party balances** | | |
| **Loan accounts - Owing to related parties** | | |
| ACRO - Batswadi Pharmaceuticals (Pty) Ltd | (2 625) | (2 625) |
| **Committed conditional grants** | | |
| Ministry of Science and Technology | (16 222) | (9 387) |
| Related party transactions | | |
| **Interest received from related parties** | | |
| TIA - Interest received from associates | (599) | (771) |
| **Royalties received from related parties** | | |
| TIA - Royalties received from associates | (377) | (490) |
| **Dividends received from related parties** | | |
| TIA - Dividends received from associates | - | (550) |
| **Allocations received** | | |
| TIA - Ministry of Science and Technology | (389 370) | (543 073) |
| TIA - National Research Foundation | (1 385) | - |
| **Grants disbursed** | | |
| TIA - Council for Scientific and Industrial Research | 9 483 | 7 785 |
| TIA - Agricultural Research Council | 9 832 | 4 257 |
| TIA - Grants disbursed to associates | 14 061 | 23 033 |
| **Bad debts written off** | | |
| ACRO - Batswadi Pharmaceuticals (Pty) Ltd | - | 110 |

## 25. Members' emoluments

Executive

2015

| | Emoluments | Annual Bonus | Allowances* | Total |
|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 |
| TIA | | | | |
| Prof R Kfir - Interim CEO (from 01/05/2014 to 31/03/2015) | 2 007 | - | 3 | 2 010 |
| Mr W van der Merwe - CFO | 1 515 | 71 | 165 | 1 751 |
| Mr M Mazibuko - COO (until 28/02/2015) | 1 573 | - | 109 | 1 682 |
| Dr S Gumbi | 1 645 | 81 | 26 | 1 752 |
| Ms P Maruping | 1 741 | 91 | 177 | 2 009 |
| Ms M Mkhwanazi (until 30/11/2014) | 1 246 | - | 217 | 1 463 |
| Ms C Mamabolo (from 1/12/2014) | 304 | 46 | 46 | 396 |
| Ms A Machobane (from 01/05/2014 to 31/01/2015) | 450 | - | 1 | 451 |
| Ms F Harrisunker (from 01/01/2015) | 206 | - | - | 206 |
| Adv T Polaki (until 30/05/2014) | 173 | - | 28 | 201 |
| | 10 860 | 289 | 772 | 11 921 |

2014

| | Emoluments | Annual Bonus | Allowances* | Other | Total |
|---|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 | R'000 |
| TIA | | | | | |
| Mr S Duma (CEO) (dismissed on 31/03/2014) | 1 726 | - | 211 | - | 1 937 |
| Ms B Kortjass (CFO) (dismissed on 31/03/2014) | 1 681 | - | 24 | - | 1 705 |
| Ms M Mkhwanazi | 1 326 | 111 | 204 | - | 1 641 |
| Mr N Ndou (to 28/02/2014) | 1 090 | 103 | 64 | 605 | 1 862 |
| Ms P Maruping | 1 578 | 123 | 228 | - | 1 929 |
| Mr W van der Merwe (from 22/09/2013) | 653 | 96 | 107 | - | 856 |
| Mr M Ntshangase (from 01/01/2014) | 197 | - | 26 | - | 223 |
| Dr S Gumbi | 1 495 | 110 | 47 | - | 1 652 |
| Adv T Polaki | 963 | - | 18 | - | 981 |
| Mr M Mazibuko (COO) | 1 752 | - | 194 | - | 1 946 |
| Dr S Gumbi (from 01/04/2012) | - | - | - | - | - |
| ACRO | | | | | |
| Ms M Richardson | 1 423 | - | - | - | 1 423 |
| | 13 884 | 543 | 1 123 | 605 | 16 155 |

* Allowances include the following: Cell phone, Car, Acting, Travel and Subsistence.

## 25. Members' emoluments (continued)

Board

2015

| | Members' fees | Committees fees | Other fees | Total |
|---|---|---|---|---|
| TIA | R'000 | R'000 | R'000 | R'000 |
| Ms K Njobe | 77 | - | - | 77 |
| Ms H Brown | 39 | - | - | 39 |
| Mr F Hendricks (until 31/12/2014) | 38 | - | - | 38 |
| Prof D Kaplan | 44 | - | 6 | 50 |
| Dr S Lennon | 38 | - | - | 38 |
| Dr B Mehlomakulu | 61 | - | - | 61 |
| Adv M Ralefatane | 52 | - | - | 52 |
| Ms R Xaba | 14 | - | - | 14 |
| Mr M Moolla | - | - | 6 | 6 |
| Dr P Terblanche | 49 | - | 1 | 50 |
| ACRO (non-executive directors) | | | | |
| Mr D du Toit | - | 13 | - | 13 |
| Mr C Whitfield | - | 19 | - | 19 |
| | 412 | 32 | 13 | 457 |

2014

| | Committees fees | Other fees | Total |
|---|---|---|---|
| TIA | R'000 | R'000 | R'000 |
| Ms K Njobe* | 171 | 8 | 179 |
| Ms H Brown * | 126 | - | 126 |
| Mr F Hendricks * | 153 | - | 153 |
| Prof D Kaplan * | 159 | 2 | 161 |
| Dr S Lennon * | 129 | - | 129 |
| Dr B Mehlomakulu * | 125 | - | 125 |
| Adv M Ralefatane * | 134 | 1 | 135 |
| Ms R Xaba | 123 | 1 | 124 |
| Mr M Moolla * | - | 5 | 5 |
| Dr P Terblanche * | 140 | 1 | 141 |
| Mr R Norton (until 30/04/2013) | - | 7 | 7 |
| ACRO (non-executive directors) | | | |
| Mr D du Toit | 40 | - | 40 |
| Mr C Whitfield | 44 | - | 44 |
| | 1 344 | 25 | 1 369 |

* The Board of the controlling entity's term started on 01/05/2013.

## 26. Contingencies

### Contingent liabilities

### Disciplinary action

Following the dismissal of the previous CEO, CFO and Board Secretariat, the controlling entity received a claim for unfair dismissal from the affected parties. The prospect of the controlling entity defending the claims is very good.

### Roll over of funds

In terms of section 53(3) of the PFMA an entity may not accumulate surpluses unless prior written approval is obtained from National Treasury. For the 2014/15 financial year, the controlling entity will apply to retain accumulated funds. The financial impact of the final outcome of this application on the financial statements as well as the timing of the potential outflow of economic benefit could not be determined at period end. The controlling entity did obtain approval to retain surpluses as reported for 2013/14.

### Project funding

A project of the controlling entity with the South African Bureu of Standards is under dispute. The financial impact and the timing of the outflow of economic benefits could not be determined at period end.

Project funding in terms of funding agreements.

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Funding agreements | 254 149 | 189 882 | 258 818 | 193 888 |
| Funding approved not yet contracted | - | 17 146 | - | 17 146 |
| | 254 149 | 207 028 | 258 818 | 211 034 |

These agreements will be funded using surplus cash and funds to be allocated in the financial periods in which these agreements become payable.

### Contingent assets

### Controlling entity:

The controlling entity invested funds to the value of R5 381 739 with Corporate Money Managers (Pty) Ltd, which was placed under curatorship in previous periods. At the date of this report no finality has been reached on claims instated against the fund.

## 27. Commitments

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Authorised capital expenditure | | | | |
| Already contracted for but not provided for | | | | |
| • Property and equipment | 864 | 213 | 864 | 213 |
| • Intangible assets | 1 386 | 1 380 | 1 386 | 1 380 |
| | 2 250 | 1 593 | 2 250 | 1 593 |

This committed expenditure relates to computer equipment and will be financed by available funds.

Operating leases - as lessee (expense)

| | | | | |
|---|---|---|---|---|
| Minimum lease payments due | | | | |
| • within one year | 8 339 | 9 489 | 8 339 | 8 853 |
| • in second to fifth year inclusive | 4 841 | 16 474 | 4 841 | 14 853 |
| | 13 180 | 25 963 | 13 180 | 23 706 |

Operating lease payments represent rentals payable by the economic entity for certain of its offices. Leases are negotiated for an average term of five years and rentals are fixed for an average of three years. No contingent rent is payable.

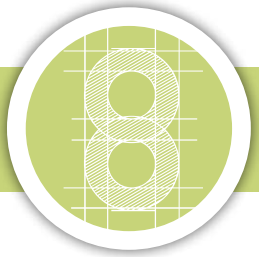
## 28. Risk management

Capital risk management

The economic entity's objectives when managing capital is to safeguard their ability to continue as a going concern in order to provide benefits to its stakeholders and to maintain an optimal capital structure to reduce the cost of capital.

The capital structure of the economic entity consists of cash and cash equivalents disclosed in note 4 and reserves as disclosed in the statement of financial position.

There are no externally imposed capital requirements and there were no changes in what the entity does to manage capital.



## 28. Risk management (continued)

### Financial risk management

The economic entity's activities expose it to a variety of financial risks: market risk (including currency risk, foreign currency risk and cash flow interest rate risk), credit risk and liquidity risk.

### Liquidity risk

The economic entity manages liquidity risk through the compilation and monitoring of cash flow forecasts as well as ensuring that there are adequate banking facilities.

The maturity profiles of the financial instruments are summarised as follows:

| At 31 March 2015 | Less than 1 year | Between 1 and 2 years | Between 2 and 5 years | Over 5 years |
|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 |
| Economic entity | | | | |
| Trade and other payables | 25 031 | - | - | - |
| Loans from shareholders | - | - | - | 2 762 |
| Finance lease obligations | 188 | - | - | - |

| At 31 March 2014 | Less than 1 year | Between 1 and 2 years | Between 2 and 5 years | Over 5 years |
|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 |
| Trade and other payables | 13 279 | - | - | - |
| Loans from shareholders | - | - | - | 2 618 |
| Finance lease obligations | 270 | 188 | - | - |

| At 31 March 2015 | Less than 1 year | Between 1 and 2 years | Between 2 and 5 years | Over 5 years |
|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 |
| Controlling entity | | | | |
| Trade and other payables | 28 590 | - | - | - |
| Finance lease obligations | 188 | - | - | - |

| At 31 March 2014 | Less than 1 year | Between 1 and 2 years | Between 2 and 5 years | Over 5 years |
|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 |
| Trade and other payables | 9 974 | - | - | - |
| Finance lease obligations | 270 | 188 | - | - |

## 28. Risk management (continued)

### Interest rate risk

Changes in interest rates will affect the revenue from exchange transaction revenue streams as the return on investment of surplus funds is linked to the prime rate.

### Cash flow interest rate risk

| Financial instrument | Current interest rate | Due in less than a year | Due in one to two years | Due in two to three years | Due in three to four years | Due after five years |
|---|---|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 | R'000 | R'000 |
| Cash reserves at CPD | 5,71% | 31 404 | - | - | - | - |
| Cash reserves at Standard Bank of South Africa | 4,00% | 34 866 | - | - | - | - |
| Other cash reserves at commercial banks | various | 8 517 | - | - | - | - |

### Credit risk

Potential concentrations of credit risk consist mainly of cash and cash equivalents and trade receivables. The economic entity limits its counterparty exposures from its bank accounts by investing surplus funds with well-established financial institutions with a high quality credit standing. The credit exposure to any one counterparty is managed by monitoring transactions.

Trade receivables comprise a widespread customer base. Management evaluates credit risk relating to customers on an ongoing basis. At year end 31 March 2015, the economic entity did not consider there to be any significant concentration of credit risk which had not been adequately impaired. The amount in the statement of financial position is the maximum exposure to credit risk.

Loans and receivables, investment in controlled entities, investment is associates and other investments consist mainly of funding granted to start up companies. The exposure to credit risk is managed through ongoing review of the operating results and financial position of the investee companies. Should the entity have doubt over the recoverability of the loan or the value of the investment, the loan/ investment is impaired and further funding is carefully considered.

Financial assets exposed to credit risk at year end were as follows:

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Cash and cash equivalents | 74 798 | 170 518 | 66 281 | 162 194 |
| Trade and other receivables | 64 656 | 8 809 | 63 481 | 6 234 |
| Loans and receivables | 44 374 | 26 729 | 44 374 | 26 729 |

## 28. Risk management (continued)

The entity has little doubt over the recoverability of Trade and other receivables not considered to be impaired at year end.

The entity has reviewed the financial position of each of the entities where they have not impaired the loan disbursed or investment made to the investee company and based on this, management is of the opinion that at period end the amount is recoverable.

Foreign exchange risk

Foreign currency exposure arises from the sale of goods by entities within the economic entity.

The economic entity does not hedge foreign exchange fluctuations. On 30 March 2015 the controlling entity concluded a sale of shares agreement with an associate company. The foreign exchange risk was managed through the short term settlement of the purchase price by the purchaser.

A controlled entity, ACRO, operates internationally and is exposed to foreign exchange risk arising from various currency exposures, primarily with respect to the US dollar and the Euro. Foreign exchange risk arises from future commercial transactions, recognised assets and liabilities and net investment in foreign operations.

The economic entity reviews its foreign currency exposure, including commitments on an ongoing basis.

## 29. Irregular expenditure

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Opening balance | 13 421 | 10 614 | 5 804 | 2 662 |
| Incurred by controlled entities | 732 | 1 832 | - | - |
| Incurred by controlling entity - relates to current year | 14 655 | 50 603 | 14 655 | 50 603 |
| Incurred by controlling entity - identified in the current year but relates to prior years | 41 547 | - | 41 547 | - |
| Less: Condoned | (2 585) | - | (2 585) | - |
| Less: Written off as not condoned and not recoverable | (23 421) | (47 461) | (23 421) | (47 461) |
| Less: Amounts written off as companies have deregistered | - | (2 168) | - | - |
| | 44 349 | 13 420 | 36 000 | 5 804 |

**Economic entity:** 13 controlled entities were inherited when the trusts (Biopad, Lifelab, Plantbio, Tshumisano, Innovation Fund, Cape Biotech Trust) were combined to form TIA. The entities were not set up to comply with the detail requirements of Treasury Regulation 16A6.1. The controlling entity is continuing to exit these entities and of the original 13 only 4 are remaining.

## 29. Irregular expenditure (continued)

Controlling entity: Treasury Regulation 16A6.1 states that the procurement of goods and services should be through way of quotation, using the Preferential Point system for amounts exceeding R30 000 or through a bidding process where the amount exceeds R500 000. For some expenditure incurred, these requirements were not complied with. Disciplinary action will be considered once investigations are completed. Controls were put in place to prevent further irregular expenditure.

The controlling entity engaged in a detailed process to identify irregular expenses related to prior financial years. The purpose of the process was to clear all the legacy issues dating back to 2012/13. Through this process, several project funding initiatives were identified where the approval was not done in line with the delegation of authority. Two of these projects amounting to R36 million are carried over to the following financial year due to recoverability being uncertain.

The Board of the controlling entity condoned Irregular expenses where it is allowed in terms of the Treasury Regulation and practise notes issued, and accepted Irregular expenses as not condoned not recoverable where value was received for payments made.

## 30. Fruitless and wasteful expenditure

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Opening balance | 430 | 635 | 371 | 371 |
| Fruitless and wasteful expenses incurred by controlled entities | - | 1 | 1 | - |
| Fruitless and wasteful expenses incurred by controlling entity | - | 6 | - | 6 |
| Less: Amount written off as not recoverable by the Board | (372) | (6) | (372) | (6) |
| Less: Controlled entities deregistered | - | (206) | - | - |
| | 58 | 430 | - | 371 |

Economic entity: The nature of the expenses that could have been avoided are interest and penalties on PAYE of two controlled entities which were subsequently deregistered.

Controlling entity: The current year's fruitless and wasteful expenses relate to interest charged on Telkom invoices during the year. Management has exhausted all avenues of trying to recover the amount from Telkom. Controls were put in place to ensure that this does not reoccur in future.

The Board of the controlling entity approved that Fruitless and wasteful expenses of R372 000, which included fruitless and wasteful expenditure for 2012/13, be written off as irrecoverable after due process was followed in terms of the Guideline on Fruitless and wasteful expenses as issued by National Treasury in May 2014.

## 31. Losses through Criminal Conduct

| | Economic entity | | Controlling entity | |
|---|---|---|---|---|
| | 2015 R'000 | 2014 R'000 | 2015 R'000 | 2014 R'000 |
| Losses through criminal conduct | | | | |
| Losses during the financial year | 47 | 50 | 47 | 50 |
| Losses recovered | (184) | (73) | (184) | (73) |
| | (137) | (23) | (137) | (23) |

Controlling entity: Losses relate to laptops stolen from the agency and its employees. Insurance claims were lodged to minimise the losses. The losses recovered also include insurance claims submitted in 2013/14 only paid in 2014/15.

## 32. Budget differences

Material differences between budget and actual amounts

The cash surplus in the controlling entity carried over from the financial year 2013/14 resulted in the budget being revised and approved by the Board to utilise the surplus cash. These changes have been noted under adjustments in the Statement of Comparison of Budget and Actual amounts.

**32.1** Revenue for non-exchange transactions exceeded the budget due to committed conditional grants recognised during the year and an additional amount received for the Technology Station programme.

**32.2** Other income, primarily from the sale of an investment, was not budgeted for in the 2014/15 financial year as the outcome of the approval under Section 54 of the PFMA was uncertain. The sale was concluded on 30 March 2015.

**32.3** Interest received and dividends received exceeded the budget for 2014/15 due to co-funding received and recognised from EWSETA.

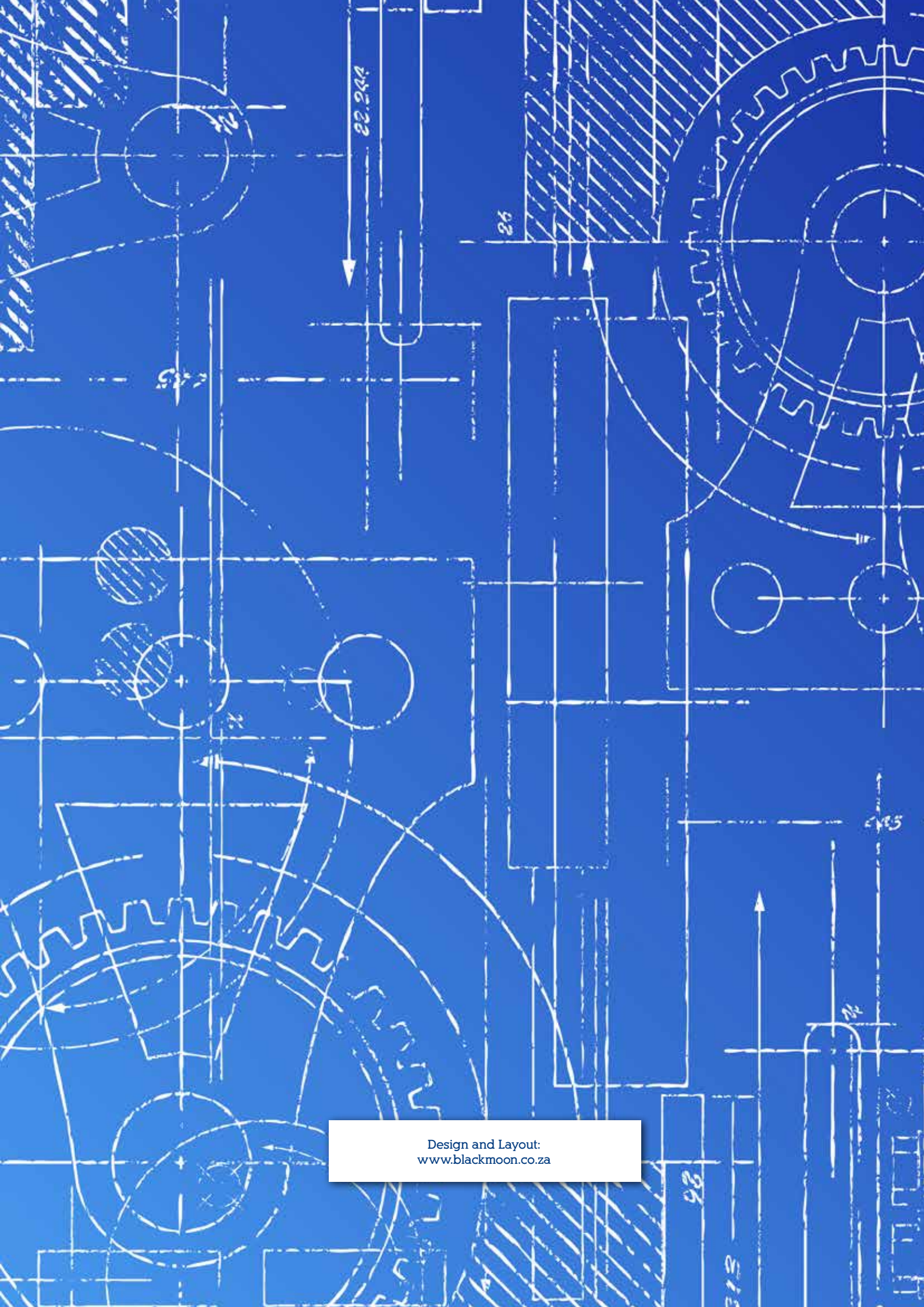
**32.4** Employee costs are under budget due to the Organisational design process embarked upon whereby the staff number reduced significantly.

**32.5** The nature of the controlling entity is such that project payments are very uncertain in the research and development space. The controlling entity provides risk funding but continue to be prudent and responsible in not continuing with projects that does not reach agreed milestones.

**32.6** The underspend can be attributed to cost saving initiatives undertaken by the controlling entity, such as travel costs, IT expenses, marketing expenses and consulting fees.

# GLOSSARY

| | |
|---|---|
| AFASA | Abalone Farmers Association of South Africa |
| AFS | Annual Financial Statements |
| AM | Advanced Manufacturing |
| AMD | Acid Mine Drainage |
| AMTS | National Advanced Manufacturing Technology Strategy |
| APIs | Active Pharmaceutical Ingredients |
| ARC | Audit and Risk Committee |
| ARTIST | Adaptive Real-Time Internet Streaming Technology |
| BMP | Bone Morphogenetic Protein |
| CCDI | Design Innovation Seed Fund |
| CEO | Chief Executive Officer |
| CFO | Chief Financial Officer |
| cGMP | Cyclic guanosine monophosphate |
| COO | Chief Operations Officer |
| CPAP | Continuous Positive Airway Pressure Therapy |
| CPGR | Centre for Proteomic and Genomic Research |
| CRM | Customer Relationship Management |
| CSFE | Continuous Supercritical Fluid Extraction of Vegetable Oil |
| CSIR | Council for Scientific and Industrial Research |
| CTC | Cost to Company |
| DG | Director General |
| DST | Department of Science and Technology |
| dti | Department of Trade and Industry |
| EDS | Excessive Daytime Sleepiness |
| EE | Employee Equity |
| eGoliBio | Life Sciences Incubator |
| EPL | Electromechanical Price Labelling |
| EPN | Entomopathogenic Nematode (worm species) |
| Eskom | Electricity Supply Commission |
| ET | Enzyme Technologies |
| EWSETA | Energy and Water SETA |
| GCIP | Global Cleantech Innovation Programme |
| GDP | Gross Domestic Product |
| HEI | Higher Education Institution |
| HR | Human Resources |
| HTS | Hybrid Tracking System |
| HySA | Hydrogen SA |
| IAT | Institute of Advanced Tooling |
| ICAS | Independent Counselling and Advisory Services |
| ICAS | Independent Counselling and Advisory Services |
| ICT | Information and Communications Technologies |
| IDC | Industrial Development Corporation |
| IDC VC SBU | Industrial Development Corporation's Venture Capital Strategic Business Unit |
| IDP | Individual Development Plan |
| IFC | Investment and Finance Committee |
| IPA | Innovation Prize for Africa |
| IPAP | Industrial Policy Action Plan |
| KPIs | Key Performance Indicators |
| LIF | Leaders in Innovation Fellowship |
| MCC | South African Medical Control Council |
| MEA | Membrane Electrode Assembly |
| MTEF | Medium-Term Expenditure Framework |
| MTET | Medium-Term Expenditure Framework |
| NDP | National Development Plan |
| NECSA | Nuclear Energy Corporation SOC Limited |
| NEHAWU | National Education, Health and Allied Workers' Union |
| NERPO | National Emergent Red Meat Producers Organisation |
| NGO | Non-Governmental Organisation |
| NGP | National Growth Plan |
| NMMU | Nelson Mandela Metropolitan University |
| NSI | National System of Innovation |
| NTC | Negative Temperature Coefficient |
| NWU | North-West University |
| OBM | Osteogenic Bone Matrix |
| OD | Organisational Design |
| OECD | Organisation for Economic Co-operation and Development |
| OEM | Original Equipment Manufacturer |
| OSA | Obstructive Sleep Apnoea |
| PCR | Polymerase Chain Reaction |
| PFMA | Public Finance Management Act |
| PV | Photovoltaic |
| REIPPP | Renewable Energy Independent Power Producers Programmes |
| RHD | Rheumatic Heart Disease |
| RPO | Red Meat Producers Organisation |
| SA | South Africa |
| SABS | South African Bureau of Standards |
| SAMFA | South African Mushroom Farmers' Association |
| SANEDI | South African National Energy Development Institute |
| SBD | Settled Bed Detector |
| SERI | Swiss State Secretariat for Education, Research and Innovation |
| SET | Science, Engineering and Technology |
| SETA | Skills Education and Training Authority |
| SME | Small and Medium Enterprise |
| SMME | Small, Medium and Micro Enterprise |
| Solidarity | Trade Union |
| STA | Strategic Technology Area |
| TB | Tuberculosis |
| TDS | Tiisetso Development Solutions |
| TIA | Technology Innovation Agency |
| TRL | Technology Readiness Level |
| TS | Technology Stations |
| TSCT | Technology Station in Textiles and Clothing |
| TSE | Technology Stations in Electronics |
| TSP | Technology Stations Programme |
| TTO | Technology Transfer Office |
| UCT | University of Cape Town |
| UK | United Kingdom |
| UKZN | University of KwaZulu-Natal |
| UNIDO | United Nations Industrial Development Organisation |
| UP | University of Pretoria |
| USA | United States of America |
| VSP | Voluntary Severance Package |
| YTIP | Youth Technology Innovation Programme |



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