University of the Free State

RESEARCH STRATEGY 2015 - 2022
Updated January 2019

Excellence and impact through transformative research

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
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UFS

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Message from the Vice-Rector: Research

Much has happened at the University of the Free State (UFS) since the publication of the Research Strategy (2015-2019). Though still highly relevant in its entirety, we have decided to amend the Research Strategy to reflect and incorporate the changes and developments of the past two years. Accordingly, this is not a new strategy, but rather an update of the current strategy, extended to 2022.

The previous version included an honest assessment of where we were, how we operated, and where we wanted to be. This approach also applies to the updated Research Strategy.

The period from 2010 to 2014 saw marked progress in shifting our research development away from being an administrative function towards becoming a strategic function. This period was also characterised by accelerating efforts to place research at the core of all academic activity. We have made considerable progress in terms of the metrics generally recognised as reasonable indicators of research importance, particularly with regard to registered doctoral students, number of postdoctoral fellows, research publication output units, the number of NRF-rated researchers, and research funding, including potential contractual income.

Our vision is to become a research-led university. Our current rate of progress is not sufficient to achieve this goal. The Integrated Transformation Plan (ITP) attributes the challenges we face in terms of the quantity and quality of knowledge production to uneven productivity among individual academics, limited qualifications of appointed academic staff, and insufficient streamlining of the research capacity pipeline from undergraduate programmes to academic staff development.

Although we are affected by these challenges, the impact of our outputs can be advanced through a more defined strategy as well as enhanced institutional facilitation.

Research excellence is central to the UFS's mission. Research helps to define a university and is key to its national and international standing. Research and a research-enriched education establish the reputation of a university. This pursuit of knowledge brings with it a responsibility to society to ensure that the conduct of our research is ethical, visionary, transformative and beneficial, and that the research results are effectively communicated. We remain convinced that research improves lives and contributes to the wellbeing of societies.

Another challenge facing all of us is the Fourth Industrial Revolution (4IR). According to Klaus Schwab, the founder of the World Economic Forum, the single most important challenge facing us is how to understand and shape the confluence of new technologies and their cumulative impact on our world.

Our strategy recognises and accepts these challenges and responsibilities. The research conducted at the UFS will be dynamic in nature, relevant and of high quality. It will not only have a recognisable international and national footprint, it will also make a difference to society. We will connect postgraduates and undergraduates through vibrant intellectual activities, and this energy will have a positive impact on the communities we serve.

We will continue to nurture scholarship, develop new knowledge and increase our understanding of our society and our world. This cannot be done without a clear strategy, the right scholars, appropriate resources and an understanding of our environment.

This Research Strategy is intended to define our direction and set priorities in order to focus our energy and resources as we work towards a common goal. Each faculty will need to embrace and interpret this strategy with the aim of developing individual implementation plans.

Prof Corli Witthuhn
Vice-Rector: Research

January 2019

Our context

Introduction

The higher education environment, locally and globally, is changing rapidly, and the demands on twenty-first century universities are many. They must demonstrate quality, societal relevance and social responsibility, as well as contribute to local, regional and national economic growth and competitiveness. They must provide access to students from diverse backgrounds, and ensure that they are employable. They must advance knowledge to address local and global challenges, engage in technology transfer and cooperate with the business sector. Success in meeting these demands will lead to domestic and international recognition and prestige.

The UFS must operate within the context of a set of challenges that are common to all universities. These challenges include national events, which have impacted considerably on our operations; high rates of change in the higher education sector; a society facing important questions and the increasing imperative to address local, national and global priorities and problems; the emergence of the Fourth Industrial Revolution; the need to transform university-industry engagement and innovation in support of economic and social wellbeing; the increased demand for public trust, accountability, ethical reflection and commitment; globalisation; rising costs and changing patterns of research funding; and greater competition for staff, students and financial resources.

We must forge our own unique path through these challenges and demands, taking advantage of our own opportunities, ambitions and strengths to contribute to local, regional, national and global conversations.

Current status of UFS research

Efforts to establish a research culture at the UFS have made steady progress over the past ten years, with increases in both volume and quality. We have consistently increased the number of registered doctoral students. In 2017, we had 960 doctoral students, of whom 63% were black. The number of postdoctoral fellows increased by 63% from 2015 to 2017, while accredited publication output units grew by 29% from 2015 to 2016. There was also a 172% increase in books and conference proceedings. The number of NRF-rated researchers increased from 124 in 2015 to 150 in 2017. The potential contractual income from signed research-related contracts has increased from R38 million to R213 million over the past three years.

However, despite these improvements, we have not performed as well as expected. Research outputs of individual staff members did not improve significantly and the percentage of our academic staff with a doctoral qualification is lower than the corresponding percentages at the best performing universities in the country.

The 'ranking' of the UFS on the National Higher Education Ranking System remains fairly static. This illustrates the ongoing challenge the university faces in identifying and exploiting its competitive advantage in a highly competitive environment. In short, the impetus needed for a rise in reputation and financial sustainability demands that greater emphasis be placed on research during the next five years.

The updated UFS Research Strategy aims to address these challenges through providing an institutional framework to drive the next phase of research development at the university. This framework will make research a priority for the institution. The strategy will focus on our commitment to research excellence and impact through transformative approaches, as well as the promotion and nurturing of the university's research capacity. Flowing from the UFS Research Strategy, each faculty will be required to develop its own implementation plan, with associated performance indicators, targets and budgets.

The Research Strategy: formative factors and principles

Research at the UFS is informed and directed by many factors, including existing and future scholarly expertise as well as the nature of research funding. The issues identified as strategically important by funding agencies, the National Development Plan, the National Research and Development Strategy, the White Paper on Science, Technology and Innovation, and the Ten-Year Innovation Plan

also play a crucial role in directing our own strategic planning.

At its core, the UFS Research Strategy is aligned with the new UFS vision to be a research-led, student-centred and regionally-engaged university that contributes to development and social justice through the production of globally competitive graduates and knowledge.

In particular, this updated UFS Research Strategy is guided by Goal 3 of the UFS Strategic Plan (2018-2022), which is to increase the UFS's contribution to local, regional and global knowledge, and its associated key performance areas:

3.1 Focus resource allocation for research and innovation on UFS areas of strength and distinctiveness.
3.2 Transform the profile and increase the diversity of UFS researchers.
3.3 Increase research impact and uptake, and focus on the African continent.

In addition, the updated Research Strategy is fundamentally informed by the Integrated Transformation Plan (ITP), which signals the commitment of the UFS to radically accelerate transformation at the university. As stated by the ITP, a transformed university is an institution where a diversity of people feel a sense of common purpose. Such an organisation also responds to the needs of the local community. At the same time, university members participate in global knowledge production in a place that can, ideally, accommodate competing views, and even disagreements. This indeed describes what research and a research environment entail.

In addition to being aligned with the overall university strategy and national imperatives, our research strategy must be based on a candid understanding of our own particular context, and the strategic advantages and challenges this brings. To this end, the Differentiated Research Strategy was developed. This document does not simply intend to inform research management, but to drive actions at faculty, department and institute/centre level. It also has implications for a number of areas that support research, directly or indirectly. The Differentiated Research Strategy provides an important cornerstone for the overall Research Strategy.

The Research Strategy

Research excellence and innovation underpin the vision of the UFS. **The aim is to be a research-led university that contributes to local, regional and global knowledge**. Our academic enterprise should be informed by research and a culture of research engagement at all levels. We must be regionally relevant, focusing on the needs and strengths of our region and our own competitive advantage.

Our overall goal is thus to increase the UFS contribution to local, regional and global knowledge, to address fundamental and strategically important questions, and to make an economic, social and cultural impact at regional, national and international levels.

Strategic research aims

The UFS Research Strategy aims to accomplish the following:

1. Implement a differentiated research approach (addressing KPA 3.1 of the UFS Strategic Plan).
2. Develop excellent researchers and scholars, providing sustainability and continuity (addressing KPA 3.1 and 3.2).
3. Increase the visibility, impact and uptake of UFS research (addressing KPA 3.3).
4. Provide a sustainable and supportive research environment with appropriate management and physical and financial resources (addressing Goal 5 of the UFS Strategic Plan).

The guiding principles underpinning these strategic aims are:

- Responsible stewardship of human, financial and other resources.
- A focus on relevance, excellence and impact.
- A culture of continuous reflection and improvement in strategies, actions and systems.
- A culture of people-centred, flexible and accurate service delivery.
- Responsiveness to market needs and demands for human resources, expertise and products.
- Integration, collaboration and synergy, where appropriate for better performance.

These strategic aims are populated with a range of goals: some are initiatives and programmes that are already in place; others are expansions and extensions of current initiatives; while some are new interventions. All of them aim to ensure research excellence and impact.

Aims and Goals

1.   Implement a differentiated research approach

We have opted for differentiation as the primary policy driver of our research. The approach outlined in the Differentiated Research Strategy will be the core driver of research and research capacity development at the UFS over the next five years. The end goal is to make the university an internationally competitive research university, while remaining focused on local, national and continental priorities. This represents a direct and strategic route to excellence, while simultaneously optimising the use of scarce resources.

We have a responsibility to add value with the research we choose to undertake. We must conduct rigorous research, inspired by a quest for deep understanding. The research outputs must be responsive to the needs of society in terms of problem selection and research design, and they must expand the knowledge base through impact and quality.

Resourcing our research endeavour presents major challenges. In the face of declining research investment, we must be strategic and selective in choosing where to invest; this is only possible through a more strategic approach.

The establishment of a research-led university will require a focused approach. On the one hand, informed decisions will be required on strategic investment in areas of strength and strategic importance. On the other hand, decisions on exiting areas of relative weakness or low strategic importance will need to be taken.

Against the backdrop of our place on this continent, we will focus our research on being the best in a select range of areas, and we will build scale, critical mass and a reputation to develop and attract world-class researchers, students, collaborators, and funding support.

We will identify and invest in those areas which have the potential to become pillars of excellence, and attack our challenges with dynamic, multidisciplinary teams. Opportunities to address the challenges of the 4IR will be proactively identified.

These developed Research Hubs will address pressing local, national and global problems and develop strategic, long-lasting partnerships, which will enable us to claim a strong competitive research advantage.

Once we achieve the optimal size and quality of research output in key strategic areas, our research standing will improve nationally and globally. National leadership and international recognition will only be possible if the university invests its resources in those areas where we can realistically achieve and maintain excellence and impact. This strategy reflects the university's response to the rapidly changing national and global environment where universities must continually adapt the way in which they conduct research if they are serious about improving research excellence and addressing the problems facing society at large.

Our research investment decisions will be weighted towards building quality and scale in the abovementioned selected areas. This differentiated research approach must be established across the university.

The goal has distinct key performance areas, but is also the driver of the other goals identified in this Research Strategy.

GOAL 1: KPAs
• Identify and develop strategically distinctive research areas • Increase the number of externally funded research chairs • Consolidate and build research capacity at the Qwaqwa Campus • Encourage multidisciplinary research

KPA 1.1: Identify and develop strategically distinctive research areas

Differentiation implies a strategy of targeted excellence. Its goal is to build and focus on selected areas where we have or wish to develop critical mass, and where we will concentrate institutional resources. This will entail the development of strong research areas or groups of research activities which bring together people and infrastructure, thus fostering opportunities for research collaborations and attracting funding.

We will increase the level of strategic investment in select areas of research strength, strategic importance and competitive advantage through the establishment of strategic research hubs, which could become internationally recognised. These hubs are seen as the main vehicle with which to reach the status of a truly research-led university. They will be multidisciplinary and interdisciplinary research groupings that will harness cross-departmental and even cross-faculty collaboration, where appropriate, maximise opportunities for partnerships, and create new opportunities for leveraging international research funding.

Our differentiated research approach will support greater productivity and return on investment through focused interventions to improve research capacity and performance in areas of institutional strength and potential. This will strengthen our competitive advantage and raise the profile of the university in order to maximise opportunities and minimise duplication.

The UFS model will be differentiated at two levels: firstly, through proactive selection of high-priority areas, and secondly, through a differentiated three-tier development trajectory of the strategic research hubs, based on the magnitude of development and their size, structure and scope. The strategy will also provide a development trajectory for promising research groupings, enabling them to attain increasing stature and providing them with the opportunity/possibility of becoming strategic research hubs.

KPA 1.2: Increase the number of externally funded research chairs

The development trajectory inherent to this approach requires that the number of externally funded research chairs be increased.

In order to attract and/or retain world-class researchers in priority areas, the university aims to increase the number of externally funded research chairs. As leaders in their respective fields, the holders of such research chairs will deepen the university's knowledge and research capacity, bring in innovative ideas and solutions, and also provide our students with excellent education and research training experience. Our aim is to increase the number of externally funded research chairs (currently six) through proactive recruitment of high- profile scholars, and lobbying, for example, SARChI, SANRAL, UNESCO, and other potential donor organisations.

This will not only result in a substantial increase in additional funding, but also raise the profile of research at the UFS. The aim is to use each chair as a central research node that will attract a critical mass of researchers in the funding area. The resultant increase in research output, in terms of both quantity and quality, will enable the chairs to be largely self-funded by the time the funding programmes expire.

KPA 1.3: Consolidate and build research capacity at the Qwaqwa Campus

The development of a research culture at the Qwaqwa Campus requires particular interventions and capacity building to overcome the challenges of the historical legacy of the campus. As part of the Research Strategy the campus has therefore been identified for special attention with regard to the above initiatives.

Cognisant of limited human resources, the UFS in 2015 decided to establish the Afromontane Research Unit (ARU) as the primary vehicle to fast-track research development. This particular area of study was chosen because it is relevant, suitable and appropriate for the campus in view of its current and potential strengths and the strategic advantage offered by its location. In addition, the ARU provides unique opportunities for inter- and transdisciplinary scholarship.

The Qwaqwa Campus will initially be the primary driver of the ARU, but the unit will be

developed into a strategic research hub that includes the whole university. The ARU provides the platform for achieving the ultimate aim of developing a postgraduate focus on sustainability sciences at the Qwaqwa Campus.

KPA 1.4 Encourage multidisciplinary research

Understanding the complex elements and forces within nature and society requires the perspectives of multiple research disciplines. Multidisciplinarity generates synergies and encourages new modes of thinking, asking questions and finding solutions. The differentiated research approach encourages multidisciplinarity.

The UFS will cultivate a research culture that encourages and enables its scholars to engage in multidisciplinary research. This will require recognising the uneven pace at which multi-disciplinary research often progresses, and the need for more flexible organisational structures, funding priorities and reward systems.

Productive, realistic multidisciplinary collaboration will be initiated and fostered from the ground up by the development of strong clusters/groupings of research activity, which will bring together scholars, and increase available resources and infrastructure. To encourage this, a special pool of funding will be made available to support promising multidisciplinary projects.

2. Develop excellent researchers and scholars, providing sustainability and continuity

The success of the differentiated research approach and the improved scholarly reputation of the UFS are dependent on the best researchers and sufficient resources. The former includes not only the professoriate, but also postgraduate students and postdoctoral fellows. The UFS therefore strives to create a favourable and encouraging work environment in order to attract and retain the best. This means that the university's policies and programmes for recruitment, promotion and performance management should be aligned with strategic priorities to support research excellence, and, more widely, research competence.

Investment in staff excellence is a time-consuming and cost-intensive exercise. To ensure the long-term success of these kinds of investments, providing for continuity in staff excellence is as important as investing in the development of staff excellence. Age distribution in the UFS academic staff demographic is an important consideration in continuity planning, as the age of our productive and established researchers tends to lean towards the higher end of the age spectrum. While it is important to generate a new generation of academics to address the age distribution challenge, it is also of significant importance to retain existing expertise.

The following key interventions are aimed at promoting ongoing and sustainable research

GOAL 2: KPAS
• Increase the diversity of UFS researchers
• Support emerging scholars and career development
• Develop our researchers and scholars
• Appoint research fellows
• Increase the number of postdoctoral fellows
• Increase the number and quality of postgraduate students

competence:

KPA 2.1: Increase the diversity of UFS researchers

Special interventions will be put in place to increase the diversity of UFS researchers. These interventions will include targeted appointments, and focused research capacity development and support.

More excellent black and female researchers will be recruited as vacancies become available. The identification and appointment of research fellows will also prioritise excellent black and female researchers who can serve as valuable role models.

Researcher development interventions (described below), such as the Emerging Scholar Accelerator Project (ESAP), Researcher Development Programme, and other interventions of the Postgraduate School, will focus on the selection of excellent potential participants into these initiatives, with a view to fast-tracking the development of black and female researchers.

Interventions aimed at people who could potentially become UFS staff members (such as postdoctoral fellows and postgraduates of high quality) will also be sensitised to the targeting of black and female participants.

KPA 2.2: Support emerging scholars and career development

This has to date primarily resided within the ESAP, the aim of which is to prepare a new generation of world-class South African scholars. The programme seeks to fast-track the scholarly careers of promising young staff members (who represent the next generation of professors) in the postdoctoral period of their careers. This is done through an advanced mentorship and development programme. To this end, international networks involving leading universities and scholars are created and sustained for the benefit of these young scholars.

We will investigate ways of extending and enhancing this type of intervention, including ways to take it into the faculties, and strategic interventions related to NRF ratings.

KPA 2.3: Develop our researchers and scholars

The Researcher Development Programme, based on the UK Vitae Research Development Framework, has been implemented to promote staff excellence in research. The programme is tailor-made for developing the research skills of staff members and is evaluated and improved on annually. The key features of the programme are:

- Workshops to develop knowledge and skills in research methodology, research ethics, technology transfer and research management.
- Discussion groups and training workshops to develop research supervision capacity for less experienced research supervisors, and an understanding of relevant UFS policies and procedures.
- Article-writing retreats for staff members to increase their research productivity and improve the quality of their publications.

A significant challenge in terms of research development at the UFS pertains to the fact that only 45-50% of its current staff members hold doctoral degrees. In order to address this shortcoming, the Postgraduate School has implemented a research development programme aimed at assisting staff in completing their doctoral qualifications through a research proposal development and mentoring programme.

KPA 2.4 Appointment of research fellows

The appointment of research fellows has been identified as a mechanism to promote research development and increase research output over the next five years. It is also a means to broaden the existing research base and provide a more individualised mechanism for formalising research networks. This initiative, often tried but underutilised at the UFS, has been revisited. This intervention will be reviewed and refined annually over the next five years.

KPA 2.5 Increase the number of postdoctoral fellows

It is well documented that postdoctoral research fellows make significant contributions to research development and research output at universities. Their appointments entrench existing research groups around key scholars and are an essential component of deepening research through the introduction of new skills, ideas and approaches.

This has also been the experience at the UFS. However, the potential contributions of

postdoctoral fellows are limited by the availability of existing funds. In the next five years, the university aims to leverage more funds to attract high-quality fellows in a fiercely competitive market.

We aim to sustain a significant annual increase in the number of postdoctoral fellows. In order to refine the quality of the postdoctoral cohort, we aim to recruit a significant international component.

KPA 2.6: Increase the number and quality of postgraduate students

Being research-led requires a cohort of excellent postgraduate students. This starts at undergraduate level. To ensure a pipeline of students into postgraduate programmes, research skills will be developed in undergraduate programmes.

Postgraduate research programmes need to prepare graduates with the knowledge, skills and attitudes for operating within a global environment characterised by collaborative, technical and cultural skills and sensitivities.

The size and quality of honours, master's and doctoral programmes and enrolments will need to increase. We will grow the number of postgraduates at the UFS by attracting students from other institutions and by encouraging undergraduates to continue their studies to create a seamless pipeline of students from honours to master's to doctoral level. More international students will be attracted from Africa and the rest of the world, which will encourage diversity.

In 2014, the Postgraduate School initiated a programme that identifies the 30 top achieving honours and master's degree students at the UFS in order to offer them the opportunity to develop their academic identity and continue their studies at the university. Although the programme does not guarantee employment for selected participants at the UFS, it does provide the institution with a pool of excellent future researchers, from which it can potentially recruit employees.

Due to the challenge of inadequate supervisors for the increasing number of postgraduate students at the UFS, it is important that prominence be given to new supervision models that balance supervisory load more effectively.

There is a need to improve the supervisory capacity of young academics. The university could use retired academics as mentors to young academics in cases where there is no capacity in departments. This will, however, require clear operational modalities and expected outcomes to be fruitful.

3. Increase the visibility, impact and uptake of UFS research

An inherent aspect of the Differentiated Research Strategy is to raise the profile and visibility of UFS research and increase its

research footprint.

KPA 3.1: Grow strong local and global partnerships and networks

An increasingly important dimension of the strategy will be strategic collaborations and partnerships with fellow researchers and a wider community of research funders and sponsors.

Deep and comprehensive relationships with select high-quality institutions with complementary research interests and capacities must be developed. Strong research networks and infrastructures present us with strategic opportunities to improve the scale, quality and impact of our scholarship. In this way, additional and diversified funding sources will be obtained and the international footprint of the university will be expanded.

Existing international collaborations favour institutions in Europe, the United Kingdom, the United States and Canada. The strategy will continue to encourage and support partnerships with colleagues in these countries. However, astute extension of networks to institutions in other strategically important regions, particularly in Africa, will be prioritised.

As detailed in the Internationalization Strategy, links with Brazil, Russia, India and China will be encouraged because of the opportunities presented by BRICS, among other things. The focus of our activities will also be to develop partnerships on the African continent.

As part of the Research and Internationalization Strategies, the UFS will form strategic partnerships with commerce and industry to extend and deepen the impact of research and scholarship.

We could also provide outstanding international scholars, with whom collaboration already exists, with the opportunity to enter into flexible part-time affiliations with the UFS. The same applies to scholars located at excellent universities abroad. Consideration could also be given to the creation of pathways through which those universities' students could transfer to the UFS as their research potential emerges.

The types of collaboration to be pursued include:

- Research collaboration where strengths are complementary.
- Research collaboration where combined expertise offers exceptional potential.
- Research collaboration with local, regional, national and international centres of excellence.
- Collaboration with commercial and non-commercial organisations to foster relevant research and product development.
- Collaboration with business and industry.

KPA 3.2: Use innovative research for viable commercialisation

In line with a number of governments of industrial and developing economies which seek to use universities as instruments for knowledge-based economic development and change, the South African government has implemented a number of programmes in support of this strategy. As a result, contract income remains the largest source of third-stream income at South African universities. This is one important reason why many universities give priority to objectives such as company creation, which cultivates an entrepreneurial culture and attracts venture capital.

The primary objective of the KovsieInnovation Office is to achieve sustainable growth in third-stream income from innovative UFS research activities. The UFS's reputation and image will inevitably play an important role in attracting new research contracts from industry and other stakeholders on an ongoing basis. The

UFS should become known as an academic knowledge partner that can foster, drive and successfully commercialise innovative research. It is anticipated that research-related contracts will also foster a culture of innovation and entrepreneurship at the UFS. The growth in sustainable ventures will inevitably lead to a continuous cycle of innovation, where newly established ventures will start to support research and teaching at the UFS. Moreover, these new ventures could create employment opportunities for our graduates.

The KovsieInnovation has identified the following key areas in terms of innovation and technology transfer:

- Human Resources
  (KovsieInnovation Entrepreneurship Development Programme)
- Infrastructure
  (KovsieInnovation Incubator)
- Finance
  (Intellectual Property and Investment Committee (IPIC))
- Industry partnerships

The commercial aspect of these innovative research activities will be grounded in a thorough, multidisciplinary academic footprint (i.e. fully integrated with our core teaching and research functions).

The intellectual property (IP) created through this integrated strategy must lead to the generation of sustainable third-stream income, and there are various ways to unlock the true commercial value of know-how and IP. These include licensing, incubation and spin-off companies. The KovsieInnovation Office strategy will give preference to incubation because international data on the success rates of commercialisation at universities clearly confirms that the success rates in such cases are higher and that incubation supports core research activities.

KPA 3.3: Develop in-house journals for inclusion on the DHET accredited journal lists

The university plans to identify the most suitable journals aligned with its areas of research excellence and support them to become high- impact journals, for inclusion on the DHET accredited journal lists. A strategy to reach this goal will be developed, taking into account the best practices identified by ASSAf and SciELO.

KPA 3.4: Communicate our research

Communicating publicly the research successes, strengths and achievements of the university is important to building its national and international reputation. Currently, there is no strategy in place to encourage the optimal communication of relevant research via public forums. Such a strategy should ensure that information about scholarship at the UFS is collected, synthesised and packaged in as many different contexts as possible.

Utilisation of the World Wide Web, social media and other online platforms to showcase discoveries, individual scholars and affiliated scholars has to be optimised.

As in the past, UFS scholars will be expected to promote research at all levels, including through public debates, external peer reviews, editorial appointments, committee membership, etc.

In order to ensure the relevance of its research, the university will continue its commitment to public engagement, informing public opinion, and influencing individual, organisational and mass behaviour in a positive way.

4. Provide a sustainable and supportive research environment with appropriate management and physical and financial resources

Research-led universities should be institutions where research and teaching and learning are mutually reinforcing, and where all activities take place in an active research environment. Research-led universities operate in a complex and demanding environment, requiring high-quality, well-capacitated and consistent research services.

We must provide an environment in which researchers can conduct excellent research and which nurtures and cultivates staff and encourages them to fulfil their career ambitions. Research support must be workable, efficient and effective.

GOAL 4: KPAS

- Integrate UFS research support structures
- Revise and update research-related policies and governance structures
- Optimise information management
- Ensure financial accountability and sustainability
- Manage research infrastructure
- Measure research performance and impact
- Provide high-quality statistical support
- Incentivise research activities

KPA 4.1: Integrate UFS research support structures

The various research support service structures form a distributed portfolio, consisting of the Directorate for Research Development (DRD), the Postgraduate School (PGS), the Office for International Affairs (OIA), Library and Information Services (LIS), and the Emerging Scholar Accelerator Project (ESAP).

Research Support Services (RSS) at the UFS should provide a structured series of interventions and activities to assist individuals and groups. It needs to narrow the gap between research and academic studies, provide support for innovation, and offer better preparation to postgraduate students as future professionals. It also needs to contribute to effective and strategic decision-making, planning and scheduling.

This must be done for the entire spectrum of researchers, ranging from undergraduate students to the most advanced researchers and groups of researchers, across the full cycle of the research process, and for many types of research, each of which requires similar and different interventions.

The different groups offering research support services need to work together to provide the best possible service to the university research community – that is, a seamless service that is not perceived as being fragmented. In the light of scarce resources and financial constraints, it is particularly important that we avoid unnecessary duplication. The groups must not merely collaborate and share reporting lines, but must work together towards a common goal. We must develop research support that uses a distributed structure to maximise our ability to attract researchers and research income, enables our researchers to undertake high-quality research, encourages them to meet the highest standards of researcher integrity, and exploits research outcomes.

KPA 4.2: Revise and update research-related policies and governance structures

Sound governance and management systems are critical to the successful development of a research-led university. Locally and globally, the higher education landscape is changing, offering particular opportunities and challenges to research management. In order to ensure that research is the fibre at the core of the business of the university, its management and governance systems must be brought in line with this changing environment. Responsiveness and agility must be facilitated by a set of policies, systems and structures that are aligned to promote and support strategic priorities.

Against this backdrop, the strategy requires that all research-related policies and governance structures be reviewed and, where necessary, adapted or changed in order to ensure optimal support and accountability.

All universities face internal and external research-related institutional risks. It is important that these are identified and timeously managed through appropriate policy development. Included are issues such as, *inter alia*, research ethics, research misconduct, conflict of interest, working in dangerous environments, plagiarism, etc.

KPA 4.3: Optimise information management

Higher education institutions and research councils rely on accurate and reliable research information to support strategic planning, manage the research process and improve reporting to external bodies, such as funders and government. This will be addressed through:

- **RIMS**

RIMS is the primary research information management tool at the UFS. The following modules have been/will be integrated with current systems:

  o RIMS Compliance Module (Human-, Animal- and Environmental & Biosafety Ethics)
  o RIMS Research Outputs Module
  o RIMS Technology Transfer Module
  o RIMS Financial Module
  o SPIN (Funding Database)
  o Genius (Profile Database)

The system poses some challenges in terms of configuring modules to suit the needs of the university. An effective electronic business process for every module will be implemented to ensure that business processes are replicated on the system. Continuous development, training and improvement processes will be provided for different role players.

- **Postgraduate candidate management**

The low throughput rate of postgraduate students poses a significant challenge to the university as it leads to extended strain on supervisors and loss of subsidy. It also impacts the research output of postgraduate students.

The Graduate Research Management (GRM) programme facilitates a range of applications that track a student's progress from first application to graduation. It generates information on an individual student's progress through various stages of the study process. The Postgraduate School will use information generated by the system to identify students at risk of not completing their dissertations/theses within the time limit. This will allow for the timely implementation of specific, targeted interventions.

The implementation of the student tracking system will make a significant contribution to the university's ability to monitor supervisor load, the success of an individual supervisor's students, and the performance of departments.

- **Research inventory**

A key element of the strategy is the development of a searchable, up-to-date database to record the institution's research activities. This will form the core activity of the Digital Scholarship initiative in the Library. The research inventory will allow for improved management of research, facilitate collaboration, and represent a resource for external stakeholders (such as potential academic collaborators and funding agencies) wishing to gain insight into the extent of UFS scholarship in a particular research area.

- **Open Access Policy**

The UFS Library and Information Services (LIS) champions improved visibility and discoverability for all UFS scholarly output. The Open Access Policy facilitates this and embeds the LIS in the research process.

LIS recognises scholarly publications as an important asset of the university and seeks to ensure that they are managed effectively and efficiently for the benefit of the academic community at large.

KPA 4.4: Ensure financial accountability and sustainability

The UFS currently derives its research funding from a limited number of sources. In order to grow the research endeavour, it is essential to increase levels of funding and further diversify the funding base. This will entail developing strategic partnerships with business and industry, and exploring opportunities for international funding.

Requirements for financial accountability are becoming increasingly stringent and complex as funding sources become diversified and the pool of competitors for funding increases. Even more than in the past, it has become imperative that financial and budgeting systems are transparent and optimally utilised. The budget model has to be synchronised with the strategy to enable research activity at the highest level. This includes regular scrutiny of the model to ensure that financial hurdles in the way of improved scholarship are minimised, and that unintended behaviours prejudicial to research activity are eliminated.

KPA 4.5: Manage research infrastructure

To ensure a successful research strategy, it is essential that the management of capabilities and planning of investments be improved.

Research excellence demands appropriate equipment and infrastructure; this includes skilled professionals to manage and support the research infrastructure.

As a starting point, a strategy for the management of research equipment will be implemented. Innovative ways of accessing and/or obtaining cutting-edge research equipment will be investigated and developed.

KPA 4.6: Measure research performance and impact

Measuring and describing the impact and uptake of academic scholarship are becoming increasingly important. Careful measurement and understanding of research performance, impact and uptake contribute to the continuous improvement of our research.

This means that increasingly the allocation of resources must be supported by better and more meaningful data to promote informed decision-making. Furthermore, funding agencies expect robust reporting on the impact of the work they are sponsoring.

The DRD has the ability to undertake such measurement activities. Flexible systems are required to capture information on research and research training, particularly where it occurs across faculty boundaries.

Impact refers to the demonstrable contribution that scholarship makes to society and the economy. This can involve advancement of knowledge; application of research outputs; legislation and policy; economic benefits; and/or community benefits.

A framework for measuring and reporting on impact and uptake will be developed for inclusion in the planned policy on knowledge exchange.

KPA 4.7: Provide high-quality statistical support

The Centre for Statistical Consultation provides a free service to scholars and postgraduate students to improve the statistical quality of their research data meant for publication. This service will be continued and strengthened during the next five years.

KPA 4.8: Incentivise research activities

Incentivising research (through various approaches) has proven to be an important motivational element in promoting a culture of research excellence. The current system (that motivates scholars with incentives based on the number and quality of research outputs, and NRF ratings) will be reviewed annually to determine its impact and viability. A process of benchmarking incentives provided to researchers to align our guidelines with those of other universities will also be implemented.

The annual UFS Book Prize was instated to reward and encourage outstanding scholarly book contributions by UFS staff.

Key Performance Areas: Summary

UFS VISION:
The UFS is a research-led, student-centred and regionally engaged university that contributes to development and social justice through the production of globally competitive graduates and knowledge
OVERALL RESEARCH GOAL:
Increase the UFS contribution to local, regional and global knowledge

	GOAL/KPA		KPI	AS IS 12/2018	TARGET 12/2022
1. Implement a differentiated research approach	1.1	Identify and develop strategically distinctive research areas	• Develop strategic research hubs	0	5
	1.2	Increase the number of externally funded research chairs	• Number of externally funded research chairs	6	8
	1.3	Consolidate and build research capacity on the Qwaqwa Campus	• Number of active researchers in ARU	15	20
	1.4	Encourage multi-disciplinary research	• Active multidisciplinary projects within strategic research hubs	-	20
2 Develop excellent researchers and scholars, providing sustainability and continuity	2.1	Increase the diversity of UFS researchers	• Share of NRF-rated researchers who are black and who are female	B: 18% F: 30%	B: 22.5% F: 33.6%
	2.2	Support emerging scholars and career development	• NRF rating categories	Y: 36	Y: 44
	2.3	Develop our researchers and scholars	• Percentage of permanent academic staff with doctoral degree	49%	52%
	2.4	Appoint research fellows	• Appointed research fellows in strategic research areas	-	-
	2.5	Increase the number of postdoctoral fellows	• Number of postdoctoral fellows	109	204
	2.6	Increase the number and quality of postgraduate students	• Improved throughput rate of postgraduate students: o M 100% research ≤3 years o D ≤ 4 years	M: 33%[1] D: 32%[2]	M: 36% D: 35%
3 Increase the visibility, impact and uptake of UFS research	3.1	Grow strong local and global partnerships and networks	• Signed, active collaboration agreements	77	85
	3.2	Use innovative research for viable commercialisation	• Income from research-related contracts	R60 mill	R100 mill
	3.3	Develop in-house journals for inclusion on DHET accredited lists	• Included on DHET accredited lists	8	10
	3.4	Communicate our research	• Number of publications per academic staff member	1.0[3]	1.5
4 Provide a sustainable and supportive research environment	4.1	Integrate UFS research support	• Seamless research support services (satisfaction survey)	-	80% positive
	4.2	Revise and update research-related policies and governance	• Rate of review and revision	-	100%

[1] 2017 data
[2] 2017 data
[3] 2017 data

Updated UFS Research Strategy (2019 – 2022)

	GOAL/KPA		KPI	AS IS 12/2018	TARGET 12/2022
with appropriate management and physical and financial resources		structures			
	4.3	Optimise information management	• Useful up-to-date information (satisfaction survey)	N/A	90%
	4.4	Ensure financial accountability and sustainability	• UFS funding for research development	R102 mill	R110 mill
			• Research income (other sources)	R34 mill	R50 mill
	4.5	Manage research infrastructure	• Policy	Yes	Yes
	4.6	Measure research performance and impact	• Up-to-date information	100%	100%
	4.7	Provide high-quality statistical support	• New projects supported by Statistical Consultation Unit	65	75
	4.8	Incentivise research achievement	• Funding to incentivise research achievement (linked to NRF rating)	R16 mill	R18 mill

Concluding Remarks

This revised Research Strategy is unashamedly ambitious and challenging, but it is also inspiring. It shows a determined commitment to the values and purpose espoused in the UFS Strategic Plan and ITP. We are confident that the UFS research community will respond as they always have in the past – with dedication and commitment.

Faculties, departments, centres and institutes will be required to develop their own research strategies and implementation plans that are aligned with the UFS Research Strategy. These will be assessed during the annual reviews to determine their contributions to individual, divisional and institutional visions, goals, and strategies.

We believe that if this Research Strategy is effectively implemented, we will have achieved the following by the end of 2022:

- We will be recognised as a research-led university
- We will have improved our national ranking
- Our resources will be aligned with our Research Strategy
- The multidisciplinary and cross-sectoral research outputs and innovation in our strategic research hubs will be recognised for their relevance and impact
- Our partnerships with external organisations will be generating joint initiatives, enhancing research and enlarging our research capabilities
- Superior governance, budget and support systems as well as a solid research infrastructure will be helping to drive high-quality research and minimise impediments to research excellence
- Researchers graduating from the UFS will be well-rounded, prepared for diverse careers, and in demand globally
- We will be recognised for successfully commercialising our research outputs