Strategic Plan for Research

2023 - 2027

11/4/2022
University of the Witwatersrand, Johannesburg
Development process led by Prof Lynn Morris

Version Control

Version	Description	Date
0.1	First draft after early thoughts were considered by task team - R&PG	13 May 2022
0.2	Draft with PG strategy complete - R&PG	2 June 2022
0.3	Draft with research strategy completed - R&PG	6 June 2022
0.4	Further minor edits and layout check - R&PG	6 June 2022
0.5	Further minor edits and layout check - R&PG	7 June 2022
0.6	Research focused plan	23 July 2022
1.0	Plan updated after consultation	18 Aug 2022
1.1	Plan updated after further consultation	27 Aug 2022
2.0	Final draft ready for approval at UR&ICT, Senate, & Council	14 Oct 2022
2.1	Final draft ready for approval by Council, with amendment arising from Senate approval process	4 Nov 2022
3.0	Approved by Council	24 Nov 2022

Version numbering scheme:
0 = early rough drafts containing broad stroke ideas and concepts
1 = drafts that contain inputs from the task team and through consultation with various stakeholders
2 = final drafts that are being considered for approval by various statutory bodies in the University
3 = Approved version

1.   Purpose

This 2023 – 2027 Strategic Plan for Research (the Plan) is a strategy of the University of Witwatersrand (Wits or the University) and was approved by Senate and Council. The purpose of the Plan is to provide aspirational goals and an associated supportive framework that will shape and direct investment and activities across the University that support research. The Plan should be read in conjunction with three other related strategic plans, namely the strategies for postgraduate (PG) student training, innovation, and internationalisation.

The 2018 - 2022 Strategic Plan for Research and PG Affairs (Wits Research, 2017) was developed under the umbrella of the Wits Vision 2022 strategic framework (Wits 2022, 2002). The current Plan is aligned with new Wits 2033: Strategic Framework that positions the University at the "leading edge of the Global South" (Wits 2033, 2022). This Plan will guide our research trajectory in the first five years of the University's second century.

The process used to create this Plan was led by the University Research and Innovation Committee (UR&IC) that is chaired by the Deputy Vice-Chancellor for Research and Innovation (DVC: R&I) and involved multiple inputs from a representative task team dedicated to advising the process, broad consultation opportunities, and using established organisational governance structures.

2.   Executive Summary

This Plan recognises the current context that is set at the national level by the National Development Plan (NDP), the 2019 White Paper for Science, Technology, and Innovation (STI) and the related 2021 Decadal Plan for STI. These documents emphasise that investments in STI should address the country's social challenges through the acceleration of knowledge and digital innovation that leads to inclusive and sustainable socio-economic development.

In the Wits context, the University enjoys a rich history of innovation, high-quality research, good PG student training, overlaid by a strong commitment to social justice. From its inception, 100 years ago, Wits has been committed to quality research and PG training and has identified itself as "research intensive" for at least 20 years. Inherent in the notion of research intensity is the understanding that research is strongly enabled by the PG student cohort and indeed that research and PG training form two sides of the same coin, in the knowledge economy.

The cumulative effects of the University's recent strategic trajectory have produced significant growth in external funding, research publications and PG student numbers. Between 2011 and 2021, the quantum of external funding for research has outstripped any of the University's peers in South Africa, the number of publication units[1] increased by 120% and overall PG enrolment numbers increased by 73%. However, this strong growth significantly outpaced the

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[1] Using the DHET fractional author count methodology

growth of supervision capacity with the number of staff able to supervise doctorates (i.e., staff with PhDs), only growing by some 45%. This "supervision capacity gap" has resulted in increased pressure for doctoral supervision on appropriately qualified staff – an almost doubling of demand over the last 10 years, which is impacting on innovation, research, and PG student training.

The University is now embarking on a new journey guided by the 2033 Strategic Framework. It states that our purpose is to make a "positive impact on society through creating and advancing global knowledge and fostering graduates to be leaders with integrity" (Wits 2033, 2022). In this context the **strategic objective** for our research efforts will be to **produce increasing amounts of research with impact**.

It is understood that research with impact is inherently of high quality and includes **discovery research**, **translational research**, and **innovative research**. Discovery research impacts on the discipline, translational research (also called action-based research) impacts on policy and practice and innovative research includes "multidisciplinary approaches to interact with industry, government, academia, society and/or the environment … [with] outputs that are either tangible (products or 'things') or intangible (processes, services, policies, or ideas)." (Wits Innovation, 2022) This strategic objective is inclusive and, for example, embraces 'creative research' including design, film, fine art, literary arts, music, television and theatre, performance, and dance.

The underlying assumptions of this strategic objective include:

- Multidisciplinary collaborations enhance research,
- Open access (OA) publishing is good for research,
- High standards of research integrity are vital for success,
- External funding enables research and innovation, and
- Quality assurance for research is provided by peer review, especially international peer review, and is therefore important for success.

The Plan presents a framework aimed at supporting researchers and thus enabling them to achieve the strategic objective. The framework reflects on required **inputs**, including talented people, efficient processes, and a supportive physical environment. The execution of research in the freedom to follow ones' own **curiosity** is important for success. However, some focus areas are encouraged to bring about critical mass. These include the broad themes of:

- The sustainable development goals (SDGs),
- The digital transformation,
- Ensuring better health for all,
- Solving global challenges,
- Advancing society, governance, and justice,

- Future proofing our national treasures, and
- Fostering multidisciplinary approaches that integrate science, technology, engineering, and mathematics with the arts and humanities.

The **outputs** include quality publications, patents, and other forms of making knowledge explicit. The **outcomes** include impact of the new knowledge and its take-up by various communities. The importance of research communication that promotes take-up is recognised and supported. The final component of the framework is the underlying support provided by a well-trained and highly motivated body of people engaged in **research and innovation management and administration** (RMA).

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Abbreviations used in this document

Abbreviation	Description	Meaning
DHET	Department of Higher Education and Training	Government department
DVC: R&I	Deputy Vice-Chancellor for Research and Innovation	
NDP	National Development Plan	South African development plan
NSI	National System of Innovation	The SA science system is focused on innovation
OA	Open Access	Scholarly journals that use a pay to publish model allowing wide and unrestricted readership
PAS	Professional and administrative staff	A staff category in the University that does not include academics
PG	Postgraduate	Research focused student programmes
RMA	Research management and administration	The administration that supports research and innovation
SARIMA	Southern African Research and Innovation Management Association	Professional body that promotes to the profession of RMA
SDGs	Sustainable development goals	UN set of goals for global development
STEAM	Science, technology, engineering, mathematics, arts, and humanities	An integration of the humanities and the STEM subjects
STEM	Science, technology, engineering, and mathematics	
STI	Science, technology, and innovation	
UR&IC	University Research and Innovation Committee	A Senate and Council subcommittee that provides governance for research and innovation
WCE	Wits Commercial Enterprise	A Wits wholly owned company
WHC	Wits Health Consortium	A Wits wholly owned company
WIC	Wits Innovation Centre	An organisational structure created to lead innovation in the University

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3.   Current Context

3.1. The South African Strategic Context

The South African higher education and related research landscape, within which Wits operates, is framed by several key national strategies. Starting with the National Development Programme (NDP) that focuses on developing the country's higher education sector to deliver the following by 2030:

- An increase in the proportion of academic staff with a PhD to 75% of the total.
- An improvement in the quality of teaching and learning.
- An increase in the participation rate so that the total student enrolments amount to 1.62 million.
- An increase in the throughput rate to more than 75% (or the graduation rate to more than 25%) of students.
- An increase in the number of PG students to 25% of total enrolments.
- The graduation of more than one hundred doctoral graduates per million of total population per annum.
- A doubling and commensurate increase in the number of women and black postgraduates graduating with science degrees.

This broad stroke plan is further developed in the 2019 White Paper on Science, technology, and Innovation (STI) which emphasises the "core themes of inclusivity, transformation, and partnerships". (SA-White Paper, 2019) It presents ways "to address policy coherence, the development of human capabilities, knowledge expansion, innovation performance and increased investment". These proposals are meant to inject "creativity, learning and entrepreneurship" into the National System of Innovation (NSI).

The 2021 Decadal Plan on STI drives the priorities listed in the 2019 White Paper. It emphasises that all investments in STI must address the country's social challenges through the acceleration of knowledge and digital innovation and must lead to inclusive and sustainable socio-economic development. The plan recognises four societal grand challenges including climate change, future proofing education and skills development, re-industrialising the modern economy, and the future of our society. (SA Decadal Plan, 2021) It also identifies two STI priorities, namely health innovation and energy innovation.

3.2. The Wits Context

From its inception as a mining college established to train people for the burgeoning gold mining industry, and later in 1922 after the confirmation of university status, Wits has strived to produce useful innovation, quality research, and excellent PG students. Wits has over the last 100 years consistently addressed much of its scholarship towards achieving equality and social justice. For at least 20 of these years, Wits has identified itself as "research intensive". Inherent in this notion of research intensity is the understanding that research is strongly

enabled by the PG students and indeed that research and PG training are two sides of the same coin, in the knowledge economy. Thus, as early as 2007, the University research plan emphasised the growth of PG student numbers and the need for PG student publication as priorities. The Wits 2022 strategic plan increased the institution's focus on enhancing the quality of the PG experience and increased its targeted proportion of PG students to 45% of the overall student body within a clear transformation imperative. The increasing prioritisation of PG scholarship was formalised in the University's 2018-2022 Research and PG Affairs Strategy. The vision articulated at that time was for increased amounts of "research with impact" and a "swift, secure and stimulating PG experience".

The cumulative effects of the University's strategic trajectory have produced strong growth in external funding, research publications and PG student numbers. Between 2011 and 2021, the quantum of external funding for research has outstripped any of the University's peers in South Africa, the number of publication units[2] increased by 120% and overall postgraduate enrolment numbers increased by 73%. Doctoral growth was higher with enrolment figures increasing by 80% in the same period. However, this strong growth significantly outpaced the growth of supervision capacity with the number of staff able to supervise doctorates (i.e., staff with PhDs), only growing by some 45%. This has created a "supervision capacity gap" that has resulted in increased pressure for doctoral supervision on appropriately qualified staff – an almost doubling of demand over the last 10 years, which is starting to impact negatively on innovation, research, and PG supervision.

4.   Purpose and Mission

Borrowing from the 2033 Strategic Framework, our purpose is to make a "positive impact on society through creating and advancing global knowledge and fostering graduates to be leaders with integrity". Moreover, our mission is to integrate PG student training into the research process in a seamless manner that enhances productivity and quality in the digital age of the 21st century. The mission is to produce people, skilled in the art of thinking and problem solving, who can use their new knowledge to address the world's problems, and to tap the rich opportunities for innovating new knowledge from our position in the Global South.

5.   Values

The core values that shape further components of this Plan include:

- Inclusivity, equity, and people centred approaches.
- Adherence to the highest standards of quality, ethics, and integrity.
- Professional relationships, involving professional staff, academic faculty, and PG students, which are characterised by mutual respect and collegiality.
- Intellectual independence, creativity, and ingenuity.

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[2] Using the DHET fractional author count methodology

- Respect for empirical research methodologies (including the classical scientific method) focused on evidence-based knowledge development.

6.   Strategic Objective

The strategic objective of this Plan is to **produce increasing amounts of research with impact**. The inherent implication of this objective is that the research produced is of high quality and thus can make the required impact.

This objective is a refreshed version of the 2018-2022 objective that now reflects that the broader definition of innovation, adopted by the Wits Innovation Strategic plan for 2022 – 2027. Innovation is so much more than commercialisation of new knowledge. Indeed, it is defined as the "successful deployment of new research ideas or methods to benefit society".

Thus, the concept of research with impact is best explained through reflection on these three ambitions. Research with impact embraces all the following:

- Research that makes a significant contribution to our understanding of a discipline, or research that changes the direction of the discipline, or knowledge that opens new fields of investigation and thought. This is conveniently referred to as **discovery research**,
- Research that "seeks transformative change through the simultaneous process of taking action and doing research, which are linked together by critical reflection" (Wikipedia, 2022) and creates knowledge that can be transferred to a community, or influence professional practice, or inform policy development. This is referred to as **translational research** or **action-based research**,
- Multidisciplinary research undertaken through the interaction with industry, government, academia, society and/or the environment that has outputs that are either tangible (products or 'things') or intangible (processes, services, policies, or ideas). This is referred to as **innovative research** or simply innovation.

Research with impact is understood in the Plan to embrace all types of research and is not limited to the science, technology, engineering, and mathematics. To emphasise the breadth of this inclusive concept, it is important to note that it embraces 'creative research' including design, film, fine art, literary arts, music, television and theatre, performance, and dance.

The aspiration is that Wits research will have influence and lead to change by making a weighty contribution to the body of knowledge and/or practice. The interconnectedness of the concept is illustrated in Figure 1 showing how these types of research are nested together and that it is impossible to separate them. It is better to regard them as an interrelated set of activities only distinguished by their final outcomes.

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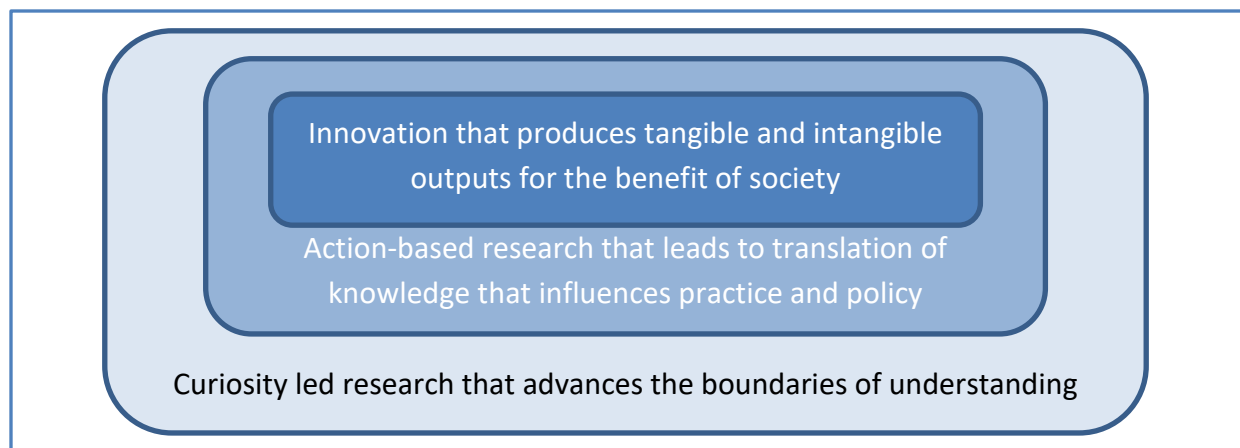
Figure 1: An illustration of the interconnectedness of research with impact

This focus on impactful research supports the need to maintain the current trajectory of increasing productivity and quality. It also supports the significant role that PG students play in the research process. Indeed, as indicated in the PG Training strategy, Wits will look to its PG students to be a source of truly pioneering ideas and possibilities than can be used to change the world throughout the next 100 years.

The strategic objective is based on fundamental assumptions that are laid bare below, in no specific order.

6.1. The Benefit of Multidisciplinary and Collaborative Research

It is well understood that the complex problems and tough questions that face the world today are best addressed from multiple perspectives. Thus, multidisciplinary and transdisciplinary research is strongly encouraged.

This focus on cross-disciplinary research should not however, dilute the excellence within a discipline. To maximise the benefit of multidisciplinary approaches it is vital to work from a strong disciplinary base.

Collaboration across disciplines requires that research is best practiced in teams. Sometimes these teams are small involving one or two academics and their PG students, in other cases, these teams can grow to include 10s, even 100s or more people. These collaborations can stretch across schools and faculties in the University; they can also include partners from outside our university that come from local and international research focused institutions. The Wits Internationalisation strategy 2023 – 2027 gives helpful direction in this matter. It is important to record that all types of research collaboration should be characterised by mutual respect and equality that follows internationally accepted good practice around authorship and research integrity.

It is understood that these collaborations grow from the ground up, where individual academics interact and plan research projects and jointly supervise PG students. They can also be

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facilitated through a top-down process, where partnerships are agreed upon at the institutional level. Both modes work well, but the best results arise when the two approaches meet, that is, where an institutional agreement creates space and opportunities for individual collaborations to flourish.

Effort will be invested in developing strategic partnerships, as guided by the 2023 - 2027 Internationalisation Strategy. However, it is also important to support *ad hoc* collaborations that spring up and may last for only a single project involving one or two people. Tools will be provided to allow people to easily search for suitable partners and processes established to facilitate these collaborations.

6.2. Immediacy and Accessibility through Open Access Publishing

Immediacy, accessibility, and priority are important concepts in the world of research and innovation especially when impact is regarded as important. This is true for at least two reasons: firstly, urgency is important if priority is to be established when protecting new knowledge and, secondly, early accessibility of published work to critical readers and peer reviewers is important to establish quality. Thus, the use of excellent quality open access (OA) publishing is encouraged. This encouragement comes with two caveats, namely a warning about predatory publishers that have none of the quality assuring peer review characteristics that are so vital to ensure quality and the need to protect some intellectual property, through patenting (or other means), before it enters the public sphere.

6.3. Quality and Peer Review, Especially International Peer Review

Quality is of paramount importance for all research. The notion of research with impact is even more reliant on the highest possible quality.

The key determinant of quality in the context of research and investigation of the unknown is peer review, preferably international peer review. Despite all its potential shortcomings of bias and vested interests, peer review remains the gold standard for maintaining the quality of research. Thus, this Plan encourages the use of internationally recognised journals, book publishers, and conference organisers to carry the University's research findings. Peer review also plays a vital quality assurance role for the less traditional forms of communicating research outcomes.

6.4. Research Integrity

The use of honest and verifiable methods in proposing, performing, and evaluating research and reporting research results in a reliable and trustworthy manner is at the core of quality research. Thus, it is import for Wits to retain high standards of research integrity as envisaged in the 2010 Singapore Statement on Research Integrity[3], despite the pressures to publish increasing amounts of research with impact and/or to speedily gain priority. The need to maintain the highest standards of research integrity should never be compromised.

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[3] https://wcrif.org/guidance/singapore-statement

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This commitment to the highest standards of research integrity includes the independent review and approval of the ethics of proposed research programmes before they begin.

6.5. The Importance of Funding that enables Research and Innovation

Finally, but by no means of least importance, it is essential to recognise that external funding enables research and innovation. Although the seeding of research can be supported by the University through the Research Incentive and other similar programmes it will never stretch to cover all the costs of research.

Thus, this Plan recognises the importance of providing support for those applying for funding. This begins with ensuring that the Wits landscape enables the acquisition and use of external funding. This implies that our governance and financial control frameworks stand up to international scrutiny so that international funders trust our governance and use of their financial resources. It also implies that the provision of tools, advice, and expertise aimed at securing external funding are of great importance and must be made available.

7.   Supportive Framework

To achieve the objective and its underlying assumptions the Plan provides a supportive framework. It is a description of the environment that is required to allow talented people to conduct quality research, supervise students, and innovate their way to real impact.

The research conducive environment is illustrated in Figure 2 and is described using an analogy of a leading athlete in the role of the researcher. The athlete needs good nutrition (**inputs**) to perform the athletic pursuit of choice (**academic freedom**) and attain record breaking achievements (**outputs**), which are enjoyed by an audience of spectators and fans (**outcomes**). All of which is aided by a support team (research management and administration).
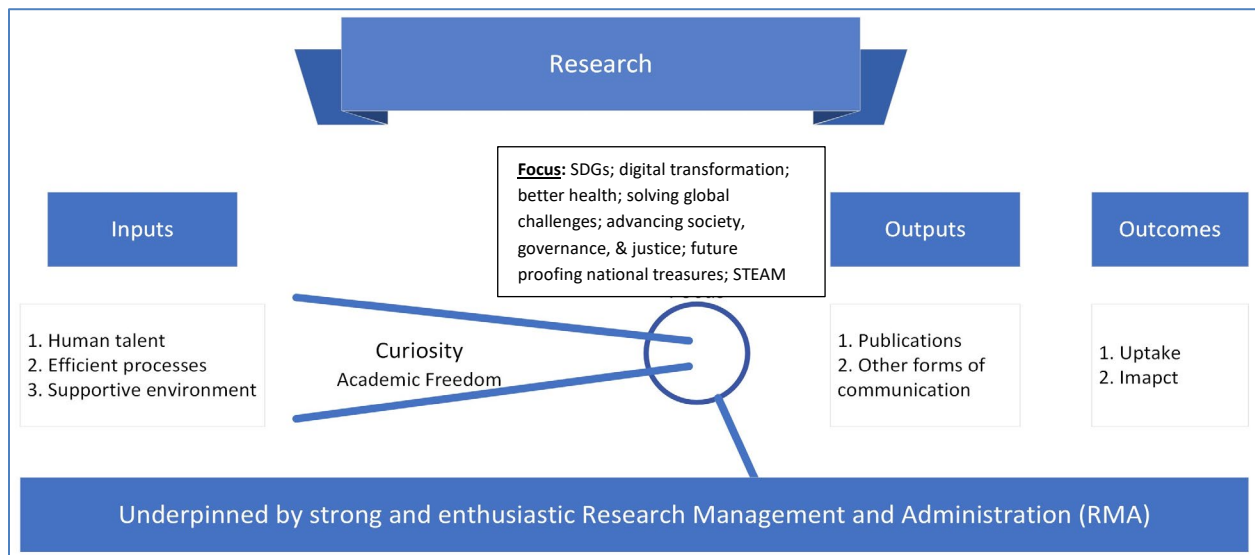

Figure 2: The research conducive environment

7.1. Inputs

The research conducive environment consists of three important inputs, namely (1) talented people, (2) efficient processes, and a (3) supportive physical environment (Figure 2). Research is of course a human activity and so it is important to give talented people, the researchers, supervisors, and PG students, the freedom to follow their **curiosity** to wherever it leads their research. Emphasis is placed on the freedom to select one's own research programme, however, some focus areas are encouraged, as illustrated by the magnifying glass in Figure 2. These include the broad themes provided by the sustainable development goals (SDGs), and a particular emphasis on:

- Driving the digital transformation,
- Ensuring better health for all,
- Solving global challenges,
- Advancing society, governance, and justice,
- Future proofing our national treasures, and
- Fostering multidisciplinary approaches that integrate science, technology, engineering, and mathematics (STEM) with the arts and humanities (the so-called STEAM approach).

7.2. Outputs

The envisaged outputs include quality peer reviewed publications, patents, and other ways of making knowledge explicit and accessible to people across the world. The communication of research outcomes and implications, using a wide variety of channels, is regarded as important and should be supported so that the impact and take-up of new knowledge is maximised.

7.3. Outcomes

The outcome of this research inventiveness is the benefit derived by the communities in which Wits is embedded. The benefit will arise from the new knowledge, innovations, and engaged graduates able to use an evidence-based approach to tackle societal problems creating opportunities for inclusive development.

7.4. Enabled by Motivated and Efficient RMA

The need for active and effective administrative support for academics and their students is regarded as an important element for success. The Plan therefore envisages the continuing development of a well-trained and highly motivated body of people engaged in **research (and innovation) management and administration** (RMA). RMA "embraces anything that universities can do to maximise the impact of their research activity" (Green & Langley, 2009) and might be regarded as the oil that reduces friction encountered when going from inputs to outputs and to outcomes. These administrators are best located 'on the shop floor' close to where the research takes place.

7.5. Specific Interventions

The components of the supportive framework are specifically described in the tables below with explicit strategic interventions that will be implemented to realise the strategic objective.

The following colour code is used to describe **current initiatives (bold black ink)** that will be continued, *initiatives introduced by other strategies (bold red ink)*, and *new initiatives (bold green ink)* that will be implemented over the next 5 years.

7.5.1. Excellent Talent

It is people in the form of academics and PG students that conduct research and so it is vital to consider the process to nurture and support the talent at Wits.

Table 1: The building of a talent rich pipeline

Specific component	Description	Strategic initiatives
Wits' PG students	Access to high quality PG students at the master's and doctoral levels who are fully prepared to undertake their research	• **PG Training strategic plan** discusses the preparation of PG students before they begin their research training • **Internationalisation strategy plan** discusses initiatives for the recruitment of international PG students and to expose our students to international perspectives • **Innovation strategy** introduces the PG Diploma in Entrepreneurship • **Special support provided** for students preparing bursary applications for NRF scholarship programmes
Wits' academics	Recruit, retain, development, and nurture academic talent	• **PG Training strategic plan** discusses ways of improving supervision • Skills development for research focused academics provided by the following programmes: **Now@Wits**[4], **ECAD**[5], **EMCAT**[6], **FALF**[7], **Prospector@Wits**[8], and **Academic Entrepreneurs**[9] • Research encouragement: **Y funding**[10], **Vitamin C**[11], **Sellschop early career awards**[12] and **support for the preparation and submission of NRF rating applications**[13] • **Increased number of active postdoctoral fellows**

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[4] An academic focused induction programme for newly appointed academics at Wits

[5] Early Career Academic Development (ECAD) programme that helps early career academics to experiment with ways of becoming a successful academic

[6] Enhancing the Mid-career Academic Transition (EMCAT) programme aimed at helping people transition into academic leadership

[7] Female Academic Leadership Fellows (FALF) aimed at developing academic leadership amongst previously disadvantaged women academics. This programme is externally sponsored

[8] Prospector@Wits is a WCE sponsored programme to help people identify commercialisation opportunities

[9] Academic Entrepreneurs is a WHC sponsored programme to help academics to develop the skills of academic entrepreneurship to assist with their scholarship

[10] Y funding provides annual funding for all NRF Y-rated academics

[11] The Vitamin C programme provides once off funding for newly awarded NRF C-ratings

[12] The Sellschop programme provides three-years of financial support for 'rising stars'

[13] Support and internal peer improvement for applicants for NRF ratings

		• **Distinguished Professors Programme**[14] for the recruitment of top end academic talent
Collaboration	Working with others to enhance research quality and multi-disciplinarity – locally and internationally	• **Internationalisation Strategy** supports the development of partnerships with carefully selected strategic partners • **Seed funding** for collaboration development with University Strategic Partners • **Research entities policy** that promotes the governance of research entities in which people can collaborate • **Develop a project matching tool where people can seek out opportunities to collaborate**

7.5.2. Efficient Processes

The business processes that enable the day-to-day activities of research are important as they can either function as a drag to efficiency or they can enable the research. There are several processes and for convenience they are considered in two parts.

Funding

Support for pre- and post-award activities, that is, securing external funding, being able to use it efficiently in the University, and then to report on its use.

Table 2: The support provided to secure and use research funding

Specific component	Description	What is done to support
Making us of all funding opportunities	Sourcing research funding from a wide range of funders	• **RESEARCHConnect funder database** used to help people find alternative funding sources • **Pre-award support** for large grants using a dedicated resource • **Internationalisation strategy** encourages and supports collaboration with the University's **Strategic Partnerships** to develop collaborations that can be leveraged to secure international funding
NRF funding	Information sessions and internal peer improvement	• Special support provided for those preparing applications for these NRF programmes: **Thuthuka**[15], **CSUR**[16], **CSRR**[17]
Internal funding	Seed funding provided by UR&IC	• Internal seed funding through **RINC**[18], **Vitamin C** and the **Y-funding** programmes

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[14] The Distinguished Professors Programme aims to recruit high quality academics with NRF A or high B ratings, or equivalent, to bolster the academy at the high end

[15] Thuthuka is an NRF programme for early career academics
[16] CSUR is an NRF programme for unrated researchers
[17] CSRR is an NRF programme for rated researchers
[18] Research Incentive (RINC) is an existing research incentive programme providing seed funding based on paste publication that are accredited by the DHET. This includes Rapid RINC which pays out more timeously for journal articles

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		• **Retiree Support**[19] funding for retired but active academics • **Matching external grant funding** where required
Extended use of Oracle Projects module	A project management tool that will help with planning, budgeting, and the calculation of CORY all of which are necessary for preparing grant applications	• **Pre-award assistance providing tools to develop funding applications, project plans, project budgets, etc**. • **Post-award assistance through provision of time sheets, sub-contracting processed, progress monitoring and reporting**

Time

Time is a very precious resource. Given that research is not only lab work or library work or field work, but time is also needed for reading, thinking, questioning, and reflecting. The time needed for high quality research must therefore be protected. Ways of realising this are shown below.

Table 3: How to maximise the time for research in the context of all University responsibilities

Specific component	Description	What is done to support
Academic workloads	Ensure that workloads enable the University mission AND allow people to focus on their strengths and so use their time productively	• **Introduction of the workload measurement tool[20]**
Provide training for RMA staff	Help develop RMA staff at Faculty and School level to reduce the admin load for research active academics	• **HR recognition of the RMA profession** • **Training programmes to be provided for existing staff** • **Encourage professional recognition for RMA**

7.5.3. Supportive Physical Environment

The physical environment that supports research is also important.

Table 4: How to maximise the support provided by the physical environment

Specific component	Description	What is done to support
Wits research facilities	Centrally organised research support facilities that enable research	• **COS, MMU, RHPU, WAM, WRAF**[21] • **Consider the formation of other necessary facilities**
eResearch support	Digital data management and high-performance computing facilities	• Provide support for **research data management, cloud services, and high-performance computing**

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[19] Funding provided to retired academics based on their accredited publications

[20] This tool will help Heads of Schools or Departments to measure and calibrate academic duties fairly and where possible to maximise their choice of specialities while ensuring that the school delivers what it is required to do
[21] Central Optical Service, Microscopy and Microanalysis Unit, Radiation Health and Physics Unit, Wits Art Museum, Wits Research Animal Facility

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Equipment purchases	Capital investments into research equipment	• **Annual capital investment** into: Minor, Medium equipment programmes NEP co-funding for major equipment
Access to equipment not located at Wits	Support access to equipment housed at other institutions across the world	• Support the use of the **NRF's KIC programme** • **Support access to existing equipment focused partnerships with JNRI, BNL & LHC[22] relationships; but also expand equipment focused collaborations**
Publishing support	Support for publishing	• Provide funding for **Article Processing Costs[23]** • **Introduce ChronosHub[24] to give assistance with OA journal publishing** • **More support for book publishing via Wits University Press and other high-quality scholarly publishers**

7.5.4. Research Management and Administration (RMA)

The final component of the supportive framework is the underlying assistance provided by a well-trained and highly motivated body of people engaged in **research and innovation management and administration** (RMA). To this end a cohort of RMA focused professional and administrative staff (PAS) will be trained to operate in Faculties and Schools, close to where the research takes place. These people will have a primary objective to aid the research initiatives. They will work in harmony with the University Research Office, WHC, WCE, Wits Innovation Centre and Tshimologong.

Table 5: Promotion of an enthusiastic cohort of RMA focused people

Specific component	Description	What is done to support
Growth and distribution of RMA staff	Encouraging existing PAS in Schools to embrace the RMA profession	• **Provide training, through SARIMA and in house means** • **Encourage professional accreditation**
Community of practice	Encourage excellence	• **Arrange regular community of practice meetings to share best practice and provide mutual encouragement**
Recognition of the RMA profession	Identification of jobs with a strong RMA component	• **Use professional competence framework to influence job descriptions and hiring processes** • **Use professional competence framework as a bases for performance management**

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[22] Joint Nuclear Research Institute (Russia), Brookhaven National Laboratory (USA) and Large Hadron Collider (Switzerland)

[23] Costs that arise from Open Access publishing

[24] A tool to help with the selection of good quality OA journals, avoidance the predatory journals, the submission of manuscripts and payment of page costs

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8. Selected indicators of success

There are many indicators of quantity and quality of research. All have their strengths and weaknesses but presented in Table 6 are those regarded as useful. The indicators differentiated into input and output indicators for each of the three areas that make up impactful research.

Table 6: Indicators of research quantity and quality

Type of indicator	Description	Source
Input	Value of grants applied for	Letters of support prepared
	External grants received	Oracle Finance System
Output	Number of publications	DHET method and Web of Science
	Number of citations received (leading to secondary bibliometric data, like the *h-index*)	Web of Science or Scopus
Outcomes	Media interest in Wits' innovation	Average value equivalent
	Impact assessments by the Wits Innovation Centre (WIC)	Case studies

9. References

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