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REPORT TO COUNCIL

Vice-Rector: Research, Innovation and Postgraduate Studies

Prof TE Cloete
April 2020

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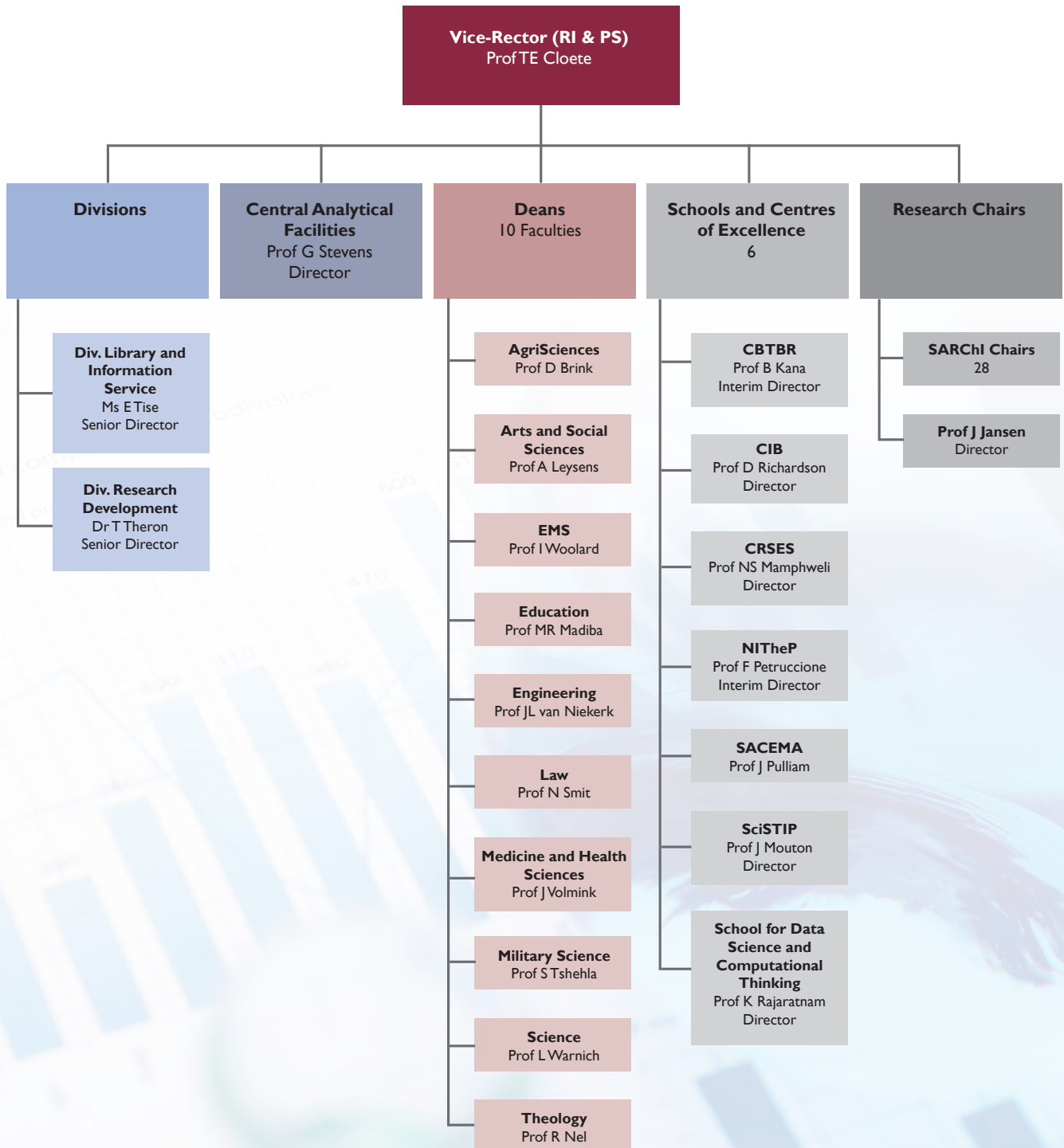
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Organogram

Responsibility Centre:

Vice-Rector: Research Innovation and Postgraduate Studies



Introduction

The Research, Innovation and Postgraduate Studies portfolio has gone from strength to strength in the past five years, positioning Stellenbosch University (SU) as the leading research-intensive university in South Africa. I attribute this to an incredible team effort. I therefore wish to acknowledge and credit the deans and vice-deans for research, the senior directors in my responsibility centre as well as SU researchers in general for their initiative and dedication. I also appreciate the support of the Rectorate and Council.

During 2018 Stellenbosch University adopted a new Strategic Framework including Vision 2040.

Vision 2040 states that, “Stellenbosch University will be Africa’s leading research intensive university, globally recognised as excellent, inclusive and innovative, where we advance knowledge in service of society”.

SU is a place of discovery and excellence, where staff and students are thought leaders in advancing knowledge in the service of all stakeholders. Its mission is to attract outstanding students, employ talented staff and provide a world-class environment: a place connected to the world, while enriching and transforming local, continental and global communities.

Research for Impact is therefore one of the six major institutional strategic themes as part of SU’s Strategic Framework 2019 – 2024. Research for Impact at SU implies optimising the scientific, economic, social, scholarly and cultural impact of our research. Our focus is on interdisciplinary research that benefits society on a national, continental and global scale. At the same time, we are committed to basic and disciplinary research excellence, as it forms the basis for applied and translational research.

Research at SU is driven by the notion of simultaneous excellence and relevance, informed by a diversity of people and ideas. The institution wishes to achieve this by pursuing excellence, remaining at the forefront of its chosen focus areas, gaining standing based on its research outputs, and being enterprising, innovative and self-renewing. This requires a careful balance between, on the one hand, continuity and consistency and, on the other, transformation and rejuvenation of SU’s academic researcher cohort. Ultimately, our research efforts are not only aimed at academic success, but also at making a significant impact in the world.

These objectives are actively pursued by the responsibility centre for Research, Innovation and Postgraduate Studies (RI&PS RC). Through the activities of its various divisions, the RI&PS RC in 2019 further strengthened the University’s status as a research leader and bolstered the institution’s intellectual capital, as the following sections will show. The report is organised along the six themes of the Strategic Framework and the respective institutional goals for each of these themes.

I. Employer of Choice

The institutional goals for this theme are to:

- Develop a comprehensive people strategy for SU that embraces diversity and equity, leverages unique talents and strengths, promotes life-long learning and celebrates achievements.
- Enhance the well-being of our people by creating and promoting an enabling, inclusive, equitable, healthy and safe working and learning environment that encourages our diverse staff to maximise their productivity, and where they feel valued and contribute to SU’s excellence.
- Improve human resource processes through the application of technology and digitalisation.
- Develop and execute a game-changing talent acquisition and talent management plan, which includes equitable remuneration, the management and rewarding of performance, the identification of competencies and the development of talent and leadership throughout the career cycle of each SU employee.
- Support the development of SU as a learning organisation that is responsive to both individual and organisational needs.

During 2019 a number of initiatives were started and/or continued to achieve the above goals and will be briefly highlighted.

I.1 Early career academic development (ECAD)

The early career academic development (ECAD) programme is a structured support programme for early-career academics, which is offered by the Division for Research Development (DRD) with the support of funding from the Department of Higher Education and Training (DHET) University Capacity Development Grant (UCDG). The programme includes a mentoring component, which has matched 113 early career academic staff members with experienced mentors in 2019. The participants in this programme were further supported through career acceleration awards, and access to a significant number of capacity and skills development opportunities offered internally and externally to the University.

1.2 Postdoctoral fellow programme (managed by the DRD)

Postdoctoral fellows contribute significantly to the institution's research output, as showcased at the postdoctoral research day held on 18 October 2019.

At the annual postdoc research day, postdocs at Stellenbosch University present to an audience made up of the university community, hosts and country representatives who deal with postdocs. Each year 20 speakers are selected through a rigorous peer-review process, and compete for a R15 000 travel award. The speakers present the cutting edge research they conduct here at the university. They are expected to present it in an accessible, informative, captive and entertaining way, tailored for the non-scientific or research community. The presentations are built on the FameLab model. Dr Marina

Joubert provided training for the 20 speakers in preparation for the research day. In 2019, Dr Taina Loureiro from the Centre for Invasion Biology won the top award.

At the same event, the Postdoc Top 20 awards were also presented. It was initiated in 2017 to honor the top performing postdoctoral fellows at the university. The Postdoc award for excellence honours postdoctoral researchers with exceptional performance in their publications, as well as their contribution in academia through student training, presentations at conferences as well as other non-academic endeavours. Each fellow receives R10 000 and certificate of recognition. The contribution of postdoctoral fellows to academic performance at the university is significant, and postdocs support students and are the muscle behind major research. The fellows honoured here had published upwards of 10 manuscripts, formed parts of collaborative research teams, landed large grants and also are active members in university and other academic societies.

Table 1: The recognised fellows for 2019

Nr	Surname	Initial	Department and faculty
1	Abrahams	S	Biomedical Sciences
2	Clements	H	Centre for Complex Systems in Transition
3	Cripwell	R	Microbiology
4	Hartfort	A	Philosophy
5	Heine	M	Health and Rehabilitation
6	Hirsch	H	Science: Botany and Zoology
7	Javal	M	Conservation Ecology
8	Kerr	T	Biology and Human Genetics
9	Lambrechts	L	Africa Open Institute
10	Leisching	G	Biomedical Science
11	Mandegari	MM	Process Engineering
12	Menzel	JL	Earth Science
13	Minaar	C	Botany and Zoology
14	Naidoo	C	Biomedical Science
15	Pisa	MM	Botany and Zoology
16	Riley	J	Botany and Zoology
17	Schoeman	L	Horticultural Sciences
18	Stone	W	SU Water Institute
19	Tsige	AA	Horticultural Sciences
20	Uren	C	Biomedical Sciences



Picture 1: Some of the winners of the 2019 postdoc research awards

SU hosted a total of 299 postdoctoral fellows during 2019. Stellenbosch University received the highest number of new postdoctoral fellowships – 14 - from the NRF in 2019. Fifty-eight continuing fellowships (including grant-holder linked fellows) were awarded.

Although the Claude Leon Foundation ceased their funding for postdocs to South African institutions in 2019, Stellenbosch University still held 16 continuing.

Stellenbosch University also received industry funding towards 30 postdoctoral fellowships.

Funding for postdoctoral fellowships was also received from other sources (eg MRC, CSIR, local governments, etc).

1.3 The Consolidoc programme

The **Consolidoc** programme, established in 2013 by the Vice Rector: Research, Innovation & Postgraduate Studies and managed by the DRD, offers an opportunity for recent PhD graduates to spend a further 6 months at SU, following graduation, to publish the research from their theses. Between 2016 and 2017, thirty Consolidocs were funded and produced a total output of 50 publications. In 2018, 11 Consolidocs produced 10 publications. In 2019, 17 Consolidoc fellowships were awarded.

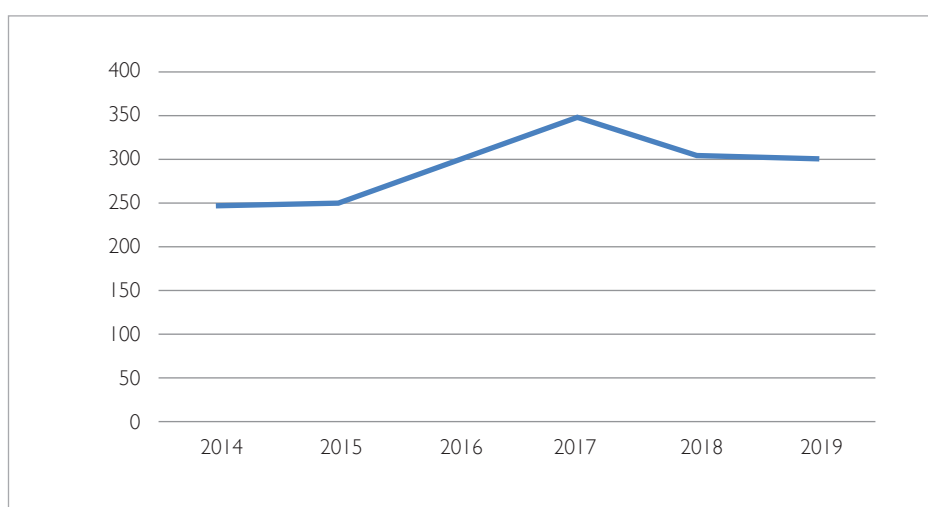


Figure 1: Number of Postdoctoral Fellows 2014 - 2019

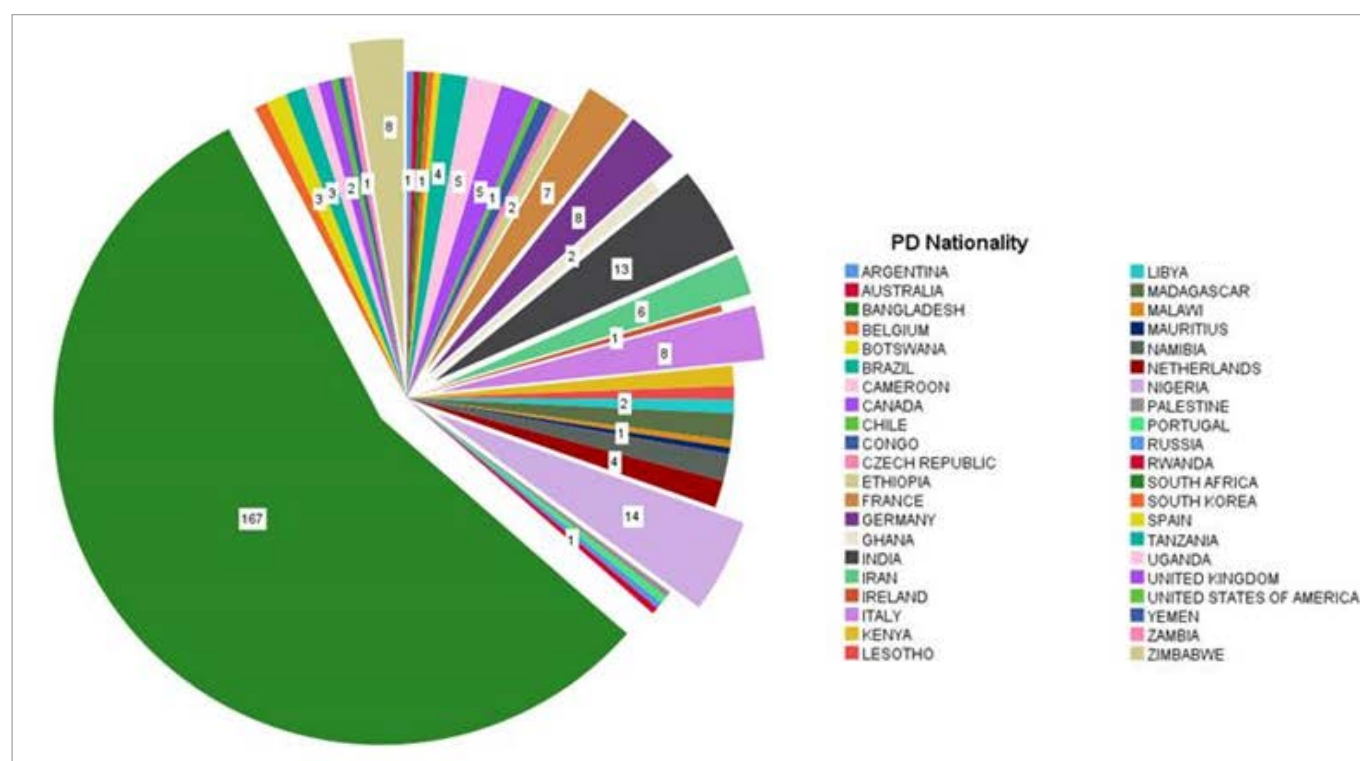


Figure 2: SU Postdoc nationalities as at 2019

1.4 NRF Early career programme (Thuthuka)

In 2019 the DRD processed twenty-six applications for the NRF's early career programme, Thuthuka. Eighteen were successful, which was three times more than in 2018, with a total of ca R2 676 941.00. There were 13 continuation awards amounting to R 1 968 302.00.

1.5 NRF-First Rand Bank Grants for Sabbatical study for Black (African, Indian, Coloured) academic staff member

Mrs Karen Garner from Electrical and Electronic Engineering and Mrs Priscalia Khosa from Social Work were the recipients of this grant in 2019. They were awarded R 508 000 and R 559 800 respectively.

1.6 FLAIR programme: African Academy of Sciences and the Royal Society Early career fellowship programme (managed by the DRD)

The **African Academy of Sciences** and the **Royal Society** partnered in creating an early career fellowship programme supported by the Global Challenges Research Fund (GCRF): Future Leaders African Independent Research (FLAIR) Fellowships. At the start of this programme in 2018, two awards were made to Stellenbosch University and the fellowships were taken up in 2019. The awardees are Dr Debra Rossouw from the Institute for Wine Biotechnology and Dr Margreth Tadi from Process Engineering. In 2019 a total of close to 1 000 applications were received, from the whole of Africa. Out of these, about 60 applicants from all over Africa were selected for interviews after which 25 final awardees were selected. At the end of 2019 it was announced that Dr Prinessa Chellan from Chemistry and Polymer Sciences was successful and will take up her grant in 2020. The value of these highly competitive FLAIR fellowships is £300 000 (ca R5.3 mill) each over two years, with the possibility of renewal of a further 3 years.

1.7 DST-NRF Internship Programme

The internship programme was established by the DST and NRF to provide work experience for unemployed graduates in the Science, Engineering & Technology (SET) and Humanities & Social Sciences disciplines. In this very competitive programme, managed by the DRD, Stellenbosch University was successful in obtaining 20 Internship positions in 2019. At the request of the Department of Public Service and Administration (DPSA) the duration of appointment of Interns in South Africa was extended from 12 to 24 months as from 2019.

The internship programme significantly strengthens the workforce at SU and also contributes to SU's commitment to capacity building of early career researchers and research administrators. The total of NRF awards to the interns in 2019 was approximately R2.3 million (R1 million more than in 2018).

1.8 nGAP programme

nGAP is one of five programmes of SSAUF (Staffing South Africa's Universities Framework) approved by the minister of Higher Education and Training in January 2015. It is aimed at the expansion of the size and compilation of academic staff at South African universities – especially with regard to transformation. The focus of the programme is the appointment of Black, Coloured and Indian scholars as well as the appointment of women.

The implementation of the transformative nGap programme entails the recruitment of young academics as part of a six year programme which supports universities in their staffing and development strategies. Lecturers participating in this programme, are expected to undertake research, teaching and any other relevant opportunities needed for development as well-rounded academics.

SU hosted a total of 16 nGAP appointees in 2019, with a further four nGAP awards received in 2020.

1.9 Library and Information Service (LIS) staff opportunities

2019 afforded 10 opportunities for staff members attending international conferences and 37 staff members benefitted from attending national conferences, workshops and seminars. A staff member also participated in the University's International Development Programme for Support Staff, for a visit to Lund University in Sweden in October.



Figure 3: Staff Enrichment

1.10 Supporting SU's growing number of exemplary NRF-rated researchers

SU continues to support the NRF rating system in principle – not only as a qualitative, peer-reviewed measure of excellence, but also as a gateway to certain competitive NRF funding programmes. The NRF rating programme is managed by the DRD, who also follows a thorough internal review process to support researchers in the preparation of their rating applications. This includes the assignment of a mentor to each applicant in order to assist with the completion of applications.

The total number of rated researchers at SU for 2020 is **485** (as at 4 February 2020) – the third highest number per institution in SA, with **13** A-rated researchers from 6 of the 10 faculties at SU.

Growth in NRF rated researchers at SU: 2016 - 2020

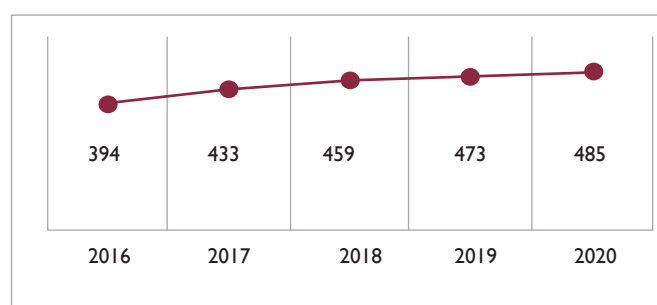


Figure 4: Number of NRF Rated researchers at SU 2016 - 2020

For the application closing date 31 January 2020, the DRD submitted **94** applications to the NRF for review. Of the 94 applications submitted, **50** were applications for a re-evaluation of a rating and **44** were new applications.

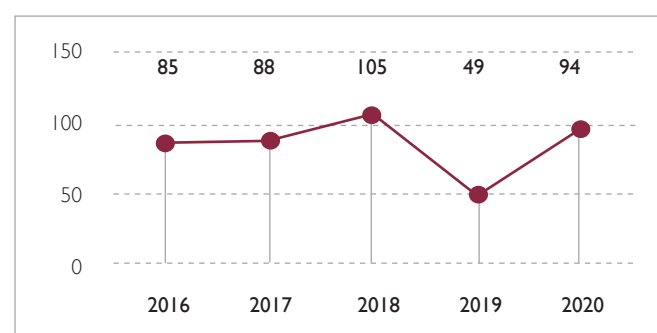


Figure 5: Number of NRF rating applications submitted for review 2016 - 2020

Over the past five years, the number of rating applications submitted to the NRF for review have remained relatively consistent. The decline in applications submitted in the 2019 round (closing date January 2019) is possibly due to the significant changes and uncertainty around the Incentive Funding scheme by the NRF. The increase for the 2020 round (closing date January 2020) is possibly due to the fact that the value of the NRF rating, beyond funding, was made more prominent.

1.11 Expert research earns SU specialised research chairs

SU now has 51 research chairs – nearly double the number we had five years ago. Of these, 28 form part of SARCHI (the South African Research Chairs Initiative) and are funded by the Department of Science and Technology. Another 23 research chairs at the University are funded by other sponsors. One SARCHI grant was renewed in 2019 for a second term of five years and two new SARCHI chairs were awarded.

• SARCHI chair renewal:

Prof Peter Weingart, an internationally recognised expert in his field, holds the **SA Research Chair in Science Communication**. This SARCHI filled a void in a fast growing global research field of increasing importance, in which there has been no clear academic leadership before in South Africa. Before the SARCHI Chairs in Science Communication were established by the DST/NRF, there was a dearth of candidates with doctoral degrees in this field within South Africa. It was therefore an area where an international academic leader was absolutely essential for the development of the necessary local capacity.

• Two new SARCHI Research Chairs were awarded to SU in 2019/2020:

Incumbent	Host Department	Host Faculty	Chair Title
Prof Josephine Musango	School for Public Leadership	Economic and Management Sciences	Mainstreaming Gender for Energy Security in Urban Poor Environments
Prof Pumla Gobodo-Madikizela		Arts and Social Sciences	Violent Histories and Transgenerational Trauma

• Other endowed research chairs established in 2019/2020:

Rand Water Chair in Public Health (Stellenbosch University Water Institute) The Rand Water Chair in Public Health will oversee a diverse range of research projects in the field of drinking water; related to human health risk assessment, with a strong focus on environmental factors in water supply and distribution that need to be monitored in order to minimize the chance of water becoming a threat to public health.	Rand Water
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Research Chair in Mechanical Engineering This chair will create a niche in asset management technologies by developing an existing pump laboratory to include digital twin architecture. The digital twin technology will enable intelligent management of Rand Water assets and optimising their use.	Rand Water
Macrocomm Smart Utility Solutions Chair The chair will focus on research in the fields of smart metering, big-data analytics, internet-of-things technologies, low-power wide-area networks, smart capacity building, hosted enterprise software solutions and utility performance forecasting. Moreover, it will form partnerships with other research and funding institutions in the general field of utility solutions, engage in specialised consulting activities for industry and pursue other funding streams.	Macrocomm Smart Utility Solution (Pty) Ltd
Hans Merensky Research Chair in Advanced Modelling of Eucalyptus Wood Formation (EucXylo) Research in the EucXylo programme will explore in detail the dynamics of wood formation (xylogenesis) in the extremely important genus Eucalyptus towards developing mathematical, computational models of the system.	Hans Merensky Foundation
Research Chair in Crop Health Its endeavours focus on research driven by the needs of industry, the education and financial support of students and the provision of further skills training for employees in the agricultural sector.	Villa Crop Protection (Pty) Ltd
Chair in Afrikaans Language Practice The Chair is aimed at further developing Afrikaans as an important instrument in the service of the entire South African community. In addition to the Chair, funds are made available for bursaries for deserving students studying Afrikaans at postgraduate level at SU.	Dr Ton Vosloo
Capitec Research Chair This chair will bring focus to the area of Data Science with funding for research, financial support for students and building capacity within SU and Capitec.	Capitec
Standard Bank Research Chair The focus of this funding is to research topics relevant to the financial service sector in the area of Data Science. This includes, but not limited to, commercialization of data assets, behavioral science, financial inclusion, and democratization of artificial intelligence and machine learning in society.	Standard Bank



Picture 2: Recipients of the Research Excellence Awards 2019

1.12 Annual Research Excellence Awards honours SU academics

The annual Research Excellence Award ceremony was held at STIAS on 5 December 2019. The awards were presented to SU researchers who made the biggest contribution to accredited publications (based on audited publication statistics of the 2017-output year) and doctoral graduates (December 2018/March 2019 graduations). For the purpose of the recognition with regards to accredited publications, two categories were taken into account, namely (i) SU researchers making the biggest contributions in terms of the publication subsidy units (PUs) of the Department of Higher Education and Training (DHET) (cut-off this year was 4.15) and (ii) SU researchers who produced the highest number of accredited research publications in collaboration with their national and international research partners and students (cut-off this year was 14). In this round, researchers who delivered 3 or more doctorates for the period mentioned were also acknowledged.

1.13 Highly cited researchers

Three of our researchers have been listed in the Highly Cited Researchers 2019 list from the Web of Science Group.

Prof Reinette (Oonsie) Biggs, the incumbent of the DSI/NRF-Research Chair in Social-Ecological Systems and Resilience, as well as Professors Linus Opara (AgriSciences) and Dave Richardson (Centre for Invasion Biology) are among the 622 most cited researchers. The highly anticipated list identifies



Picture 3: Prof Oonsie Biggs, Prof Linus Opara, Prof Dave Richardson

scientists and social scientists who produced multiple papers ranking in the top 1% by citations for their field and year of publication, demonstrating significant research influence among their peers. The methodology that determines the who's who of influential researchers draws on the data and analysis performed by bibliometric experts from the Institute for Scientific Information at the Web of Science Group.

1.14 Sustained research achievements acknowledged

The reporting year saw the University's academic and research support services staff again garnering numerous sought-after accolades.

• ASSAf award:

Over the last decade disability studies as an academic discipline in Africa, particularly South Africa, has developed extensively, in no small part due to the commitment of Prof Leslie Swartz, a distinguished Professor of Psychology at SU with an interest in mental health and disability studies.

Prof Swartz, who is considered one of the most prolific and influential scholars in the field, was recognised by the Academy of Science of South Africa (ASSAf) for his dedication to developing disability studies when he received the prestigious Science-for-Society Gold Medal for 2019. According to ASSAf, the medal was awarded to Swartz for "excellence in the application of outstanding scientific thinking in the service of society". Swartz is the only academic in South Africa to receive a medal last year.



Picture 4: Prof Leslie Swartz (middle) with his ASSAf award

- **NSTF finalists:**

The DRD submitted a record number of 21 nominations for the NSTF awards. Four researchers from SU were finalists at the annual National Science and Technology Forum (NSTF)/South32 Awards. Regarded as South Africa's 'Science Oscars', the NSTF/South32 Awards recognise, celebrate and reward excellence and outstanding contributions to science, engineering and technology (SET) and innovation by SET-related professionals and organisations in the country. Among the competitors are experienced scientists, engineers, innovators, science communicators, engineering capacity builders, organisational managers and leaders, as well as data and research managers.

The SU finalists (with department or environment) and the categories in which they have been nominated were as follows:

TW Kambule-NSTF Award: Researcher through research and its outputs (by an individual up to 15 years as a researcher; predominantly in South Africa):

- **Prof Novel Njweipi Chegou** (Division of Molecular Biology and Human Genetics)
TW Kambule-NSTF Award: Emerging Researcher through research and its outputs (by an individual up to six years in research, predominantly in South Africa)
- **Dr Wynand J Goosen** (Division of Molecular Biology and Human Genetics/Centre of Excellence for Biomedical TB Research)
Data for Research Award: for advancing the availability, management and use of data for research (by an individual or an organisation)
- The **Central Analytical Facility Team** with Prof Anton du Plessis as team leader
Innovation Award: Corporate Organisation for innovations and their research and/or development (by a team or an individual over the last five to ten years)
- The **Solar Thermal Energy Research Group (STERG)** with Prof Sybrand Johannes van der Spuy as team leader.

- **SA Women in Science Awards 2019:**

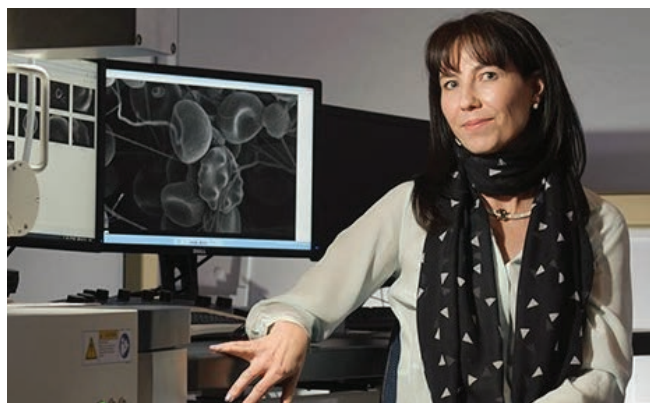
Prof Resia Pretorius, a haematologist in the Department of Physiological Sciences, was named the first runner-up in the Women in Science Awards (WiSA) on 15 August, in the category "Distinguished women researchers in the natural and engineering sciences". She was also named a finalist in the Standard Bank Top Women Awards in the category "Top women in science".

- **NRF awards 2019:**

Prof Bert Klumperman (Chemistry and Polymer Science) and prof Dave Richardson (Centre for Invasion Biology) received A-ratings for the third time. They received special recognition at the annual NRF awards that was held in September 2019.

- **SAMRC 2019 Scientific Merit Awards**

The Division of Molecular Biology and Human Genetics at Stellenbosch University's the Faculty of Medicine and Health



Picture 5: Prof Resia Pretorius



Picture 6: Prof Bert Klumperman and Prof Dave Richardson



Picture 7: Prof Craig Kinnear and Prof Novel Chegou

Sciences recently had cause to celebrate two extraordinary researchers. Professors Craig Kinnear and Novel Chegou both received SA Medical Research Council Silver Medical Achievement Awards at the SAMRC 2019 Scientific Merit Awards in November.

Kinnear, from the Tuberculosis Host Genetics Research Group, and Chegou, from the Immunology Research Group received the awards for their outstanding lifetime scientific contributions to health research.

- **Harry Oppenheimer Trust fellowship awards:**

The DRD submitted 6 nominations for the prestigious Harry Oppenheimer Trust fellowships award. The award amounts to R1.5 million over a period of approximately 12 months.

The Award seeks to attract world-class candidates with visionary ideas based on an exceptionally well-developed grasp of a field or topic. It is intended to enable scholars based in South Africa to undertake a programme of work that will 'build the academy' and contribute richly to intellectual life. It aims to strengthen relationships and partnerships between local and international institutions and the Trust. Two of SU's researchers were shortlisted and will go for interviews with the adjudication panel in February 2020, namely prof Dave Richardson (C I B) and prof Leon Dicks (Microbiology).

- **SU professors appointed to Council on Higher Education:**

Two distinguished professors from SU's Faculty of Education, **Prof Lesley le Grange** and **Prof Yusef Waghid**, has been appointed to the Council on Higher Education (CHE).

The CHE is an independent statutory body established in 1998 in terms of the Higher Education Act 101 of 1997 to function as the quality council for higher education in South Africa in accordance with the National Qualifications Framework. Le Grange and Waghid will help advise the minister on aspects of higher education policy, and will conduct research to inform the search for solutions to the short and long-term challenges of our sector:

- **Women Global Chair for 2019/2020:**

Prof Soraya Seedat of SU's Faculty of Medicine and Health Sciences (FMHS) has been awarded a Women Global Chair for 2019/2020 by the University of Bath, which is ranked 6th in the United Kingdom in the latest *Guardian University Guide*. In announcing the news, Bath said its Global Chair programme enables it to invite globally renowned scholars to engage in high-profile research activity, and that the Women Global Chair scheme highlights and celebrates women academics across all disciplines. "The scheme also strengthens our strategic university partnerships, and we are pleased that the appointment will lend further support to our strong links with Stellenbosch," it added.

- **SA Literary Awards:**

Prof Jonathan Jansen, distinguished professor of Education Policy Studies, won the South African Literary Awards (SALA) book award in the category Creative Non-Fiction for his book, *As by fire: the end of the South African university*, on 7 November 2019. Dr Wamuwi Mba, a literary critic, cultural studies scholar and lecturer in the English Department at SU was awarded a Literary Journalism award for a body of work. Now in its 14th year, the South African Literary awards is awarded annually by the Write Associates in partnership with the Department of Sport, Arts and Culture to celebrate literary excellence in all the languages of South Africa.

- **Royal Society of SA's Marloth medal**

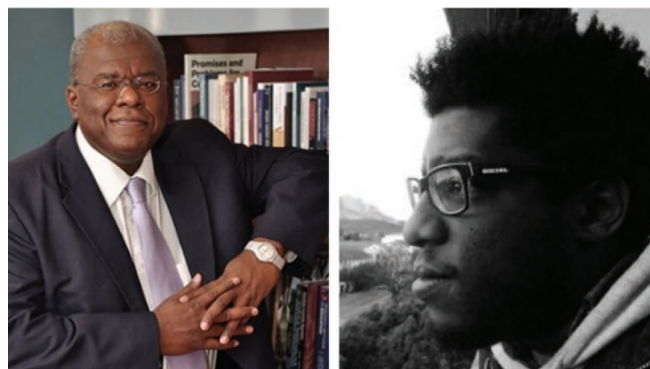
Congratulations to emeritus professor Piet Steyn, recipient of the Royal Society of South Africa's Marloth medal in recognition of "a highly distinguished career in advancing his discipline, organic chemistry, in the service of science and mankind".



Picture 8: Prof Yusef Waghid and Prof Lesley le Grange



Picture 9: Prof Soraya Seedat



Picture 10: Prof Johnathan Jansen and Dr Wamuwi Mba



Picture 11: Prof Piet Steyn

- **Nedbank associated Chairperson's Business Excellence Award 2019**

One of SU's postdoc fellows and a director of ShakSafe PTY (Sharksafe Barrier), Sara Andreotti, won the Nedbank associated Chairperson's Business Excellence Award 2019 at a function that was hosted by the Italian-South African chamber of trade and industries. The award was given to her for her role in developing the company towards full scale commercialization.

- **Jennifer Ward Oppenheimer (JWO) Research Grant award**

Dr Hayley Clements (Centre for Complex Systems in Transition) was recently announced as the inaugural winner of the Jennifer Ward Oppenheimer (JWO) Research Grant of \$150,000, for her research entitled "Quantifying the Biodiversity Planetary Boundary for Africa". The JWO grant aims to support research that will contribute to the advancement of environmental and allied sciences and address African issues of current and future importance.

- **DSI/SARIMA Awards for the Division for Research Development:**

Three staff members from SU's Division for Research Development (DRD) won prestigious awards on Thursday (5th of September 2019) for their contribution towards research management in Southern Africa at the annual DSI/SARIMA (**Department of Science and Innovation/Southern African Research and Innovation Management Association**) Excellence in Research and Innovation Management Awards. These awards acknowledge and encourage growth and achievement in the field of research and innovation management as a key enabler of research and innovation outputs and impact. The winners were announced at a gala event at the Lord Charles Hotel in Somerset West.

Cornelia Malherbe (Director: Research Contracts) received the DSI-SARIMA Award for Distinguished contribution to the Research Management Profession. This award **recognises individuals who have made a specific contribution in the period under review (2018), but nominations are in respect of leaders in their respective fields who has demonstrated a broad national and international contribution to the profession over many years.**

Clarissa Graham (Research Ethics Co-ordinator: Human Research/Humanities) was awarded the DSI-SARIMA Award for Professional Excellence in Research Management. **This award recognises individuals who have been in the Research Management or Innovation Management profession for seven years or less, and have made an increasing contribution to their organisation and the R&I Management community over that time.** A specific contribution should have been made in the period under review (2018), as well as demonstration of an increasingly broad contribution to the profession.

The DSI-SARIMA Award for Early Career Excellence in Research Management went to Aslam Arnolds (Administrative Officer; Research Contracts). **The award recognises individuals who are newcomers to the Research Management or Innovation Management professions. Nominees must have less than five**



Picture 12: Prof Sara Andreotti receiving her award



Picture 13: Dr Hayley Clements with her award



Picture 14: DSI-SARIMA Awardees: Clarissa Graham, Cornelia Malherbe and Aslam Arnolds

years' experience in any of the core elements that make up a Research Management or Innovation Management function whether they were in a formal organisational office or not.

The DRD will also provide key leadership support to SARIMA as a professional Research and Innovation membership organisation over the next two years, with **Dr Therina Theron** having been elected as the new SARIMA President and **Dr Natasha Mothapo** as a member of the SARIMA Executive Committee for the next two years.



Picture 15: Dr Therina Theron and Dr Natasha Mothapo

2. Research for Impact

The institutional goals for this theme are to:

- Develop a research agenda derived from Stellenbosch University's values, societal needs and the sustainability imperative.
- Conduct research of significance based on selected, focused strategic research areas.
- Inform the future research agenda and strategically involve our stakeholders.
- Conduct collaborative and interdisciplinary research that addresses the grand challenges of society.
- Create an embedded culture of innovation and entrepreneurship in our research.

2.1 New broad strategic research themes developed

Stellenbosch University has refocused its thinking and strategic planning on ways to hone the strengths of the University to becoming a leading 21st-century institution, by simultaneously addressing some of the pressing needs of our country, as well as delivering on the challenges brought by, inter alia, the expanding knowledge economy and the effects of globalisation.

With due cognisance of the challenges of relevance and significance, and in the light of the developmental needs of our region, Stellenbosch University has identified five strategic research areas that will drive the research agenda for the next few years:

Framework for the strategic research areas:

- **Inclusive, broad overarching areas of expertise**

SU has a number of broad areas of expertise that have developed over a number of decades. The five strategic research areas are meant to be inclusive and to encompass most if not all research that are being done by SU researchers. However, it is also forward-looking and allow for the development of new expertise over time. They also each cover a set of key societal challenges that SU research is addressing.

- **Research initiatives where SU has unique expertise**

SU has a number of so-called "high-rises" – research initiatives that are collaborative, trans-disciplinary and cross-faculty – the centres and institutes that have and will contribute greatly to SU's visibility, uniqueness, and competitive advantage. It is those areas in which SU has unique expertise, critical mass and cross-disciplinary collaborations to bring together large groupings of researchers and non-academic stakeholders to undertake cutting-edge research with high potential for creating new knowledge that will lead to new products, processes and policies.

Our Individual researchers are an equally important building block for the success of the five research areas and there is a recognition of the strong individual research efforts which contributes to internationally acknowledged research outputs.

The research areas will also create opportunities to bring together those individual and smaller/ medium-sized research groups who may wish to explore the potential to collaboratively develop new high-rises over time.

In order for the strategic research areas to flourish, concerted efforts will be made to facilitate communication and mobility between individual researchers and research groupings.

- **Basic and fundamental disciplines and research**

SU has over the past few decades also developed competitive strength in the basic and fundamental disciplines and research. Continued emphasis on (and support for) the fundamental disciplines and basic research at SU is imperative in order to acknowledge their critical role in addressing (perhaps as yet unknown) future societal challenges. Large collaborative cross-faculty research programmes can and should of course also include researchers working in the basic disciplines where appropriate.

The full spectrum of knowledge creation that contributes to these five themes – from basic to applied research – will receive strategic support at Stellenbosch University. Although strong emphasis is placed on the translation of research outcomes for the benefit of society, full cognisance is also taken of the critical need for support for the underlying fundamental and theoretical research areas.

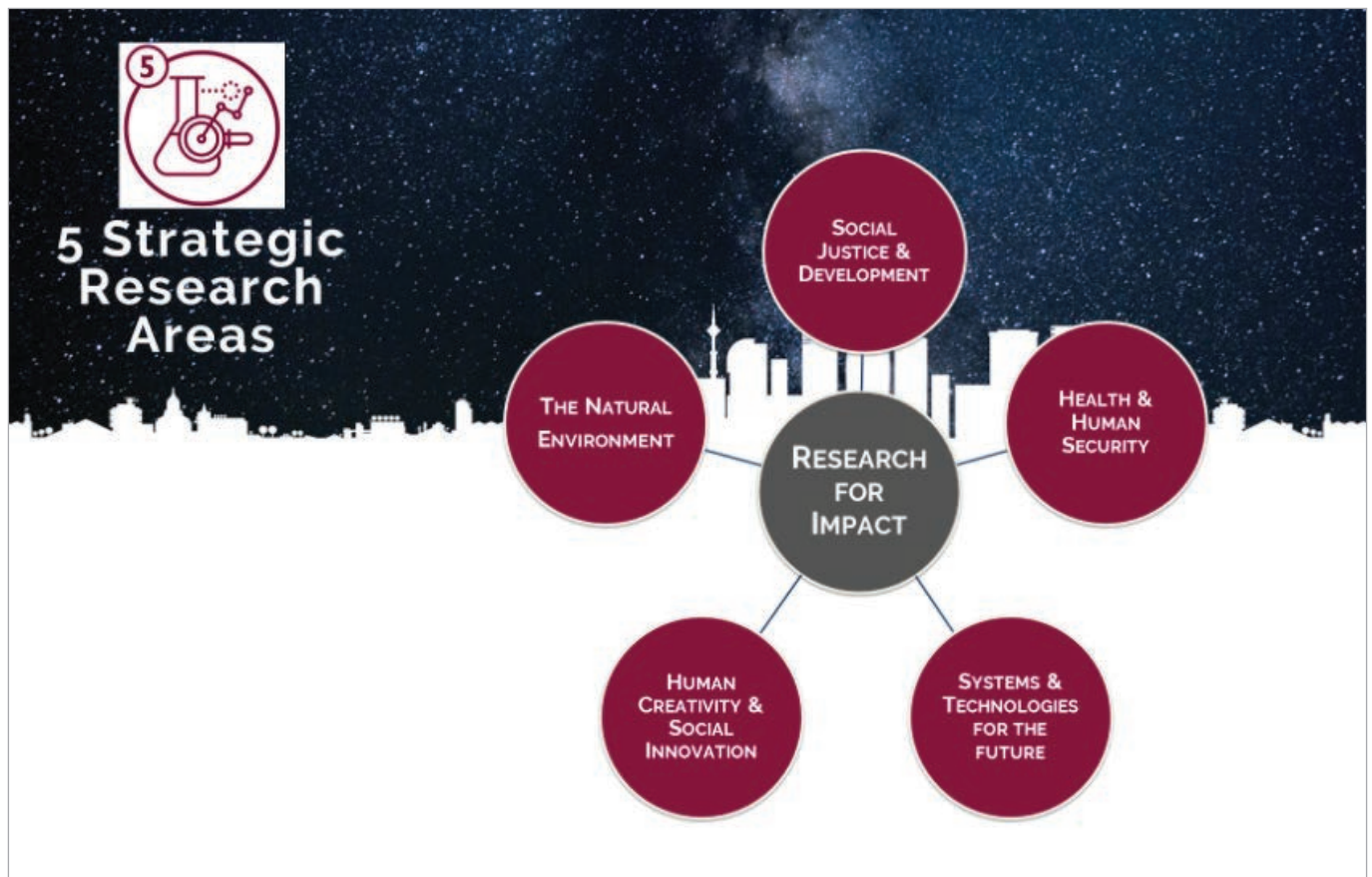


Figure 6: 5 Strategic Research Areas



Figure 7: Research@SU

The 2018 Research at Stellenbosch University publication provided the first effort to cluster the work of our current Research Chairs, Centres of Excellence and selected Institutes, Bureaus and Units within the five strategic research areas to show and report on our current competence.

2.2 New research schools and institutes

- **Biomedical Research Institute (BMRI) project**

The construction of a new Biomedical Research Institute (BMRI) on our Tygerberg campus is progressing well. The **R1 billion facility** will be one of the most innovative and advanced biomedical research centres in Africa. The Institute's main aims will be to **investigate diseases with the greatest impact** on communities in South Africa and the rest of Africa, including TB, HIV, diabetes, heart disease and neurological disorders, and to translate its discoveries into tangible improvements in the diagnosis, prevention and treatment of these conditions. The new BMRI will provide much-needed additional space and be on a par with the most advanced and sophisticated biomedical research facilities in the world. Apart from a range of research laboratories, the new facility will also host a bioinformatics hub, electron microscopy laboratories, a morphology museum, a biorepository, a clinical research unit and conference facilities.

- **School for Data Science and Computational Thinking**

SU's School for Data Science and Computational Thinking was launched officially on 29 July 2019. Subsequently, prof Kanshu Rajaratnam was appointed as the Director from 1 January 2020.

The entity will connect people in government, business and non-profit organisations as they seek to use big data to address the **challenges of our time**. The School will also provide a roadmap to prospective **students** of what they can study at SU in the field of data science and computational thinking.

- **Fraunhofer Innovation Platform for the Water-Energy-Food Nexus at Stellenbosch University (FIP-WEF@SU)**

The agreement for this initiative, which will be supported by the University's Strategic Fund for three years, with matching contribution from Fraunhofer; was signed by Fraunhofer's Board on 5 February 2020, and was countersigned by the University on 12 February 2020 during the visit of Fraunhofer President to Stellenbosch.

The FIP will coordinate and integrate the various activities of the Fraunhofer Water Systems Alliance (SysWasser), Energy Alliance and Stellenbosch University. In addition to fundamental and applied research aimed at technology development, transfer and implementation in the Water and Energy sectors, the FIP will also have a strong focus on Food Security.

The Fraunhofer-Gesellschaft is the leading organization for applied research in Europe. Its research activities are conducted by 72 institutes and research units at locations throughout Germany. Affiliated international research centers and representative offices provide contact with the regions of greatest importance to present and future scientific progress and economic development. The FIP-WEF@SU will be the first in Africa.



Picture 16: Construction of the Biomedical Research Institute



Picture 17: School for Data Science and Computational Thinking/ Standard Bank workshop



Picture 18: Signing of Agreement with The Fraunhofer-Gesellschaft

- **Institute for Life Course Health Research (ILCHR)**

The inspiring work that the Institute for Life Course Health Research (ILCHR) do in communities resonates with the vision of the Stellenbosch University's Faculty of Medicine and Health Sciences (FMHS) to enhance health and health equity with and for the communities we serve. The ILCHR was welcomed to its new home in the Department of Global Health at the institute's official launch in the FMHS in 2019. The ILCHR, led by Prof Mark Tomlinson and Dr Sarah Skeen, is a transdisciplinary entity that conducts research into infant, child, adolescent, material and family wellbeing, health and development in low resource communities.

2.3 SU Centres of Excellence contracts extended

The Department of Science and Innovation (DSI) and the National Research Foundation (NRF) Centres of Excellence (CoE) Programme is a strategic initiative for developing research, development, innovation (RDI) including, human capital and servicing relevant social or economic needs of the country. Furthermore, it is instrumental at increasing the country's competitive and innovation index through RDI outcomes.

The science, technology and innovation (STI) landscape has changed over the years, hence the DSI developed a new White Paper on STI, and is in the process of developing an Decadal Plan for implementation of the latter. The Decadal Plan, when finalised, together with the outcomes of the Science, Technology and Innovation Institutional Landscape Report will determine, formulate and shape the future of the existing and new CoEs, amongst other strategic initiatives. The DSI is aware that while the Decadal Plan is being finalised, the extended contract of the first cohort CoEs will end on 31 March 2020.

With respect to our institution, the following CoEs will be affected:

- the **CoE in Biomedical Tuberculosis**, and
- the **CoE in Invasion Biology**.

A decision was made that in the absence of finalised policies and strategies derived from the development of the Decadal Plan these CoEs will receive funding for a further three-year period, 2020/21 to 2022/23.

2.4 ARUA

The African Research Universities Alliance (ARUA) was launched in 2015, with 16 Universities from across Africa currently comprising the alliance. Countries include, South Africa, Nigeria, Ghana, Tanzania, Kenya, Rwanda, Senegal, Uganda and Ethiopia. In addition, the secretariat is hosted by the University of Ghana, with Prof Ernest Aryeetey the current Executive Secretary.

In order to facilitate research networks, ARUA identified thirteen research areas. One of these Centres of Excellence was awarded to SU (Figure 8). Natural Science research fields include Climate Change, Food Security, Non-Communicable Diseases, Materials Development and Nanotechnology, Water Conservation, Energy, and Humanities and Science fields such as Mobility and migration, Poverty and Inequality, Unemployment and Skills Development, Notions of Identity, Good Governance, Post-Conflict Societies and Urbanisation and Habitable Cities.

As member of ARUA, SU actively participate in activities of the alliance with no less than 45 researchers identified in the various research fields. In addition, as part of the governance structure of ARUA, VCs of the partner universities actively participate in the alliance, with Prof Wim de Villiers, Prof Hester Klopper and Prof Eugene Cloete regularly attend meetings. The coordination and administrative support for the SU ARUA

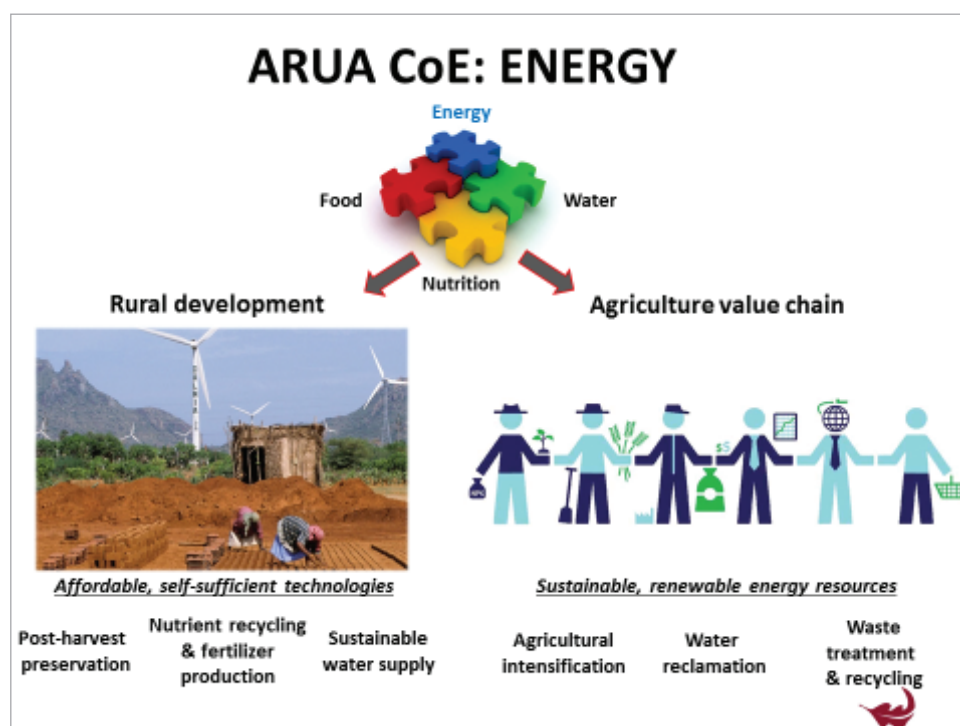


Figure 8: SU-ARUA Centre of Excellence

research group is provided by the SU International, through the Centre for Collaboration in Africa (CCA).

Future prospects for external funding:

The ARUA Secretariat in Accra signed an MoU with the UKRI for ARUA CoEs to receive a core grant of £200,000 annually for three years, which is renewable for another three years. Another element of the grant is that six of our centres will be evaluated to access another £2 million for their research programmes. It is anticipated that the core grants would be mobilised in the latter part of 2019.

2.5 Research outputs

At the time of publication of this report, the official DHET report on 2018 publications was not yet available. Table 2 gives the unaudited figures for 2018.

This makes SU one of the most research-productive institutions nationwide.

In the latest round of submission of research outputs to the SA Department of Higher Education and Training (DHET) for subsidy purposes, SU submitted more than 2900 research articles published in accredited journals.

According to the official feedback from the DHET with regards to books and conference proceedings that received subsidy, SU received the most units (282) for books (followed by UJ and UP).

The Division for Research Development, who manages the annual submission of research output to the DHET for subsidy purposes, is currently in the process of developing a specifications document, together with IT, in order to prepare to go out on tender for a new product that will replace the current online system that has been used for more than 15 years for the capturing of research publications.

2.6 Addition of creative outputs for subsidy purposes

The DHET announced in 2018 the addition of creative outputs for subsidy purposes from the end of 2019. Members of the Division for Research Development (DRD) have been involved in institutional, as well as national discussions in this regard and provided extensive input in terms of the clarification of terminology and criteria used in the policy document.

On 30 November 2019 the first round of SU Creative Outputs were submitted by the DRD to the DHET for subsidy purposes. This first submission round (2019) was applicable to outputs of the previous three years i.e. creative outputs for the period 2016-2018.

SU submitted outputs to the DHET in the following categories:

- Film: 1
- Fine Arts: 35
- Music: 62
- Theatre, Performance and Dance: 6
- Literary Arts: 4

Table 2: Research outputs

Research outputs	2014	2015	2016	2017	2018
Weighted research output per capita	3,03	2,92	3,11	3,23	3.19
Research publication output per capita	1,50	1,32	1,58	1,63	1.64

2.7 Research ethics review

Maintaining such excellence in research output productivity requires a robust and well-functioning ethics review system and the necessary support structures for promoting research integrity. Ethics review at SU is managed through five committees, whose membership comprises academic staff and community members who volunteer their time to help ensure that SU's research is conducted in an ethically responsible manner. These committees reviewed 2111 new applications in 2019.

Table 3: Stellenbosch University New Applications approved by the ethics committees (2019)

Committee	Total
Humanities	1428
Health Research Ethics (2 committees)	538
Animal Care and Use	134
Biosafety & Environmental Ethics	11

This is apart from the multi-year projects, approved in previous years, that also required continuing review. This workload occupies up to 40% of the time of the committee chairs and up to 5% of ordinary members, often at the expense of their personal/departmental academic progress. Towards the end of 2019 the Strategic Fund approved an application for funding to buy out up to 40% of the time of committee chairs during 2020 and 2021. Thereafter these salaries will be incorporated into the main budget of the university. The Strategic Fund grant also makes provision for ethics training and awareness raising.

SU, through the DRD, hosted the second annual Regional Animal Ethics Workshop for Committee Members on 1 November 2019. This workshop was attended by more than 30 representatives of the University of Cape Town, University of the Western Cape, Western Cape Department of Agriculture, the South African Medical Research Council, Cape Nature, Southern African Foundation for the Conservation of Coastal Birds (SANCCOB) and North-West University.

Some of the topics discussed at this event were:

- The role of an ethics committee in promoting responsible research
- Ethics of Zebra Fish work

- Harm - Benefit Assessments
- Large Farm Animals Husbandry in research and teaching– Industry standards or SANS?

Apart from the risk of ethically unsound research, the changing landscape of research publication also poses new challenges. Firstly, predatory publishing is of equal concern to all higher education institutions, including SU. To proactively raise awareness in this regard, several information sessions will continuously be held for the University's researchers. Secondly, a number of new requirements in terms of the information required from DHET on authors for which output subsidy is claimed were put in place. This additional information required extensive changes made to SU's online system used for capturing research publications.

Furthermore, Dr Nicola Barsdorf were appointed as the Research Integrity Officer with effect 1 January 2020. She will reside in the Division for Research Development.

2.8 SU adopts Global Research Code

SU formally adopted the Global Code of Conduct for Research in Resource-Poor Settings (www.globalcodeofconduct.org) at its Senate meeting in November 2019. The Global Code of Conduct for Research in Resource-Poor Settings was adopted as reference document for the European Union's Horizon 2020 research and innovation programme in 2018.

2.9 Article sparks formal investigation and preventative steps taken by SU

The Stellenbosch University Senate first discussed the impact of the research article, Age- and education-related effects on cognitive functioning in Coloured South African women at its scheduled meeting on 31 May 2019 after SU came under the spotlight when the article was published in an international scientific journal, *Aging, Neuropsychology, and Cognition*. The article was subsequently retracted.

A comprehensive investigation into all aspects of the published article and processes guided by the SU Policy for Responsible Research Conduct, as well as the SU procedure for the investigation of allegations of breach of research norms and standards was undertaken in 2019. After an initial investigation SU's Acting Research Integrity Officer requested that a Formal Investigation Committee be appointed to investigate specific allegations and processes. This was part of the wider SU response to the publication of the article, which was subsequently found to be scientifically flawed, not aligned with the Research Ethics Committee (REC)-approved protocol, and lead to a public outrage and reputational damage to the University.

The REC does not have the jurisdiction to approve research articles. This in response to various parties asking why the University's Research Ethics Committee (REC) did not pick up on the contents of the article. In this particular case the FIC stressed that the research design submitted for the purposes of ethical clearance allowed for within-sample comparisons between age and educational level categories, correlational analyses between the different variables, and

cautious comparisons with other norm groups, but not for the extrapolations to racial or ethnic populations that occurred in the article.

There was therefore no indication to the REC that the results of the study would be presented in terms of racial generalisations, and they did not approve the study as such. The FIC however did not find deliberate intent by the authors of the article to mislead the REC and found that the authors naively regarded the content of the article as compatible with the research trends in their discipline. The FIC thus recommended that SU should follow a broad educational and preventative approach rather than take disciplinary action against the authors of the article. This recommendation was accepted by the VR (RIPS) and by the SU Council in their meeting on 3 December 2019.

Preventative steps undertaken by SU include the following:

- The University formally adopting the Global Code of Conduct for Research in Resource-Poor Settings.
- The development of consensual guidelines for researchers regarding research dealing with racial categories and other social constructs.
- The development of a set of short online videos aimed to raise awareness of Research Integrity and Ethical Research Conduct
- The adoption of a motion by Senate to establish training and awareness raising related to anti-racism, democracy and critical citizenship; and mandatory training on responsible research conduct for staff and students at SU
- A decision that social impact projects would in future also be subjected to ethics review
- A strategic fund award was made that will assist with the strengthening of research ethics awareness raising and education processes at SU
- An audit of research processes at SU as requested by the Audit and Risk Committee of Council was undertaken by the university's internal auditors in late 2019, and this audit report with its recommendations will be finalised early in 2020.
- The university has furthermore responded in full to a request for information from the Human Rights Commission, following a complaint that was lodged with them.

2.10 New research-related policies/ regulations implemented

The DRD introduced as a mandatory requirement that all postgraduate students at SU must complete a Memorandum of Understanding (MoU) with their supervisor(s) from 2020. A template is available from the Postgraduate Office for faculties to use. As part of its quality assurance responsibilities, the Council on Higher Education (CHE) announced in 2016 that it would conduct a National Review of Doctoral degrees offered by higher education institutions in South Africa. Leading up to the Review, the CHE released a Qualification Standard for Doctoral degrees which has set the attainment of Doctoral Graduate Attributes at the heart of the doctoral endeavour. The National Review process formally commenced in July 2019. The Postgraduate Office in the DRD took responsibility for coordinating the Review on behalf of SU. A **Self-Evaluation Report Working Group** has prepared SU's Institutional Self-Evaluation Report (SER). Although input has been received

from a variety of institutional stakeholders, the primary source was the **National Review Institutional Reference Group** consisting of representation from all faculties.

The Standard Operating Procedures of both the Health Research Ethics Committees and the Research Ethics Committee: Social, Behavioural and Education Research were revised and approved by the Senate Research Ethics Committee and the National Health Research Ethics Council.

2.11 Growth in research outputs recognised in world rankings

Over the last few years, the research performance of SU has consistently been ranked by the Centre for Science and Technology Studies (CWTS) at Leiden University as among the top 500 universities in the world.

Stellenbosch University improved with 14 places on the Times Higher Education (THE) Emerging Economies Rankings 2019 and came 24th out of 442 universities. SU is ranked 3rd in South Africa out of nine SA universities on the list, and was placed in position 301-350 on the THE World University Rankings 2019. This places SU in the top 1% of universities globally.

SU maintains a nuanced approach to university rankings in general – given the current realities of the institution, our country and our continent, as well as the methodology of the various rankings, about which there are well-documented differences of opinion. Academic excellence is non-negotiable, quality always comes first, and no attempt is being made to artificially influence our position on any ranking.

2.12 SU Research makes headlines

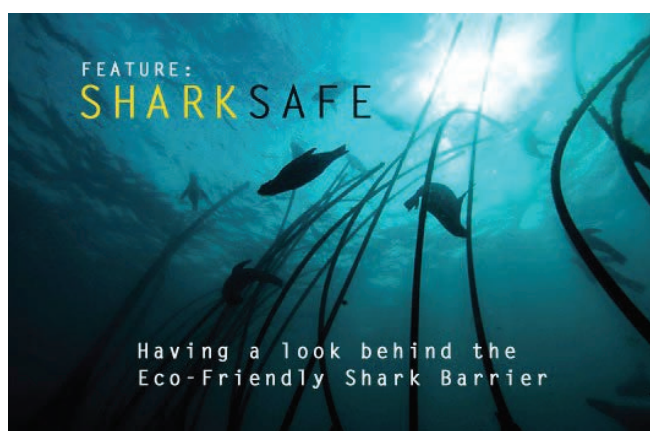
- **Artis:**

This product is one of **Time Magazine's 100 Best Inventions of 2019**.

A Stellenbosch University spin-out company is behind a nanofibre cosmetics product which was selected by Time Magazine as one of the 100 Best Inventions of 2019. The Stellenbosch Nanofiber Company has revealed that it is working with Taiki USA, a global leader in skincare and makeup tools, to bring US company Artis's Artis Phantom Cleansing Silks, which was last year selected by Time Magazine as one of the 100 Best Inventions of 2019, to market. Artis — which has developed the product and has been selling it since last year, mainly online — describes it as the “Face Wash of the Future” and is one of only five beauty inventions that made the Time magazine list. The product transforms a traditional three-step process — oil cleansing, foam cleansing, and gentle exfoliation — into one graceful, meditative and effective beauty ritual. According to the company's website Stellenbosch Nanofiber Company CEO Eugene Smit has a PhD in polymer science and is a co-inventor on 29 granted patents and that he was a co-founder of three previous tech startups.



Picture 19: Artis Phantom Cleansing Silks



Picture 20: Sharksafe Barrier

- **Sharksafe Barrier**

Shark-deterrent technology developed by a team from Stellenbosch University is one of the **top inventions from SA in the last 10 years**. The SharkSafe Barrier™ is the most advanced shark-specific deterrent technology currently available that do not injure or kill sharks and other marine animals, while keeping surfers and swimmers safe. <http://bit.ly/2QZOFAr>

2.13 Research innovation

Innovation constitutes a vital component of SU's research success. It positions the University as a place of opportunity, attracting the best researchers and students from across Africa and the rest of the world. The SU research output again delivered a considerable number of new innovations.

SU's number of PCT applications exceeds even that of the Council for Scientific and Industrial Research (CSIR), which attests to the institution's capacity to contribute to economic and social improvement in the country through innovation.

- **Idea Smash**

The Nedbank Stellenbosch University LaunchLab, in partnership with the Office of the Vice-Rector: Research, Innovation and Postgraduate Studies is looking for SU students with innovative

business ideas across multiple study fields to impact our community and nation. IdeaSmash serves as the Stellenbosch University internal round of the Entrepreneurship Development in Higher Education Intersarsity Programme 2020. The winners of IdeaSmash will be put forward at a national level.

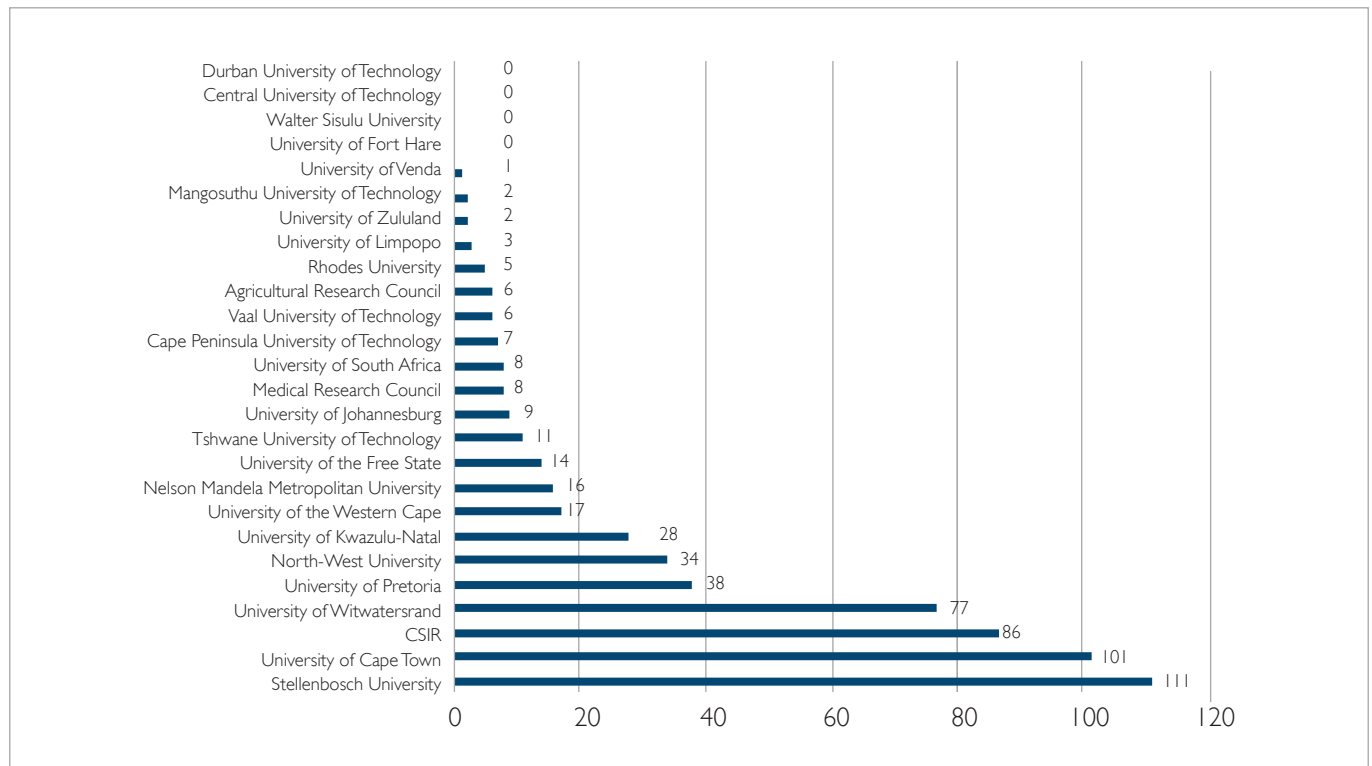


Figure 9: Patent Cooperation Treaty (PCT) applications resulting from SU research, 2009–2018



Picture 21: IdeaSMASH call for ideas



Picture 22: Leila Siljeur

- **Maties prize-winning edible straws:**

Her passion for environmental sustainability has bagged a second-year Chemical Engineering student at SU a massive cash prize. Leila Siljeur (19) felt she had to do something to help reduce plastic pollution. She decided to design her own brand of edible and environmentally friendly straws. She won R50 000 for her invention in a recent Allan Gray Orbis Foundation National Jamboree.

2.14 DRD Wednesday Wizz programme

The Division for Research Development (DRD) started a new initiative in 2019, the Wednesday Wizz information sessions. The aim of these sessions is to provide researchers the opportunity to obtain information about essential research-related support and processes provided and managed by the DRD. The sessions focused on an overview of DRD support for research at SU; funding opportunities for research; research integrity and ethics; postgraduate applications; skills development and opportunities; research contracts and budgets; SU conflict of interest policy.

2.15 Annual Research Indaba

The annual Research Indaba, organised by the DRD, was held on the 17th of October 2019 at STIAS. The aim of the Indaba is to provide an opportunity where researchers from across the ten Faculties at SU can discuss and debate topics of common interest. The focus this year was on one of SU's core strategic themes:

Research for Impact.

The programme focused on the following aspects:

- Research for Impact as a strategic theme at SU (prof Eugene Cloete)
- International approaches to Research Impact (prof Nelius Boshoff)
- Measuring Research for Impact – SU strategy and indicators (prof Ian Cloete)
- Faculty approaches to Research for Impact (panel discussion)
- The five strategic research areas at SU and approach to implementation (Dr Therina Theron)

More than 80 delegates attended the Indaba. The delegates were particularly interested in how Research for Impact will be measured at SU. The deliberations resulted in a formal request by the Research Committee that a broader consultation process to be put in place to develop the indicators and measures for the theme Research for Impact and that a more representative task team be appointed to develop a comprehensive set of indicators, based on a specific framework. These indicators should include a broader set of measures not only focussing mainly on outputs.



Picture 23: The 2019 Research Indaba, STIAS

2.16 Platforms to increase research visibility

The 2019 edition of the annual institutional research report, *Research at Stellenbosch University* performed the best ever at the annual MACE (Marketing, Advancement and Communication in Education) Awards. For the second year in a row, the publication won a platinum award (one of 3 nationally) for the divisional winner in the division Media: printed publications (highest scoring entry overall) and top award – the Chairperson's Award of Excellence – awarded to a single entry that embodies true excellence in Marketing, Advancement, or Communication. The virtual copy received 23 916 page views between 1 July 2019 and 10 January 2020.

The **SU Knowledge Directory**, a tool collaboratively developed by a number of the University's divisions, aims to open up SU expertise to the world by means of a web console featured prominently on the institution's website. The directory offers various benefits: It not only enables potential national and international research and industry partners to search for SU experts, but also promotes interdisciplinary networking among the University's own researchers. In 2017 the directory was populated by the DRD with researchers' bio-sketches and links to their research publications, and in 2018 researchers were requested to provide further updates and populate their own profiles in order to ensure accuracy and completeness.

- **SU Facebook page:**

The Facebook Page "Research at Stellenbosch University" was created in July 2019.

- To date, we have **756** people who have liked our page.
- The highest number of people who engaged with our Page



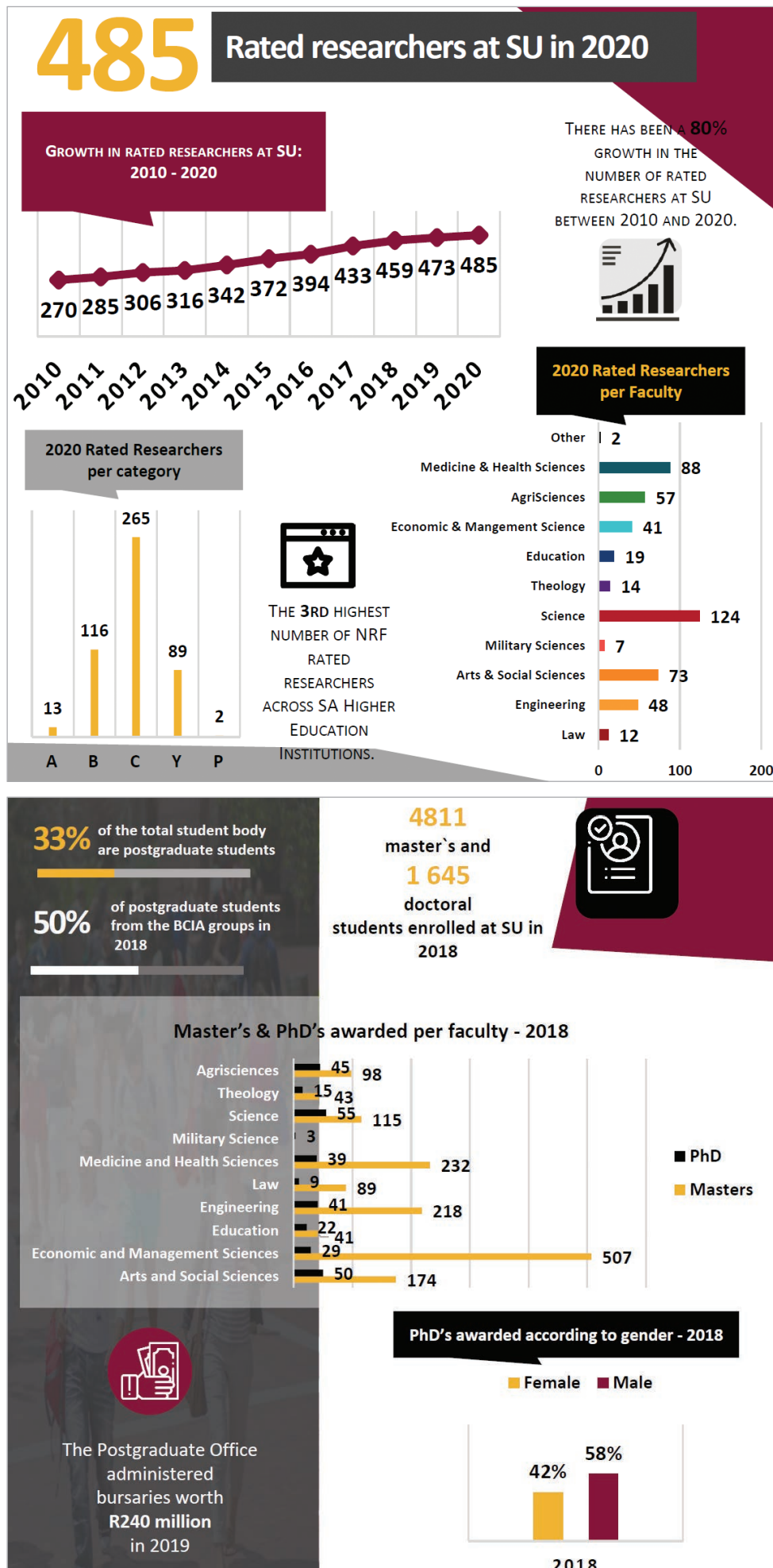
Picture 24: Maryke Hunter-Husselmann (Director: Research Information and Strategy). For the virtual copy of the *Research at Stellenbosch University* publication: <https://console.virtualpaper.com/stellenbosch-university/research-2018/>

on any day, was **1 503** on the 10th of October. Engagement includes any click or story created by unique users. On this day we posted about World Mental Health Day and shared research on this topic as well as an award for a researcher in the disability studies field.

- Our highest reach to date is **42 470 (October 2019)**. This refers to the number of people who had any content from our Page or about our Page enter their screen. This includes posts, check-ins, ads, social information from people who interact with our Page and more. This is organic reach; we have not used paid boosting to reach more people.
- With regards to posts, the highest number of people who had our Page's post enter their screen was **23 078**. Posts include statuses, photos, links, videos and more.



Picture 25: SU Knowledge Directory
For more information click [here](#)



Picture 26 (above and on right): Excerpts from the SU research-related stats and facts pamphlet

• SU Forward with Research Impact lecture series

The Division for Research Development (DRD) in collaboration with the University Museum started a new lecture series in 2019, **Forward with Research Impact**. It consists of a series of lunchtime conversations/talks that focus on the University's core strategic theme of Research for Impact. Research for Impact at SU implies optimising the scientific, economic, social, scholarly and cultural impact of our research. Our focus is on interdisciplinary research that benefits society on a national, continental and global scale. At the same time, we are committed to basic and disciplinary research excellence, as it forms the basis for applied and translational research. Our strong focus on Research for Impact is further supported through the directed efforts of our Research Chairs, Centres of Excellence and other units, bureaus and institutes at SU.

These research entities fit well within the University's new five strategic research areas:

- The Natural Environment
- Social Justice and Development
- Health and Human Security
- Human Creativity and Social Innovation
- Systems and Technologies for the Future

The latest edition of our annual research publication **Research at Stellenbosch University** which was launched on 14 August 2019 is a first attempt at showcasing our current expertise within these areas. During the **Forward with Research Impact** series, a selection of researchers whose work is presented in the publication will be featured. For more information on the lecture series programme: <http://bit.ly/forwardwithimpact>

As part of the lecture series, the DRD also presented profiles on the researchers who presented in order to create more visibility for the individual researchers and their work. The profiles were presented as "meet the researchers" and included a more informal, interview-style approach.

• Digital Scholarship and Open Access Initiatives

The Library plays a crucial role in increasing the visibility of

Stellenbosch University research output through its **digital scholarship and open access initiatives**. The year 2019 was no exception as the Library's institutional repository, SUNScholar continues to grow steadily with total of 2088 records uploaded, of which 1 124 were theses and dissertations, and 964 research outputs by SU authors. The repository is well used, with a total of 346 000 new visits, 1 072 600 page views and 138 000 unique downloads in 2019, with 48% of engagement emanating from the African continent.

The 26 open access journals currently hosted by the Library featured a total of 89 contributions by SU authors in 2019, further raising the visibility of institutional research output. The readership of these reflected 265 177 visits to all journals collectively in 2019.

The SUNDigital Collections digital heritage repository continued growing and now hosts 13 093 items in 33 collections. The repository showcases and digitally preserves unique library resources and special collections and makes these items publicly available for non-commercial use. Use of the repository has grown significantly, showing 29 976 visits and 19 010 downloads for the year, compared to 14 275 visits and 9 908 downloads in 2018.

The latest addition to our suite of repositories is the SUNScholarData repository which was launched in August 2019. The launch of the repository was but one of the highlights of the Research Data Services offering which was identified as a strategic objective by the Library in 2015 already and started with the creation for a position for a Manager: Research Data Services in 2017. In the past decade, the management of research data has taken on a more prominent role in tertiary education institutions around the world. This has been primarily due to the increasingly data-centric nature that academic research has taken. The Library's RDM offering is especially important now in the light of the establishment of the School for Data Science and Computational Thinking at SU. In addition to the repository, Research Data Services offer supporting RDM online services, training, and user engagement.

Resources are core to the Library's business and access to library material and scholarly research output is critical to support, sustain and grow research, innovation, teaching and learning.

DIGITAL SCHOLARSHIP

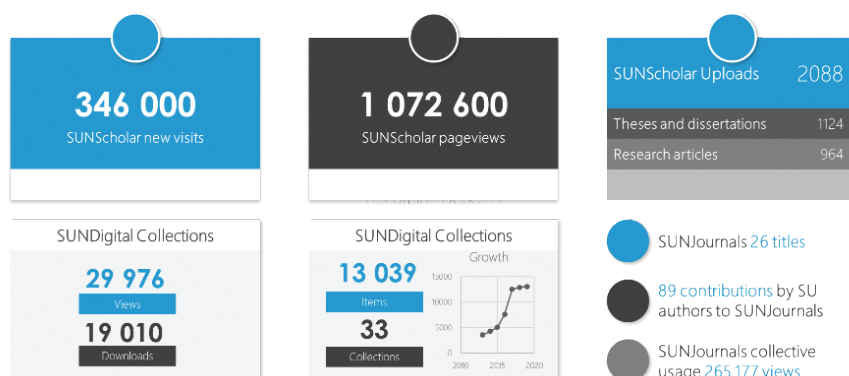


Figure 10: Digital Scholarship

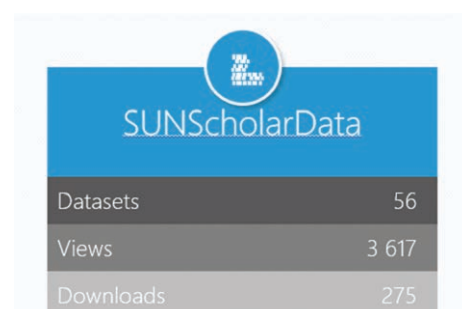


Figure 11: SunScholarData

Resources statistical snapshot:



1,2 million
physical volumes



Full-text access to
258 125
journal titles



798 508
printed books



15 141
e-books

Engagement with students and researchers remain important and in 2019 the Library presented the seventh annual Library Research week with the theme “Be a smart researcher” and subthemes “Be prepared, Be open, Be inspired and Be supported”. A total of 363 attendances were recorded during the week.

2.17 DRD's Research-related Stats and Facts pamphlet

The DRD has created a stats and facts pamphlet that provides up to date high-level institutional research-related information.

2.18 Research for Impact and Communication committee

At the Institutional Planning Forum held on 19-20 February 2019, one of the actions under the strategic theme Research for Impact was to make our research impact more visible through appropriate indicators of success and communication initiatives. It is against this background that the Research Impact and Communication committee was proposed in order to support and advise the Research Committee of Senate to matters related to the core strategic theme Research for Impact. This will be a subcommittee of the Research Committee and was formally approved at the last meeting of 14 August 2019. The committee will have its first meeting early in 2020.



Picture 27: Research for Impact Facebook link

For more information, click [here](#)

- SU Forward with Research Impact lecture series



Picture 28: SU Forward with Research Impact lecture series

For more information, click [here](#)



Picture 29: Profiles of SU Researchers

For more information, click [here](#)

3. Networked and Collaborative Teaching and Learning

The institutional goals for this theme are to:

- Focus on a learning-centred approach to teaching, whilst promoting a holistic understanding of teaching and learning.
- Foster interdisciplinary and interprofessional teaching and learning by empowering students to participate in a learning community where staff and students work together to learn, solve problems, research and innovate.
- Create an institution of continuous learning that is skilled at co-creating and sharing knowledge and insights.
- Promote the professionalisation of academics in their teaching role, and the scholarship of teaching and learning.
- Develop a digital strategy to provide the basis for digital fluency and the meaningful integration of learning technologies towards a networked University that engages and inspires students, staff and alumni.
- Expand on Stellenbosch University's knowledge offering to serve new student markets.
- Promote the continuous renewal of the University's academic programmes by means of a systemic process with clearly assigned roles and responsibilities for the various role-players.

3.1 Library and Information Services initiatives

The Library has embraced e-learning in support of the University's commitment to develop support for the rollout of hybrid blocked learning. Curriculum integrated e-learning in the Library takes on the format of curriculum related information literacy electronic guides developed in collaboration with faculties. There are guides for undergraduate as well as post-graduate students and we believe that these initiatives potentially contribute to student success. In 2019 a total of 30 undergraduate modules in 8 faculties had 12 144 students enrolled and collectively received 16 466 views. In terms of postgraduate modules, a total of 24 modules in 7 faculties had 924 students enrolled and received 2 316 views.

E-learning modules are still supplemented by important curriculum integrated group contact training and in 2019 a total of 7 976 undergraduate and 3 347 postgraduate students attended these face-to-face sessions presented by faculty and branch librarians on specific assignments or courses.

Continuing the theme of training, the Library offers a number of generic research workshops for postgraduate students and researchers, some online, and in 2019 a total of 23 workshops were presented, including two new workshops namely "Data sharing and dissemination" and "How to use the Institutional Research Data Repository". These were introduced to expand the research data service offering of the Library. A total of 770 researchers and postgraduate students participated in these workshops in 2019.

4. A Transformative Student Experience

The institutional goals for this theme are to:

- Provide a unique, personalised student experience that serves as a catalyst for transformational change amidst opportunities for engagement and development through a first-class academic offering, which prepares graduates to lead and excel in a diverse world.
- Develop our students' graduate attributes so that they can be 21st-century citizens and achieve their full potential.
- Strengthen strategic enrolment management to enhance access and inclusivity.
- Enhance our student success rate through educational innovation.
- Deliver comprehensive, premium-quality support services to our student community.
- Enhance and expand engagement opportunities for our substantial alumni community.
- Create relevant opportunities for work-integrated learning towards a successful career and positive societal impact.

The Postgraduate component of the total student cohort is 33%. This section of the report will give a short overview of how the institutional goals are being pursued through postgraduate studies.

4.1 Masters and doctoral student enrolments and degrees awarded

A substantial and successful postgraduate student body is an important building block of any research-intensive university. In 2019, SU had 4821 master's and 1637 doctoral students.

Also, similar to the two prior years, 2019 again saw a record number of master's and doctoral degrees conferred (Table 5).

Black, coloured, Indian and Asian (BCIA) students represented a solid 50% of the postgraduate student body, whilst just over 21% of the postgraduate cohort were international (Table 6 and 7).

4.2 Bursary programme

The Postgraduate Office (PGO) seeks to further support the postgraduate pipeline through skills support, financial aid and administration. In 2019, the PGO administered bursaries to the amount of R240 million (2018: R238 million). SU contributed R20 million (8.3%) which includes reserves used to address the 10% incremental decline in the institutional allocation towards PG funding. A major reprieve came in from external sources, which grew by 7% to R153m.

The total income for bursaries from the NRF appears to be growing marginally, however, this is due to the increase in the NRFs bursary values for some of its programmes. Figure 12

Table 4: The number of masters and doctoral enrolments at SU

Number of enrolled master's and PhD students at SU, 2015–2019						
	2015	2016	2017	2017 June	2018 June	2019 June
Master's students	4 848	4 919	5 005	4831	4811	4821
Doctoral students	1 473	1 497	1 703	1 614	1 645	1 637
Total	6 321	6 416	6 703	6445	6456	6458

Table 5: The number of masters and doctoral degrees awarded

Master's and doctoral degrees awarded by SU, 2015–2019					
	2015	2016	2017	2018	2019
Master's degrees	1 378	1 469	1 624	1 517	1 429
Doctoral degrees	267	278	305	310	326

Table 6: Postgraduate student diversity

Postgraduate student diversity, 2015–2019					
	2015	2016	2017	2018	2019
Percentage black African, coloured, Indian and Asian students	47,0%	48,0%	49%	50%	50%

Table 7: International student percentages

2015	2016	2017	2018	2019
18,8%	19,3%	18,4%	18,3%	21,6%

below highlights the drastic decline in NRF funded scholarships to Stellenbosch University since 2014. It illustrates a worrying decline in scholarship awards which decreased by more than 50% since 2016. The NRF's **"New PG Funding Policy"** takes effect during the 2020/21 financial year with stringent criteria for equity, financial need and academic merit. This policy is likely to

negatively impact on the NRFs postgraduate allocation to SU over the next 5 year period, which requires a review of SU's effectiveness and strategy to compete in this funding domain. It also requires a re-evaluation of the institutional allocation to postgraduate funding in order to maintain the postgraduate pipeline.

Table 8: Comparison of the main streams of funding, i.e. Mainstream budget, bequests and donations, the NRF and external funding

Year	Mainstream budget (institutional)	Bequests & Donations	NRF	External funding	Total
2014	R18,1m	R 7,8m	R53,9m	R 93,8m	R173,6m
2015	R23,2m	R10,4m	R60,4m	R105,2m	R199,2m
2016	R24,5m	R16,3m	R66,1m	R114,8m	R221,9m
2017	R30,3m	R18,4m	R64,3m	R121,0m	R234,0m
2018	R18,8m	R19,0m	R58,3m	R142,2m	R238,0m
2019	R20,0m	R13,0m	R59,0m	R153,0m	R240,0m

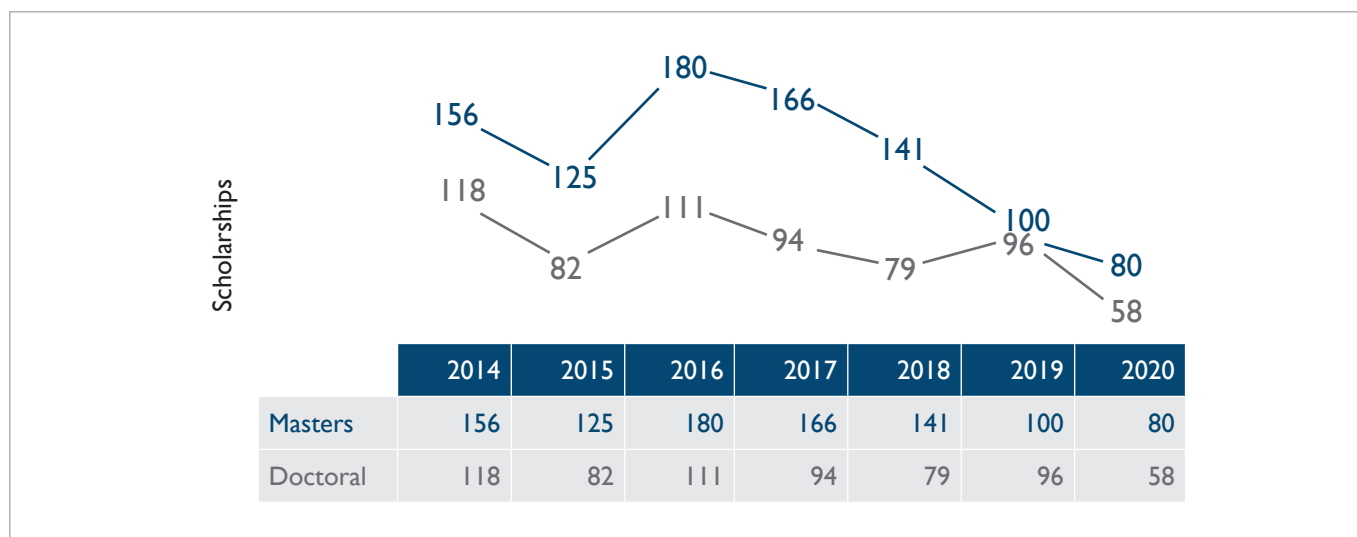


Figure 12: Decline in NRF funded scholarships to Stellenbosch University since 2014

4.3 Postgraduate Skills Development Programme

As part of its ongoing efforts to develop postgraduate students' graduate attributes and enhance their research experience, the Postgraduate Skills Development Programme in the PGO presented sixteen postgraduate orientation sessions during 2019 to approximately 720 postgraduate students representing all SU faculties. In addition, 1 463 participants attended research skills development workshops (as opposed to 1369 participants in 2018). The 1 463 participants consisted of 1035 attendees for workshops funded by the PGO and 428 attendees for opportunities funded through the University Capacity Development Programme (UCDP) Postgraduate Pipeline project. The 2019 UCDP funding thus afforded the Programme the opportunity to reach more SU postgraduate students in 2019. This additional funding is clearly crucial for the Programme to expand and to extend its offering to support more SU postgraduates – growing from seven workshop offerings in 2018 to eleven workshop offerings in 2019.

Following the Postgraduate Office's PhD student needs analysis survey carried out towards the end of 2018, four new workshop offerings were added to the 2019 offering: *Academic Writing for Postgraduates*, *ATLAS.ti for Qualitative Data Analysis*, *Understanding Academic Authorship* and *Let's Pack your Science Communication Toolbox* training.

At the beginning of 2019, the Programme arranged and co-ordinated an institutional FameLab heat that entailed 20 SU postgraduates undergoing intensive one-day training in science communication by Jive Media Africa followed by a rigorous one-day competition. The winner of the SU institutional heat, Matia Mukama, went on to achieve first runner up at the National FameLab competition in May 2019.

With regard to specific faculty collaboration and support, the Programme ran the two tailored *Academic Writing Integrity* blended learning sessions created by the Programme in 2018 for the Engineering Faculty as purely online courses on SUNLearn in 2019. In total, 320 Engineering postgraduate students completed the online course during 2019.

The Programme regularly works in collaboration with other SU support services and networks to increase SU postgraduate student support comprehensively. One such collaboration in 2019 involved the Programme collaborating with the Language Centre's Writing Lab to develop a bouquet of animated writing support resources. One of the resources, *A Magic Trick: How to shorten overly wordy sentences in academic writing*, was completed mid-2019 and made available to SU postgraduate students on SUNLearn. Another collaboration involved developing a series of Academic Integrity/Research Ethics animated informative resources with fellow DRD colleagues. The development of these resources will continue in 2020. Since 2017, the Programme has been hosting weekly lunchtime 'Shut up and Write' sessions. During 2019, four to twelve postgraduate students attended 'Shut up and Write' contact sessions each week and an average of five participated virtually each week.

Furthermore, the Programme hosted four social networking events during 2019 in the form of Pop Up cafés with an average of 40 postgraduate students attending each Pop Up event. Highlights of these events were guest speakers talking about *The seven critical differences between a potentially world class postgraduate student and just another slogger* [Prof Jonathan Jansen], *Twitter for academics* [Dr Marina Joubert], *The Media is your Friend* [Mr Martin Viljoen], and *Branding yourself as a Researcher* [Ms Thobeka Msi].

4.4 EU Capacity Development in Higher Education project

The PGO is the SU partner in the EU Capacity Development in Higher Education project called "YEBO! Development of the Internationalisation of PhD Studies in South Africa", which commenced in October 2017. As part of the project's offering, two workshops were held during 2019 in which SU staff participated. The first, hosted by the University of Pretoria, was called 'Towards institutional structures that support the complete PhD life cycle' and the second, co-hosted by SU and UCT focussed on 'Developing a Toolbox for Managing International Collaborative PhD Programmes'. The PGO will continue to participate in and extend any further opportunities via YEBO! to the research and professional support environments at SU in 2020 during the final year of the project.

4.5 Makerspace and Data Visualisation Lab (managed by the LIS)

In terms of creating a transformative student experience, the Library and Information Service has embarked on two innovative projects which will be finalized in 2020. The purpose of these projects are to ensure that students have access to the latest technology required to help them succeed academically.

Firstly, the brand new Makerspace is a new service offering in the support of research creativity and innovation. The implementation of a Makerspace in the SU Library will allow students to realize their creative potential within themselves and the possibilities new technologies can unlock. A Makerspace is a creative laboratory where people with ideas can get together with people who have the technical ability to make these ideas become a reality. The implementation of the Makerspace in the Stellenbosch University Library is set within the background of the 4th Industrial Revolution to create a space for students to learn by self-experimentation and collaborative projects. It will provide students access to some of the latest technology trends such as 3D printing, 3D scanning, electronics and 3D design software. A [video](#) showcasing the concept is available.

Secondly, a Data Visualization Lab is also a new service offering planned for implementation in 2020 in the support of research analysis and visualization. With the establishment of the School of Data Science and Computational Thinking, Stellenbosch University has entered a new area in data science. In an attempt to respond to the need for visual literacy research and education to enhance data visualization now and in the future, the Library and Information Service has embarked on the design of a Data Visualization Lab that will expand the interdisciplinary research horizon of data science and educate the visualization designer in terms of visual literacy knowledge. The analysis and visualization of statistical data is a core requirement of postgraduate students who don't always have access to the software and services to do analysis of datasets. Data analysis and visualization services ideally necessitate a dedicated environment for the provision of expert consultancy services and the location of specialist equipment and a suitable environment.

4.6 Library and Information Services (LIS)

Stellenbosch University Library is quite literally the heart of main campus and an integral part of life on campus. The five branch libraries and its spaces also contribute to a thriving university where all are welcomed and accommodated. A total number of 1 330 811 visitors were welcomed in the SU library and branches in 2019.

Purpose-built spaces in the SU Library, dedicated to offer the student, academic and wider community an opportunity to thrive in whatever they are doing, have also been extensively used with the Learning Commons at SU Library receiving 241 517 visits in 2019 and discussion rooms in the area showing a 63% occupation rate. The Carnegie Research Commons, an area dedicated to Masters and Doctoral students, received a total of 58 994 visits in 2019.



Picture 30: Makerspace in the Making



Picture 31: SU Data Visualization Lab

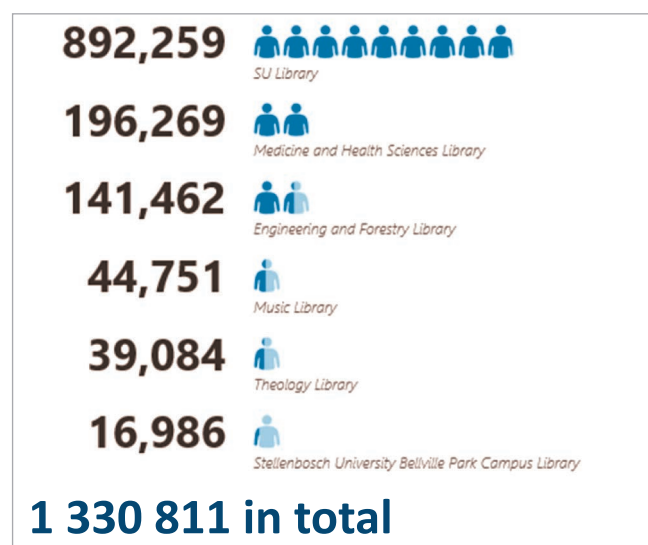


Figure 13: Library visits

5. Purposeful Partnerships and Inclusive Networks

The institutional goals for this theme are to:

- Develop a framework of principles to ensure local relevance, regional impact and a global reach to enable transactional partnerships and promote transformative partnerships.
- Promote a deep connectedness and interaction with business, industry and government to leverage our strengths, which will include work-integrated learning, continuing professional development, collaborative research, consulting, licensing, spin-out companies and commercial ventures.
- Embrace the communities we serve to bring about social, cultural, environmental and economic development and change.
- Enhance and expand engagement opportunities for, and foster our relationship with, our substantial alumni community.
- Build effective collaborations through partnerships, alliances and networks with other universities, institutions and organisations, where such collaboration contributes to excellence in teaching and learning, outstanding research and social engagement and impact.
- Foster distributed, networked and reciprocal partnerships that are nurtured by both institutional structuring and personal relations.
- Establish appropriate partnerships with institutions in all societal sectors, including the spheres of civil society, public discourse, public opinion-formation and public policy-making.

The responsibility centre of the Vice Rector: Research, Innovation and Postgraduate studies is responsible for building meaningful partnerships and these will be discussed in this section of the report indicating how the institutional goals, highlighted in bold, are being met.

5.1 Collaborative masters and doctoral degrees

Stellenbosch University has joint PhD degree and a limited number of double Master's degree agreements with partner institutions in different countries. The list of possible institutions with whom Stellenbosch University can enrol joint PhD degree candidates changes as agreements expire and new agreements are concluded. There are currently 19 joint PhD degree partners. These include Coventry University; Erasmus University Rotterdam (EUR); Ghent University; Hasselt University; Katholieke Universiteit Leuven; Macquarie University; Radboud Universiteit Nijmegen; Università degli Studi di Padova; Université Claude Bernard Lyon 1; Université de Bordeaux; Université de Bretagne Occidentale; Université Jean Monnet Saint-Etienne; Université Rouen; Universiteit Antwerpen; the University of Groningen; the University of Hamburg; the University of Leipzig; Vrije Universiteit Amsterdam (VUA); and Vrije Universiteit Brussel (VUB). Due to continuing uncertainty at national policy level, Stellenbosch University is not currently entering into any new double Master's degree agreements.

By the end of 2019, Stellenbosch University awarded 35 joint PhD degrees of which the most thus far (7) has been with the Vrije Universiteit Amsterdam (VUA). 32 joint PhD candidates are currently enrolled. A total of 44 Double Master's degrees have been awarded since 2012 and by the end of 2019, a further 20 Double Master's degree candidates were enrolled.

5.2 International research funding

DRD administered Calls for over 70 international funding programmes in 2019. The total amount of awards received for international collaboration from funders other than NRF and EU was ca R15 million.

5.3 National Research Foundation (NRF) bi- and multilateral programmes

The NRF's international programmes have enjoyed increasing interest from both early career and experienced researchers at SU. These programmes offer a very good platform for the creation and strengthening of international networks and the required inclusion of PhD students give the added benefit of giving international research exposure to postgraduate students. Involvement in these bi- and multilateral programmes in many cases lead to success in larger multilateral grants. Through the SA government's international collaboration programmes, administered by the NRF, Stellenbosch University researchers were awarded a total of R15.6 million in 2019. These collaborations not only strengthened international networks, but also resulted in joint publications and larger funding consortia.

5.4 HB & MJ Thom Trust

In 2019 the **HB & MJ Thom Trust** awarded SU R2 146 771 to be used towards sabbatical research grants to academic staff and bursaries to postgraduate students.

5.5 Wellcome Trust

There was a sharp increase in applications from SU researchers, especially early career researchers, to the highly competitive **Wellcome Trust** programmes and two applications were successful in 2019.

5.6 Medical Research Council

Stellenbosch University received 10 new Medical Research Council (MRC) Self-Initiated Research grants in 2019. The MRC also established a new extramural unit, the SAMRC/SUN Genomics of Brain Disorders Research Unit, under the leadership of Prof Soraya Seedat.

5.7 NRF funding

During 2019 SU received 8 new Human and Social Dynamics Grants, 17 Unrated and Rated Researcher Grants and 4 Foundational Biodiversity Information Programme grants. This represents a success rate of 26%.

5.8 New Cooperation Agreement signed

On 10 October 2019 an important cooperation agreement was signed between Stellenbosch University (through its Development and Rule of Law Programme), the Pan-African Parliament and the German Environment Agency (Umweltbundesamt). The main objective of the new partnership is to implement the sustainable development goals (SDGs) of the United Nations 2030 sustainability agenda effectively. As a first project the partners team up on the issue of land degradation neutrality (SDG target 15.3) and sustainable soil management on the continent.

5.9 EU-related funding schemes

SU researchers continue to be seen as preferred partners by leading researchers in Europe and many were invited in 2019 to join consortia in applying to the European Union (EU) Horizon 2020 Research and Innovation Framework programme, as well as other EU-related funding schemes. During 2019 seven H2020 grants to the value of R56 million were awarded. These included the following funding types: Research and Innovation Actions (RIAs), Research and Innovation Staff Exchanges (RISEs) and EDCTP Fellowships.

- **Horizon 2020 research grants:** with the H2020 programme, which comes to an end in 2020, a total of 37 grants were awarded to SU, while with other EU related projects, 28 grants were awarded. The subsequent research funding programme, HorizonEurope, will start in 2021 and run till 2027.
- **EU Erasmus + capacity development and mobility grants:** over the last 10 years, SU researchers and students were involved in 85 Erasmus+ capacity development awards and 10 mobility grants.

The total overall number of all EU-related research collaboration awards at the University for the period (2014 – 2019) was 160, totalling R241 million.

5.10 Travel funds

SU researchers were successful in obtaining a total of R 2 217 400.00 for travel & conference organisation grants from the NRF in 2019.

5.11 LIS contributions through open scholarship, partnerships and networks

Developing and maintaining collaborative relationships and partnerships with a range of external and internal stakeholders is one of the strategic objectives of the Library and is directly aligned to the University's core strategic theme of purposeful partnerships and inclusive networks.

The Library hosted various national and international visitors, participated in national initiatives regarding open scholarship, contributed to the activities of national consortia and successfully partnered with the University of Bath in terms of creating opportunities for research and developing tools for enhancing learning and research in 2019.

Delegations and visitors to the Library in 2019 included four visitors from Michigan State University accompanied by SU Museum Director Bongani Mgiijima, Mrs Omobolade Adeagbo, Head of ICT and E-resources, Hezekiah Oluwasanmi Library, Obafemi Awolowo University, Nigeria visited to learn more about our services regarding repositories, IT and e-resources, three staff members of the University of Namibia (UNAM) Libraries visited to benchmark key and emerging functions against our Library and twelve staff members from the Parliamentary Information Centre (PIC) visited to benchmark their reference and information service and the implementation of an institutional repository against our services.

During 2019 the SU Library Service continued its participation in the regional and inter-institutional ilifu RDM Project which aims to develop shared research data infrastructure services for researchers in the disciplines of bioinformatics and astronomy. The Library contributed to the project by helping to develop researcher guidelines for good data management practices and policy considerations for open science.

Our strong partnership network has earned us the honour of hosting two international conferences in the next two years, namely the 15th Open Repositories conference in 2020 (OR2020) and the congress of the International Association of Music Libraries, Archives and Documentation Centres (IAML) in 2021.



Picture 32: Open Repositories

6. A thriving Stellenbosch University

The institutional goals for this theme are to:

- Cultivate an SU characterised by inclusivity, deep and intentional transformation, and diversity.
- Create opportunities for the advancement of multilingualism in academic, administrative, professional and social contexts, whilst recognising the intellectual wealth inherent in linguistic diversity.
- Change the size, shape and mix of our student population and of our academic programmes to mirror the strategic direction of our vision.
- Create a financially sustainable organisation.
- Raise the standard of the University's facilities and infrastructure to that of a world-class research-intensive university, while embracing visual redress.
- Bring about profound and sustainable change and regeneration in all facets and functions of SU to be agile, adaptive and responsive.
- **Aspire to be a leading, research-intensive university ranked amongst the top world universities by 2024.**

This section of the report speaks to the highlighted (in bold) institutional objectives above.

6.1 Third stream income

Actual research contract and National Research Foundation (NRF) income for the period 2015 - 2019:

The **signed contracts** are contracts received, registered, processed, negotiated and signed in 2019. These contracts can run over multiple-years, and for the sake of reporting the full contract value is reported for contracts signed in 2019 (Figure 15).

Twenty six percent of the new contracts signed in 2019 were national and seventy four percent were international (Figure 14).

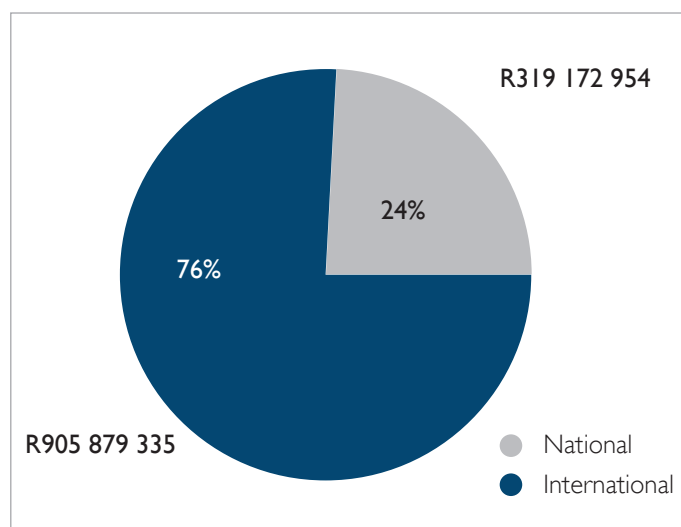


Figure 14: Contracts signed in 2019

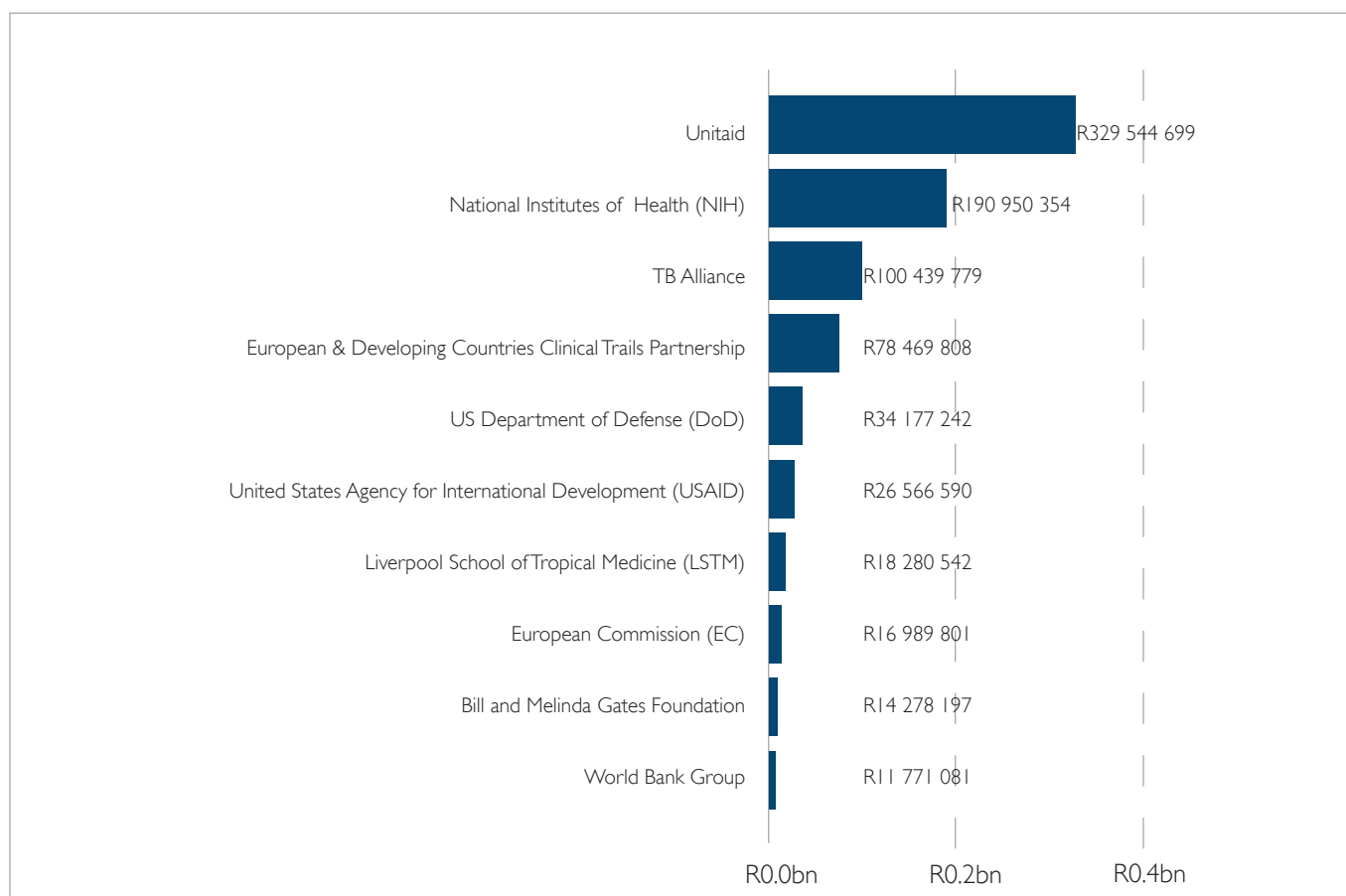


Figure 15: Top ten international contracts 2019

A contract to the value of R328 million was signed with UNITAID. This is the largest single contract for research in the history of Stellenbosch University (Figure 16). A substantial number of contracts were also signed with European funders.

The above reflects the success of a deliberate strategy to diversify and increase funding from international sources in view of the static and declining funding for research in South Africa.

The funding indicated in figures 16 and 17 will be realised as income during 2020 and beyond over the next five years.

The SAMRC contract was the largest national contract signed in 2019 followed by the DSI (Figure 16). Noteworthy are the contracts with organisations and companies. The Macrocomm Smart Utility Solution contract as well as Villa Crop Protection, Hans Merensky Trust are all related to research chairs.

The **actual income for 2019 (Table 9)** include contracts signed in 2019 or previous years, but receiving certain payments in 2019. For example, contracts signed in 2019 year 1, contracts signed 2018 year 2, contracts signed in 2017 year 3, etc. Of concern as mentioned above is the decline in NRF funding between 2017 and 2019 (Table 9).

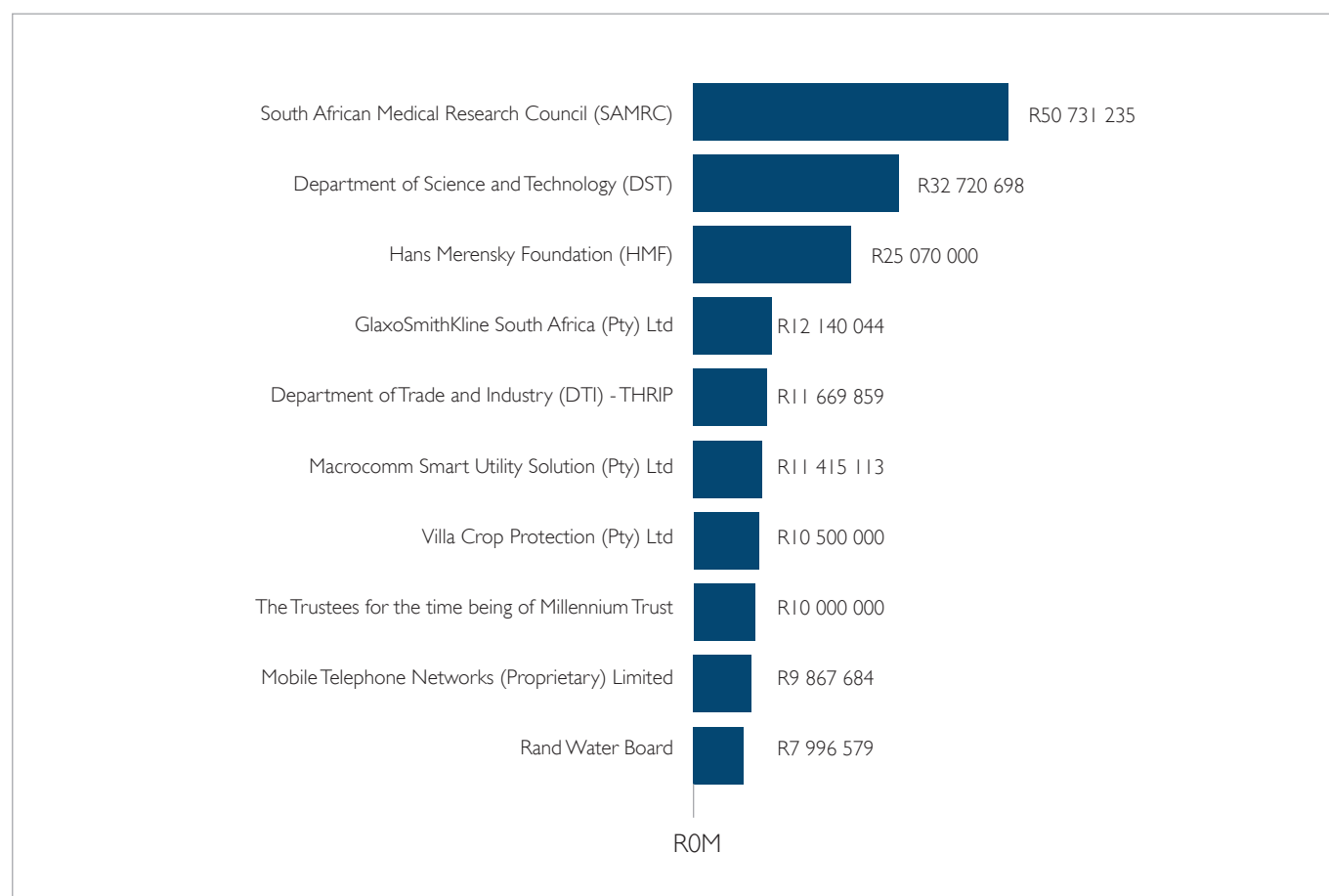


Figure 16: Top ten national contracts 2019

Table 9: Realised research income for the period 2017 to 2019

	2017	2018	2019
Research contracts	R885,8m	R783,2m	R806,03m
NRF	R364,2m	R235,2m	R209,92m
Total	R1,250m	R1,018m	R1,016m



Picture 33: The Nuclear Medicine Research Infrastructure Research Initiative (NuMeRI)

6.2 Central Analytical Facility (CAF) highlights 2019

The Central Analytical Facility (CAF) at SU continues to expand the range and scope of the services it offers in support of research. During 2019 the most important developments in this regard, were the launch of the Node for Infection Imaging (NII), a state-of-the-art PET/CT research facility, and the granting of approval by the Department of Science and Innovation (DSI), for the establishment of the Node for Water and Soil Biogeochemistry. The NII is a core node of the Nuclear Medicine Research Infrastructure Research Initiative (NuMeRI), whilst the Node for Water and Soil Biogeochemistry forms part of the Biogeochemistry Research Infrastructure Platform (BIOGRIP), championed by Profs Sarah Fawcett at UCT and Jodie Miller at SU. Both BIOGRIP and NuMeRI form part of the South African Research Infrastructure Roadmap (SARIR). The NII began operations in December 2019 and is equipped with a Philips Vereos digital PET/CT scanner which is only the second of its kind installed in the southern hemisphere and includes an advanced radiopharmacy facility. The Node for Water and Soil Biogeochemistry will be established during 2020.

In addition to the two developments outlined above, a variety of state-of-the-art analytical equipment was acquired by CAF during 2019, through SU and NRF funding that was granted in 2018 as part of the National Equipment Programme (NEP). This included a mass-directed auto-purification and QC system at the LCMS Unit, a Gemini 300FESEM with advanced system for automated 3D-microscopy by in situ ultramicrotomy at the Electron Microscopy Unit and an Amnis® ImageStream®X

Mark II Imaging Flow Cytometer at the Fluorescence Microscopy Unit.

CAF ensures access to advanced analytical techniques for all researchers through its open access, multi-user management model. During 2019 CAF provided high-level analytical services to 1630 different clients, of which 852 were from SU. These figures illustrate the degree to which CAF has become a national facility as well as an essential part of research support at SU. In this regard, CAF is playing a critically important role in developing human capacity, as 121 PhD students and 131 MSc students from other RSA universities used CAF services in 2019. Thus, the excellent base of expertise and large equipment infrastructure within CAF is helping educate people and facilitate research at all South African institutions. This level of impact would not be possible without the investment in large equipment that SU and the National Research Foundation (NRF) through the National Equipment Programme (NEP) make in large equipment, as well as from DSI through the SARIR initiative.

The income streams on which CAF depends continued to diversify and CAF continued to function sustainably as a largely self-funding research support structure. CAF aims to provide services to SU researchers at the lowest possible cost, therefore CAF income should always be only slightly more than CAF costs. The CAF client base continued to diversify and during 2019 CAF income was earned in almost equal proportions from SU clients, clients at other RSA universities and industry clients. This is important as it makes CAF income less sensitive to variations in the availability of funding for research in each of these three different environments.

7. Acknowledgements

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REPORT TO COUNCIL

Vice-Rector: Research, Innovation and Postgraduate Studies