



University of Fort Hare
Together in Excellence

University of Fort Hare

RESEARCH REPORT 2024

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FOREWORD

Professor Sakhela Buhlungu
Vice-Chancellor and Principal,
University of Fort Hare

The University of Fort Hare (UFH) is making progress in implementing its 2022-2026 Strategic Plan which focuses on the renewal of all aspects of the institution. Research outputs recognized by the Department of Higher Education and Training (DHET) are an important indicator of institutional performance. At Fort Hare, these took a downward turn in 2018. However, it is pleasing to note that a number of interventions aimed at enhancing research production are now beginning to bear fruit with the result that approved outputs have started to rise. A total of 291.90 units were approved by the DHET for 2022, an increase of 46.69 from the 245.21 units attained in 2021.

Improvements in the University's research productivity are also indicated by research funds obtained in the form of external grants, by the number of NRF-rated researchers and by student throughput at postgraduate level. A project to review and redesign the institutional organogram in order to align it with the 2022-2026 Strategic Plan was embarked upon and is now in its final stages. The new, streamlined, Council-approved organogram will ensure the optimal utilisation of knowledge, skills and competencies of staff in enhancing the quality of research, community engagement and teaching and learning.

This report provides a snapshot of institutional excellence in research and innovation and showcases researchers who have excelled in their various areas of specialisation.

INTRODUCTION

Dr Nthabi Taole-Mjimba
Deputy Vice-Chancellor:
Research, Partnerships & Innovation,
University of Fort Hare

The University of Fort Hare's 2024 Research Report showcases the significant strides that have been made in enhancing research and innovation at the institution. As Fort Hare transforms itself into a research-focused university, programmes to expand its capacity to conduct research and to strengthen research capacity in all knowledge areas are in full swing. The Report describes the work of Research Institutes and Centres that were established and approved by the University Council in June 2024. Also included are examples of research activities that are taking place in the Faculties of Education, Health Sciences, Law, Management and Commerce, Science and Agriculture, and Social Sciences and Humanities.

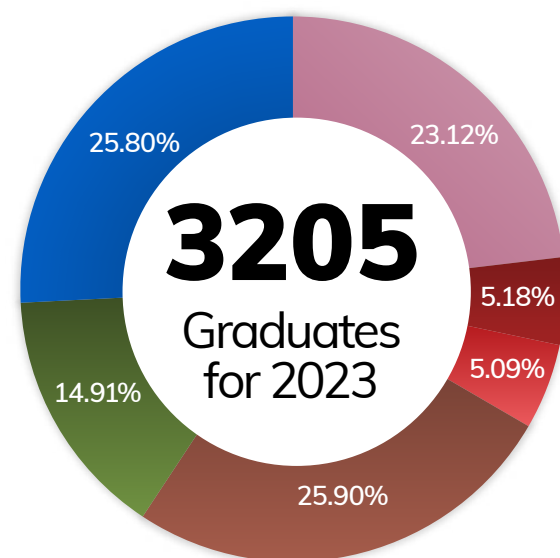
To foster excellence in research and innovation, the Report also provides an overview of recipients of the Vice Chancellor's Research Excellence Awards in the categories of (i) emerging researchers, (ii) established researchers, (iii) the most innovative prototype developed, (iv) the most creative output (music) developed and (v) the best book published. The Report also marks the achievements of staff members who received a rating from the National Research Foundation.

We hope you will enjoy reading the 2024 Research Report and celebrate with us the achievement of researchers at a university that has long been recognised for its unique contribution to the history of South African higher education.

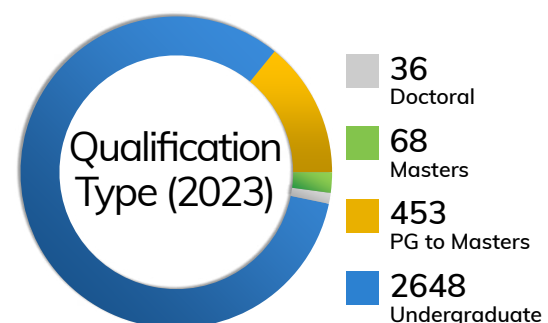
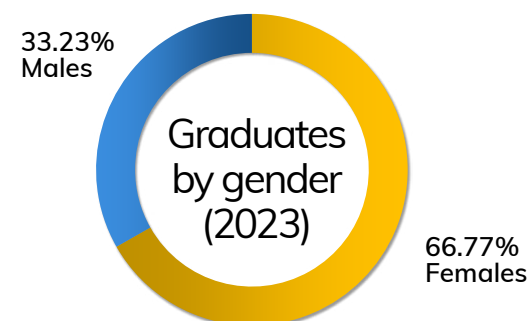
UNIVERSITY OF FORT HARE AT A GLANCE



Faculty	NRF-Rating						Total
	B3	C1	C2	C3	Y1	Y2	
Education (EDU)							0
Health Sciences (HS)			1				1
Law		1	1	1			3
Management & Commerce (M&C)			2	2		3	7
Science & Agriculture (S&A)		2	7	7	1	8	25
Social Sciences & Humanities (SSH)	1		4	2			9
Total	1	3	15	12	1	13	45



■ Social Sciences & Humanities
■ Science & Agriculture
■ Education
■ Management & Commerce
■ Health Sciences
■ Law



Research Niche Areas



- SAMRC Microbial Water Quality Monitoring Centre
- Risk and Vulnerability Science Centre
- Centre for Leadership Ethics in Africa
- Fort Hare -Centre for Entrepreneurship and Rapid Incubator



- Fort Hare Institute for Technology
- Fort Hare Institute for Social and Economic Research



- AngloGold Ashanti Research Chair in Dairy Science and Technology
- SARCHI Chair in Social Change
- SARCHI Chair in Sexualities, Genders and Queer Studies
- UNESCO Oliver Tambo Chair of Human Rights

BUILDING A FOUNDATION FOR SCHOOLS WHERE ALL CAN FLOURISH



Dr Sonti Mokobane



In South Africa, the end of apartheid meant that previously segregated schools needed to admit learners from a range of social, cultural and linguistic backgrounds. Although thirty years have now passed since the first democratic election, events at some schools continue to show that tolerance and respect of different groups for each other is still in short supply. Yet, schools are the very places where the ability of different social groups to live and work together should be nurtured.

In the United States, the concept of ‘cultural competence’ has been promoted as a means of addressing the diversity resulting from immigration. In the school context, cultural competence involves reviewing bias and identifying misconceptions in order to address disagreements and conflicts arising when learners and teachers with differing world views come together. The concept of ‘cultural competence’ has faced sharp criticism, however, with some claiming it involves ‘tokenism’ and others that it does not contribute to a transformative social justice agenda. For many, the challenge is not to dismiss the concept of ‘cultural competence’ out of hand but to elaborate upon it.

The idea of ‘cultural humility’ offers the promise of doing exactly this, firstly because, unlike ‘cultural competence’, it acknowledges the structural inequalities which, in the case of South Africa, continue long after the end of apartheid. Working with the concept of cultural humility requires teachers to recognize how their own backgrounds shape their work with learners from different backgrounds and, as a result, to demonstrate a lifelong commitment to self-reflection and analysis to redress power imbalances in their classrooms. However, in order to practise cultural humility, individuals must first be culturally competent.

Dr Sonti Mokobane, senior lecturer in inclusive education at Fort Hare, is passionate about contributing to the development and empowerment of marginalized groups. This led her to do a piece of research exploring understandings of cultural humility and the need for it at two secondary schools admitting diverse groups of learners recently. In order to conduct the study, Dr Mokobane interviewed the principals of both schools, 42 teachers and 28 learners. Teachers participating in the study identified the need for the respect for diversity with one noting, for example, that

It is important always to respect other cultures in the school so that we should all feel at home.

Nonetheless, learners noted that this principle was not always followed with one describing how she felt ‘left out’ and as if her

teacher hates my culture because of how she talks about it, you know - not showing any respect.

In any school, teachers hold more power than learners who gain or lose power depending on the extent to which teachers are willing to yield their own. Awareness of power differentials and of the need to treat those who are less powerful with respect and to include them in decision making is therefore key to cultural humility. Teachers in the study appeared to be aware of this need with one noting that

We know that we have more power over learners, but we should include them as well to have their say - all learners, of course, because all learners matter equally.

Learners, however, described different experiences with one noting

Teachers involve us sometimes, but with that serious face, and we don’t feel welcomed.

In diverse multicultural, multilingual contexts, the African philosophy of ubuntu is critical because of the way it calls on all to treat each other with respect, dignity and sensitivity. In the study, participants called on these ideas even though they might not have noted the concept of ubuntu directly with one teacher noting, for example, that

If we treat learners with love and respect and not discriminate against them, they will prosper.

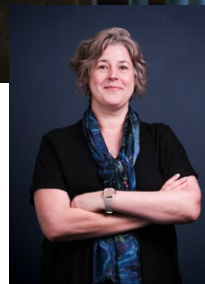
As a result of conducting the study, Dr Mokobane concludes that much more needs to be done in schools to create and foster diverse, inclusive, and equitable learning environments so that all learners have access to quality education that does not discriminate against anyone. This important study lays the ground for practical initiatives which will do just that.

RESEARCHERS PROMOTE THE RIGHT TO QUALITY EDUCATION IN THE EASTERN CAPE

Dr Siyabulela Fobosi, Mrs Anel Odendaal, Dr Ntandokayise Ndhlovu, Ms Zukiswa Pearl Mkuzo; Dr Adebola Olaborede & Dr Nazreen Shaik-Peremanov



>> Dr Fobosi



>> Mrs Odendaal



>> Dr Ndhlovu



>> Ms Mkuzo



>> Dr Olaborede



>> Dr Shaik-Peremanov

The poor quality of schooling available to many South African learners is an issue of particular concern especially since Section 29 of the Constitution of South Africa, signed by President Mandela in 1996, guarantees the right to quality basic education to all children. The right to quality basic education also enjoys extensive protection under international and regional human rights laws, which require countries that have assented to them, like South Africa, to provide access to quality education without any form of discrimination.

The realization of the right to quality basic education is particularly problematic in the Eastern Cape where many schools suffer from inadequate infrastructure. The dire situation of the school infrastructure deviates from the '4 As' scheme in international human rights law. The '4 As' are Availability, Accessibility, Adaptability, Acceptability. The dire and dilapidated school infrastructure means that, for many learners, education is unavailable and inaccessible.

Concern that the human rights of learners were not being upheld led Dr Siyabulela Fobosi and colleagues from the Faculty of Law, Mrs Anel Odendaal, Dr Ntandokayise Ndhlovu, Ms Zukiswa Mkuzo, Dr Adebola Olaborede; & Dr Nazreen Shaik-

Peremanov, to design a study investigating the extent to which schools in the province meet the minimum norms and standards for public school infrastructure, as set by the Department of Basic Education. The focus of the study is on understanding how infrastructural deficits affect the quality of education. The research team also aims to explore potential solutions to the challenges identified.

The study draws on a mixed-methods approach to gather data from ten selected schools in the Amathole West and Joe Gqabi districts. The selection of schools was based on criteria ensuring a representative sample of different socio-economic backgrounds and geographic locations. Data were collected using a range of methods including questionnaires distributed to learners and teachers intended to gather information on their experiences related to school infrastructure, interviews with teachers aimed at exploring administrative and logistical challenges, observation of school premises and focus group interviews with learners and teachers to identify the impact of infrastructure on educational outcomes. The study also drew on secondary data in the form of reports from the Department of Basic Education. Altogether a total of 500 questionnaires were

distributed to learners. The research team then interviewed twenty teachers, two from each of the ten schools selected for the study, and ten, learners from across the grades in each school.

Preliminary findings from the study indicate significant inconsistencies in the quality of infrastructure across the surveyed schools. Many schools lack basic amenities such as functional toilets, adequate classrooms, and proper fencing. These deficiencies directly affect the learning environment, contributing to lower educational outcomes. In essence, the challenges affect the best interests of the child and the right to quality basic education in the Constitution as well as in International Law. The following images show the situation at some of the schools visited.



Figure 1: Ndukumbana Primary School, Amatole West District

At Ndukumbana Primary School, the buildings are obviously dilapidated. Cracks in walls are clearly visible, windows are broken and poorly maintained classrooms suggest a lack of regular upkeep and insufficient funding for repairs. Such conditions hinder the learning environment, making it difficult for learners to focus and for teachers to deliver lessons effectively. The area around the school is also underdeveloped, lacking essential amenities that contribute to a holistic educational experience.

Mhlontlo Junior Primary School exhibits similar issues, with additional concerns regarding safety and sanitation. The presence of broken and inadequate fencing poses security risks, while the absence of functional toilet facilities raises significant health concerns. Classrooms appear overcrowded and poorly ventilated, further exacerbating the challenges learners and

teachers face daily.

Both schools exemplify the pressing need for improved infrastructure to ensure equitable access to quality education. Addressing these deficiencies is critical, as they directly impact educational outcomes and the overall well-being of learners. The conditions observed underscore the urgency for targeted policy interventions and increased funding to uplift the standard of education in these disadvantaged districts.

The final stage of the study will involve conducting interviews with four key informants. Thereafter data analysis will continue and a research report will be developed. The research team also aims to write a number of papers for publication and presentation at conferences.

Data analysis to date has allowed the research team to identify a number of recommendations for policy. The first recommendation centres on the need to increase funding and allocate more resources to upgrade school infrastructure in rural and disadvantaged areas. A second involves the need for enhanced engagement with stakeholders to foster collaboration between government, communities, and private sectors to pool resources and expertise. Finally, the research team has identified the need for the development and implementation of robust monitoring and evaluation mechanisms which will assess the state of school infrastructure and compliance with minimum standards on a regular basis.

Once again, the study conducted by Dr Fobosi and his colleagues shows the commitment of Fort Hare researchers to using their expertise to better the lives of fellow citizens in the Eastern Cape. In researching the impact of infrastructure on education, the team brings the University of Fort Hare to the fore as a major stakeholder in the development of the province.



Figure 2: Mhlontlo Junior Primary School, Joe Gqabi District



BRINGING AFRICAN 'SUPERHEROES' INTO MANAGEMENT CURRICULA



Professor Willie Chinyamurindi

In recent years, calls to decolonize education by undoing the impact of colonial thinking and its influence on the present have been made across the world. These have included demands made by South African students for the decolonization of curricula in the protests that rocked the higher education system in 2015 and 2016. In spite of these appeals, scholars hold differing opinions about the best way this can be achieved, and even whether it is necessary or desirable.

This observation prompted Professor Willie Chinyamurindi, of the Department of Business Management, to do a piece of research, now published as an article in the *South African Journal of Education*, asking focus groups of students at Fort Hare about how they thought the courses they studied could

be decolonized. Overwhelmingly, students expressed a desire for curricula to feature more business and industry leaders, termed 'superheroes' by Professor Chinyamurindi, from South Africa and the African continent more broadly. They also called for more localized stories and case studies in the courses they were taking.

The main issue and thread uniting students' requests was relatability. According to Professor Chinyamurindi, a great deal of the teaching of management and commerce globally can be described using the acronym 'WEIRD', in that it is dominated by Western, Educated, Industrialised, Rich and Democratic countries. In the study, student participants noted this in remarking on which theorists and expert voices appeared in their courses in comparison to those that did not. Students noted, for instance, the inclusion of top US economics scholar Michael Porter's work on the 'five forces' that drive competition in industries. They did not suggest that Porter's theory should be removed from the curriculum but, rather, it be linked with thought processes and ideas also emerging from the African context. For instance, the work done by the late Lovemore Mbigi could be useful teaching material. Mbigi's thinking on the ubuntu African philosophy, a concept that emphasises the importance of inclusivity in a strong business community, could equally feature in the African classroom.

For the participants, decolonization meant giving voice to African scholars, scholars like Mbigi, and increasing the volume of their contribution in classrooms. This would require lecturers to be more intentional in spotlighting African 'superheroes' whose work was relatable to students' own contexts. As one student pointed out, in the focus group in which they participated,

...there appears to be consensus of the need for change, the type of change that places importance on the role of giving more South African and even African business leaders a chance to be heard. This, for us, was what decolonization was about.

Another participant noted how their focus group saw the concept of decolonization resonating with the inclusion of African voices.

At the core of strategic management instruction is a protagonist, the one that is faced with a dilemma. There needs to be more effort in seeing case examples and the lives of protagonists we can relate with.

Another group reported that they had

... made important links with the entrepreneurship space. There is [a] need to bring in the experiences of entrepreneurs from the township and even rural community to the classroom [to] edify the teaching experience.

Yet another group observed that

Some great stories from South African business leaders fail to see the light of day in making it to the classroom. The challenge could be that researchers are not being active in making sure these stories make it to the classroom.

In South Africa, attempts have been made to encourage case-based teaching drawing on African contexts identified by Professor Chinyamurindi in his study. For instance, the Gordon Institute of Business Science at the University of Pretoria has a dedicated portal that houses and offers resources on case-based teaching. Many of these case studies are from South Africa or elsewhere on the continent. What Professor Chinyamurindi's study shows is that more teaching of this nature is needed.

Professor Chinyamurindi concludes his study by noting the need for lecturers to be aware of the contexts in which they teach and the material conditions surrounding the students in their classes. They then need to look for 'superheroes' their students can relate to. Professor Chinyamurindi notes that examples of superheroes are everywhere and offer rich learning experiences for students. Finally, lecturers need to focus on making content more relatable by including training in case-based writing and investigation in order to bring local cases, developed by students, into the classroom. Training students in case-based writing and investigation would not only ensure that more local cases are included in curricula but would immediately make the content students engage with more relatable.

In the context of calls for decolonization, Professor Chinyamurindi's study offers practical insights and advice on the way academic teachers can make subject content more meaningful to students, thus contributing to their success. In doing this, it makes an important contribution to the transformation of higher education in South Africa.

Link to the full article: <https://doi.org/10.15700/saje.v43n3a1637>

ENHANCING THE PERFORMANCE OF FAMILY BUSINESSES IN SOUTH AFRICA

Dr Angela Pike-Bowles, Dr Juliet Townes, Professor Willie Chinyamurindi



>> Left to right: Dr Juliet Townes, Professor Willie Chinyamurindi, Dr Angela Pike-Bowles

Many are aware that family businesses can offer excellent opportunities for earning a living, often because we know people who are involved in running a family business themselves. At a global level, family businesses are recognized as key players in most economies, and this is also true of South Africa. However, because of changing economic conditions, many family businesses have struggled to maintain their competitive advantage and many have failed. The more family businesses fail, the more negative implications for the national

economy because of the way they contribute to economic prosperity.

In the field of Business Management, 'dynamic capabilities' are fundamental tools that family firms can draw on to enrich their competitive advantage and ensure their continued profitability and success. Dynamic capabilities centre on a firm's capacity to adapt and recreate itself in response to changes in the environments in which it operates.

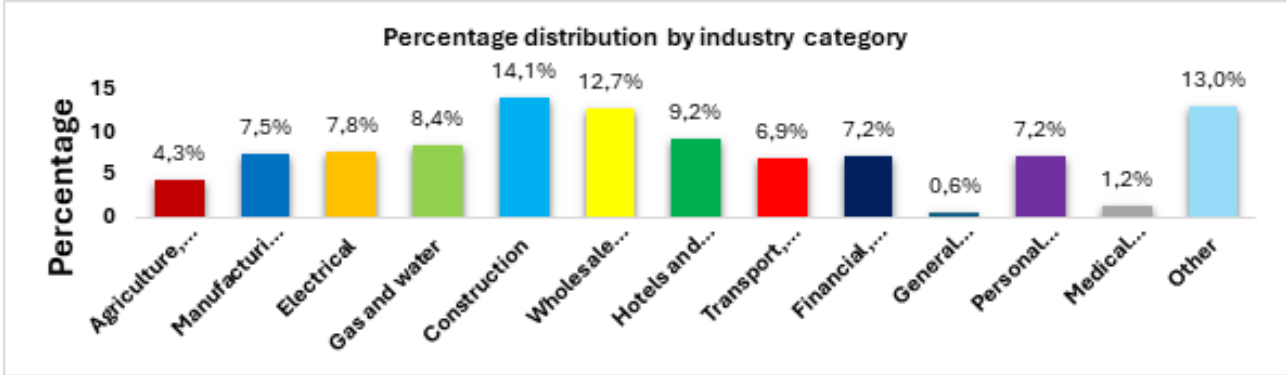


Figure 1: Industry Landscape of the Eastern Cape

Strategic foresight, involves ongoing scanning of the environment in which a firm operates and scenario planning in order to allow the business to respond to change and gain a competitive advantage. However, according to Dr Pike Bowles and colleagues Dr Juliet Townes and Professor Willie Chinyamurindi of Fort Hare's Department of Business Management, strategic foresight alone is not enough. Rather, it has to be exercised alongside dynamic capabilities. By linking strategic flexibility and dynamic capabilities, firms can identify opportunities and adapt their business strategies.

In spite of research focusing on family businesses, few studies have explored the dynamic capabilities these businesses need to succeed. Where researchers have studied family businesses using dynamic capabilities models, they have generally identified the need for additional resources to improve business performance. Drawing on their understanding of strategic foresight and dynamic capabilities, Dr Pike Bowles and her colleagues designed a study to explore the way strategic foresight mediated the use of dynamic capabilities in attempts to improve performance in family businesses. Five dynamic capabilities were considered in the study: environmental scanning, scenario planning, knowledge creation, culture, and formal organization. These dynamic capabilities were selected because of their limited use within the family business field.

In order to complete the study, Dr Pike-Bowles and her colleagues collected data from 347 family businesses currently operating in the Eastern Cape using a questionnaire completed either by the manager of a family business or its owner.

Analysis showed that women were the largest group of respondents (53.6%) and that 45.5% of all respondents were aged between 25 and 34 years. Biographical data suggested that the largest group of 14.1% of participants were involved in

construction. Participation in other industries is shown in Figure 1 above.

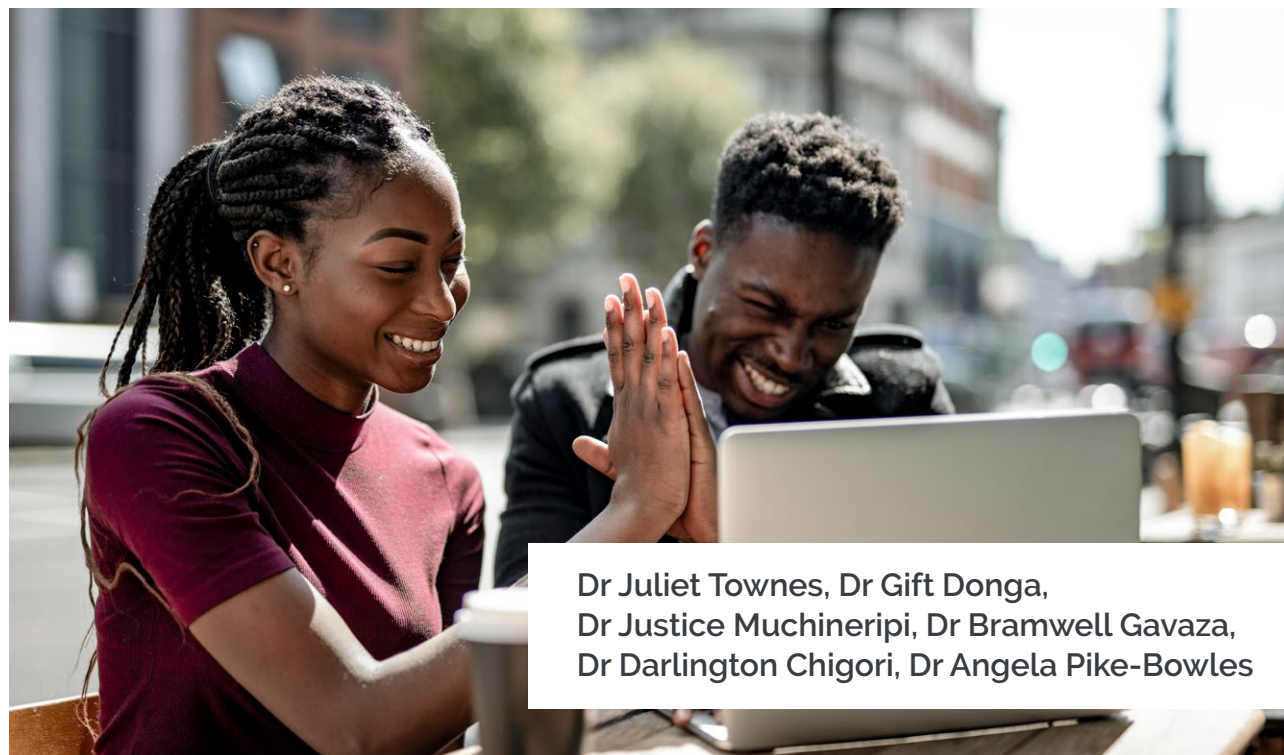
Statistical analysis indicated that strategic foresight and family business performance have a positive significant relationship ($r = 0.459$) with strategic foresight positively associated with all five dynamic capabilities studied: environmental scanning, scenario planning, knowledge creation, culture, and formal organization. The strongest significant relationship was between strategic foresight and the dynamic capability of formal organizations. This is a new finding in the research field with the potential to be enormously useful to family businesses.

As a result of their study, Dr Pike-Bowles and her colleagues have been able to make a number of recommendations for family business owners, one of which is that family firms need to draw on a model that integrates strategic foresight and dynamic capabilities to improve their performance. In implementing the model, businesses would be focusing on their formal organization in order to reshuffle resources to cope with economic uncertainties.

This study by colleagues from the Department of Business Management not only offers practical recommendations but also contributes to theory in the field by identifying the need for a model incorporating strategic foresight and dynamic capabilities. Findings from the study appear in an article in the Southern African Journal of Entrepreneurship and Small Business Management, published in February 2024, and have much to offer small businesses and are yet another indication of the contribution of researchers at Fort Hare to social and economic development particularly in the Eastern Cape.

Link to the full article: <https://doi.org/10.4102/sajesbm.v16i1.767>

ENHANCING EDUCATION FOR ENTREPRENEURSHIP



Dr Juliet Townes, Dr Gift Donga,
Dr Justice Muchineripi, Dr Bramwell Gavaza,
Dr Darlington Chigori, Dr Angela Pike-Bowles

Entrepreneurship, or the process of innovating, developing and leading a new or current business idea in a continuously changing environment, is essential for all economies as it combats poverty, increases job creation, enhances innovation, and contributes towards economic sustainability. Entrepreneurship also supports business success and sustainability. As a result, universities across the world are being called upon to consider the current state of the labour market and to restructure the curricula of their programmes to focus on entrepreneurship.

Dr Juliet Townes and co-researchers from the Department of Business Management, Dr Gift Donga, Dr Justice Muchineripi, Mr Bramwell Gavaza, Dr Darlington Chigori and Dr Angela Pike-Bowles, noticed a significant gap in curricula aiming to develop entrepreneurship in that content focusing on its implementation in developing countries was sparse. If students cannot recognize themselves or the contexts in which they

live, work and study in curriculum content, learning is likely to be less meaningful. In addition, if the attitudes, beliefs and social norms in students' home communities that constrain entrepreneurship are not challenged, then the goals of curricula aiming to develop it are less likely to be achieved.

To this end, Dr Townes and her colleagues designed a piece of research aimed at exploring students' opinions on the importance of entrepreneurship education and the curricula of programmes focusing on entrepreneurship. The study involved recruiting 322 students at the University of Fort Hare to respond to an online survey administered via a learning management platform. The survey consisted of 10 items on a 5-point Likert scale. A pilot study showed that the questionnaire was reliable and valid. Data were analysed using the Statistical Package for the Social Sciences (SPSS) software. The majority of respondents were female (68.3%) and were in their first year of study (61.5%).

Interestingly, a large majority of respondents (81.1%) reported being familiar with entrepreneurship and a significant percentage (60.9%) expressed interest in enrolling for an entrepreneurship degree. Of the students surveyed, 56.8% considered it extremely important to have a university degree in entrepreneurship while 32.3% regarded it as somewhat important. These findings highlight the need for universities to prioritize the integration of entrepreneurship education into their curricula, ensuring that students are equipped with the necessary skills, knowledge, and mindset to thrive as entrepreneurs in a rapidly evolving economic landscape. By offering tailored entrepreneurship education programmes, universities can play a pivotal role in nurturing an entrepreneurial talent pool and fostering socio-economic development in South Africa.

The findings also demonstrated a strong endorsement (58.7%) from students regarding the role of entrepreneurship education in improving their understanding of the qualities needed to be an entrepreneur. A large proportion of respondents

(41.6%) strongly agreed or agreed (35.1%) that embedding entrepreneurship education as a specific, stand-alone course in a programme was a good idea. The use of practical hands-on learning methods, such as project work within real entrepreneurial businesses, was also strongly affirmed. In addition, a substantial majority (66.8%) of the surveyed students strongly supported the idea that the curriculum should include at least one practical entrepreneurship experience, such as drafting a comprehensive business plan. An additional 25.5% of the respondents indicated agreement with this idea.

The results underscore a significant and widespread interest in entrepreneurial education among students at Fort Hare and indicate an immense appetite for entrepreneurial education. By giving precedence to entrepreneurship education and incorporating it into the higher education curriculum, universities are poised to assume a critical role in fostering the development of future entrepreneurs in South Africa. If Fort Hare can follow suit, its students will have a more promising future ahead of them.



>> Back row left to right: Dr Bramwell Gavaza, Dr Justice Muchineripi, Dr Darlington Chigori,
Front row left to right: Dr Juliet Townes, Dr Gift Donga, Dr Angela Pike-Bowles

GUIDING THE USE OF ARTIFICIAL INTELLIGENCE (AI) IN SOUTH AFRICAN UNIVERSITIES



Dr Vusumzi Funda



Professor Roxanne Piderit

The Covid-19 pandemic opened the way for technological innovations in the form of Artificial Intelligence (AI) to disrupt the way universities operated in ways never before experienced. In teaching and learning, AI offers the opportunity for one-on-one tutoring and personal coaching and its potential for application in other areas, including solving financial and arithmetical problems, is enormous. Noting the relative lack of research on the use of AI in South African higher education, Dr Vusumzi Funda and Professor Roxanne Piderit of the Faculty of Management and Commerce, took up the challenge of conducting a systematic review exploring the impact of Artificial Intelligence (AI) on academic performance and students' learning outcomes.

Their study was informed by the Technology Acceptance Model (TAM) which highlights elements that need to be considered when AI is used in higher education. These elements range across social, economic and political factors, the perceptions of students, academic teachers and other stakeholders, and attitudes and belief systems. Social factors acknowledge the impact of technology on individuals as they engage with changes in the contexts in which they live and work. Economic factors relate to the initial costs associated with the adoption of technology and returns on investment. In South African higher education, cost pressures have increased since the #FeesMustFall protests of 2015 and 2016 which resulted in lower annual tuition fee hikes, with increases in government subsidy then not covering resultant shortfalls. Political factors include policies and legislation intended to guide the use of technology with Dr Funda and Professor Piderit noting that, in South Africa, little guidance on the use of AI has been provided at a government level and that many universities have been slow to develop their own policies.

Perceptions, perceived costs, culture and traditions and infrastructure all impact on the degree to which students, academics and other stakeholders embrace AI. Clearly the cost of introducing and using AI needs to be considered early in the adoption process. Although costs are always a constraining factor, culture, or the shared values, skills and knowledge of different communities, must also be contemplated since cultural factors can constrain adoption in unforeseen ways. Finally, attitudes and belief systems impact on decisions made by individuals and the acceptance of new possibilities.

Dr Funda and Professor Piderit's study drew on a qualitative research method called 'PRISMA' to conduct a systematic review of 18 academic articles published between 2016 and 2022. PRISMA involves a four-step process encompassing evidence-based analysis, systematic review reporting, and meta-analysis. The study showed that AI is being used in universities in South Africa and revealed the enormous impact of the Covid-19 pandemic, which resulted in rapid shifts to e-learning, on its uptake. In e-learning, AI personalizes students' learning experiences and frees up time for them to concentrate on other aspects of their lives. However, there are negative implications for the use of AI in the form of human-to-human communication barriers, a decrease in human interaction, a failure to develop emotional intelligence and, potentially, increased unemployment for teachers. In addition, increased dependence on AI could lead to student laziness.

Although the study identified potential for the use of AI in universities, the study warns about the need to manage its use and application. Dr Funda and Professor Piderit also identified a lag in the development of policy in relation to AI and recommend that attention should be paid to this important issue at every university in order to ensure that the benefits of AI are maximized and its threats mitigated. The study also identified a need for the training of academic staff on the use of AI in order to contribute to its uptake.

Systematic reviews allow researchers to come to evidence based conclusions. As a result of their study, Dr Funda and Professor Piderit argue that AI is the next big future for higher education in South Africa and that the South African educational ecosystem has set itself up in a manner that is receptive to technological innovations. As a result, South Africa has the potential to become a leader on the continent. The potential of this important study to support South African higher education in the take-up of AI is therefore enormous and the work of the two Fort Hare researchers leads the way in drawing attention to what needs to be done to ensure that AI fulfils this potential in ways that are appropriate to our particular context.

Link to the full article:

doi: [10.1109/ICTAS59620.2024.10507113](https://doi.org/10.1109/ICTAS59620.2024.10507113)

Faculty of Science and Agriculture

ENHANCING SOUTH AFRICAN LIVESTOCK PRODUCTION

Beautiful Isabel Mpofu, Mhlangabezi Slayi, Gabriel Mutero, Sisipho Mlahlwa, Ishmael Festus Jaja



>> Left to right: Dr Mhlangabezi Slayi, Beautiful Isabel Mpofu, Dr Ishmael Festus Jaja

Anyone driving along the Eastern Cape's major roads will become aware of feedlots, an increasingly popular method of raising and finishing cattle in the meat industry. Despite the growing recognition that feedlots are an efficient means of meat production, there is a noticeable lack of research addressing their impact on animal welfare, food safety, and environmental sustainability.

A significant challenge faced by cattle farmers is the prevalence of parasitic diseases, which can adversely affect an animal's ability to gain weight and maintain optimal body condition during slaughter. The scarcity of research on animals raised on feedlots combined with the need for greater awareness of parasitic diseases led researchers from the University of Fort Hare, Beautiful Isabel Mpofu, Dr

Mhlangabezi Slayi and Dr Ishmael Festus Jaja, and colleagues from the Department of Rural Development and Agrarian Reform in the Eastern Cape, Dr Gabriel Mutero, and Sisipho Mlahlwa, to design a research study, published in the journal *Frontiers in Animal Science* in 2023. This study aimed at comparing parasite egg loads per gram (EPGs), body condition scores (BCS), and weight gain in cattle raised on feedlots versus those raised on pastures.

The study examined 120 cattle of different ages, sex groups, and breeds from different farms slaughtered at two commercial abattoirs in East London and Queenstown. The research team found that EPGs in cattle raised on pastures were significantly higher than those in feedlot-raised cattle, confirming findings from previous studies. This suggests that cattle raised on

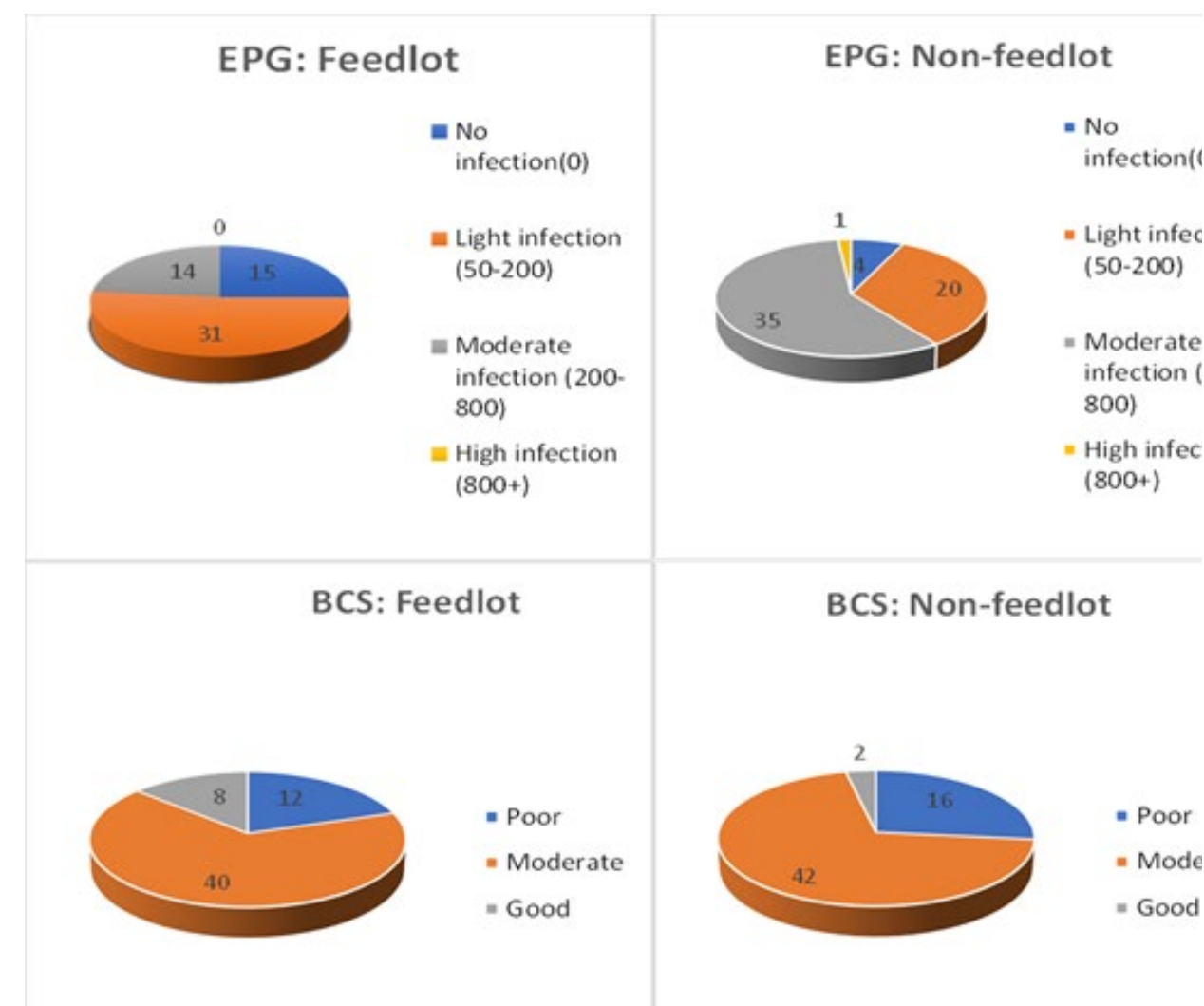


Figure 1: Comparisons of parasite egg count per gram (EPG) and body condition scores (BCS) of feedlot and non-feedlot cattle

pastures are more likely to encounter parasitic infections due to grazing habits and greater exposure to the natural environment. Body condition scores were also notably better in feedlot cattle than those raised on pastures (Figure 1). However, at one of the abattoirs, the farm of origin for feedlot cattle had a significant impact on scores for both EPG and BCS. The higher parasite egg count values in non-feedlot cattle may also be linked to the fact that these abattoirs process cattle from communal farmers who often lack access to adequate veterinary care and infrastructure for disease control. All this means that the differences in body condition scores between feedlot and non-feedlot cattle could be attributed to varying feeding regimes, management practices, and parasite loads.

Given that South Africa supplies 21.4% of the meat consumed

on the African continent and 1% of the global meat supply, research into the effects of feedlot practices on animal production is of enormous importance. While the Fort Hare research team acknowledges that further research is needed, their study provided valuable insights into the relationship between fecal egg counts, live weights, and body condition scores in both feedlot and non-feedlot cattle. In doing this, the research contributes significantly to understanding and enhancing livestock farming practices and ensuring the continued growth and sustainability of South Africa's agricultural sector.

Link to the full article: <https://doi.org/10.3389/fanim.2023.1302320>

CONTRIBUTING TO SUSTAINABLE AGRICULTURE AND FOOD SECURITY

Mutengwa, C.S., Aliber, A., Manyevere, A., Mushunje, A., Zhou, L., Chiduzu, C., Miya, S., Elephant, D., Mndela, M., Jama, K.



>> Back, left to right: Prof Manyevere, Dr Mndela, Prof Aliber, Prof Chiduzu
Front, left to right: Prof Mutengwa, Mrs Jama, Prof Mushunje, Dr Zhou

Increasing the productivity of arable and grazing lands is a priority in the Eastern Cape, a province characterized by poor infrastructure and high levels of poverty and where many people depend on the land for a living. The threat of climate change brings an additional challenge to many who already lead a precarious existence.

Fort Hare's Sustainable Agriculture and Food Security (SAFS) Research Group, part of the Sustainable Agriculture, Water Usage and Climate Change Research Niche Area (RNA), focuses on improving land productivity holistically. In doing this, the group works to enhance the lives of the many people

who depend on the land for a living. A particular focus of the SAFS is conservation agriculture, a type of crop farming that can restore the health and fertility of degraded soils producing poor crops. The SAFS group also supports farmers facing climate change by exploring the way farming systems can be made more resilient to harsh conditions and by reducing emissions of greenhouse gases.

Researchers, Professor Michael Aliber, Professor Alen Manyevere, Professor Abbyssinia Mushunje, Dr Leocadia Zhou, Professor Cornelius Chiduzu, Dr Silindile Miya, Dr D. Elephant, Dr Mthunzi Mndela and Mrs Kanyisa Jama have been involved in a range of initiatives over the years including a field trial which investigated crop rotations, tillage practices and residue management practices. The purpose of the field trial was to gather evidence about the impact of these conservation agriculture practices on soil health and crop productivity in the short, medium and long terms.

Researchers have also been involved in a project involving the evaluation of winter crops (wheat and canola) and summer crops (maize, sorghum, soybean, sunflower) in order to widen the choice of crops that can be grown by recommending suitable cultivars. This is an important intervention given that maize is the predominant summer crop in the Eastern Cape and that cultivation of winter crops, especially by smallholders, is limited. Investigation of micro-organisms associated with different types of sorghum is also under way. Some micro-organisms have been shown to allow sorghum to adapt to stresses such as heat and drought. Eventually, the aim of this work, conducted with the International Centre for Genetic Engineering and Biotechnology (ICGEB) in Cape Town, is to identify micro-organisms that can be used to promote stress tolerance commercially.

In the Eastern Cape, research that aims to optimize the use of the land is critical. Investigations conducted by the SAFS research group include attempts to establish the extent of ecological degradation using techniques such as remote sensing imagery, machine learning and drones, all of which are advances associated with the Fourth Industrial Revolution (4IR). The studies aim at identifying invasive species and assessing plant biodiversity in rangelands and to distinguishing between arable lands that are highly eroded and those that are not. Other studies monitor the chemical, biological and physical properties of soil on previously degraded land that has been restored and look at the way soil nutrients on degraded lands can be enhanced using microorganisms. Researchers are using modelling techniques to compare current soil interactions with those in the future. They aim to monitor climate change in different land use areas and cropping systems by measuring the emission of greenhouse gases.

Another study has collected baseline data on the composition and structure of vegetation in the Ncera communal area and Fort Hare's Honeydale Farm in order to compare the impact of different land tenure systems on vegetation and soil. In addition, the study assessed the extent and impact of bush encroachment, an indicator of degradation. Soil samples were also collected to allow the research team to identify the effects of the encroachment of some species on their chemical composition. This ongoing research forms part of the holistic management of rangeland furthered by the SAFS Research Group.

Studies on socio-economic factors that affect the adoption of new farming practices are also ongoing. These include an investigation of smallholder farmers' willingness to plant soybeans and another on the impact of climate-smart agricultural practices on farming systems that integrate crop and livestock farming. These studies also analyse value chains in order to facilitate the adoption of new methods aimed at eradicating poverty.

Other important work implemented by group members from the Centre for Global Change (CGC), formerly known as the Risk and Vulnerability Science Centre, involves making climate data more accessible to farmers to allow them to better make decisions. The CGC works in partnership with other institutions specializing in climate change to do this work including the African Climate and Development Initiative (ACDI), at the University of Cape Town. Recently, the CGC and ACDI in collaboration with UFH's Education Department and other members of the SAFS research group organized a Climate Change Training Workshop for teachers in the Eastern Cape. Geography and Natural Science teachers for grades 7-9 in the Amathole West District were the main focus for the workshop which attracted 45 participants. In the workshop, the teachers were provided with information on climate change and with resources for use in their classrooms. The CGC has also set up community gardens in selected villages in the Amathole district in order to train residents in the sustainable production of vegetables.

Since inception, the SAFS research group has graduated more than 85 MSc and 40 PhD students. It has also published more than 150 manuscripts and nine technical reports; one patent was registered, and research outputs were shared in more than 100 conference presentations, an indication that the important work of the group is reaching a wide audience.

Once again, the work of a research group located at Fort Hare shows the University's commitment to using its expertise to improve the lives of inhabitants of the Eastern Cape.

USING ECONOMIC INSTRUMENTS TO MANAGE WATER SUPPLY IN ETHIOPIA

Dr Micheal Tsegay Assefa, Professor Abbyssinia Mushunje, Professor Tesfay Araya



>> Professor Abbyssinia Mushunje

Although only 18% of the world's arable land is irrigated, this area is responsible for 33% of all agricultural production. In recent years, questions have arisen about the need for more expensive irrigation projects to meet rising demands for food given the negative impacts of huge dams. Often, attempts to manage water supply exacerbate shortages as dams can result in water scarcities in areas downstream. As a result, water policy debates have switched focus from water-supply to water-demand, as the concept of 'getting prices right' is increasingly identified as a tool to allocate water and increase the efficiency of water use.

This observation led new doctoral graduate, Dr Micheal Tsegay Assefa, to conduct a study looking at the use of economic instruments to manage water in Wondo-genet in the Sidama and Oromia regions of Ethiopia, under the supervision of Professor Abbyssinia Mushunje of the Department of Economics and Extension at Fort Hare and Professor Tesfay Araya of the Department of Soil-and-Crop and Climate Sciences at the University of the Free State. Although Ethiopia has large reserves of surface and underground water, its population of more than 120 million people and the uneven distribution of available water throughout the country means that the right to use water needs to be managed carefully.

Economic instruments can be used to recover costs associated with the supply of water, reduce demand, improve environmental outcomes and increase agricultural productivity. They can also contribute to the allocation of water between and within the sectors that use it. Water pricing, taxes, subsidies and tradable water rights are all economic instruments that can be used to manage water. Non-market approaches such as rationing and crop-based and area-based charges are also important in managing irrigation systems.

Dr Assefa's study drew on survey data, focus group

discussions and interviews with water users as well as analyses of reports and policy documents. One aspect looked at water rights. The Ethiopian Constitution of 1995 assigns ownership of all natural resources, including land and water, to the state and the people of Ethiopia which means there is no private ownership. Farmers therefore have the right to use land and water but they do not own it. Participants in the study were not in favour of separating the right to use water from the right to use land. A large proportion (82%) of the participants in Dr Assefa's study were not in favour of the principle of water trading. They were, however, willing to separate water rights and land rights if a market to trade water was established.

A second aspect of the study looked at the willingness of those using water for irrigation purposes to pay for it. Statistical analysis showed many different groups of people who were willing to pay for water for irrigation purposes. Large family households in receipt of some supplementary income, for example, were prepared to pay as were those who depended on irrigation to grow the crops that sustained their livelihoods. In addition, the study showed that water fees or taxes based on land size or crop type were feasible. Most people using water for irrigation purposes indicated that they preferred to pay for water on the basis of the land area irrigated rather than the volume of water used. In Ethiopia, volumetric pricing is difficult because of a lack of infrastructure and the variability of water supplies. The finding that users were prepared to pay for water based on land size was, therefore, important.

Although the study identified a number of constraints to the use of economic instruments to manage water use in Ethiopia, Dr Assefa's findings go a long way to understanding how a complex problem involving access to water in Ethiopia can be managed using this mechanism.

USING A SYSTEMATIC REVIEW TO DEVELOP EVIDENCE-BASED CONCLUSIONS ON CHANGES IN LAND USE AND LAND COVER

Dr Gbenga Abayomi Afuye, Mr Lwandile Nduku, Professor Ahmed Mukalazi Kalumba, Professor Dr Celso Augusto Guimarães Santos, Dr Israel Ropo Orimoloye, Vincent Nduka Ojeh, Dr Kgabo Humphrey Thamaga, Mr Phila Sibandze



>> Dr Afuye



>> Dr Thamaga

Systematic reviews, which extract and interpret data from published research, are becoming increasingly important in developing evidence-based conclusions in all areas of study. Fort Hare researchers have recently been involved in producing one such review examining changes in the way land is used (land use) and the extent to which it is covered by vegetation (land cover). In order to complete the study, five Fort Hare Researchers, Dr Gbenga Abayomi Afuye of the Department of Geography and Environmental Science, Mr Lwandile Nduku of the Geospatial Application, Climate Change and Environmental Sustainability Laboratory (GACCES), Professor Ahmed Mukalazi Kalumba, head of the GACCES, Dr Kgabo Humphrey Thamaga and Mr Phila Sibandze of the Department of GIS and Remote Sensing joined other researchers from the University of Paraiba in Brazil, Western Michigan University in the United States of America and Taraba State University in Nigeria.

Information about the way land is used (land use) and the

extent to which it is covered by vegetation or buildings constructed by humans (land cover) is critical in the conservation of water and the control of erosion and accretion, or the gradual increase in land as a result of natural forces washing up sand soil and silt from rivers and oceans. Changes in land use and land cover (LULC) threaten biodiversity and can also result in increased soil erosion as well as distress in the way water circulates between the earth and the atmosphere. LULC can change as a result of logging and fires, pressure from increasing populations, rapid urbanization, the development of infrastructure and poor drainage. Changes in LULC can also result from modifications to wetlands and soil degradation in crop growing areas.

Estimating losses to vegetation and the biodiversity of forest areas is critical in determining the dynamics of land use and land cover. Using information on changes in LULC as urban areas are developed is crucial if areas designated for human settlement are to be sustainable. All this meant that

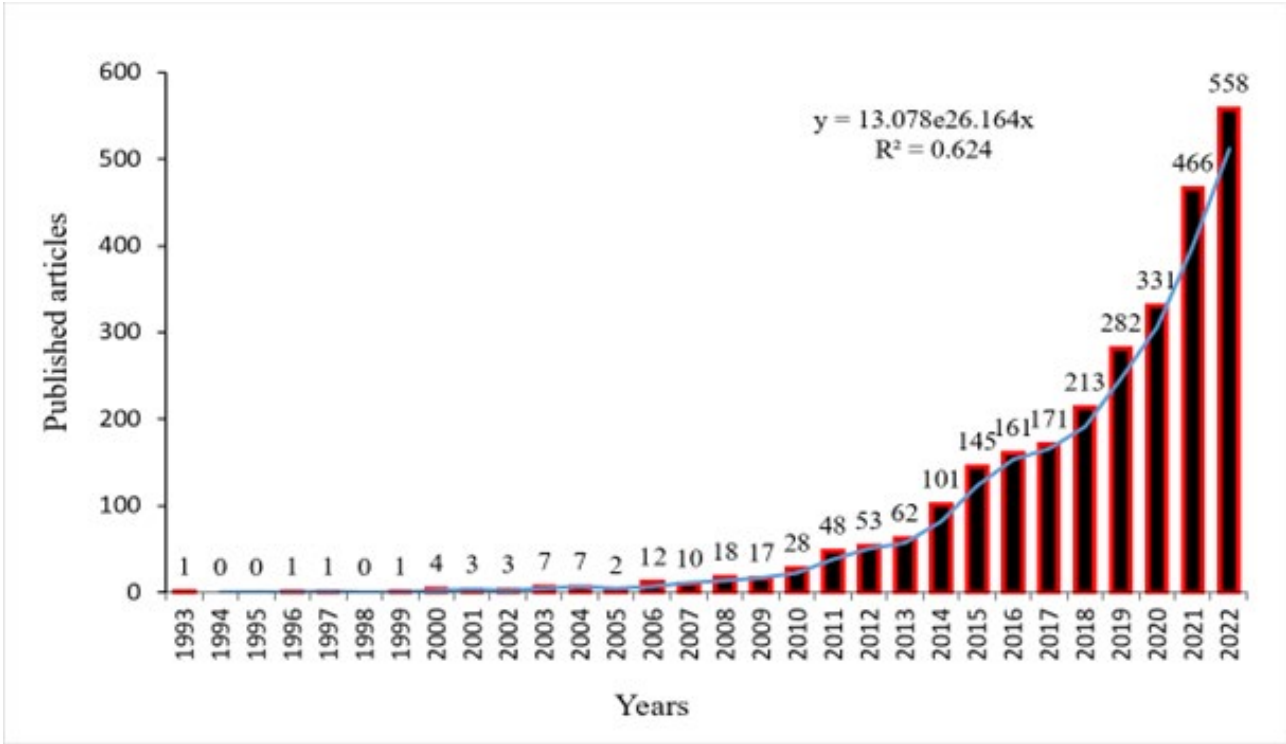


Figure 1. Annual scientific production growth trend from 1993 to 2022

the systematic review of the literature on changes to LULC published between 1993 and 2022 was much needed.

In order to complete the review, the team drew on the Scopus, ScienceDirect and World of Science databases to generate data using key search terms related to land use and land cover. The search identified 2710 studies. Between 1993 and 2022, global research on LULC experienced an average annual growth rate of 43.51%, indicating increased attention to monitoring change. Between 1993 and 2009, the amount of published research progressed slowly. However, in 2010, research outputs started to rise, peaking in 2022, a trend attributable to the high demand for land that could be used for habitation and agriculture.

China, a developing country, has experienced significant changes in land use thanks to rapid urbanization. It ranked first in the number of publications produced in the period examined by the research team with top Chinese institutions making a substantial contribution to all studies of land use and land cover. The USA ranked second in publication outputs, utilizing advanced technology to assess complex land use planning through decision-support systems. The team identified limited research produced by developing countries other than China, especially in the Global South. This finding indicates the need for increased funding and more independent research to

enhance the study of land use/land change. The study also revealed limited co-authorship with countries such as Spain, India, Indonesia, Malaysia, Ethiopia, Ghana and South Africa, along with lower research output from these countries on LULC change generally. Ethiopia ranked amongst the top twenty countries producing research on LULC with Addis Ababa University ranking fourth among all the institutions producing research.

The reviewed articles highlight remote sensing as the primary research theme in LULC and the most commonly used method for creating physical, theoretical, or computer-based models to study land use/land cover change. The study also identified informed decision making on degraded lands, the enhancement of policy to restore land and advanced cutting edge research in developing nations as key areas of interest and showed that developing nations can combat environmental degradation by promoting the establishment of new forests, conservation, climate policy programmes and reducing their carbon footprints.

The findings of the study serve as a basis for future research on land use and planning related to changes in land cover and show Fort Hare researchers collaborating internationally in order to enhance the future for all humankind.

THE IMPACT OF GENETICALLY MODIFIED (GM) MAIZE AND SOYBEAN ON LAND USE IN SOUTH AFRICA

Dr Siphokazi Ngcinela, Professor Abbyssinia, Professor Mushunje Amon Taruvinga, Dr Charles Shelton Mutengwa, Dr Tlou Samuel Masehela



>> Prof Taruvinga



>> Dr Mutengwa

Agriculture in South Africa has changed dramatically over the past two decades, becoming increasingly efficient in terms of operations and management. Changes have been driven by various factors, including a demand for increased food production thanks to increases in the population, changes in climatic conditions, and the introduction of new breeding methods and technologies. Change has also been supported by enabling policy frameworks.

Although agricultural change can bring enormous benefits, it can also result in threats to biodiversity and land which fulfils an important function or service in ecosystems. Awareness of these threats led researcher Dr Siphokazi Ngcinela to conduct a doctoral study on the impact of genetically modified (GM) maize and soybean. Dr Ngcinela’s study was supervised by Professor Abbyssinia Mushunje, Professor Amon Taruvinga and Dr Charles Shelton Mutengwa of the Department of Agricultural Economics and Extension at Fort Hare and Dr Tlou Samuel Masehela of the Department of Forestry, Fisheries and the Environment

GM maize was introduced to South Africa in 1998 and soybean in 2001. Dr Ngcinela’s study aimed to explore the impact of GM crops on land use and establish whether these varieties were replacing other crops, replacing each other, and whether they were resulting in more land being brought under cultivation.

The study identified a positive change in production yields for both maize and soybean after GM crops were introduced. The amount of land used to grow maize declined after the introduction of GM variants while a marginal increase in land used to grow soybean was observed. The increase in the land used to cultivate soybean could be as a result of farmers choosing to grow the crop which is in high demand as a source

of protein in livestock production, a growing sector. As a result, Dr Ngcinela was able to conclude that maize production is likely to remain restricted to existing agricultural land and not encroach on land used for other purposes. She was also able to conclude that the marginal increase in soybean production meant that cultivation of this crop was likely to increase but only on land currently used for agriculture. One reason for this is because the current preference is for soybean to be intercropped or rotated with maize, therefore utilizing the same, or similar, cultivation areas given the required growing conditions.

Other findings also confirmed that the changes and shifts in maize and soybean production were accelerated to a large extent by the introduction, adoption, and use of advances in agricultural technology together with enabling agricultural policies.

Although the study showed positive results in terms of the impact of the introduction of GM modified crops on land use in South Africa, Dr Ngcinela recommends that assessment of changes in areas under cultivation needs to take place frequently in order to ensure that South Africa’s biodiversity is maintained and ecosystems continue to flourish.

EXPLORING DIGITAL ITEM DESIGN FOR ASSESSMENT OF PRESCHOOL CHILDREN

Dr Rivca Marais, Professor Louise Stroud,
Professor Cheryl Foxcroft, Dr Johan Croner,
Dr Jennifer Jansen

Like many other aspects of professional practice, assessing young children's development was affected by the Covid-19 pandemic as psychologists had to move from face-to-face interaction to using smartphones and tablets to conduct tests online. The fact that attempts to shift assessment to digital formats often result in paper-based methods simply being replicated caught the attention of Dr Rivca Marais of Fort Hare's Department of Psychology and led her and a team of colleagues from Nelson Mandela University to investigate the use of innovative methods to assess young children. South Africa is a middle-income country and Dr Marais and her team identified a critical gap in knowledge about the use of technology to assess children's development in lower and middle income countries in particular.

The study drew on a parallel mixed-method design to investigate the performance of children aged between three and five years on story-linked items of cognition. Sixty participants were identified from three preschools in the Nelson Mandela Bay and Raymond Mhlaba Municipal areas. The study involved observing children as they interacted with three different digital story related items selected because they required varying levels of interactivity. The aim of the study was to evaluate the effects of different requirements on participants.

One of the observations made by Dr Marais and her colleagues was that the response to test items depended on the child's stage of development as younger children engaged with storylines through fantasy play while older children followed instructions more realistically. The researchers also noted that test items requiring intricate drag-and-drop interactions were particularly challenging and, as a result, identified the need for larger touch-sensitive areas around small objects. Overall, younger children struggled with tasks requiring drag-and-drop actions more than older children as a result of different stages in their development of fine motor skills. The study also showed that the design of test items influenced children's decision making as participants tended to choose familiar items

rather than following instructions for the task. These insights highlighted the importance of considering developmental factors and interface design when designing digital cognitive tasks for young children. Computerized tracking of children's performance as they completed the tasks showed that three-year olds touched the screen more frequently than five-year olds with significant difference between the time taken by the three groups.

Overall, the study highlighted the feasibility of creating engaging digital assessments that accommodate children's diverse stages of development. It also showed that computerized performance tracking enhanced clinical observations by identifying variations in completion time and touch responses, critical for accurate test interpretation. Above all, the research showed that age-appropriate interactive features are crucial for valid assessments if test design effects are to be minimized.

Taken as a whole, the study conducted by Dr Marais and her colleagues provides a compelling rationale for more research exploring the use of tablet-based assessment for children with further studies into gamification, the impact of digital literacy and diverse test item types identified as a priority, especially in relation to children with special needs. We look forward to hearing more from Dr Marais and her team as they move forward in this important area of research.

Link to the full article:
<https://doi.org/10.4102/ajopa.v6i0.154>

THE CLIMATE CRISIS AND CLIMATE INJUSTICE IN AFRICA

Professor Philani Moyo



For Professor Philani Moyo, of the Fort Hare Institute for Social and Economic Research (FHISER), climate change at a global level, now becoming more and obvious in weather patterns and events such as flooding and excessive heat waves, is not only a threat to the existence of humankind but also a driver of injustice. As a result, we are experiencing a 'climate crisis'.

Injustices occur because the impact of climate change on communities is not uniform. Depending on their location and the social, economic and political systems in which they live, the impact of climate change is felt most by vulnerable, poor, marginalized communities in Africa. Professor Moyo points to claims that the suffering of these communities amounts to 'climate apartheid' and that those who experience the effects of change most are usually those who have contributed to it least.

As a result of the crisis, many African countries and non-governmental organizations are at the forefront of a radical push for climate justice for the people of the Global South. This push is conceptually anchored in three approaches, namely, the rights-based approach, the sustainable development approach and the historical responsibility perspective.

Rights-based approaches to climate justice, as their name suggests, prioritize human rights and the fairness of procedures. Their central argument is that effects of the climate emergency violate the basic human rights of the poor and marginalized, as embodied in international and national legal frameworks. These include the right to food, medical care, good health, housing, social services and social security. The calamities of the climate emergency are thus disrupting or denying these rights to the poor thereby providing justification for advancing and advocating for climate justice in order to recognise and respect them.

The rights-based approach overlaps with the sustainable development perspective that emphasizes prioritizing the basic needs of the poor, the limitations of the environment to meet these needs and developmental rights. Sustainable development generally encompasses the idea that any development should meet the needs of the present without impacting on the ability of future generations to meet their own needs. This idea of social equity between generations echoes thinking in the field of distributive justice. In a nutshell, distributive justice identifies a number of climate injustices related to who benefits and who suffers, at what cost and with which risks. It also considers the way in which national and international policies, intended to mitigate change and allow people to adapt, impact on different groups. A focus on distributive justice also allows for an assessment of the way

the climate crisis is aggravating the destruction of ecosystems and biodiversity, undermining human capabilities or the ability of individuals and communities to achieve who they want to be and what they want to do.

Some elements of the sustainable development perspective overlap with the historical responsibility approach that is informed by the 'polluter-pays-principle' (PPP). In basic terms, the PPP is an economic, ethical and legal principle that ties responsibility for causing harm to the generation of funding which can be used for measures to adapt to and mitigate climate change.

The central argument of the historical responsibility approach is that the actions of the Global North brought us to the current climate emergency and, hence, that nations located there should shoulder primary responsibility for their consequences.

The struggle for climate justice in Southern Africa is motivated by the fact that vulnerable, poor and marginalized people of Southern Africa have precarious livelihoods due to the failed Western-initiated neocolonial project, which has seen free trade, privatization and a lack of spending on public services, forced upon them in a process known as 'structural adjustment'. The situation in Southern Africa is made worse by the failure of governments to provide adequate support for adaptation and the development of resilience in the form of information, capacity building, and material resources in contexts where people may have limited (or no) voice and cannot participate in top-level decision-making. This is a form of procedural injustice since the voices of poor and marginalized communities are not adequately included in political and climate action decision-making.

Finally, mitigation and adaptation policies in some Southern Africa countries also have injustice elements since they are a threat to jobs, especially those in the mining-manufacturing industrial complex powered by fossil fuels. While the anticipated climate benefits of a transition to renewable energy are not in dispute, the cost of this transition on the working class, their jobs and livelihoods is a matter of potential injustice. Given that there is currently no evidence of the transition to 'green energy' opening up well-paid, new jobs or of renewable technologies being developed locally, the likelihood that the transition to a green economy will be equitable is low.

In offering this exploration of approaches to climate justice, Professor Moyo opens the way for those not familiar with his field to join their voices to the many already calling for the end of 'climate apartheid'.

TRANSCENDING THE DECOLONIAL CRITIQUE AND RETHINKING THE HUMANITIES IN AFRICA

Dr Siseko H. Kumalo



In South Africa, the #RhodesMustFall protests of 2015 and 2016 resulted in enormous interest in the concept of 'decolonization'. Dr Siseko Kumalo, of the Department of Philosophy, responded to this interest by launching a new home for decolonial theory in the form of the *Journal of Decolonising Disciplines* in 2019. As founding Editor-in-Chief, Dr Kumalo's vision for the journal was for it to accommodate thinking on decoloniality from multiple disciplinary perspectives.

It soon became apparent, however, that two things were missing in thinking about decolonization. The first related to what a decolonized university might look like in practice. The second was that the concept of decolonization had never been part of national discourse in South Africa where the talk was of the 'struggle for liberation' or the 'struggle against apartheid'.

Dr Kumalo critiques these two problems in a publication in the *Journal of Philosophy of Education* published earlier in 2024 by responding to claims made by other authors that we lack definitions of decolonization and noting that many of these claims contribute to erasing the potential of indigenous intellectual thinking. Discounting indigenous thinking has a long history in South Africa going back to the decision to distinguish the education students received at Lovedale College in 1870. James Stuart who, in teaching activities such as wagon-making, bookbinding and agriculture to black students, contributed to denying their ability for critical reasoning by constructing them as only useful for manual labour.

Dr Kumalo argues that, because of the lack of a tradition of thinking about decoloniality in South Africa, scholars have largely drawn on the work of Latin American (Latinx) scholars and have ignored the work of thinkers such as William Wellington Gqoba, S.E.K. Mqhayi, Archie Mafeje, A.C. Jordan, and Mazisi Kunene. The fact that some of these thinkers wrote in isiZulu and isiXhosa provides a reason for the

lack of awareness of local work but also suggests a curious assumption that knowledge can only ever be developed in the language of the colonizer, a point challenged by Dr Kumalo in another paper published in *Critical Studies in Teaching and Learning* in 2020.

As a result of his identification of a lack of tradition in thinking about decolonization in South Africa, Dr Kumalo began to work with the Black Archive, or the work of Black/Indigenous intellectuals excluded from the knowledge development project in South Africa. Part of this work has involved engaging with the work of musicians and artists whose work does not require translation thus avoiding the critique that knowledge can only ever be developed in the language of the colonizer.

Important in this work has been the need to establish the Black Archive as an internationally reputable and impactful area of research. To this end, during time spent at Harvard University on the South Africa Fellowship, Dr Kumalo developed the Black Archive Visual Podcast, bringing together scholars like Paul Zeleza, and curators like Khanyisile Mbongwa and Dr Sarah Clunis of the Harvard Peabody Museum.

Dr Kumalo's concern with global solutions developed from local context(s) then resulted in an invitation to participate in the Aristotle-Confucius Symposium in China. This meeting was convened by the president of the United Nations Sustainability Development Network, Professor Jeffrey Sachs of Columbia University, to consider how ancient wisdom responds to the ill-defined, complex problems of the modern world.

Given the history of the University of Fort Hare in developing African intellectual thought, it is extremely fitting that further work is being done here drawing on its proud tradition.

UKUPHUHLISELWA EZOBUNGICALI KWEELWIMI ZASEAFRIKA: ISIXHOSA NJENGOLWIMI LOKUPHANDA (Intellectualisation of African Languages: IsiXhosa as a research language)

Lukhanyo E. Makhenyane



Nakubeni kukho uphandolwazi osele lwenziwe ngokuphuhliselwa ezobungcali kweelwimi zaseAfrika (Kaschula & Nkomo, 2019; Khumalo, 2016 & 2020; Maseko, 2011; Prah, 2017;), lunqongophele uphandolwazi olugxile ekuphuhliselweni kwezi lwimi njengeelwimi zokuphanda, ngokungakumbi isiXhosa. NgokukaKhumalo (2016), ukuphuhliselwa ezobungcali kuthetha inguqu egqibeleleyo kumthamo nendima yeelwimi zemveli zaseAfrika ekusasazeni ulwazi kuzo zonke iinkalo zobomi. Enye yeendlela zokwenza oko, ngokukaKaschula noNkomo (2019), kukuphuhliswa nokumiselwa kwesigama sobugcisa nesobuchwepheshe kwiinkalo eziluthotho zobungcali, kuquka neyophandolwazi.

Nangona zikhona iingxelo zophandolwazi ezibhalwe ngesiXhosa kwibakala lobuNgqawulwazi (Mastazi) nelobuGqirhalwazi, asikho isigama sokuphanda sesiXhosa esimiselweyo. Ukuphononongwa kweengxelo zophando ezibhalwe ngesiXhosa ukusuka kowama2013 ukuya kowama2020, kusetyenziswa uphengululo loncwadi olucwangcisiweyo, ndifumanise ukuba iingcali zesiXhosa ezibhale ingxelo yophandolwazi ngesiXhosa ziyohluka kwisigama sokuphanda ezisisebenzisayo. Unozala woku kukungabikho kwesigama sesiXhosa esimiselwe uphandolwazi. Lo ngumngeni ekufuneka usatylwe ziingcali zesiXhosa ukuqhubela phambili iilinge lokuphuhlisa ezobungcali ilwimi zaseAfrika. Ewe, iingcali ezifundisa isiXhosa zinako ukuziqambela isigama xa bebhala ingxelo yophandolwazi ngesiXhosa. Noxa kunjalo, abafundi abakwibakala labaqalayo ukwenza uphandolwazi kwaneengcali ezingezizo iingcaphephe zolwimi neziphuma kwezinye iinkalo zenzululwazi, zifumana ubunzima ekuziqambeleni isigama sokuphanda ngesiXhosa, kuba abazizo iingcali zesiXhosa.

Zikhona iimodeli zokuphuhlisa isigama ezisekelwe kwisithako sesigama sikaWüster (1968) nesithako sesigama sokunxibelelana sikaCabre (2003) ezingathi iingcali zesiXhosa zizisebenzise ukugagana nalo mngeni wokuqulunqa isigama sokuphanda sesiXhosa. Lo kaCabre (2003) usisekele kwizizindlo ezibini isithako sakhe. Kwesokuqala uthi isigama masijongwe njengengqokelelo yeentshukumo zokusombulula iintswelo ezikhoyo kwinkalo ethile ndawonye nommandla omanyeneyo wolwazi. Esesibini, sityhila ukuba

isigama sisebenza namalungu esigama antlantloninzi nathi ngaxeshanye abe ngamalungu olwazi, olwimi nawonxibelelwano. Ngako oko, ukuphuhliswa kwesigama sesiXhosa makusombulule ingxaki ekhoyo yesigama sokuphanda sesiXhosa esingazinzanga nesiingamiselwanga. Ngaphaya koko, isigama esiphuhlisiwayo masibe sesityhila ubungcali bokuphanda ngesiXhosa.

Enye yeendlela zokuphuhlisa isigama kukuboleka kwezinye iilwimi (Maseko, 2011; Antia & Ianna, 2016). Noxa kunjalo, phambi kokuba isiXhosa siboleke isigama sokuphanda, masikhumbule umntu akayiboleki into anayo. Ngako oko, iingcali zesiXhosa maziqale zigrombonce bonke oovimba besiXhosa, ukuzingela isigama semveli esityebisa ezi ngcingane zokuphanda phambi kokuba kubolekwe kwezinye iilwimi.

Ekuphuhliseni isigama sokuphanda sesiXhosa, uTaljad (2007) ukhuthaza ukuba igama eliphuhlisiweyo malibhekise kwingcingane (khonsepti) enye, lingasebenziseki kwiingcingane ezininzi kwisigama sokuphanda. Oku kunceda ekunciphiseni ukulahlekiseka kwabafundi ekujoliswe kubo ngokunqanda ubumbonombini. Ngako oko, kwisigama sokuphanda makungabikho igama elinye elibhekisele kwizinto ezimbini okanye nangaphezulu.

Imodeli yokuphuhlisa isigama yeYunivesithi yaKwaZulu Natala iqaqambisa la mabakala mahlanu: ukuvunwa kwesigama; ukuchazwa nokuguqulwa kwesigama; iinkqubo zokucebisana ngesigama; ukumiselwa kwesigama; ukufakwa kwesigama kumathala esigama amaziko (Khumalo, 2016). Eyona ndawo engumngeni ekuphuhliseni isigama sokuphanda sesiXhosa ikwibakala lesine, ukumiselwa kwesigama. Iingcali zesiXhosa kudingeka zidibane kwiqumrhu lokucebisa ngesigama sokuphanda sesiXhosa, nto leyo engaphumela ekumiselweni kwesigama sokuphanda sesiXhosa. Ngaphaya koko, oku kungaphumela nasekufakweni kwesigama kwithala lesigama, nesiingalibiza iGoqo lesiGama sobuNgcali esinxusanisa isiXhosa nesiNgesi.

Ekuphononogeni idatha kolu phando, ndiphume nesi sigama silandelayo (itafle 1), nendindulula ukuba siqwalaselwe, sihlatywe amadlala, sandiswe size kamva simiselwe njengesigama sokuphanda sesiXhosa.

Itafile 1: isigama sokuphanda sesiXhosa		
Isigama sesiXhosa	Inkcazelo	Isigama sesiNgesi
Intsusamabandla	Imiba ethe yasisizekabani sokwenza uphandolwazi nengcaciso ngentsusa yengxaki noko uphandolwazi eliza kugxila kuko.	Background
Ukudakancwa kwengxaki	Ukondlalwa kwengxaki eza kusonjululwa ngokubonisa imeko egqibeleleyo ebekumele kuyiyo, imeko ekuyiyo xa kuthelekiswa negqibeleleyo (ingxaki) nokuza kwenziwa lolu phando ukubuyisela kwimeko yengqibelelo.	Problem statement
Injongo yophando	Isizathu sokwenza olu phandolwazi; oko uphandolwazi okungako.	Research aim(s)
Iziphumonjongo	Oko umphandilwazi ajonge ukuphumeza ngophandolwazi.	Research objectives
Imibuzo yophando	Umbuzo okanye imibuzo eza kuphendulwa lolu phandolwazi ukuphumeza iinjongo neziphumonjongo.	Research questions
Uthelekelelo	Ingcinga ethethwa njengenyano engekaqinisekiswa ngovavanyo olungqingwqa.	Hypothesis
Ukubaluleka kophandolwazi	Iziphumo zophando ziza kuba lulutho njani esizweni nasehlabathini	Significance of the study
Isigama sesiXhosa	Inkcazelo	Isigama sesiNgesi
Isithako esingumchankatho wophandolwazi	Izithako ezixhasa ingxoxo ngolwaziphando oluqokelelweyo.	Theoretical framework
Uphononongo loncwadi	Ingxoxo ngoncwadi olungqamene nophandolwazi ekhokelela ekuphawuleni isikroba esifuna ukuvingcwa.	Literature Review
Isigama sesiXhosa	Inkcazelo	Isigama sesiNgesi
Ulwazinkqubo lokuphanda	Inkqubo okanye ingqokelela yeenkqubo zokwenza uphando	Research methodology
Iphozithivizim	Imbono yentandabulumko egxininisa kubukho obungaqhutywa luluvo nobuquka imimiselo yehlabathi elawula zonke izinto nesimilo somntu.	Positivism
Indlela yokuphanda	Uhlobo lophando oluza kulandelwa ukuphendula umbuzo/imibuzo yophando.	Research approach

Uphandolwazi lohlahlelohlobo	Uphandolwazi olwenziwa kwindawo yemvelo nolusetyenziselwa ukuphicotha nokuqonda iinkolelo, amava, izimvo nokuziphatha.	Qualitative research
Uphandolwazi lohlahlelobungakanani	Uphandolwazi oluqokelela ulwaziphando ngokwamanani.	Quantitative research
Uyilo lophandolwazi	Yinkqubo eza kusetyenziswa ukuqokelela, ukuhlalutya	Research design
Ukuhlalutya umxholo	Uhlalutyo olucwangcisiweyo lokuye kwaqatshelwa kwiingxelo, kumaxwebhu, namanqaku athathwe ngaphandle.	Content analysis
Uphandolwazi lwezembali	Ukuqokolela okucwangcisiweyo nokuhlolwa kolwaziphando oluphathelele kwizehlo zembali ukumisela unobangela, iziphumo okanye iintsingiselo zezo ziganeko ezingasanceda ukucacisa iziganeko zangoku nokuthelekelela ezangomso.	Historical studies
Ukuhlalutya ngokuthelekisa	Umphandilwazi uthelekisa imiba emibini nangaphezulu ngeenjongo zokuhlalutya imihlaba ezalana neyahluka kuyo.	Comparative analysis
Uphandomba	Luphando olunzulu lwemiba, ukuziphatha namava anamhlanje nezolo omntu, usapho, iqela okanye umbutho.	Case study
Iethnography	Luyilo lophando olunenjongo yokuqonda iimbono zabantu bomthonyama ngehlabathi labo.	Ethnography
Uphengululo loncwadi olucangcisiweyo	Uphengululo lombuzo oqulunqwe ngokucacileyo nolusebenzisa iindlela ezicwangcisiweyo nezicacileyo ukuqokelela, ukuchonga, ukukhetha ukuphengulula nokuhlalutya uncwadi olufanelekileyo.	Systematic literature review
Ukhethe lwabathathi nxaxheba/ Ukusampulisha	Inkqubo yokukhetha abemi abaza kuthatha inxaxheba kuphandolwazi.	Sampling
Isampuli	Abemi abaphandwayo kuphandolwazi oluthile.	Sample
Uyilo lokusampulisha	Isicwangciso esicacisa indlela yokukhetha abaphandwa nokuba baza kuba bangaphi	Sampling design
Ukusampulisha okungenamkhethe	Indlela yokukhetha abemi nakanjanina, eqinisekisa ukuba wonke ubani unethuba elilinganayo lokukhethwa.	Probability sampling

Ukusampulisha okuzenzekelayo	Isikhokelo sokukhetha nakanjanina abathathi nxaxheba abamele uluntu oluthile.	<i>Random sampling</i>
Iindlela zokuqokelela ulwaziphando	Iindlela ezisetyenziswa ngumphandilwazi ukuqokelela ulwaziphando kubathathi nxaxheba.	<i>Methods of data collection</i>
Udliwanondlebe	Indlela yokuqokelela ulwaziphando apho abantu okanye iqela labantu libuzwa imibuzo yomlomo ngumphandi, bejongene, ngemfonomfono okanye ngobuxhakaxhaka bale mihla.	<i>Interviews</i>
Iphephamibuzo	Isixhobo sokuqokelela ulwaziphando elinemibuzo esetyenziselwa ukuqokelela ulwazi ebantwini oluza kusetyenziswa kuphando.	<i>Questionnaires</i>
Ukuqaphela	Indlela yokuqokelela ulwaziphando apho ulwaziphando luqokelelwa ngokuqaphela ngeliso	<i>Observation</i>
Ukuhlalutya ulwaziphando	Inkqubo yokuhlengahlengisa nokucakaca ulwaziphando ukuze lube nokuqondwa.	<i>Data analysis</i>
Ukulabalaba kolwazinkqubo lokuphanda	Umba wolwazinkqubo umphandilwazi alwaziyo onganefuthe kwiziphumo, kodwa angenamandla okuwutshintsha.	<i>Limitations</i>
Ukulandelwa kwemigaqo yokuziphatha	Ukuthathela ingqalelo imigaqo ekhokela umphandilwazi kwindlela yokuziphatha ekuqhubeni uphando lwakhe, efana nokufumana imvume ebantwini, ukuqinisekisa ukukhuseleka kwabaphandwa, njalonjalo.	<i>Ethical considerations</i>
Isigama sesiXhosa	Inkcazelo	Isigama sesiNgesi
Ushokobezo	Ushwankathelo olufutshane olubonisa indlela iziphumo zofuniso ezixhasa okanye ezichasa uthelekelelo. Ushwankathelo olufutshane olubonisa iziphumo zemibuzo yophandolwazi.	<i>Conclusions</i>
Izindululo	Zingcebiso ezigxile kwiziphumo zophandolwazi, ezifana nokuziphucula, ukutshintsha, ukulungisa imiba ethile, uphandolwazi olungenziwa	<i>Recommendations</i>

Iphulo lokuphuhlisa nokumisela isigama sokuphanda sesiXhosa kungalulutho ekukhawuleziseni ukuphuhlisa ezobungcali iilwimi zaseAfrika.

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Institutes and Centres

FOSTERING THOUGHT IN PURSUIT OF ETHICAL LEADERSHIP

The Centre for Leadership Ethics in Africa (CLEA)



The Centre for Leadership Ethics (CLEA), led by Dr Christopher Allsobrook, fosters research in African social and political philosophy, grounded in the values and ethics of the heritage of African liberation movements. Researchers in Centre consider concepts such as Power, Justice, Legitimacy, Authority, Consent, Governmentality, Property, Dignity, Interests, Needs, and Rights from a basis in three distinct streams of African social and political thought.

The first stream of thought draws on the political and ethical theories of professional African philosophers and ethicists. The second utilises archival studies of African liberation movements, thinkers and leaders with a special focus on South Africa. Finally, the third stream arises from understandings of African customary social practices and common law articulated by African knowers.

Researchers in the Centre consider the practical relevance and application of concepts such as power and justice to contemporary social and political concerns, including class-based inequality, domination, and exploitation; land distribution, access, and tenure; racial and ethnic discrimination; ecological and environmental degradation; and justice related to whose knowledge is included in education and curricula.

In 2024, researchers have produced a number of important works. With postdoctoral fellow Dr Elphus Muade, outgoing senior researcher Dr Motsamai Molefe produced a book entitled *African Ethics and Death*, published by Routledge. The two authors consider the way in which personhood is defined in African ethical theories before going on to apply the principles they identify to moral problems associated with death, such as euthanasia and the treatment of dead bodies.

CLEA director Dr Christopher Allsobrook also edited a special issue of the journal *Theoria*, to be published in December 2024, with the theme 'African steps beyond dialectical recognition'. A series of influential publications over the past thirty years by leading Western social and political theorists, such as Axel Honneth and Judith Butler, has closely tracked the steep rise in significance for different groups of the politics of recognition, insofar as this relates to feminism, racism, multiculturalism, decolonisation, and globalisation. At the same time, a growing body of African philosophy on recognition with distinct aims and concerns has developed independently. This literature, which locates ethics within the context of relationships and respectful engagement, addresses recognition with a distinct

sets of conceptual tools and resources. Taking its cue from this body of work, the special issue of *Theoria* sets out an alternative path, which recognises the dominant influence from the West on conceptions of the politics of recognition and, at the same time, seeks to escape divisive positions that undermine the desire for freedom. The special issue contains papers written by a range of scholars including Dr Colby Dickinson of Loyola University in Chicago, Professor Pedro Tabensky of Rhodes University and Dr Dimpho Maponya of the University of Johannesburg.

Dr Christopher Allsobrook has also written two chapters, the first of which appears in a collection entitled *Humour as Social Critique* published by Lexington Books, which offers a critique of the political efficacy of 'satire' in social and political criticism. In the second, Dr Allsobrook and Dr Camilla Boisen of New York University in Abu Dhabi reconsider Jan Smut's conception of 'trusteeship', tracking the ways in which it influenced the Mandate System of the League of Nations after the First World War.

Also, in the pipeline for publication this year in *African Studies* is an article by Dr Allsobrook on the impact of trusteeship for the way in which members of society play an active role in their own self-government. The paper draws on Michel Foucault's explanation of governmentality to explain how, following political independence from colonial and imperial powers, concepts such as 'indirect rule' and 'informal empire' have resulted in continued domination.

Dr Carla Turner, who holds a postdoctoral fellowship in CLEA has also published in *Theoria* on the 'Eugenic underpinnings of apartheid South Africa, and its influence on the South African school system'. Associate researcher, Dr Ada Agada, has published three articles so far this year on a range of topics in the field of African philosophy. His latest article in *Sophia* questions the claim that a God who distributes *sunsum* (human spirit) in the physical world can be entirely immaterial.

Plans for the future by researchers located in CLEA include a series of collections edited by Dr Allsobrook and Dr Molefe, on Contested Concepts of African Political Theory. The series will include volumes on Human Rights, Real Interests, and Power in Consent.

A VIBRANT HUB FOR INNOVATIVE RESEARCH AND TECHNOLOGY DEVELOPMENT

Fort Hare Institute of Technology



The Fort Hare Institute of Technology (FHIT), formally recognized as an Institute by Council in 2024, conducts energy-related research at graduate, postgraduate and postdoctoral level in conjunction with various departments, faculties and external stakeholders. The Institute's research falls into four focus areas: i) Advanced Materials for Solar Cells, ii) Renewable Energy Technologies and Systems, iii) Smart Energy Systems and iv) Sustainable Energy resources and Economics.

In addition to conducting research as an Institute, the FHIT also hosts Fort Hare's Renewable Energy Research Niche Area (RNA) and the Photovoltaic Spoke under the Department of Science and Innovation's (DSI) Energy Research Programme. Under the leadership of Professor Edson Meyer, the Institute

utilizes interdisciplinary approaches to solve real-life challenges by collaborating with the Risk and Vulnerability Centre, the Nelson Mandela School of Law and six highly productive departments within the Faculty of Science and Agriculture. The Institute also hosts a number of postdoctoral fellows who, as well as conducting their own research, provide valuable support in mentoring graduate and post graduate students registered in the departments with which the Institute collaborates.

Ongoing research activities include research on the simulation and synthesis of new materials that can be used in renewable energy applications. This research also identifies ideal conditions for optimizing and tailoring the materials to suit



Figure 1: The concept of Agrivoltaics

specific needs within a specific concern for energy efficiency.

Other research focuses on dye-sensitized solar cells (DSSCs) as a potential alternative to expensive silicon-based photovoltaic devices thanks to their low cost. DSSCs are also easily manufactured and environmentally friendly materials and, at the same time, are highly efficient.

In recent years, solar power, utilizing photovoltaic (PV) systems, has revolutionized sustainable energy generation and provided much welcomed relief to energy shortages in South Africa. Solar power is considered a clean, sustainable and, most importantly, one of the cheapest energy sources relative to long-term investment. The use of solar PV modules, or solar panels, has increased thanks to continuous reductions in the levelized cost of energy (LCOE), or the measurement used to assess and compare alternative means of producing energy of solar PVs across the world. However, the technology depends on local weather conditions, specifically solar radiation. Researchers at the FHIT use ground and satellite data, simulations and machine learning algorithms to study and forecast the weather conditions most favourable to the performance of solar panels.

Agrivoltaic systems are also the focus of ongoing research activities in the Institute. Conventionally, land has been used solely for the generation of solar power. However, this is a relatively inefficient use of land that is often not open to participation from local communities and which provides limited job opportunities. The utilization of land for both the generation of solar power and agriculture is more efficient as it contributes to the production of power and food.

Solar energy systems and agrivoltaics address power shortages by generating environmentally friendly and

renewable energy. In spite of this, when carbon footprints are calculated the extraction, manufacture and life cycle of the components and materials used to generate power can impact negatively on the environment and contribute to the depletion of resources. Future research activities in the Institute will therefore go beyond the exploration of the positive aspects of solar energy systems and agrivoltaics by assessing the life cycles of systems and components in order to contribute to both energy generation and the safeguarding of resources.

In addition to the innovative research activities noted above, the FHIT is actively involved in innovation technology development with more than three ongoing Technology Innovation Agency (TIA) funded projects. The Combined MPPT Charge Controller, Inverter and Data Acquisition (MID) System is one of these projects.

In conducting their work, FHIT partners with various public and private sectors to solve real-life challenges from feasibility studies of wind energy for nature reserves, to finding solutions to mitigate power loss through soiling of large solar power plants.

In conclusion, activities at the FHIT ranges from laboratory-based material science research, including advanced materials engineering, to field research, such as photovoltaic and agrivoltaics. Despite its multidisciplinary nature, the core research goals and activities of the various focus areas complement each another to address and promote clean and sustainable energy availability.

FOSTERING ENTREPRENEURSHIP IN THE EASTERN CAPE AND BEYOND

The Centre for Entrepreneurship and Rapid Incubator



In South Africa, unemployment, particularly amongst young people, is cause for huge concern with latest data showing that more than 33% of the work force is without a job. In this context, entrepreneurship is not only valuable as it creates employment opportunities for owners of new businesses but also because the business itself can contribute significantly to the job market. As new businesses are established and flourish, not only are others employed in the firm but they also often require goods and services from other businesses creating a chain reaction. The Fort Hare-Centre for Entrepreneurship and Rapid Incubator (FH-CFERI), led by Professor Olabanji Oni, aims to promote this process amongst students and younger members of society and, in doing so, address the crisis of unemployment amongst young people in particular.

Located on the Bisho campus, the Centre supports any student registered at the University to develop their innovative business ideas in the Raymond Mhlaba and Buffalo City Metropolitan Municipality. The Centre also assists young people in the community with the development of a business plan and any registered small businesses that are struggling to grow. Support programmes focus on technical training that will allow budding entrepreneurs to develop the skills needed to start a new venture. Amongst other things, beneficiaries of the Centre can also gain access to potential markets, networking, mentoring and coaching and funding.

The incubation of entrepreneurship involves three phases. The first, pre-incubation phase, focuses on recruitment and selection, screening, orientation and training in a number of areas including feasibility studies and business plan pitching. The second phase, incubation, sees staff from the Centre assisting with raising and managing finances and offering training focused on developing entrepreneurs' ability to promote their ideas to others. Beneficiaries are also provided with technical support, advice on marketing and on the notion

of 'Intellectual Property' (IP) and how to protect it. In the final phase, entrepreneurs are assisted with networking.

Linked to the Department of Business Management, the Centre also extends its activities beyond support and training to research falling within eight themes: i) Agriculture, ii) Smart technologies, iii) Renewable energy, iv) Food security, v) Health, vi) Sustainable development, vii) Local Economic Development and viii) Development Assistance Management. These themes are all aligned with the University's Research Niche Areas, research deliverables identified by researchers and their expertise, as well as the budget of the Centre itself.

Current research projects focus on developing cases by conducting interviews with local entrepreneurs about the challenges they face, the strategies they employ and the outcomes they have achieved. Researchers also aim to conduct in-depth studies on entrepreneurial ecosystems and conduct comparative research on entrepreneurship models in developing economies. Other research projects will focus on the evaluation of government policies and initiatives aimed at supporting entrepreneurship. Through its research activities, the FH-CFERI aims to provide a platform for the development of young researchers and will seek funding for postdoctoral fellowships from the Govan Mbeki Research Development Centre (GMRDC) as well as other sources.

It is not hard to see that this busy Centre is set to play an important role in fostering a thriving entrepreneurial ecosystem in the Eastern Cape and beyond thanks to its support for business ideas and its research activities. Even more importantly, it has the potential to make an enormous difference to the lives of people in the Eastern Cape and beyond by introducing them to livelihoods they might not even have dreamed of.

DRIVING INNOVATION AND SUSTAINABILITY

The Centre for Global Change



The Eastern Cape is one of the poorest and most rural provinces in South Africa. As analyses of its demographic, health and socio-economic profiles show, the province remains trapped in structural poverty even though thirty years have passed since the shift to democracy. The rural poor, who make up 51.6% of the population of the province, are particularly affected and are now having to come to terms with the effects of climate change. Extreme weather events, such as heavy rainfall, flooding and heat waves, affect resources such as land, water and biodiversity, lessening their ability to support essential ecosystems and sustain livelihoods. The complex interaction between climate change and the management of natural resources thus adds to the vicious cycle of poverty

experienced by vulnerable communities. In this context, the need for resilient strategies and sustainable solutions to safeguard the well-being of the population of the Eastern Cape is greater than ever.

The Centre for Global Change (CGC) was established in 2011 by the Department of Science and Innovation (DSI) and the National Research Foundation (NRF) as a strategic initiative to advance research, innovation, and societal impact. The mandate of the CGC is to i) conduct responsive and proactive evidence-based research in collaboration with stakeholders at local, national, and global levels; ii) promote transdisciplinary postgraduate training for the next generation of researchers and practitioners; iii) manage knowledge dissemination

through community forums, scientific publications, and conference/workshop presentations to communities, government entities, NGOs, and civil society; and iv) implement community engagement activities to build resilient communities capable of adapting to global changes. As a result of this mandate, the Centre is ideally positioned to support changes facing vulnerable populations in the Eastern Cape.

Although the work of the CGC is anchored in the Eastern Cape, through collaboration its reach and impact is extended to Southern Africa. Thanks to partnerships with entities such as the African Climate and Development Initiative (ACDI) at the University of Cape Town, it also aims to develop collaborations beyond the continent with the aim of making global change science and policy more diverse and inclusive at local, regional, and global levels.

Under the leadership of Dr Leocadia Zhou, and with the assistance of Research Fellow Dr Mhangabezi Slayi and Post-Doctoral Research Fellow Dr Shadreck Muchaku, the CGC is currently focusing on a number of intersecting research areas depicted in Figure 1 below.

In recent years, CGC has undertaken a range of research projects including one that explored the impact of climate change on food security in communities in Hamburg, another that looked at the vulnerability of households to disasters in

the Raymond Mhlaba Local Municipality and yet another that explored water utilization to reduce poverty and create wealth in agriculture.

The Centre's current research activities aim to tackle cross-cutting issues within communities by collaborating with academics from various institutions, both in South Africa and overseas. One project is focused on the promotion of climate-smart vegetable and crop production strategies in communities and high schools in the Raymond Mhlaba Local Municipality. Another focuses on building resilience amongst small scale farmers in Elundine Local Municipality.

Plans for future activities aim to strengthen transdisciplinary research on global change challenges, to increase funding and to emphasize societal impact by prioritizing empowerment and ownership of research outputs particularly among economically marginalized communities and by engaging stakeholders in planning, implementation and decision making.

The CGC has already made an enormous contribution to the production of knowledge that will allow vulnerable communities in particular to cope with global change. In doing this, the Centre draws on Fort Hare's unique history in the Eastern Cape, South Africa and beyond, and ensures the University is at the forefront of research that contributes to the wellbeing of people everywhere.

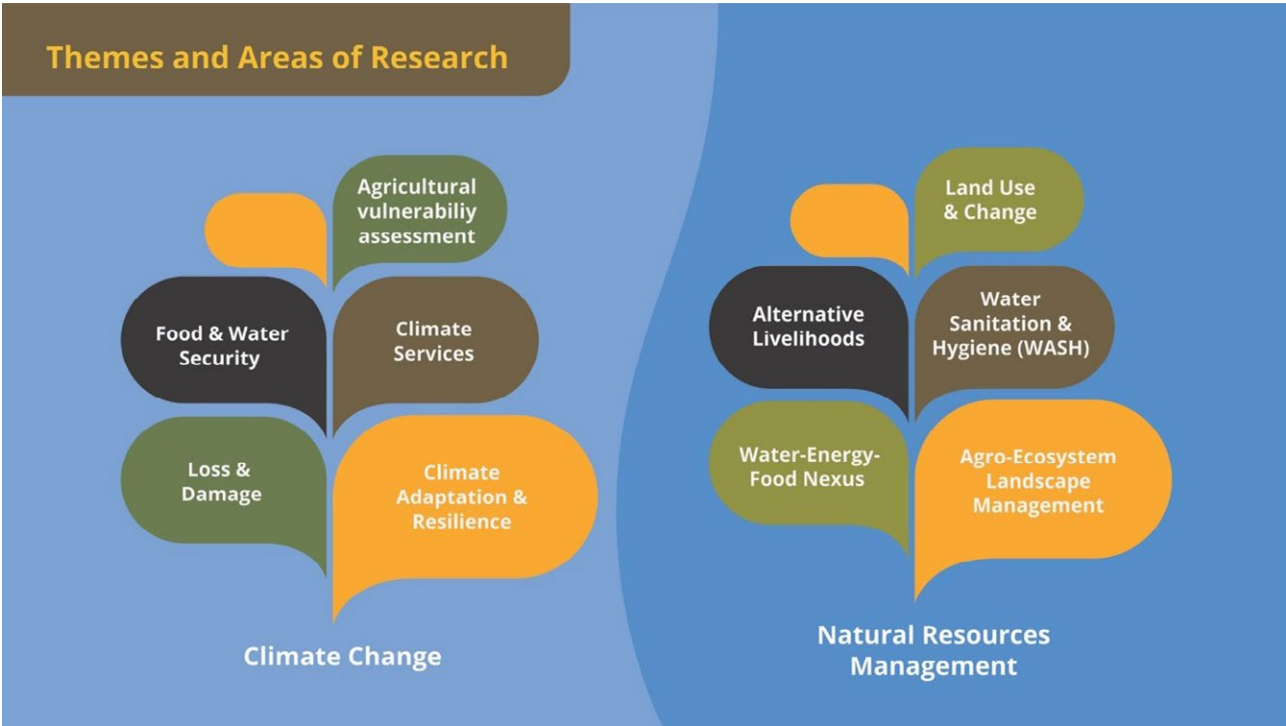


Figure 1: Themes and Areas of Research

STRIVING FOR JUSTICE AND EQUALITY

Fort Hare Institute for Social and Economic Research

The University of Fort Hare's mission statement identifies the advancement of knowledge which contributes to socio-economic development of South Africa and the wider world as a goal. Over the years, the Fort Hare Institute of Social and Economic Research (FHISER) has contributed to the attainment of this aim in no small way by producing a wealth of research in the areas of rural development, agrarian studies, livelihoods and social change. Some of the major book publications by its former researchers include *Home Spaces, Street Styles: Contesting Power and Identity in a South African City* (Pluto Press, 2011), *Inside African Anthropology: Monica Wilson and her Interpreters* (Cambridge University Press, 2013), *Imonti Modern: Picturing the Life and Times of a South African Location* (HSRC Press, 2017).

In recent years, FHISER has undergone a slight change of direction in its research focus to encompass an emphasis on climate futures, social transformation and rural capabilities. Numerous journal articles and book chapters have been published on these themes including four flagship books: *Conserved Spaces, Ancestral Places: Conservation, History and Identity Among Farm Labourers in the Sundays River Valley, South Africa* (University of KwaZulu-Natal Press, 2014), *Revisiting Environmental and Natural Resource Questions in Sub-Saharan Africa* (Cambridge Scholars Publishing, 2017), *Climate Action in Southern Africa: Implications for Climate Justice and Just Transition* (Routledge, 2024) and *Socio-Ecological-Economic Reflections on the Impacts of COVID-19 in Africa* (AOSIS:2024).

For the next five years, the primary research focus of the Institute will be 'Climate Change, Multidimensional Poverty, Inequality and Injustice'. There are several complex reasons for this change of direction. Climate change currently affects the environmental, economic, health, social, political and physical aspects of human development on a global scale. In Sub-Saharan Africa, the negative effects of climate change are apparent in erratic rainfall patterns, more recurrent and intense floods and droughts, increased temperatures and heat

waves. While the impacts of climate change are not uniform across African countries, they generally put increased pressure on vulnerable communities and efforts to alleviate poverty and inequality.

Problems resulting from climate change predominantly impact female-headed households which suffer the effects of poverty more than those headed by males. Although scholarly and policy work on the impact of climate change on the building of resilience and adaptation exists, there is limited research exploring the relationship between climate change, rural multidimensional poverty and inequality in South Africa.

Under the directorship of Professor Philani Moyo, the research programme at FHISER aims to address this gap with work guided by a number of themes and objectives. The Institute draws on the intellectual expertise of four research fellows, Dr Thapelo Ramalefane, Dr Mandlenkosi Maphosa, Dr Kablan Effossou and Dr Gordon Moyo as well as that of researcher Mr Zolani Sita. Currently, four doctoral candidates are being supervised within the Institute.

The Institute's research activities are not limited to the academic world as research projects are guided by community engaged approaches and researchers address issues in partnership with communities and policymakers. These partnerships have seen FHISER successfully complete commissioned applied research projects for various provincial and national government departments. The institute receives funding from the National Research Foundation (NRF) of South Africa, National Institute for the Humanities and Social Sciences (NIHSS) of South Africa, Oxfam South Africa and Future Earth Africa Hub Leadership Centre.

From this brief history of FHISER's work, it is obvious that the Institute not only represents Fort Hare's proud history of striving for justice and equality but also contributes to the University's commitment to research excellence at the service of its students, scholars and the wider community noted in its vision statement and elaborated in its mission.

ENHANCING PUBLIC HEALTH BY TRACKING THE SARS-COV-2 VIRUS IN WASTEWATER

SAMRC Microbial Water Quality Monitoring Centre



>> Dr Msolo



>> Dr Ebomah



>> Dr Nontongana



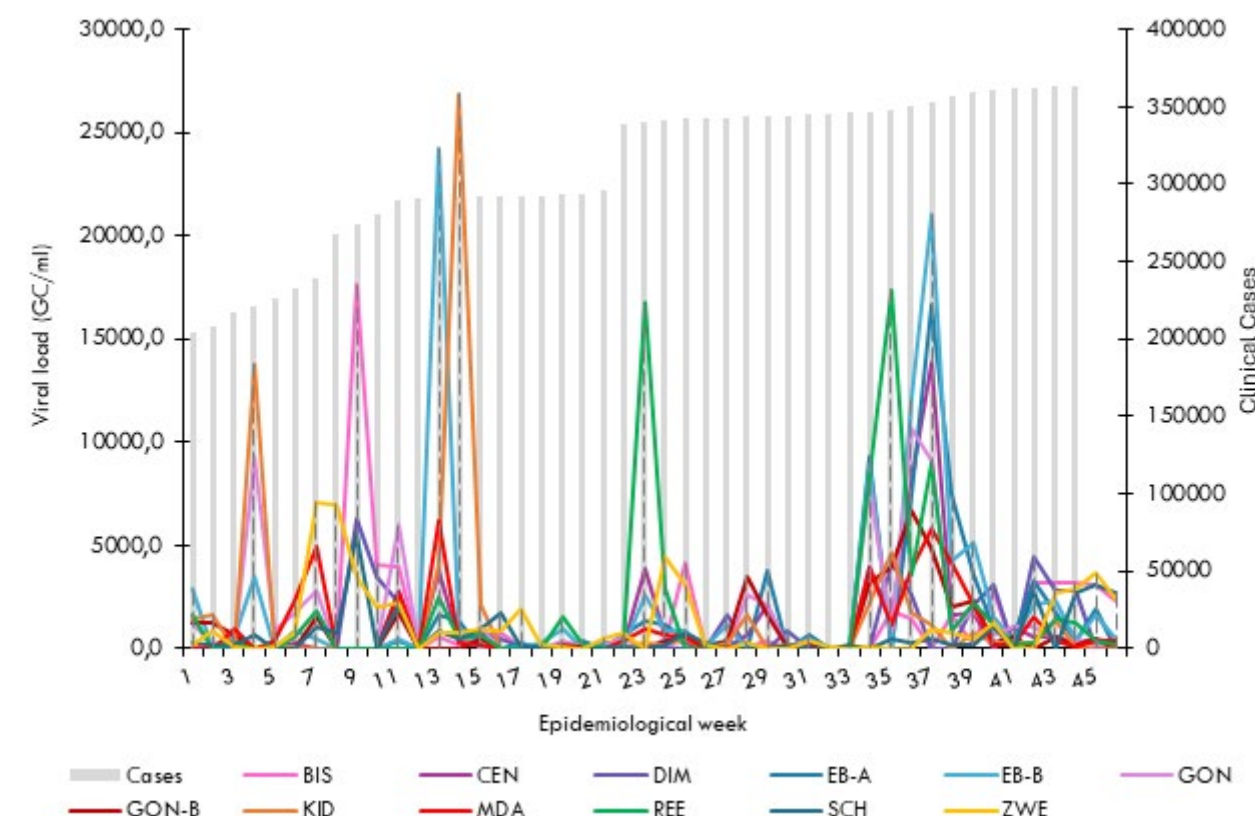
>> Prof Okoh

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the viral strain that was at the root of the COVID-19 pandemic that, in 2019, began to sweep across the world affecting millions of people as it did so. The outbreak lasted for more than three years and, to date, has claimed more than 6.3 million lives with over 600 million clinical cases reported worldwide. Over time, the virus has evolved, becoming more and more infectious and more easily transmissible as new variants have emerged.

The virus is primarily transmitted from person-to-person via respiratory droplets (aerosols), through close contact with infected persons and, also, through contact with contaminated surfaces where the virus can survive for extended periods. Less well known, however, is the fact that the spread of SARS-CoV-2 can also result from wastewater from medical centres and sewage from infected households.

The problems posed by the virus led to the South African Medical Research Centre Microbial Water Quality Monitoring Centre at Fort Hare, led by Professor Anthony Okoh, being commissioned by the South African Medical Research Council to monitor SARS-CoV genomes in municipal wastewater in the Amathole District Municipality (ADM) and Buffalo City Metropolitan Municipality (BCCM) regions and provide data to feed into the national coronavirus epidemiology database. Studies conducted by the Centre contribute to the broader National Coronavirus Surveillance Project which also draws on researchers working at other South African institutions with Fort Hare's SAMRC Microbial Water Quality Monitoring Centre spearheading surveillance of SARS-CoV-2 in wastewater treatment plants in the Eastern Cape.

With fellow researchers Luyanda Msolo, Kingsley E. Ebomah, Okuhle Mayoyo, Velisa V. Qongwe, Balisa Ngqwala, Piwe A.



Ntlati and Nontongana Nolonwabo, Professor Okoh has been using Quantitative Microbial Risk Assessment (QMRA) models to understand the risks associated with exposure to virus particles for operators working in wastewater collection and treatment facilities. Researchers have identified a heightened risk of accidental exposure to the virus at times when they need to work with increased volumes of wastewater.

Studies conducted by the Centre have also used an experimental approach to explore the persistence of SARS-CoV-2 in wastewater at twenty wastewater collection and treatment facilities within the BCCM and ADM regions. Researchers collected samples of wastewater weekly for analysis. Elevated concentrations of the SARS-CoV-2 genome copies were identified throughout the time of the study across all facilities with very high viral loads in some instances. These findings were in line with the number of clinical cases of the disease around the same period as illustrated in Figure 1.

Figure 1: Distribution of SARS-CoV-2 genomes across the wastewater treatment facilities and the reported clinical cases of the Buffalo City region (National Institute for Communicable Diseases (NICD), 2021). The acronyms represent the locations

of the WWTPs, i.e. BIS= Bisho; CEN= Central; DIM= Dimbaza; EB-A= East Bank (Site A); EB-B= East Bank (Site B); GON= Gonubie; GON-B= Gonubie (Site B); KID= Kidds Beach; MDA= Mdantsane; REE= Reeston; SCH= Schornville; ZWE= Zwelitsha.

As a result of their work, Professor Okoh and his team have shown that tracking the presence of the virus in wastewater can provide valuable insights into the health status of particular areas as individuals can suffer from the disease without showing any symptoms. Even in communities with a low number of reported cases of disease, the virus can be detected in wastewater as it is shed in urine, faeces and respiratory secretions. Its presence in wastewater is therefore a potential indicator that transmission is occurring in a community. This means that wastewater monitoring can serve as an early warning system allowing for responses by public health teams to be planned.

As a result of their work with SARS-CoV-2, Professor Okoh and his team of fellow researchers conclude that wastewater monitoring can also assist in mitigating the effect of a wide range of pathogens contributing to enhanced public health as a result.

Vice Chancellor's Research Awards:

SENIOR RESEARCHER CATEGORY

Professor Uchechukwu Nwodo: Overall Winner: Faculty of Science and Agriculture

Professor Uchechukwu Nwodo joined the University of Fort Hare in May 2014 as a senior lecturer. By January 2018, he had advanced to the rank of full professor thanks to his expertise in enterobacterial pathogenic gene ecology and the valorization of waste biomass using cutting-edge techniques. Professor Nwodo has published over 120 articles in accredited journals and over 80 nucleotide sequences.

Professor Nwodo has served as a visiting professor at the University of Tübingen in Germany and currently holds a visiting position in Ottawa, Canada. In collaboration with the National Research Foundation and the Department of Science and Innovation, he has been instrumental in establishing bilateral cooperations between South Africa and other countries on the continent, such as Angola, Tunisia, and Egypt. He has served as a member of the Council of the South African Society for Microbiology Council and is also a member of several international societies. At Fort Hare, he leads a Research Niche Areas (RNA) and is the Scientific Research Lead of the University's participation in the Institute for Pandemic Prevention and Preparedness (IP3), a body with a continental span funded by national and international agencies.

In 2016, Professor Nwodo received the Vice-Chancellor's Emerging Researcher Award for the Faculty of Science and Agriculture. He also received the Federation for European Microbiological Society Award in 2013 and several other awards from The World Academy of Sciences for emerging scholars in 2014 and 2015.

Professor Nwodo served as Head of the Department of Biochemistry and Microbiology from 2017 to 2019 and as Deputy Dean of Research and Internationalisation in the Faculty of Science and Agriculture from 2021 to 2024. Other institutional service includes acting as Director of Postgraduate Studies and Postdoctoral Fellows in April 2014 and as Acting Dean of the Faculty of Science in July 2024.

Professor Nwodo holds a C2 rating from the National Research Foundation.



Professor Liezel Cilliers Faculty of Health Sciences Winner

Professor Liezel Cilliers' research focuses on several critical areas within the field of health informatics. Recently, she has explored infodemics, which involves examining the impact of misinformation and information overload on public health and developing strategies to mitigate the spread of false information during health crises. However, Professor Cilliers' research interests also extend to mobile applications for health monitoring and intervention, and electronic health records. She has also investigated the ethical considerations in social media research, developing guidelines to address privacy, consent, and data integrity issues in health-related studies.

Professor Cilliers has supervised 3 doctoral and 17 master students to completion and has been the recipient of research funding from the National Research Council and South African Medical Research Council. She is currently acting as Dean in the Faculty of Health Sciences at Fort Hare and holds a C3 rating from the National Research Foundation.

Professor Mzuyanda Percival Mavuso Faculty of Education Winner

Professor Mzuyanda Percival Mavuso is an associate professor and Acting Dean of the Faculty of Education. He served two terms as Deputy Dean: Teaching and Learning and has also served in other leadership positions such as Head of School and Postgraduate Coordinator in the Faculty of Education. As part Fort Hare's Decade of Renewal, he has been involved in re-designing and amending teacher education programmes and modules. He has excelled in teaching and learning and, in 2023, was awarded a Teaching Advancement at Universities (TAU) Fellowship. He also received the Vice Chancellor's 2024 TAU Recognition Award.

Professor Mavuso's research interests lie in educational leadership and management and climate change education. To date, he has published seven book chapters and twenty-eight papers in peer reviewed journals and in accredited conference proceedings. Together with other scholars, he edited a book entitled Foundations of Education: contemporary social perspectives, published earlier in 2024.

In 2015 he was a recipient of the Vice Chancellor's emerging Researcher Award for the Faculty of Education. Professor Mavuso has forged a partnership with between the Faculty of Education at Fort Hare and the Eastern Cape Department of Education's Matric Intervention Programme which seeks improve Grade 12 results in the Amathole West Education District. He is a recipient of an Africa University Twinning Programme award for 2024 which allowed for collaboration between Fort Hare and Queen Njinga A Mbande University in Angola.

Professor Mavuso is involved in postgraduate supervision and has successfully supervised ten master's and thirteen doctoral students to completion.



Vice Chancellor's Research Awards:

EMERGING RESEARCHER CATEGORY

Professor Omobola Oluranti Okoh **Faculty of Sciences and Agriculture Winner**

Professor Omobola Okoh is a Professor of Analytical and Environmental Chemistry in the Department of Pure and Applied Chemistry. Her academic career began with an appointment as a Research Fellow in the Centre for Energy Research and Development Centre (CERD) at the Obafemi Awolowo University in Nigeria in 2003. In 2012, she was appointed as lecturer in the Department of Chemistry at the University of Fort Hare and rose through the ranks to become a full professor in 2018. In January 2021, she was appointed Head of the Department of Chemistry, a position she holds to date. Professor Omobola Okoh has published over 82 peer-reviewed articles in high impact factor accredited journals, presented several conference papers and has an h-index of 38. Her research publications have over 4584 citations.

Professor Omobola Okoh is a recipient of a number of grants including an NRF Thuthuka Funding Instrument Award (2015-2018), ESKOM / Tertiary Education Support Programme Award (2015-2024) and a number of Govan Mbeki Research Development Centre (GMRDC) research capacity seed grants. She is the leader of the Synthetic, Environmental and Analytical Chemistry Research Group, a member of the Water for Sustainable Development Research Niche Area, a member of the South African Medical Research Council (SAMRC) Microbial Water Quality Monitoring Centre and member of Renewable Energy Research Niche Area.

Professor Omobola Okoh's research expertise falls within the fields of Analytical and Environmental Chemistry with strong focus on water/wastewater quality, chemical pollutants in water and their health risk assessment, natural products chemistry, renewable energy and nanotechnology.



Dr Siseko H. Kumalo **Overall Winner: Faculty of Social Sciences and Humanities**

Dr Siseko H. Kumalo, a lecturer in the Department of Philosophy, is a political theorist whose work examines social ontology focusing on Blackness/Indigeneity in South Africa. His doctoral study analysed belonging and national identity using the scholarship of two historical Black intellectuals, William Wellington Gqoba and S.E.K. Mqhayi.

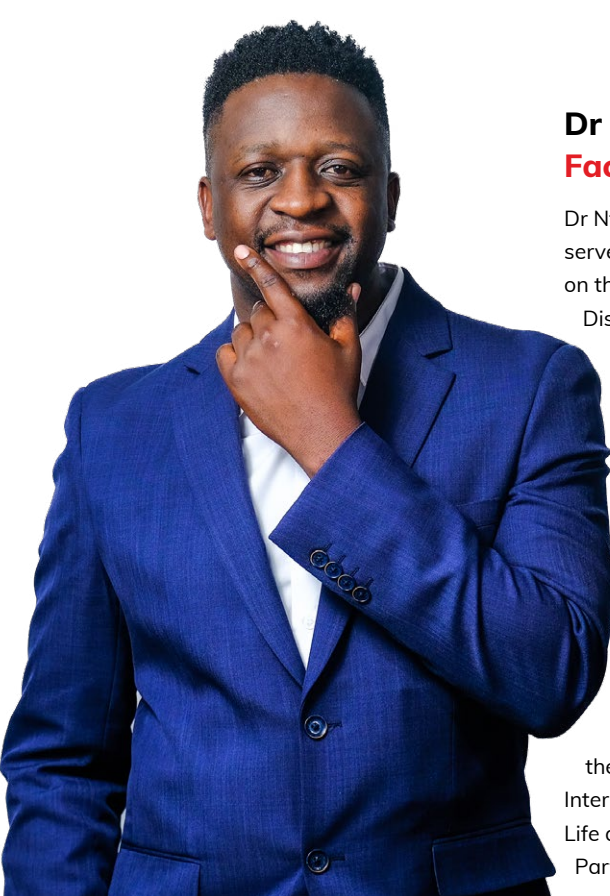
Dr Kumalo served as the founding Editor-in-Chief of the Journal of Decolonising Disciplines. He received the Harvard South Africa Fellowship in 2022 and, as a result, spent time developing the Black Archive Visual Podcast and other innovative research projects at Harvard. His research has garnered international attention, featuring in platforms such as the United Nations Pre-Summit for the Future in New York in 2024.



Dr Sive Makeleni
Faculty of Education Winner

Dr Sive Makeleni is a lecturer and Head of School in the Faculty of Education. His research field is language education, with a special interest in the teaching and learning of the African Languages. His doctoral degree, which informs his current teaching, focused on Grade 3 teachers' self-efficacy in teaching reading comprehension in isiXhosa Home Language. This built on an interest in teachers resulting from his master's degree which explored the experiences of male, foundation phase, student-teachers on teaching practice and spurred his passion for gender issues in education.

Dr Makeleni also publishes on decolonisation in education. He is currently leading a project on preserving the indigeneity and languageness of isiXhosa through literacy which allows him to pursue his advocacy for mother-tongue based bilingual education.



Dr Ntandokayise Ndhlovu
Faculty of Law Winner

Dr Ntandokayise Ndhlovu is a senior lecturer in the Faculty of Law. Currently, he serves as an Expert Member of the African Union Commission's Working Group on the Death Penalty, Extra-judicial, Summary or Arbitrary Killings, and Enforced Disappearances in Africa 2022-2024, a renewable position. Dr Ndhlovu previously worked as a legal researcher under the Policy, Legislation, and Governance Section of United Nations Habitat, and has served as an external editor for the Pretoria Student Law Review and as an associate editor for the South African Journal on Human Rights. He is currently assistant/associate editor for the South Africa Year Book of International Law and the Speculum Juris Law Review.

Dr Ndhlovu is a published author and has participated in the writing of various research reports and project reports at national and international levels. He is also an active member of the Law and Society Association (LSA-International Research Collaboration Africa), an international group of scholars that aims to identify, explore, and map the past and future of scholarship in the field of law and society in Africa. He holds an LL.D from the University of Fort Hare, with his primary research interests lying in Public International Law, International Human Rights Law, Law and Society, the Right to Life and the Death Penalty in Africa, Constitutional Law and Education, and Child Participation in Policy and Legislative Development.

Dr Lukhanyo Elvis Makhenyane
Faculty of Social Sciences and Humanities Winner

Dr Lukhanyo E. Makhenyane is a lecturer in the Department of African Languages, where he teaches isiXhosa literature to undergraduate and postgraduate students as well as a research methods course to honours students. His niche areas are African poetry and the re-intellectualisation of isiXhosa as a research language.

Dr Makhenyane was awarded a South African Humanities Deans' Association (SAHUDA) scholarship in 2016 and obtained his doctoral degree in 2020. He has peer reviewed for three journals. As an emerging researcher, he has published five peer-reviewed research articles, four which were published in 2024, and one academic essay. In addition, two book chapters are currently in-press. He has presented papers at local and international conferences



Dr Ntombana Mc'Deline Rala
Faculty of Health Sciences Winner

Dr Ntombana Mc'Deline Rala obtained her doctoral degree in nursing from North-West University. Before joining academia, she worked as a nurse and manager at hospitals, clinics and the Eastern Cape Department of Health. Currently, she holds an appointment as lecturer and Head of the Department of Nursing at Fort Hare.

Many health care systems, primarily those in developing countries, earn a poor reputation as a result of the abuse, neglect, abandonment, and disrespect of birthing women in health facilities. This observation resulted in Dr Rala's goal of promoting supportive interpersonal relationships between midwives, birthing women, and their companions. Her doctoral thesis developed a contextualised intervention programme to further this aim.

Dr Rala has published several articles, presented at conferences, and reviewed journal articles.



Dr Kim Schmidt

Faculty of Social Sciences and Humanities Winner

Dr Kim Schmidt is currently Head of Department and senior lecturer in the Department of Social Work and Social Development. Prior to joining academia, she worked for more than ten years as a social worker and supervisor in the field of child protection.

Her research interests extend across the fields of social work training, child protection and early childhood development with outputs including the co-editing of a transdisciplinary early childhood book and various journal articles and book chapters. By critically engaging in local issues relating to child protection and early childhood development she hopes to draw attention to, and support, good outcomes for vulnerable children through the development, implementation and evaluation of early intervention programmes in local communities.

Currently she is working as lead editor on a book proposal that brings together a multidisciplinary collection of empirical and conceptual research papers from scholars and academics across the Eastern Cape province. The book covers topics across the spaces of social work and education, unpacking pressing issues relating to higher education, schooling, early childhood development, language, learning, well-being and culture. In addition to her bachelor's, master's and doctoral qualifications, she has an Early Childhood Development (ECD) certificate, a postgraduate teaching diploma and is a Senior Teaching Fellow with the Academy of Higher Education in the United Kingdom.



Dr Kgabo Humphrey Thamaga

Faculty of Science and Agriculture Winner

Dr Kgabo Humphrey Thamaga is an emerging researcher and lecturer in Geographic Information Systems (GIS) and remote sensing, specializing in water resource and environmental management. He has published several articles in reputable journals and contributed to two chapters in a book entitled Remote Sensing of Climate published by Elsevier in 2024

Dr Thamaga is currently supervising more than five master's and doctoral candidates. His co-expertise includes the integration of cutting-edge geospatial and Earth Observation (EO) technologies, spatial modelling, machine learning, and artificial intelligence (AI) for informing decisions and policy implementation pertaining to environmental management. Dr Thamaga's research interests include cloud computing and big data analytics, land degradation, invasive aquatic plant species, wetland and rangeland ecosystems, flood modelling, and drone-based environmental remote sensing applications. Dr Thamaga frequently collaborates with interdisciplinary teams to harness the power of remote sensing technologies in various sectors, including agriculture, urban planning, and climate science.



Vice Chancellor's Research Awards:

CREATIVE OUTPUTS CATEGORY

Mr Ndumiso Mtshali

Overall Winner

Ndumiso Mtshali is a prominent South African ethnomusicologist and is the Head of the Music Department at the University of Fort Hare. Born and raised in a vibrant musical environment, he developed a deep appreciation for music from an early age. His academic journey led him to specialize in ethnomusicology, where he focuses on the study of music within its cultural context, particularly where that context involves African traditions.

As one of the youngest leaders in his field, Mr Mtshali has made significant contributions to the understanding of South African music genres and their socio-cultural implications. His research often explores the intersections of music, identity, and history, shedding light on the role of music in expressing cultural heritage and illuminating social issues.

At Fort Hare, Mr Mtshali is recognized not only for his academic achievements but also for his commitment to nurturing the next generation of musicians and scholars. He actively engages students in research and performance, aiming to preserve and promote the rich musical heritage of South Africa while encouraging innovative musical expressions.

Through his work, he continues to inspire both academic and public appreciation for the diverse musical landscapes of Africa and has established himself as a key figure in contemporary ethnomusicology.



Vice Chancellor's Research Awards:

MOST INNOVATIVE PROTOTYPE DEVELOPED CATEGORY



Mr Vuyo Masebe
Overall Winner

After completing his National Senior Certificate examinations successfully in 2021, Mr Vuyo Masebe registered for a Bachelor of Science degree in Microbiology and Biochemistry at the University of Fort Hare. He is currently completing his third year of study.

Mr Masebe's appreciation of the value of plants used in traditional African medicine triggered his curiosity as a scientist and led him to thinking about ways they could be introduced into mainstream medicine. Ultimately, his aim is to establish his own research-based business manufacturing and distributing medicinal capsules.

In doing this, Mr Masebe not only draws on his abilities as a scientist but also a strong interest in entrepreneurship. His belief in the value of natural flora in traditional healing processes is such that his ultimate ambition is to develop his ideas in ways that ensure that everyone suffering from ill health can benefit from the medicines he produces.

BOOK AWARD

Professor Neil Roos
Overall Winner

Professor Neil Roos, a social historian, is Dean of the Faculty of Social Sciences and Humanities and a professor of history at the University of Fort Hare. Additionally, he is co-implementer of the South African Department of Higher Education and Training's national collaborative Future Professors Programme. He was a two-term member of the ASSAf Standing Committee on the Humanities and Social Sciences. His research is animated by a focus on histories of everyday life in societies marked by great inequality.

Unlike most social historians of South Africa, he is interested not so much in those who defied segregation and apartheid but rather, in the history of beneficiaries and perpetrators. Over many years he has written about the complex anatomy of white everyday life in modern South Africa, asking questions about accommodation, choice, and docility, as well as racism, racial identity, and racial violence. From this body of work, he has published essays in journals like *Social History*, the *Journal of Social History*, *The Historical Journal* and *International Review of Social History*, as well as a book, *Ordinary Whites in Apartheid Society: social histories of accommodation* (Indiana University Press and Wits University Press), which has attracted considerable media attention.



RESEARCHERS NEWLY NRF-RATED IN 2024



Professor Tendai Chimucheka
Department of Business Management

Professor Tendai Chimucheka's research interests lie in Entrepreneurship and Small Business Management, Strategic Management, Marketing Management and Human Resources Management. Professor Chimucheka is a member of the Southern African Institute of Management Scientists (SAIMS) and the African Network of Social Entrepreneurship Scholars (ANSES). He is also a Senior Fellow of the Higher Education Academy in the United Kingdom (SFHEA). Professor Chimucheka was coordinator for the Entrepreneurship Development in Higher Education (EDHE) programme at Fort Hare from 2017 to 2021. His research mainly focuses on entrepreneurial business development and improving small business performance. He received the Vice-Chancellor's Research Excellence Award in the Emerging Researcher category in the Faculty of Management and Commerce in 2019 and the Vice-Chancellor's Research Excellence Award in the Senior Researcher category in the Faculty of Management and Commerce in 2023. Professor Chimucheka holds a Y2 rating from the National Research Foundation.



Professor Willie Chinyamurindi
Department of Business Management

Professor Willie Chinyamurindi's research interests lie in the areas of human and organisational capability development and the way capabilities contribute towards development. His research draws on the fields of work psychology and applied management to explore the role of socio-economic status in relation to the ability of individuals and organizations to maximise their potential and achieve their goals. Professor Chinyamurindi's research also accounts for aspects such as rurality, gender, technology access (and usage), economic and social proxies as individuals strive to realize their promise and attain their goals. In 2021, he served as Co-chair of the South African Young Academy of Science, in addition to his professional membership with this society. Professor Chinyamurindi holds a C2 rating from the National Research Foundation.

Dr Mthunzi Mndela
Department of Livestock and Pasture Science

Dr Mthunzi Mndela is a pasture science specialist employed as a senior lecturer for planted pastures and rangeland ecology and management. He teaches at undergraduate level and also supervises at both master's and doctoral levels. His research focus spans plant-animal interactions, plant invasion and encroachment management, and rangeland ecosystem services. He is also interested in climate-biosphere interactions including feedback between climate and vegetation and the way climate-driven changes in vegetation affect livestock production and, thus, the livelihoods of livestock owners.

Dr Mndela has published over 17 scientific papers and contributed to a book chapter appearing in a collection entitled Remote Sensing of Climate published by Elsevier in August 2024. He holds a Y2 rating from the National Research Foundation.



Professor Rianna Oelofsen
Department of Philosophy

Professor Rianna Oelofsen's areas of specialization include Social Transformation, African Philosophy, Education and Decolonization, Race and Gender theory, Phenomenology, and Feminism. She has published a number of articles and book chapters and has co-edited a collection of papers that applies African philosophical solutions to problems in areas including ethics, health, education, economics and criminal justice in Africa and the rest of the world. Professor Oelofsen holds a C3 rating from the National Research Foundation.





Dr Mike O Ojemaye

Department of Chemistry

Dr Mike O. Ojemaye's research interest is in the development of novel nanomaterials for use in water/wastewater treatment and recovery. He is a widely published early career scientist and has presented several papers at national and international conferences. Dr Ojemaye has supervised postgraduate students and was a recipient of a highly competitive South African Medical Research Council Extramural Postdoctoral Grant in 2023, a South Africa National Research Foundation Post-Doctoral Grant from 2021. to 2022, an H3D Symposium Travel Scholarship in 2022, a University of Mauritius/Volkswagen Stiftung, Germany participation grant for a workshop on computational chemistry in 2019 and South Africa Medical Research Council grant for study support from 2015 to 2017.

Dr Ojemaye has five years' experience of working in industry. He is a member of the Water Institute of South Africa, the South African Chemical Institute, the South African Catalysis Society and American Chemical Society. Dr Ojemaye is an NRF Y2-rated researcher.



Professor Opeoluwa O. Oyediji

Department of Chemistry

Professor Opeoluwa O. Oyediji is an organic/analytical chemist. He obtained his PhD in organic chemistry from the University of KwaZulu-Natal in 2010. His research interests lie in the isolation of products obtained from plant material that can be used for the formulation of medicines. His research also involves investigations into water and soil in the environments in which the plants grow.

Professor Oyediji has been teaching chemistry in tertiary institutions for over 25 years and has supervised undergraduate and postgraduate research projects in organic and environmental chemistry. Professor Oyediji holds a C2 rating from the National Research Foundation.

Dr Ellen Chenesai Rungani

Department of Business Management

Dr Ellen Chenesai Rungani is a senior lecturer in the Department of Business Management. With a strong research focus on small business management, small, medium and micro enterprise (SMME) support, and entrepreneurship, Dr Rungani has published 20 peer-reviewed articles, supervised over ten master's students and co-supervised two doctoral candidates to completion. She is currently overseeing two doctoral and three master's candidates.

She has served in numerous leadership roles, including that of Head of Department for seven years, Acting Deputy Dean of Teaching and Learning, Chairperson of Fort Hare's Gender-Based Violence (GBV) Implementation Task Team as well as the Acting Chairperson for the University's Institutional Forum. She is actively involved in community engagement and is the university coordinator for the Entrepreneurship Development in Higher Education programme where she led the agenda for student entrepreneurship.

Dr Rungani is social research scientist registered with Southern African Institute of Management Scientists (SAIMS) and is a Fellow on the Department of Higher Education and Training's (DHET) Future Professor Programme, a Senior Fellow of the Higher Education Academy (SFHEA) in the United Kingdom and a Teaching Advancements at Universities (TAU) Fellow. Her work has significantly impacted the development of SMME support frameworks in South Africa. Dr Rungani is Y2-rated by the National Research Foundation.



Professor Ulene Schiller

Department of Social Work and Social Development

Professor Ulene Schiller, who has a doctoral degree in forensic social work, has been an active researcher in the field of child protection since 2014. Her research is driven by a strong interest in social innovation, particularly at the intersection of social work and improving service delivery in child protection services. She has made substantial contributions to knowledge in her field, publishing numerous research articles and book chapters.

Professor Schiller's dedication to research and innovation was recognized in 2023 when she received the Vice-Chancellor's Excellence Award for the most innovative research. In addition to her scholarly accomplishments, she has played a key role as a mentor, successfully supervising two doctoral candidates and sixteen master's students.

Professor Schiller's work in the fields of child protection and social innovation has positioned her as a leading figure in advancing both practical and theoretical approaches to child welfare. She holds a C2 rating from the National Research Foundation.



RESEARCH OUTPUTS FOR 2023

The research outputs listed in this report are for the year 2023, which were captured, verified, and submitted to the Department of Higher Education and Training (DHET) in 2024. The research outputs are still being reviewed by the DHET and the outcome of the review process will be released by the DHET in 2025.

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ACKNOWLEDGEMENTS

The Department of Research and Innovation would like to acknowledge various players who took part, in different but complementary ways, in the development and finalisation of this research report. The following individuals are gratefully acknowledged:

Dr Aceme Nyika:

Editor and Director: Research and Innovation

Professor Chris Boughey:

Proofreader (Professor Emeritus, Centre for Postgraduate Studies, Rhodes University)

Kanyisile Mandla:

Coordination

(Administrator: Research and Innovation Director's Office)

Alida Mundell:

Senior Graphic Designer
(UFH Institutional Advancement)

Tim Wilson:

Photographer
(UFH Institutional Advancement)





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