

NELSON MANDELA UNIVERSITY



RESEARCH & INNOVATION REPORT 2018/19

Mandela Centenary Year:
A university in service to society

100 YEARS OF MANDELA



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VC's foreword: a culture of vibrant research

A culture of vibrant research, innovation and internationalisation is central to the growth and reputation of Nelson Mandela University. Senate has therefore approved a new strategy to advance our research and innovation culture by supporting researchers from honours all the way through to postdoctoral fellows and established researchers.

As we know, there is a direct correlation between the proportion of academic staff with PhDs and research outputs, and we are committed to increasing our numbers of academic staff with doctorates, doctoral graduates, and our cohort of postdoctoral fellows. It is pleasing that for 2018, with a weighted research output (WRO) of 1.67, our university edged closer to the national average of 1.88 WRO. We are also pleased that our doctoral graduates for 2018 increased by 11% to 102, compared to 92 in 2017.

We are currently hosting 63 postdoctoral fellows, compared to 52 in 2017. They significantly contribute to the university in terms of publication outputs, postgraduate supervision and general research productivity. In 2018 our postdoctoral fellows published over 50 peer-reviewed papers. External funding for postdoctoral fellowships has, however, been declining, and this has become a focus area for future resource mobilisation. Another focus is the decline in our honours and master's graduates; a situation we are investigating, as these are crucial for growing our academic pipeline.

We believe that none of the global challenges of our time can be resolved by a single scholarship domain, so we are working on strengthening the arts and humanities, while continuing to advance our science gains. In the humanities, a much-anticipated new development is the inclusion of creative outputs in our criteria for recognising research excellence and being eligible for DHET subsidy.

Social cohesion, discrimination, poverty and inequality are some of the major challenges we face, and both the new SARCHI Chair in Identities and Social Cohesion and the Transdisciplinary Institute

of Mandela Studies draw on a constellation of scholarship that can make sense of the social, political, economic and environmental challenges we face, and drive meaningful, practical solutions for change. In the same vein, the Centre for Philosophy in Africa responds to the call for decolonised, innovative ways of thinking and being, in, and for, Africa.

In the School of Engineering, a major achievement in 2018 was the introduction of the three-year Bachelor of Engineering Technology in Marine Engineering, with the Marine Engineering honours programme to follow from 2022, and thereafter a master's programme, which will grow research vibrancy around this strategic area.

Our flagship Ocean Sciences Campus, the SARCHI Chair in Ocean Science and Marine Food Security, FishFORCE, the SARCHI Chair in the Law of the Sea and Development in Africa, and the new One Ocean Hub are examples of programmes partnering in local and international transdisciplinary research towards the understanding and growth of a sustainable ocean economy.

Meanwhile, other research Chairs ensure the university addresses the issue of economic growth and unemployment, particularly graduate and youth unemployment.

The merSETA Chair in Engineering Development is helping to grow human resources in engineering in the Eastern Cape, and with the Isuzu Chair of Mechatronics, provides platforms for mentorship and research and development on real-world industrial projects. The Chairs also afford student mobility and international immersion where students and postgraduates gain experience and practical skills that serve them well in the job market.

We also encourage research in fields that improve health and welfare, and the SARCHI Chair in Microfluidic Bio/Chemical Processing is working to make life-saving medications widely and cost-effectively available by manufacturing generic AIDS, TB and malaria drugs locally in South Africa.



We are extremely excited about the prospective launch of our Medical School in 2020 as we believe the research and engagement emanating from its work will contribute to breakthroughs in medical and health science issues endemic in our society.

Internationally, all our faculties continue to build partnerships in domains aligned to our institutional research themes, with an emphasis on sustainability. The International Research Laboratory on our George Campus, for example, is a new research and training collaboration between ourselves, the French National Research Centre and the University of Lyon. The unit's focus is on how to create multifunctional landscapes that can sustainably deliver the ecosystem benefits on which humans rely.

In line with our values of excellence, we congratulate Dr Alastair Potts from the African Centre for Coastal Palaeoscience as the first academic in the history of the institution to achieve an NRF P rating, an award made to outstanding researchers under 35.

To all our researchers, we congratulate you for your sterling work in advancing our university's research and innovation endeavours, and we thank you for the time and commitment you contribute to growing our fine postgraduate pipeline.

Vice-Chancellor
Professor Sibongile Muthwa



Prof Sibongile Muthwa



"To all our researchers, we congratulate you for your sterling work in advancing our university's research and innovation endeavours, and we thank you for the time and commitment you contribute to growing our fine postgraduate pipeline."

DVC's message: research, innovation and internationalisation in the Mandela centenary year

It's been an exciting Nelson Mandela Centenary year, with significant growth in our research and innovation outputs, grants and partnerships, nationally and internationally.

We have recently approved our research and innovation strategy, and developed our new internationalisation strategy and implementation plan; all part of our organisational redesign, which is taking the university forward in establishing a vibrant research, innovation and internationalisation culture.

Fittingly, during this period the Chair for Critical Studies in Higher Education Transformation (*CriSHET*) hosted the Dalibhunga Mandela Colloquium that questioned: "What Mandela for what time?" Who is the Mandela we import from history and 'what' is the Mandela approaching us from the future? Building on these considerations, in 2018 our Dean of Students hosted the Youth Convention, and a second one in 2019 to deeply reflect on the wave of changes in society and in the higher education sector over the last few years.

This year we have made great strides in revitalising the Humanities. In addition to the excellent work being done by the South African Cultural Observatory (SACO), *CriSHET*, the Centre for the Advancement of Non-Racialism and Democracy (CANRAD) and others, we plan to launch our Centre for Women and Gender Studies later this year.

Adding to our notable SARCHI Chair lineup is the new SARCHI Chair in Post School Education and Training: Community and Worker Education, the first to be co-hosted by two South African universities: our Centre for Integrated Post-School Education & Training (CIPSET) and the University of Johannesburg's Centre for Education Rights and Transformation (CERT).

A major global challenge of our time is to gain a deeper understanding of our oceans, notably the least researched Indian Ocean. Two major international ocean sciences conferences were held at Nelson Mandela University in March this year: the Second International Indian Ocean Expedition (IIOE-2) and the South Africa–Norway Research Co-operation on Blue Economy, Climate Change, the Environment and Sustainable Energy (SANOCEAN).

The IIOE-2 selected Nelson Mandela University to be the hub for marine robotics in a Western Indian Ocean-wide research network, and in March 2019 our Faculty of Engineering, the Built Environment and Information Technology (EBEIT) launched its transdisciplinary Marine Robotics Unit, enabling oceanographic researchers to collect data in situ, using robotic technologies.

One of our long-standing international partnerships is with the University of Southampton (UoS), UK, initially established through our SARCHI Chair in Ocean Science and Marine Food Security, and now including Marine Engineering and Marine Architecture. Nelson Mandela University's first Marine Architecture doctoral candidate, Boswell Douse, is currently doing his PhD at the UoS. In 2018 the Vice-Chancellor and I met with our counterparts there to identify additional disciplinary focus areas for our partnership.

Another long-standing research partnership is with Carl von Ossietzky University of Oldenburg in Germany, which spans several disciplines, including teacher education, computing sciences and IT, business intelligence and ocean sciences.

Nelson Mandela University's longest standing international partnership, however, is with St Cloud State University in Minnesota, United States; the original MOU was signed in 1998, and St Cloud's president visited us in March this year to celebrate 20 years of collaboration. The partnership includes student and



“We have recently approved our research and innovation strategy, and developed our new internationalisation strategy and implementation plan; all part of our organisational redesign, which is taking the university forward in establishing a vibrant research, innovation and internationalisation culture.”

Prof Andrew Leitch

staff mobility and exchanges, and funding that has enabled several Nelson Mandela University students to complete their master's degrees there.

A new research partnership, signed this year, is with the Malawi University of Science and Technology. As a new university, officially opened in 2014, it offers postgraduate programmes in engineering, computer and information technology, innovation and entrepreneurship.

Further afield, a new global South partnership is with the University of the South Pacific, focusing on the marine environment, but also on education, social justice and democracy. Both universities are already working jointly in the £20-million transdisciplinary One Ocean Hub project, discussed in this publication.

In closing, I would like to mention the outstanding work of our

university's business incubator, Propella, to which Nelson Mandela University provides considerable annual support. Established to commercialise projects emanating from the university, Propella is currently incubating and accelerating 21 ventures, with notable successes in 2018–2019. One is Robert Bosch's Rubber Nano Products (Pty) Ltd which has patented a nano-based additive that accelerates the vulcanising of rubber. It is currently trialing in over 20 countries and has been commercialised in South Africa and Europe.

Disruptive, smart, innovative and leading edge, this is the spirit of our innovators and researchers, and we look forward to further significant growth in the year ahead.

Professor Andrew Leitch
Deputy Vice-Chancellor: Research, Innovation and Internationalisation

Director's report: research management



Dr Kwezi Mzilikazi

In 2018, we began the process of revising the institutional research and innovation strategy which seeks to ensure that there is alignment between the research, innovation, engagement, teaching and learning and internationalisation agenda and the institutional priorities set out in the university's vision. The strategy is intended to be operational well into the next five years (2019–2023). At its heart are five principles that are underpinned by the pursuit of research and innovation excellence in all its dimensions. These are:

- Investing for impact
- Transformation
- Sustainability
- Strategic coherence and positioning
- Ubuntu.

Guided by these principles the university will make deliberate and considered decisions in order to achieve certain strategic research and innovation outcomes. These include the modalities of student support and funding, investments in innovation enabling initiatives and infrastructure, support for institutional research themes, investments in university research entities and the choice of national and international collaborators and partners.

The Department of Research Management is tasked with creating an enabling research and innovation environment that allows for



critical thinking and removes the administrative and bureaucratic tedium that burdens most academics at universities globally and detracts from a dedicated focus on their research and innovation initiatives. One of the most critical activities in the portfolio every year is the consolidation of the research outputs for submission to the Department of Higher Education and Training (DHET) for subsidy purposes. This has become an increasingly heavy administrative process and we are pleased to announce that an online platform to capture individual researchers' outputs throughout the year is now at the testing phase and will be rolled out shortly.

In 2018 the DHET announced that creative research outputs would be considered for subsidy purposes for the first time, so we will be partnering with faculties as we prepare for the first institutional creative research outputs submission. The DHET also shone the spotlight on research publication integrity and ethics, which calls for us as an institution to be alert and vigilant so that we do not fall prey to questionable publication practices. The university's Library and Information Services have been instrumental in the dissemination of information on this issue.

In the coming year, we look forward to partnering with faculties, the custodians of teaching, learning, research, innovation and internationalisation activities, to create a vibrant research environment at Nelson Mandela University through streamlined, efficient systems, processes, policies and infrastructure.



"The Department of Research Management is tasked with creating an enabling research and innovation environment that allows for critical thinking and removes the administrative and bureaucratic tedium that burdens most academics at universities globally and detracts from a dedicated focus on their research and innovation initiatives."

Director's report: innovation office

In today's innovation driven world, I am privileged to have joined the Innovation Office at Nelson Mandela University during the past year. It was both challenging and fascinating to chart a renewed path to better serve both our internal and external stakeholders. It was important to remind ourselves that the Innovation Office's task goes beyond technology transfer and innovation support activities, to develop and nurture an enabling innovation culture at the university.

While we recognise that our mandate goes beyond technology transfer, intellectual property (IP) protection is still one of our core functions. As part of fulfilling this role, during the past year, the university nearly doubled its investment in protecting the IP generated from its research activities, which in this case is indicative of the global spread of our innovations. This can only happen through the hard work of our researchers and their diligence in ensuring that intellectual property is disclosed and managed according to national and institutional policies. In that spirit, I would like to congratulate Prof Watts and the UYilo team, who were recipients of the Innovation Excellence Awards in 2018, for their contribution in their respective fields.

One of our ambitions is to translate the research outputs of our university into products and services that have commercial and/or societal benefit. While the office continuously seeks opportunities to enable this activity, I am particularly proud of the successes achieved by the early stage technology development programme that is managed by the Innovation Office. This programme is funded by the Technology Innovation Agency (TIA) Seed Fund Programme, and by the end of 2018, it had supported 29 early-stage technology development projects: our congratulations

"One of our ambitions is to translate the research outputs of our university into products and services that have commercial and/or societal benefit."



to those who successfully advanced their inventions under this programme.

Adequate business support is one of the critical components in the successful commercialisation of IP-based spin-offs. In order to ensure business sustainability, offer optimum business support and stimulate the commercialisation of technology-based innovation companies, the university – through its IP commercialisation vehicle, Innovolve (Pty) Ltd and in partnership with Engeli Enterprise Development (a private sector business support company) – established a joint venture incubator company, Propella. We would like to congratulate Propella on their continued support of university spin-off enterprises and other technology based companies in the Eastern Cape region. We look forward to even deeper engagements in the coming year.

I would be remiss if I did not acknowledge the support that we have received from our national stakeholders. Innovation is a “team sport” and we would not be able to successfully fulfil our mandate without the support of the following government departments and agencies: the National Intellectual Property Management Office (NIPMO), Southern African Research and Innovation Management Association (SARIMA) and the Technology Innovation Agency (TIA).

From this strong foundation, we step into the future anticipating even greater partnerships with all stakeholders. I would like to warmly thank all our researchers, partners and funders for making 2018 a success, and we are particularly proud of our inventors, who walk the difficult journey with us, and continue to be committed to innovation and the creation of new knowledge.



Dr Nqobile Gumedede

Acting director's report: research capacity development

Research Capacity Development's (RCD) mandate is to focus on the university's emerging researchers, postgraduates and emerging academics, through funding and skills development. RCD also facilitates research associate appointments, ethics application administration, postdoctoral funding and special postgraduate and emerging research programmes.

In 2018, RCD disbursed over R65.4-million in internal and external funding to postgraduate students. The three main sources, accounting for 91% of disbursed funds, were the National Research Foundation (NRF) (46%, 422 students), University Council postgraduate research scholarships (PGRS) (29%, 687 students) and internal research bursaries (IRBs) (16%, 263 students).

IRBs are funds allocated from supervisors or departments or faculties and can be from multiple sources (e.g. external research grants and research accounts). Because of a change in the NRF postgraduate funding model there has been a R5-million decrease in their funding since 2018. Although Council's PGRS funding has increased overall – from R17.8 million in 2018 to R20.2-million in 2019 – this has not offset the loss of NRF funding. The University is working toward increasing Council funding and strategic partnerships with external sources to ensure adequate funding for postgraduate students.

Postdoctoral fellows are an important and increasing group of emerging researchers. These fellowships are funded primarily by the NRF (~40%), Council (~32%) and IRBs (~15%), with R10.7-million disbursed in 2018. In 2011, there were 12 postdoctoral fellows registered. By 2018 this had increased to 61, and it is estimated that by the end of 2019 there will be approximately 65 postdoctoral fellows hosted at Nelson Mandela University. The 2018 cohort published over 50 articles to date, which is a significant contribution to the university's outputs.

"The New Generation Academic Programme (nGap) is currently in its fourth phase since 2016. The university now has 12 nGap posts, with four more new academic staff members due to join us in 2020."



The university has also taken advantage of national initiatives from the NRF and DHET to ensure that academic staff receive the support and training needed to attain higher degrees. Currently, 46% of academic staff have doctoral qualifications, an increase from below 40% just eight years ago, and in line with national averages for comprehensive universities. Through FRF-NRF Black Academic Advancement grants, five staff members have been funded to complete their PhDs or postdoctoral research over the next two to three years. Meanwhile, the NRF Thuthuka grant programme has been funding emerging researchers for over ten years, with 26 grants awarded in 2018.

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In 2018 RCD began its Postgraduate Orientation Programme for master's and doctoral students institution-wide, which has continued into 2019. Over 200 students attended the first three-day programme at the beginning of 2018, with two follow-up sessions held later in the year.

In addition, the RCD runs workshops to provide research support to postgraduate students and university staff. Funded by the DHET's University Capacity Development Grant, over 50 workshops and information sessions were held in 2018. A broad range of interventions have been put into place to support staff and postgraduate students, from proposal development skills, writing for theses and publications, to different data collection and statistical analysis methods and postgraduate supervision practices. Emerging academic staff have been supported for teaching relief, conference travel and research seed funding. Through all these funding and development initiatives, RCD continues to grow in its mandate to unlock the potential of postgraduates and emerging researchers.



Dr Denise Schael

Director's report: academic engagement & collaboration

Nelson Mandela University has a strong history of scholarly engagement, which has come into its own in 2018/19 with the integration of engagement into the core functions of Learning and Teaching, Research and Innovation.

With the change of name to Nelson Mandela University and the appointment of a new Vice-Chancellor, the university's engagement focus became "in service to society"; addressing the injustices and challenges facing marginalised communities.

"The university recognises that impactful and sustainable solutions to societal challenges should be driven by a scholarly approach to engagement. This not only serves society but also enhances and contextualises teaching and learning and contributes to research relevance and the development of graduate attributes," says the director of the Engagement Office, Professor George de Lange.

"Exceptional research and teaching therefore remain pivotal, as it is through new knowledge and skills creation that the university is able to contribute to the socio-economic development of its communities and to be of service to society.



Prof George de Lange

"This scholarly and integrative approach to engagement was further strengthened in 2018 by the establishment of the Institutional Research and Engagement Committee, and Faculty Research and Engagement Committees."

University–Community Partnerships

Sustainable solutions to complex societal challenges require trans- and multidisciplinary interventions and co-creative partnerships and platforms. These include: the Centre for Community Schools, the Centre for Community Technologies, the Govan Mbeki Mathematics Development Centre, the Centre for Integrated Post-School Education and Training, the Centre for Law in Action and the Labour and Social Security Unit.

Other platforms are community forums on which university representatives serve, such as the Schools Safety Forums, the Summerstrand Crime Prevention Committee, the Missionvale Community Clinic–Missionvale Care Centre Committee, and the Community Dialogues Series. Entity Advisory Boards also comprise a broad range of representatives of the various communities served by the university.



"Within the context of the new engagement trajectory it has set itself, the university has also identified the need to co-create solutions with the community", says Prof de Lange. "Hubs of Convergence, an initiative proposed by the Vice-Chancellor at her inauguration, serve as physical spaces where the university meets its immediate communities to engage in finding solutions to practical problems and challenges that affect them."

Engagement Excellence Awards

At the prestigious annual awards in 2018, the university recognised the scholarly based engagement projects of its staff:

Prof Graham Kerley, *Livestock Predation*: Engagement Excellence Award – STEM; Dr Magda Minguzzi, *The Way of the Water*: Engagement Excellence Award – Humanities and Social Sciences;

Dr Jennifer Jansen, *The Missionvale P-Project*: Team Excellence Award; Mr Michael Barry and the *I Mpilo Y Amanzi* Production Team: Engagement Team Award;

Ms Zurina Abdulla, *Children in Conflict with the Law*: Engagement Project Award;

Dr Johan Westraadt, HRTM Engagement Project: Emerging Engagement Award.

Engagement Status Report

Repositioning Engagement: A Status Report on Engagement with Disadvantaged Communities 2016-2018, was produced within the university's repositioning engagement process and the proposed Hubs of Convergence. The data on which the report is based was obtained through an analysis of a representative sample of 230 of the university's engagement initiatives and research projects with marginalised communities.

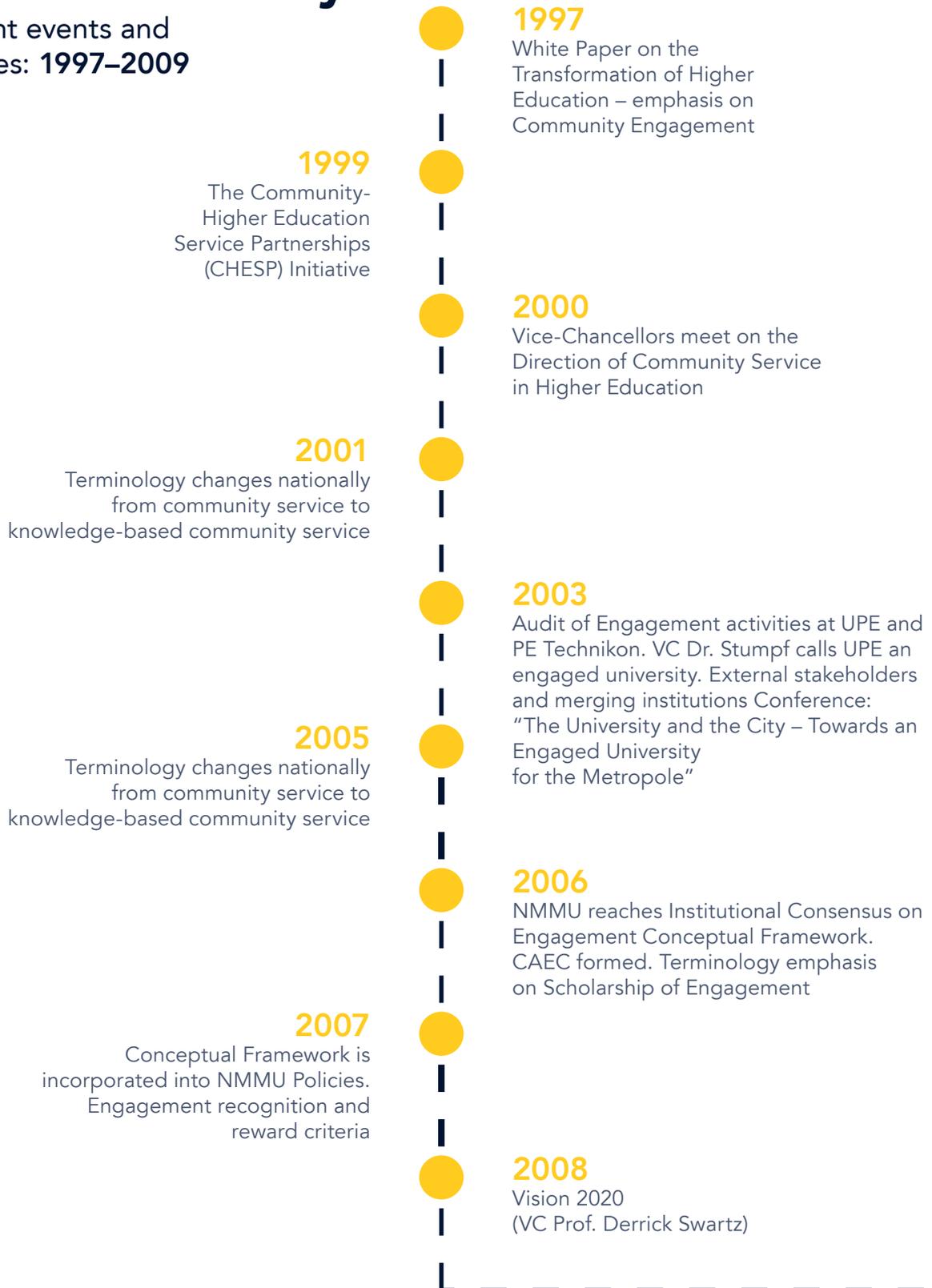
The report shows that the university is currently impacting 12 of the most pressing social challenges facing marginalised communities in South Africa, with the top five impact areas being education and training, health and well-being, social and community development, social justice and agriculture and food security. The report goes on to make recommendations on how community engagement can be further enabled, and includes a database of the key internal stakeholders involved in engagement activities.

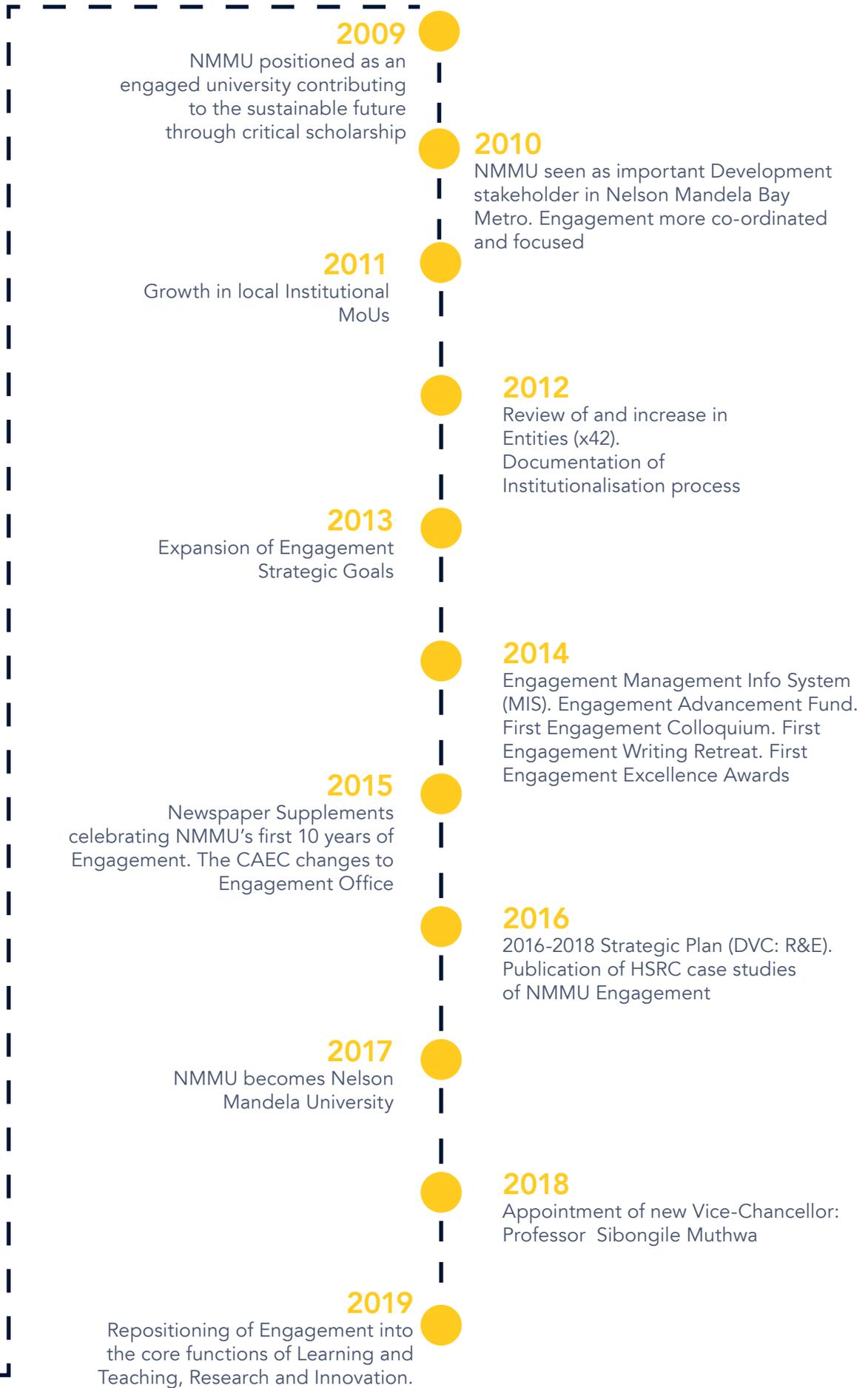


"The university recognises that impactful and sustainable solutions to societal challenges should be driven by a scholarly approach to engagement. This not only serves society but also enhances and contextualises teaching and learning and contributes to research relevance and the development of graduate attributes."

A brief history of Engagement at Nelson Mandela University

Significant events and
milestones: 1997–2009

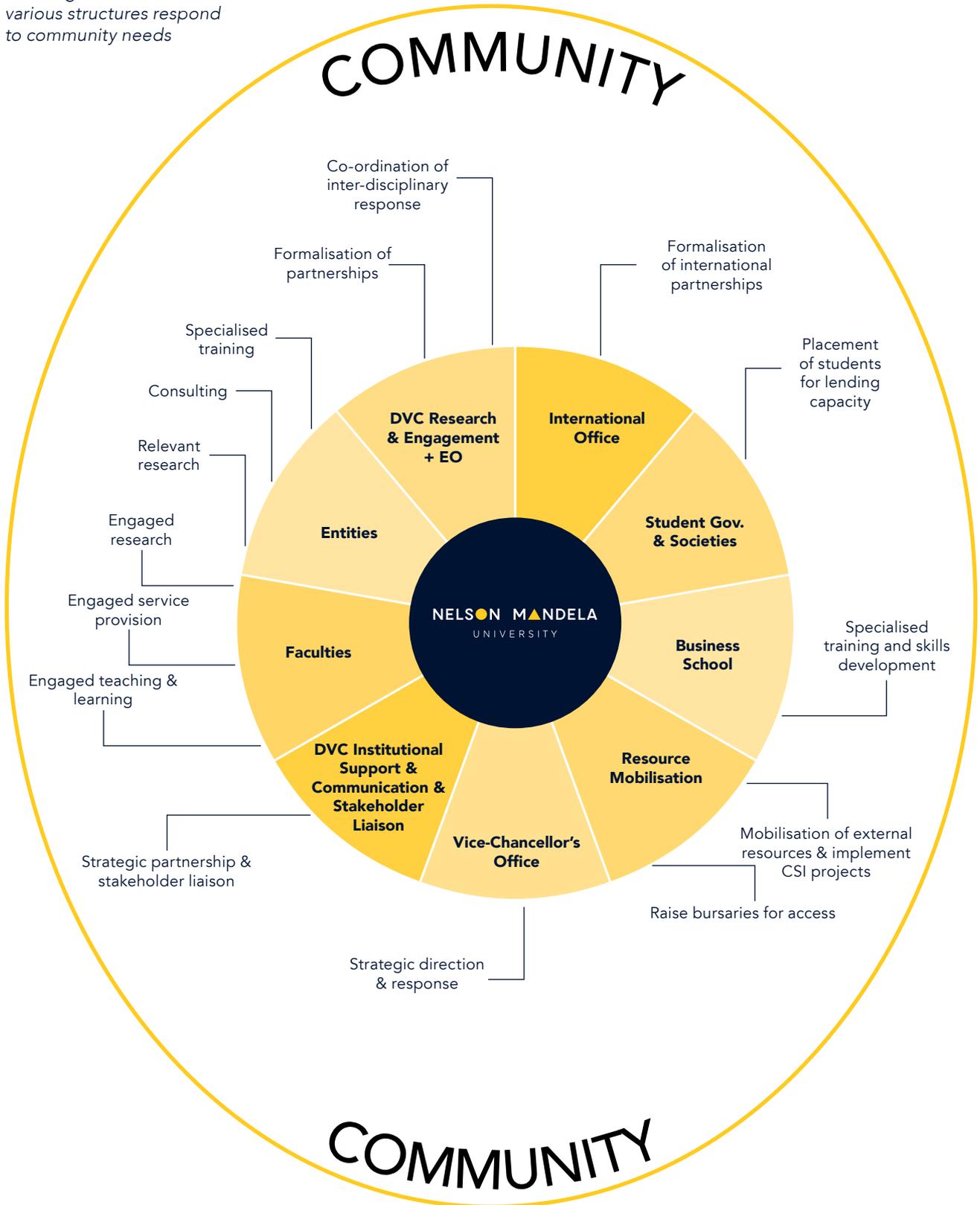




Operationalising engagement

How university structures respond to community needs

The diagram shows how the various structures respond to community needs



Research chairs

The University hosts a number of Council and externally funded Research Chairs. The key objectives of university research chairs in general are succinctly captured in the goals articulated through the DST/NRF SARCHI platform. These are: to expand research and innovation capacity, to improve international research and innovation competitiveness while responding to social and economic challenges, to attract and retain excellent researchers, to increase the training of master's and doctoral graduates. Our research chairs fulfil all these objectives and their research interests and activities are aligned with the various university strategic imperatives. The university is committed to increasing the number of externally funded research chairs in the near future.





Participants in the sea-to-source Tributaries Project

How is a cohesive society achieved?

In a country with many different identities, how is a cohesive society achieved? This is the quintessential South African and global question being addressed by the SARChI Chair in Identities and Social Cohesion.

How do we create South African communities that are both deeply aware of – and responsive to – our fractious past, and committed to social cohesion, unbinding the rigid identities that lead to exclusion, social antagonism and violence?

The Chair is addressing this question in two ways. The first is through philosophical and theoretical research pertaining to the diverse aspects of identities and social cohesion and their interrelationship. The second is through experimental and experiential learning.

On the research front, the Chair supports 20 students at various levels from honours to postdoctoral, and publishes research articles with a number of local, national and international research associates. In 2019 chairholder Professor Andrea Hurst also guest

edited a special issue of the *SA Journal of Philosophy* called *Identities in Question*.

“When we identify ourselves with a specific identity, everyone else becomes ‘the other’,” Prof Hurst explains. “We have many different ways of understanding ‘the other’ and each brings with it a whole lot of philosophical presupposition of what ‘the other’ is, with an ethical stance emanating from this, in either damaging or emancipatory ways.”

She offers the example of an article by Mandela University master’s student Lungelo Manona, published in *Image and Text* in 2018, based on the movie *Inxeba* (The Wound), about the Xhosa manhood initiation ritual *ulwaluko*. Manona’s article was an analysis of masculinities and the cultural pressure to conform to a particular masculinity.

“What is exciting is that many more people, especially younger people, identify themselves as having a fluid identity and it is this dismantling of identity that fosters social cohesion.”



Professor Vulindlela Nyoni, head of the Department of Visual Arts at Mandela University and one of the Chair's associates, explores another aspect of identity dismantling, positing that the human condition today is by its nature diasporic. To be diasporic, Nyoni notes, is to be displaced, without the prospect of any return to an origin. He argues that this "between state" of not-belonging, in which a person is neither one of the in-group nor an outsider, is increasingly the case, and presents an opportunity for recognition of our diasporic state to become a condition for social cohesion. The experimental and experiential learning response to the Chair's research question was developed in 2018 and this year has taken the form of an "aesthetic event" called *The Tributaries Project*. The project is co-funded by the Engagement Office and is a transdisciplinary collaboration between the Chair and Mandela University's Department of Visual Arts.

The Tributaries Project is becoming many different things for its diverse participants – academics, students and community members. All are responding to the same questions: In social conditions of extreme diversity, what would a cohesive community look like? Under which conditions would it "work" or "not work"?

A key aspect of the research is to acquire insight through practical knowledge into how aesthetic, scientific and philosophical practices may contribute to understanding the link between identity and

social cohesion.

The project takes members out of their comfort zones, during a three-day sea-to-source pilgrimage. Twelve people at a time start off in Sardinia Bay where they engage with academics, experience diverse sites first-hand, such as the wastewater treatment works, lighthouse and the polluted Swartkops estuary, and participate in activities such as a beach clean-up. Then they head up the Swartkops River towards the source in Groendal where they drink pure, pristine water in a wilderness area. Participants are asked to produce a response for the end of year multimedia/multidimensional exhibition, which can be anything from an article to a poem, a video, a piece of music, an artwork, experiment, performance or an academic presentation.

Prof Hurst explains: "The Chair's methodology is a version of complexity thinking and philosophy which relates to the concept of 'assemblage', where concepts and spaces may clash or coincide, creating spaces of mutual inspiration. From this, new directions emerge that the collaborators might not have thought about at the beginning, with potentially innovative responses to questions about the link between identity and social cohesion."

W: research.mandela.ac.za/Research-Chairs/Chair-in-Identities-and-Social-Cohesion-in-Africa



Prof Andrea Hurst



"The Chair's methodology is a version of complexity thinking and philosophy which relates to the concept of 'assemblage', where concepts and spaces may clash or coincide, creating spaces of mutual inspiration."



Collecting invertebrate data



Era of marine spatial planning

In 2014, the government launched Operation Phakisa: Oceans Economy, to unlock the economic potential of the oceans bordering its shores, based on the principles of sustainable development. One of the key tools available to promote sustainable practices in the ocean is marine spatial planning.

Professor Mandy Lombard, who holds the SARChI Chair in Marine Spatial Planning at Nelson Mandela University, explains, "Marine spatial planning is all about how to sustainably use marine resources and manage our oceans. Through the Chair we undertake research that informs ecosystem-based marine spatial planning in South Africa. We partner with other universities, local and national user groups and authorities, NGOs and industry, and work with ecologists, economists, social scientists, governance and legal specialists, and civil society."

Situated in the Institute for Coastal and Marine Research (CMR) at the Ocean Sciences Campus, the Chair collaborates in coordinated, transdisciplinary, evidence-based research with members from seven faculties.

Prof Lombard's Chair currently includes two master's students, nine doctoral candidates and three postdoctoral research fellows working on a wide range of topics. "An example is our partnership with the Nature's Valley Trust (NVT) at our joint research station in Plettenberg Bay, where Dr Gwen Penry and doctoral candidate Minke Tolsma are investigating the sustainability of the boat-based whale-watching industry. Then we have Dr Kelly Ortega working on climate models for fisheries, and Dr Jai Clifford-Holmes is working with doctoral candidate Estee Vermeulen to develop system dynamics models for the Bay to assist with marine spatial planning decision-making and scenario-planning."

Faculty of Law doctoral candidate Rachael Chasakara is researching the Marine Spatial Planning Act to investigate potential conflicts between the Act, human rights and the South African constitution. Prof Lombard is co-supervising Chasakara with Professor Patrick Vrancken who holds the SARChI Chair in the Law of the Sea and Development in Africa. "As we develop the ocean economy it is going to be increasingly crucial that the Marine Spatial Planning Act is applied without compromising the environment," says Prof Lombard. "The ecosystem services that the oceans deliver are essential for our survival."

Despite a clear understanding of their dependency on the oceans' provisions, humans continue to impact marine systems in

potentially irreversible ways. An estimated 70% of fish populations are either fully or over-exploited and altered food webs, together with ocean warming, are reducing food security and increasing the frequency of toxic algal blooms. Habitat destruction, pollution, ocean acidification, ocean warming ... the list goes on.

The big move required

"Unfortunately, South Africa's national policies tend to be fragmented and sector-specific and include decision-support tools that address only components of marine systems," says Prof Lombard. "For example: fisheries management tools focus on living resource extraction; integrated coastal management tools are implemented mainly along coasts; and marine protected areas and marine spatial planning are both area-based management tools. These tools are all represented in South Africa's legislative toolbox, the most recent addition being the Marine Spatial Planning Act, and our 20 new marine protected areas."

We need to act now, warns Prof Lombard, and the big move required is towards integrated ocean management.



Prof Mandy Lombard

Gains for all South Africans?

Operation Phakisa is the enabling policy for these recent developments; but is Phakisa's agenda, based on economic growth, in line with sustainable development goals? Will it really address poverty, or is it just the "business as usual" model of short-term gains for the few (catch all the real and proverbial fish now), rather than long-term gains for all South Africans ("infinity" fish)? Hopefully the latter, but what is required to move South Africa's ocean policies into a safe operating space? Do we need more research, and if so, what questions should we be asking, and what relationships should we be building, and with whom? The SARChI Chair in Marine Spatial planning is addressing these questions in South Africa's crucial ocean waters.

W: oceansciences.mandela.ac.za/Research-Chairs/Chair-in-Marine-Spatial-Planning





The law of the sea and combatting fisheries crime

The SARChI Chair in the Law of the Sea and Development in Africa is part of a South African and continent-wide engagement to develop the law of the sea for Africa by Africa.

“Concerted efforts to explore, exploit and protect the maritime zones that surround Africa, aligned with effective legal governance, are essential if the continent is to play a leading role in the ocean economy contributing to a peaceful and equitable international economic order,” says Professor Patrick Vrancken, incumbent of the SARChI Chair in the Law of the Sea and Development in Africa, established in 2013 and renewed for a second five-year cycle until 2023.

The Chair is playing a pivotal research role in developing the law of the sea in South Africa and Africa, and in combatting organised fisheries crime, through PescaDOLUS, an independent research and fisheries crime network co-founded by the Chair.

In an article introducing a 2019 special issue on fisheries crime, in the journal *Marine Policy*, Prof Vrancken, Dr Emma Witbooi

(the Chair’s first Postdoctoral Fellow) and Professor Jan Glazewski from the Institute of Marine and Environmental Law, University of Cape Town, wrote about transnational organised fisheries crime. The article provides insight into the complex, multiple criminal problems currently facing South Africa, Africa and the global fisheries industry, and proffered solutions from a law enforcement perspective.

In addition, the Chair’s postgraduate researchers are focusing on the many complex aspects of ocean governance. For example, Foluke Ajiboye-Dare’s LLD is focused on the legality of applying anticipatory self-defence against a maritime cyber-attack. Maritime cyber-attacks range from commercial espionage and selling stolen data, to gathering intelligence for organised crime, including the exact cargo location, ship transportation and handling plans.



Prof Patrick Vrancken

Advocate Jacques Mahler’s LLD is on the appropriate and sustainable regulation of surfing as an important vector for tourism and coastal development in the African context. Kevashinee Pillay’s doctoral research focuses on the protection of artisanal fishers through the intersection of the law of the sea and human rights law principles, with a specific reference to Africa.

Master’s candidates’ research includes the legal aspects of marine spatial planning; the jurisdiction of organs of state at sea; seafarers’ rights in Namibia; noise pollution at sea; renewable ocean energy; the 2009 FAO Port State Control Agreement; and marine plastic pollution.

“Overall, what is needed,” says Prof Vrancken, “is a more positive, proactive attitude towards the complexities of state ocean jurisdiction and the existing scope of the state’s duties towards the marine environment, and, more specifically, the protection of marine living resources.”

Ocean governance in Africa

Professor Patrick Vrancken is the co-editor of *The Law of the Sea: The African Union and its Member States*, published in 2017. The other co-editor is Emeritus Professor Martin Tsamenyi, a former director of the Australian National Centre for Ocean Resources and Security (ANCORS) and adviser to Ghana on maritime boundaries issues and fisheries governance.

The work is the first to systematically collate the legal aspects of ocean governance in African countries and is an indispensable reference for all the role players in the African maritime domain, including governments, business, civil society, lawyers, scientists and students.

W: lawofthesea.mandela.ac.za

Facebook: www.facebook.com/SAlawofthesea



Between land and sea are 290 estuaries

South Africa has 290 estuaries and 42 micro-estuaries urgently in need of formal protection, with priority areas identified in the new National Biodiversity Assessment.

Estuaries form the critical interface between the land and the sea. They are nursery areas for fish; they prevent river banks from eroding, providing protection against floods; they produce detritus on which animals, such as crabs, feed; and they take up nutrients and act as water filters.

“Our research is focused on the conservation and management of estuaries throughout South Africa, and we work closely with the Department of Environmental Affairs (DEA) and the South African National Biodiversity Institute (SANBI),” says Professor Janine Adams, who holds the interim SARCHI Chair in Shallow Water Ecosystems.

Prof Adams has written chapters on the health of South Africa’s estuaries for this year’s National Biodiversity Assessment. Published every five years, the report provides an assessment of the country’s terrestrial, marine, coastal and estuarine environments.

To produce the report Prof Adams and her research group worked with 14 other institutions around the country, including universities, government departments, and conservation organisations to understand the pressures on our estuaries, including freshwater inflow, pollution, water quality status, fishing pressure, invasive alien species, and climate change responses. From this, they are able to track the health and status of estuaries.

“The assessment identifies priority systems that urgently need to be protected, and we are advocating the proclamation of priority Estuarine Protected Areas,” says Prof Adams. “We have 20 new Marine Protected Areas, some of which have estuarine zones, but these only go to the high water mark, which is a problem, as estuaries include the surrounding land up to 5m above sea level and inland to as much as 30km,” Prof Adams explains.

South Africa’s estuaries are classified as: estuarine lakes (such as St Lucia); estuarine bays (such as Knysna); predominantly open

systems (such as the Swartkops, Gamtoos, Sundays, Mbashe, Mngazana); temporary closed systems – most of South Africa’s estuaries are this type (such as the Seekoei and Kabeljous); South Africa’s only estuarine lagoon – Langebaan; fluvially dominated systems (river mouths), such as the Tugela, Kei and Orange Rivers; arid temporal systems, which function approximately every ten years (such as the West Coast’s Groen, Spoeg and Bitter Rivers); and micro-estuaries.

Prof Adams’ research group includes three research fellows, 15 postgraduates and three research interns. “We work nationally and globally in big teams,” Prof Adams explains. “In South Africa we work with Stellenbosch University, Rhodes, Wits, UCT, UKZN, UWC and the University of Zululand. Internationally we work with the University of Glasgow, Scotland, on salt marshes (an estuary habitat), and with Wollongong University in New South Wales, Australia, on climate change and carbon storage.” As part of the Australian collaboration, Adams contributed to an article entitled “Wetland carbon storage controlled by millennial-scale variation



Prof Janine Adams



in relative sea-level rise” with lead author Prof Kerrylee Rogers of Wollongong University, published in *Nature* in March 2019.

Prof Adams explains that the southern hemisphere will gain carbon with sea level rise because mangrove and wetland soils will be flooded and depleted of dissolved oxygen, which slows down the decomposition of organic matter and therefore becomes a carbon store. This opens opportunities for carbon offsetting; in Kenya, for example, communities in Gazi Bay, by looking after their mangroves, gain carbon credits, which are then sold to companies wishing to offset their carbon footprint.

“In South Africa we are conducting long-term monitoring of South Africa’s mangrove swamps in the intertidal habitat, because with climate change they are moving down our east coast.” Mangroves in South Africa exist at one of the most southerly limits in the world, providing a unique opportunity to study recovery and resilience to change.

In 2018 Prof Adams ran her tenth annual estuary management course. Held at the Wilderness Lakes Ramsar site, in partnership with DEA, CSIR, CapeNature and the Department of Agriculture, Forestry and Fisheries, the course was attended by 40 SANParks staff members.

“In 2018 we also held an important water quality short-learning course in Plettenberg Bay, where we worked with 45 people from government and NGOs who use water sensing instrumentation to measure temperature, salinity and oxygen. With new people entering government positions all the time, ongoing training is essential to expand the knowledge base and protection requirements for our estuarine environments.”

W: research.mandela.ac.za/Research-Chairs/Chair-in-Shallow-Water-Ecosystems

Life-saving drugs manufactured in South Africa

The local production of key generic drugs for major diseases in South Africa and Africa could save billions, while establishing a new manufacturing industry and creating jobs.

"We are ready to manufacture life-saving medications in South Africa, specifically generic AIDS, TB and malaria drugs. None of the advanced pharmaceutical intermediates (APIs) or drug substances are made locally, which makes them incredibly expensive," says Professor Paul Watts, holder of the SARChI Chair in Microfluidic Bio/Chemical Processing.

He explains that over the past 10 years South Africa has spent in the region of R120-billion buying in AIDS, TB and Malaria APIs from India, and a significant amount will also have been spent in China. Added to this the cost of making the tablets, which is done by local pharmaceutical companies. He adds that a recent media report suggests that because of the costs, one in five AIDS patients in South Africa goes without this life-saving medication because there's simply not enough to meet the huge demand. The quality of the APIs is also not assured.

"For this reason, the biggest project for the Chair is the local production of quality drugs, as the morbidity and mortality from these diseases is far more devastating in Africa than elsewhere," says Prof Watts, who strongly believes that scientists should conduct research that positively influences society. Prof Watts, who has a doctorate in bio-organic natural product chemistry, started this research in 2000 at Hull University in the UK and continues to collaborate with researchers in the UK and US.

The Chair includes a group of approximately 30 researchers who are working on developing better chemical routes for the different medicinal targets and on developing cheaper ways of making quality drugs for life-threatening diseases in South Africa.

"In any tablet, from a headache tablet to a tablet for HIV, about 70% is the API or drug substance," Prof Watts explains. "Using new technology we can make the APIs 20 to 30 per cent cheaper in South Africa. More people would therefore have access to them, and, it would be creating an industry and jobs."

The Chair started this project in 2013 and it has reached the point where three different AIDS drugs (Lamivudine, Emtricitabine and Efavirenz) have been manufactured at the research lab level on campus and are now in the international patent protection processing stage, which takes two to three years.

"These are known drugs, we have not developed a new drug; we have developed a new way of manufacturing the drug. We can also manufacture drugs under patent, but we would need a licence for the patent – this would not be cheap, hence our initial focus is on generic drugs not under patent," says Prof Watts.

The university has partnered with local companies with the aim of establishing a manufacturing plant and is currently awaiting approval from government for further funding. All the equipment would come from the UK and the Netherlands and be approved for drug manufacturing purposes. "We'd probably have one centre in South Africa where the drugs would be manufactured, and it would make sense for it to be near a port for export."

Despite all protocols being met, there are endless delays over the funding, which is highly frustrating for the researchers and raises questions about why the government would pay out so much for the APIs but hesitate to invest in manufacturing them on home soil. "We are so close to doing something big here," says Prof Watts. "We are so close to pushing it over the line and so we will keep on with it until it happens."

W: flowchem.mandela.ac.za



Prof Paul Watts



Prof Mike Roberts

What is Africa doing about its oceans?

Increasing sea temperatures, destructive fishing practices and high levels of pollution are impacting the Western Indian Ocean (WIO), which extends from South Africa all the way up the eastern coast of Africa, where an estimated 60 million people depend on the ocean for their livelihoods.

The Indian Ocean is the least researched and understood of the world's oceans, so in an initiative jointly hosted by Nelson Mandela University, the University of Southampton (UoS) and the Southampton-based National Oceanography Centre (NOC), the SARChI Chair in Ocean Science and Marine Food Security is investigating what sustains marine food security and the underpinning ecosystems in the WIO.

New Frontier PhD and Early Research Career (ERC) programme

The New Frontier programme is part of the Chair's *Innovation Bridge – Regional Hub* (IB-RH) research engagement mechanism. It is building partnerships between top institutions in Africa and top, well-resourced institutions in the Global North to tackle ocean science challenges in the southern hemisphere that have global implications.

"Together with our French partners, the joint Mandela University-UoS–French PhD and Early Career Research (ECR) programme is growing the postgraduate ocean sciences pipeline in South Africa and the WIO to over 100 students, and we already have 15 master's, PhDs and ECRs registered," says Professor Mike Roberts, holder of the SARChI chair.



Two major ocean science case studies

Case Study 1 South African squid fishery collapse 2013

Nelson Mandela University researchers are investigating the causes of the squid fishery collapse in the Eastern Cape between 2013 and 2014 that affected many thousands in the Eastern Cape dependent on the fisheries for their subsistence.

Prof Roberts explains how the source of the problem may lie further away in the WIO: “The South Equatorial Current that flows across the Indian Ocean from east to west induces mesoscale eddies – large, swirling masses of water – in the Mozambique Channel and the Agulhas Current. This turbulence is responsible for significant ocean production, but further south on the edge of the Agulhas Bank, it can cause substantial loss of shelf waters. We don’t know whether the turbulence is increasing and therefore whether this kind of fishery crash could be more regular, and what this means for livelihoods and food security.”

Satellite observations and ocean models suggest that the “cold ridge”, an oceanographic feature of the Agulhas Bank that is believed to be responsible for much of the ocean productivity here, was absent in 2012. This would explain the fishery crash in 2013. “Ultimately, we believe there has been a regime shift in the Agulhas Bank ecosystem, probably as a result of climate change. If this is the case, we need big, powerful models to help us anticipate future shifts and to predict if or when this will happen again.”

Case Study 2 East African marine ecosystems

The Chair’s partner institutes in Kenya and Tanzania are carrying out case studies on the northern Western Indian Ocean (WIO), where there has been limited scientific research on marine ecosystems, how these are changing and how this is impacting the ocean food resources.

Prof Roberts explains: “Coastal communities in Zanzibar and mainland Tanzania coastal communities depend on the monsoon-related small pelagic fish (anchovies, sardines,

mackerel, threadfin and herring) for food and income. Hundreds of small, locally built boats venture out to fish at night using nets and lamps. Fluctuations in the supply of these fish varies from year to year, depending on the strength of the monsoon and the resultant degree of coastal upwelling that brings nutrients into the surface waters.

“In July 2018, our partners from the Tanzanian Institute of Marine Studies and the UK National Oceanography Centre deployed a series of satellite-tracked ocean drifters in the Pemba Channel to identify the complexity of flow in the lee of Pemba Island, north of Zanzibar, during the South-East monsoon season, the most energetic period for this part of the Western Indian Ocean (WIO). This information was augmented by a 10-day ship and ocean glider survey in July 2019 to collect data under the sea’s surface.

“In synopsis, we know ocean productivity is decreasing in the tropical WIO as a result of warming seas. The research aims to determine if this coastal region of the WIO is changing too, how this is affecting the food web, and importantly, to use computer modelling to forecast the future. We strongly suspect a decrease in food production in the future. This will require engaging with the respective governments to initiate policies to mitigate this challenge.”

The French Connection

A major collaboration with French partners in the Innovation Bridge-Research Hub – notably the *Institut de Recherche pour le Développement* (IRD) in Marseille and the *Université de Bretagne Occidentale* (UBO) in Brest – has focused on a seamount 200km south of Madagascar. Seamounts play a special role in the global ocean, as their special shape and shallow depth provide biodiversity “stepping stone” hotspots. They attract top predators such as tuna, billfish and sharks near their summits and are as important as continental shelves.

Roberts says: “To date, we have had three cruises using French research vessels with scientists and students from Nelson Mandela University, France and Madagascar onboard. We will be publishing an 18-paper special issue for December 2019’s volume of the journal *Deep-Sea Research II*, with recommendations that may play an important role in helping Madagascar formulate ocean conservation measures.”

W: research.mandela.ac.za/Research-Chairs/Chair-in-Ocean-Science-and-Food-Security



Prof André Keet

NELSON MANDELA UNIVERSITY

[Re] Dis(e)ction/Ukukhethwa Ewendlelo
Knowledge, Power and the African-voiced curriculum



Eugene Buhle
Professor in the Institute of Social and Health Sciences at the University of South Africa (UNISA) and member in the South African Medical Research Council (SAMRC), History & Peace Research Unit, as well as the Programme in Transdisciplinary African Studies.

Masculinity of University
Until a conversation with a would-be thesis-chancellor on why I am personally uninterested in university management, it was ironic that I had never dwelt on the kinds of masculinity that a university implicitly or deliberately nurtures or discourages. The irony is that I work at university, I am a man, and I study masculinities. The cultivation of some masculinities and discussion of others happen in the daily flow of university life, and not only in formal lectures. University managers and professors perform, challenge or tolerate of masculinity ideologies in activities such as academic symposia where students are involved, authoring with or without students, supervision sessions, and workshops of relationships. Working from the idea of multiple masculinities, and taking off from a teachable moment from a night in 2015 of what was called Asofo House of the University of Cape Town during the #Rhodes campaign, in this talk I would like to consider the possible masculinities students might discover or fail to find at a university, where they might find such masculinities, what makes such discovery and failure possible, and what potential is there to cultivate a life-enriching, progressive vision of masculinity.

Date: Friday, 18 May 2018 **Time:** 14:00 – 16:00
Venue: 6th Street Campus, Art Gallery, Drawing Room (upstairs)
Please RSVP to Dorcashe Ntshole (Tel: 054 4036) ntshole@nmu.ac.za

Becoming CIBET members will include themes on [Re]dis(e) locations of whiteness and the re-imagination of social activities across socio-cultural and public-economic divides.

NELSON MANDELA UNIVERSITY

[Re] Dis(e)ction/Ukukhethwa Ewendlelo
Knowledge, Power and the African-voiced curriculum



Shirley Anne Tofe
Professor of Race and Education at South Dakota University (SDU) department of US and the US and Secretary Professor at Boston Atlantic University in the Chair for Global Studies in Higher Education Transformation.

Whiteness and Institutional Racism: Making Hidden Curriculum Visible
Institutional Racism happens by our beliefs making everyday social judgments and assumptions of people and situations without us realising. Our biases are influenced by our background, cultural upbringing and personal experiences. We may not even be aware of these views and attitudes, or be aware of their full impact and implications. Diversity Challenge Unit, 2015.

This presentation speaks against the point of view to arguing that race is not anomalous but instead is linked to Charles Mills' (2007) 'Racial Contract' and its 'epistemologies of ignorance'. These epistemologies of ignorance emerge from what the SDU calls 'our hegemonic, cultural consciousness and personal experiences'. Its task is arguing that racism stems from 'unconscious bias' (unconscious bias) and members who embrace it as a will to deny institutional racism, to equality and diversity training. 'unconscious bias' has become a terminology of institutionalised conditions. It has become a simulation attempting to move beyond a racialised world to where 'we all have better' because we have been trained to participate in a 'best-practice' (Shilling, 2015) paper reality. Members agree that it is through deconstructing 'unconscious bias', while laughing and 'self-reflecting' that we can begin to see hidden institutional whiteness at the base of each bias.

Date: Thursday, 26 July 2018
Time: 14:00 – 15:00
Venue: 6th Street Campus, Art Gallery, Drawing Room (upstairs)

Dorcashe Ntshole
15th St 404 4036 E Dorcashe.Ntshole@nmu.ac.za

Becoming CIBET members will include themes on [Re]dis(e) locations of whiteness and the re-imagination of social activities across socio-cultural and public-economic divides.



Scholarship as transformation

Since its inception in October 2017, the CriSHET research community has grown exponentially from seven to 28 members across Africa, Europe and the Americas, collectively driving scholarship as transformation.

The Chair for Critical Studies in Higher Education Transformation (CriSHET) was established to drive the transformation agenda of Nelson Mandela University by grounding it in critical studies and framing it within the concept of an African-purposed curriculum. This is in view of the current debates about the decolonisation of higher education, and against the backdrop of national, regional and global processes.

By forging substantive networks and mutually beneficial associations with universities, research entities and foundations nationally, in Africa, and internationally, who are making similar strides in promoting debates around decolonisation and transformation, CriSHET seeks to position the university as a leader within the higher education sector in terms of its transformational impact.

“To achieve our research objectives of advancing critical scholarly engagements and outputs, CriSHET approaches the study of universities through the notions of critique and power,” explains Professor André Keet who holds the CriSHET Chair. The Chair’s focus is on original scholarship that critically analyses patterns of inclusion and exclusion and configurations of recognitions and misrecognitions within higher education.

“To achieve our programmatic objectives of facilitating spaces for Nelson Mandela University stakeholders to engage with transformation challenges, and advancing social justice praxes within higher education, in 2018 CriSHET, amongst others, initiated the seminar series titled *[Re]Directions/Ukutshintshwa Kwendlela: Knowledge, Praxes and the African-purposed curriculum.*”

CriSHET hosted 12 of these seminars in 2018 to offer established and emerging academics, as well as current graduate students, a platform to present original reflections and scholarships that challenge mainstream thinking within the academy.

Other events CriSHET hosted in 2018 included five book launches, a Decolonising Music Studies colloquium, the Academy of Science of South Africa (ASSAf) Presidential Roundtable, three workshops and a writing retreat.

“In order to translate student activism and initiatives into critical scholarly discourses within higher education spaces, CriSHET,

in partnership with the Office of the Dean of Students and Student Governance and Development, initiated a biannual student journal titled *The Perspective Online: The Journal for In-depth Conversations*,” Prof Keet continues. Each peer-reviewed, interdisciplinary issue will feature articles, columns and creative work by students and academics on the deepening of transformation, decolonisation and Africanisation of higher education.

In 2018, CriSHET’s team of research assistants, postdoctoral fellows, research associates and visiting professors, produced 28 articles in peer-reviewed journals (ISI and DoE), 22 book chapters submitted for DHET subsidy, four edited book compilations, and two books. The postgraduate agenda of CriSHET reflects an interdisciplinary mix of scholarship and is steadily increasing. Two PhDs were awarded in 2018, and this number is set to grow.

“The research and postgraduate objectives of CriSHET are reflected on our website, which include the profiles and work of research assistants, postdoctoral fellows, research associates and visiting professors,” says Prof Keet.

The research and postgraduate programmes provide the intellectual resources for CriSHET’s university transformation work at Nelson Mandela University and in the broader national and international higher education sector. Workshops, seminars, colloquia, book launches, and training programmes are all tuned into this scholarly discourse.

Within the university, CriSHET is a pivotal institutional player in a number of the university’s strategic projects and transformation policy development. It is also a key national resource on transformation architectures and praxes within universities more broadly; the development of transformative intellectual cultures; and strategies on the renewal of the academy. “Merging scholarship and praxis, CriSHET, together with our university partners, is working on an online resource for higher education transformation, whilst initiating an African Critical University Studies network collaboration,” says Prof Keet.

In addition, CriSHET is a key player on the Global (De)Centre – a platform that brings together a growing network of scholars from across the world, committed to producing new knowledge and using different epistemologies and methods by working collaboratively with a broad range of partners.

W: crishet.mandela.ac.za



Prof Sijekula Mbanga

Human settlements for improved quality of life

In 2018 a ten-year roadmap was developed to support technological innovations for human settlements that provide for an integrated, sustainable future and an improved quality of life.

From 2018 the Chair in Human Settlements, in partnership with the CSIR, has been leading a project with the Department of Science and Technology (DST), the Department of Human Settlements and several South African universities to develop a countrywide ten-year framework for the application of appropriate innovative technologies that can be mainstreamed for human settlements.

The holder of the Chair in Human Settlements, Professor Sijekula Mbanga, explains that the technologies need to be resilient and respond to climate change, the global energy and financial crises, resource depletion and environmental degradation. He emphasises the use of “settlement” rather than “housing”. As he explains: “It is not only about a house or shelter, it is about creating sustainable neighbourhoods and cities that are good to live in.”

“The roadmap framework is complete and is being circulated for comment, before going to government for endorsement towards the end of 2019. www.sti4shs.co.za

“From January 2020 we need to work on how to roll it out, and



who will be driving it and funding it," says Prof Mbanga. "To attract and encourage contributors we co-hosted the *Out of the Box Human Settlements Conference* in October 2018.

"A big issue that needs to be addressed is mixed income settlements rather than the fringe settlement development we currently have for those with lower incomes, who spend hours of their lives and a considerable percentage of their income on transport to get to work," Prof Mbanga explains.

"In Nelson Mandela Bay we are co-hosting a seminar series with the Mandela Bay Development Agency (MBDA) on sustainable mixed income settlements, smart and inclusive cities and inter-dependencies between urban and rural spaces. The MBDA has a five-year plan, with certain areas in the city identified for integrated development. It will hopefully start to turn around downtown Port Elizabeth which, as it stands, is not an inviting, integrated, economically and culturally vibrant space."

The Chair has a large number of postgraduates contributing to its work, including 12 PhDs, 16 master's and 20 honours students, as well as a postdoctoral researcher, Dr Olufemi Ojo-Fajuru. His research, titled, "Dimensions of informal sector activities, public space contestation and conflicts in downtown areas of cities: the paradox in Ado-Ekiti, Nigeria and Port Elizabeth, South Africa", is intended to investigate the causes and effects of informal sector encroachment on public spaces, and issues arising from such space conflicts in central area of cities, using the two cities as case studies.

The honours, master's and PhD students are focusing on different aspects of South Africa's housing programme, including: housing policy effectiveness; how cities are responding to mass housing needs arising out of demographic changes and urbanisation; the process of upgrading informal settlements and transitioning them to formal settlements; and innovations for informal settlement housing, including how they can be made more fire and flood-resistant.

The Chair is also partnering the University of Potsdam, Germany and the DST in the EcoSUN sustainable "Green Village" project at

Kenton on Sea's Ekuphumleni township, a science and technology initiative for new types of settlements. www.ecosun.com.de

"The Ekuphumleni demonstration site comprises 10 RDP houses which will be built with technologies other than bricks and mortar, and linked to a water recycling facility," Prof Mbanga explains. "Energy efficient solar panels will power the houses to take the pressure off the national grid. This approach is becoming essential given the water and energy crisis our country and the world is facing."

There is also a focus on waste management for biogas production, home gardening for nutrition and food security, and physical health programmes linked to school and community education. The intention of this demonstration site is to influence government policy nationally.

"In 2018 several of our postgraduates attended summer school at the University of Potsdam and we visited sustainable communities in Germany and the University of Berlin to look at their energy and waste management, and how waste is processed for biofuels. We also looked at the maintenance of new technologies, as we need to source funding for the training of green community technicians, and how this training could be developed into a higher certificate of education. This would be a transformative instrument in addressing another of South Africa's most urgent and significant societal needs: sustainable, decent work opportunities."

"A big issue that needs to be addressed is mixed income settlements ... for those with lower incomes, who spend hours of their lives and a considerable percentage of their income on transport to get to work."



Student exchange interns visit from partner universities in Germany.

Practical industry research and development

The Isuzu Chair of Mechatronics is a platform for international engagement, mentorship and practical industry research and development. It has facilitated the completion of numerous projects to date and boasts a strong project pipeline.

“As part of undergraduate and postgraduate training, it is important to expose mechatronics students to real-world industrial projects where they develop practical skills that serve them well in the job market,” says Professor Igor Gorlach, who holds the Chair, currently in its tenth year, and renamed the Isuzu Chair of Mechatronics in 2018.

Prof Gorlach meets with engineering managers at Isuzu to identify suitable projects for mechatronics students in their third

and final (honours) years as well as master’s students. “Through research and innovation, the Chair encourages and facilitates cooperation between industry and academia with the aim of enhancing human capital development in the automotive sector,” he says.

Student exchange interns visit from partner universities in Germany, such as Reutlingen University and Aachen University to engage on projects. Similarly, the Chair also sends Master’s students to universities in Germany. The students are supervised by Prof Gorlach as well as Isuzu’s engineers to achieve the required project outcome. Ultimately, the successful projects are implemented in the factory, sometimes exactly as the students designed them, and at times with small modifications.



Above: New torqueing station installed in 2019 at the Isuzu engine assembly line
Below: Professor Igor Gorlach

Projects the third year students worked on in 2018 include:

- Designing a torqueing station for automatic transmissions for Isuzu bakkies;
- Improving the material supply chain of the Isuzu truck cabins from the storage to assembly area. The objective was to design a reconfigurable platform to reduce the number of trolleys;
- Developing a method to handle truck chassis that are shipped in containers from Japan. The students designed a trolley to do this;
- Designing a trolley to safely transport truck fuel tanks from the storage area to the truck chassis on the assembly line. The aim of this project was to design a universal foldable trolley to support all types of trucks on the new assembly line at the Struandale plant.

Over the years, the industry has contributed funding of more than R4-million, allowing the Chair to financially support students in building prototypes as well as projects that are successful enough to be commercialised. Examples include the development of a low-cost Autonomous Guided Vehicle for production material handling and a CNC controlled VIN number scribing machine for truck chassis.

The Chair also sponsors trophies and prize money for the top achieving mechatronics students, which are presented by Isuzu representatives at the annual Merit Awards Ceremony.

Academic support programme

The Department of Mechatronics, together with the Centre for Teaching, Learning and Media (CTLM), developed a Mechatronics Engineering Mentoring Programme (MMP) for engineering students, an initiative currently in its seventh year.

The aim of the programme is to increase the pass rate of engineering students through mentorship, as well as to provide general support for students in adapting to university life, especially those who come from previously disadvantaged communities. Within the department, senior students are identified to serve as tutors for the first year mechatronics students and to individually assist them with the content of their courses. "It has certainly made a positive impact and improved our first year pass rate," says Prof Gorlach.

W: mechatronics.mandela.ac.za



Karl du Preez and Thabelo Mohlala, mechatronics master's student and lecturer in the Higher Certificate: Mechatronics

Postgraduate and degree growth in engineering

In 2018, the postgraduate engineering pipeline, the marine and maritime programme and the faculty's engagement focus took giant steps.

"A major achievement was the introduction of the new three-year Bachelor of Engineering Technology in Marine Engineering, with the first 18 students registering; we aim to grow this to 75 first year students per year," says Karl du Preez, the Director of the Advanced Mechatronics Technology Centre (AMTC) and the holder of the merSETA Chair in Engineering Development. "We are also developing a Marine Engineering Honours programme, which we aim to offer from 2022 and a master's programme in the near future."

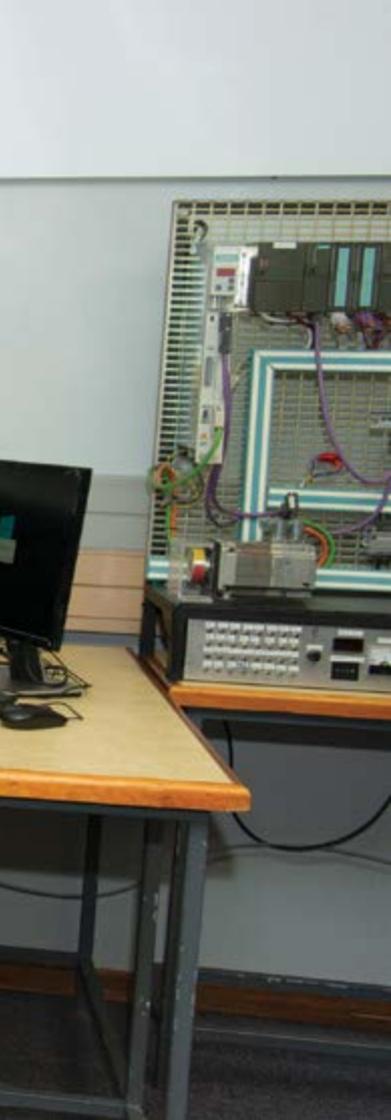
Du Preez explains that the merSETA Chair, established in 2010, is making a significant impact in growing human resources in engineering in the Eastern Cape in order to enhance the manufacturing industry, economy, research outputs and the postgraduate engineering pipeline. "In 2018 the AMTC provided

considerable support for postgraduate research, including R1.6-million to fully fund nine master's students and three doctorates," says du Preez.

Lungisa Boswell Douse (a former Mechanical Engineering student), registered for his PhD in Naval Architecture at Southampton University in the UK, fully funded by the Chair, which is also funding lecturer John Fernandes' PhD in Mechatronics at Nelson Mandela University. Once they graduate they will contribute to growing the PhD pipeline.

Dr Sean Poole, a former postdoctoral student of the AMTC, started his own 3D printing company in 2018 after having been part of the faculty team that built one of the largest 3D printers in Africa.

Du Preez says: "We are collaborating with him on new technologies in the field of additive manufacturing (3D Printing). In 2018 Dr Poole was also contracted by the Chair to lead a R10.9-million project to upgrade the Department of Industrial Engineering's laboratory and training facility, develop Industry 4.0 technologies,



Some of the Eco Car team members.

upskill university and TVET College staff in these technologies, partner with industry and integrate Industry 4.0 technologies into both undergraduate degrees and postgraduate projects.”

Supporting both undergraduate and postgraduate projects and the operations of the AMTC is the Nelson Mandela University–Siemens Training Centre. Siemens SA donated three new 1500 hardware stations to the University (total value R1.3-million) which has equipped the training centre to offer all accredited courses on the new Totally Integrated Automation (TIA) Portal.

The AMTC is also accredited to provide industry-standard training in factory automation and drives. In June 2018 they hosted six universities from South Africa, West Africa and East Africa for a Siemens Automation Cooperates with Education (SCE) Training programme.

Engagement

The merSETA Chair’s engagement priorities include:

- Educational support to high schools
- TVET College support and development
- Women in Engineering support
- Industry and student projects
- Managing the merSETA bursary programme.

Some of the engagement activities towards achieving these goals were:

- An engineering open day at Isikhoba Nombewu Technical High School, a rural school in Cofimvaba, Eastern Cape, displaying engineering projects and featuring racing drones;
- Designing and manufacturing automation hardware for the East Cape Midlands and Southern Cape TVET Colleges and training their staff; and
- The Renewable Energy Research Group’s design and

commissioning of a solar water pumping station on a remote site in Riemvasmaak, Northern Cape.

€1-million partnership in Maritime Education

In 2018, Erasmus Plus, an international European Union-sponsored partnership, awarded a grant of €1-million (±R16-million) to an international consortium of six universities to ensure the highest global standards in their maritime engineering and nautical science degree programmes. Nelson Mandela University is the lead institution in the consortium. Participating with the university are: Satakunnan University of Applied Sciences (Finland), Southampton Solent University (UK), Hochschule Wismar (Germany), Cape Peninsula University of Technology and Durban University of Technology.

Mandela University Autonomous Operations (MAO)

As part of the Chair’s three-year (2018–2020) R15.7-million contract from merSETA, in 2018 the MAO: completed the design of a marine glider; designed, manufactured and tested a quadcopter for the security industry; and initiated the concept design of an unmanned vertical take-off vehicle.

The Chair also contributed to the design and manufacture of the winning Eco Car in the 2018 national Shell Eco Car competition. The vehicle travelled 220km on one litre of fuel, making the university African Champions for the third year in a row.

Mechatronics, or mechatronic engineering, includes electrical, mechanical and industrial engineering systems, robotics, systems, product engineering and all the technologies pertaining to Industry 4.0 or the Fourth Industrial Revolution (4IR), such as automation and data exchange in manufacturing technologies, the internet of things, cloud computing and cognitive computing.

W: mao.mandela.ac.za

W: amtc.mandela.ac.za/merSETA-Chair-in-Engineering-Development





Revitalisation of the humanities

Nelson Mandela University recognises the critical role of the humanities, and – in keeping with its pledge to “change the world” – fosters a humanising pedagogy in learning, teaching and research, towards developing a socially, politically and environmentally conscious society.

By revitalising the arts, humanities and social sciences, the university is advancing its efforts in building social cohesion and democratic citizenship among its students – regardless of their research or programme choice.

We’re encouraging transdisciplinary research, the promotion of indigenous knowledge systems and sharing of new knowledge paradigms, as these foster the depth of thinking and understanding required to deal critically and creatively with pressing local and global challenges. In today’s ever-changing world of work, and with the realities of the Fourth Industrial Revolution (4IR) upon us, the arts, humanities and social sciences are integral to progress.



Dr Sam Nzioki

A living philosophy for Africa

The Centre for Philosophy in Africa heeds the irrepressible call of our times for decolonised and innovative ways of thinking and being, as a living philosophy for Africa.

"You can't biologise or racialise culture. My idea of knowing myself in the world is African, but my skin colour is not the determinant. This reduction of people to one template of colour is vicious racism and something that was weaponised by history. But it is not culture. Culture is a complex of multi-layered realities of knowing oneself and how one lives one's life."

So says the Director of the Centre for Philosophy in Africa, Dr Sam Nzioki, who took up his post in October 2018.

"Through the Centre we question what the discipline of philosophy in Africa means for a scholar in Africa, and as an everyday person in Africa. The work of the Centre responds to the #FeesMustFall movement's call for a decolonised curriculum, which Nelson Mandela University embraces as one of the expressions of being an African university. We need to profoundly respond to this while at the same time not removing ourselves from the big world issues as a country and continent that is part of the world."



Dr Nzioki explains that decolonising the curriculum is not easy, given that the current traditions have existed for many decades. The question of “what is philosophy in Africa?” is also not confined to the discipline of philosophy; it exists in all disciplines and the Centre is positioned to ask the big philosophical questions in mathematics, physics, pharmacy, psychology, education and economics.

“It requires transdisciplinary Africa-purposed research,” says Dr Nzioki. “One of the first objectives of the Centre is therefore to conduct and stimulate inter-disciplinary, intra-institutional and inter-institutional philosophical research with a focus on developing a canon, maxims and concepts for thinking that are purposed for Africa and Africanness.”

“The Centre is therefore thinking about how to develop a bold packaging of philosophical processes to engage school learners, students, teachers, lecturers and postgraduates in the critical thinking tools of logic, knowledge creation and how to think and live ethically.”

Ethics, Dr Nzioki explains, is not just about life orientation; it is a rigorous way of asking questions and taking responsibility for being in the world. This is the foundation of a living philosophy from which a philosophy in Africa can develop. It is also essential in this time, with leaders and public servants finding themselves on the wrong side of ethics.

One of the cornerstone questions is: ‘how can philosophy become a way of life?’. It borrows from the ancients where philosophy is not just a play with ideas – it is a vigorous combat of the mind and self; a constant realisation of ‘I don’t know but I continue to learn’. The Centre proposes this as one of its main ideas and is looking for likeminded people, including students, as intellectual activists across all disciplines where philosophy has the power to dispose them differently, in how they relate to the environment, other people and the self.

In 2018, a group of mainly undergraduate students from a broad range of disciplines created the *Thinkers Collective*. “They meet on Fridays and I encourage them to think about philosophy as a way of changing how they think about life and problem-solving. It’s exciting to witness them increasingly questioning the binary view of reality; reality is not that simple.

“They are also debating the big decolonisation questions about how you emancipate yourself and give yourself capacity even if you come with tools from a bad legacy. They explore how to use these tools to sharpen their world; to unlock tenacious prejudices, including race and identity politics, and hegemonic capitalist issues.”

Together with *CriSHET* and the Nelson Mandela Foundation, in 2018 the Centre started putting together the Atlantic Fellowship for Racial Equity, a short learning programme which includes research fellows from South Africa and the United States. It looks at Africa’s political history and what happened with African governance post-independence. “We are hoping to offer the programme to the private sector and government, such as municipalities, to defuse narrow notions of identity and share the philosophy of Ubuntu, not as an empty slogan, but as a rich, ethical way of living.”

“One of the cornerstone questions: is ‘how can philosophy become a way of life?’. It borrows from the ancients where philosophy is not just a play with ideas – it is a vigorous combat of the mind and self; a constant realisation of, ‘I don’t know but I continue to learn’.”

Bursaries promote isiXhosa studies at Mandela University

Over the past few years, Nelson Mandela University has experienced a surge in the number of students pursuing qualifications in language studies, especially in isiXhosa.

This is largely as a result of significant bursary support from the Department of Arts and Culture (DAC) and the National Arts Council (NAC).

From 2015 to 2018, over R4-million in DAC bursaries were awarded to 200 students. Ninety were master's students, 70 were honours students and 35 were undergraduates. Meanwhile, the NAC supported over 30 students, with bursaries ranging from undergraduate to doctoral level.

"The development of African languages is recognised as a constitutional prerogative and the DAC bursary programme, in particular, has enabled the development of isiXhosa at Nelson Mandela University, inspiring many students to go on to produce doctoral work written in isiXhosa," said the university's DAC administrator Nkululeko Mkosana.

"The DAC programme has also been able to foster transformation and equity at the university, with the majority of recipients being African female students." Of the 200 recipients, 150 were female and 130 were black.

The programme has also been a strong supporter of students with special needs, including two blind students, Avukile Jeke and Ntsikelelo Williams, who graduated with their BA honours degrees in isiXhosa this year.

Language and Literature's Prof Linda Kwatsha said the NAC bursaries were assisting in the intellectualisation of African languages as the language of research.

"The university must be applauded for creating an environment which allows students to write their proposals and research in isiXhosa."





Madiba paves the way

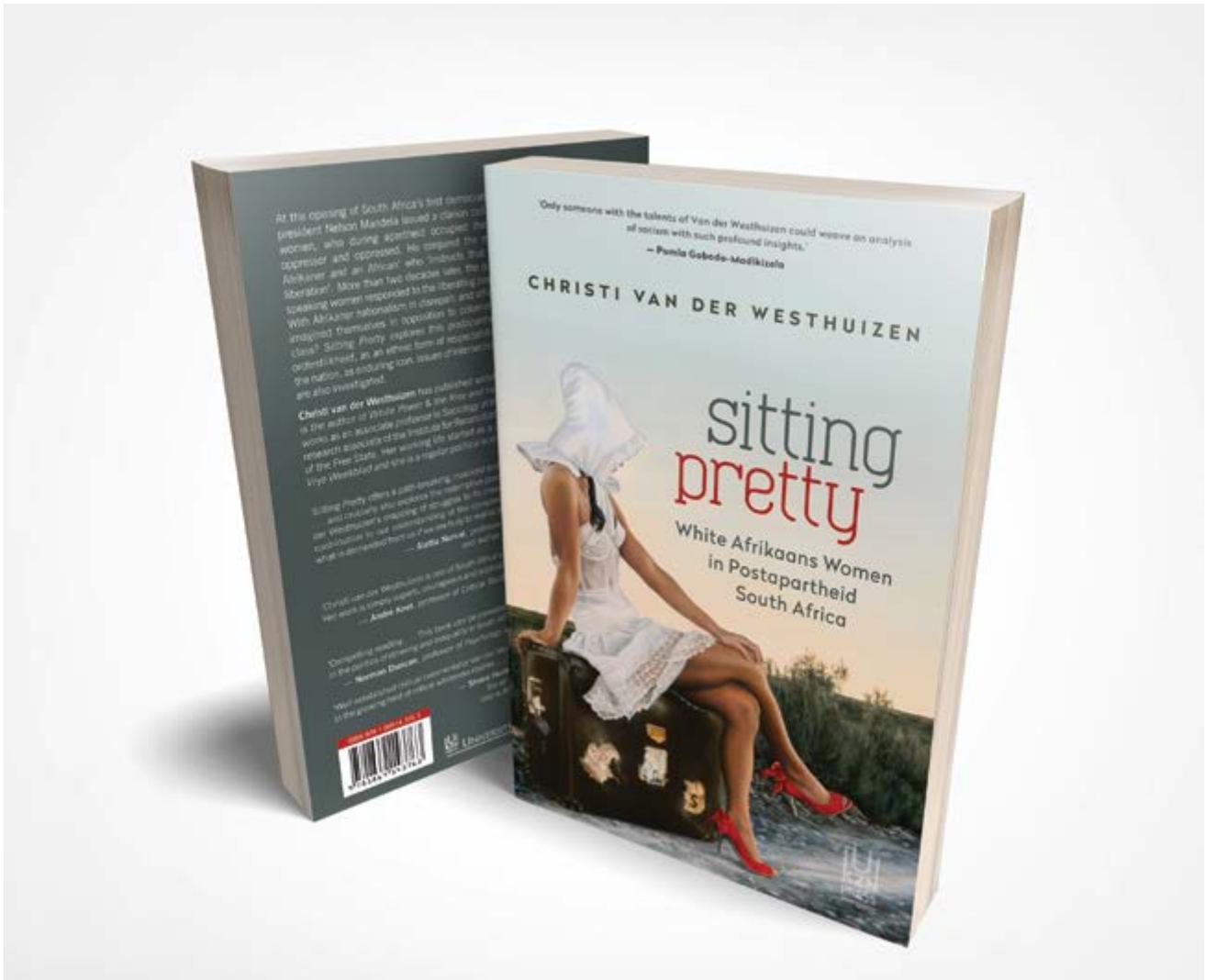
Since its name changed in 2017, Nelson Mandela University has been exploring its role as the only university in the world that carries Madiba's name, and the enormous responsibility that goes with this.

This exploration sparked the idea of introducing critical Mandela studies at the university – studies where Mandela, as a figure of social justice, becomes the lens through which the huge challenges of our time can be viewed, grappled with and understood, ultimately paving the way towards new and better ways to solve them.

The idea of a Transdisciplinary Institute for Mandela Studies (TIMS) was the focus of the *Dalibhunga: This time? That Mandela?* colloquium, held at the university in March.

The colloquium was one of the few remaining activities under the year-long Centenary Celebrations Programme – launched in July last year – which has been firmly rooted in the academic project as the best contribution the university can make towards preserving and nurturing our namesake's legacy.

"Through TIMS, we want to develop Mandela scholars. There are many people doing great work in isolation, but not in a programme that will bring them together. That's the uniqueness of TIMS ... We want to attract people who have a deep sense of the issues Nelson Mandela would have been interested in, and want to study them at a postgraduate level," said Prof Andre Keet, Chair for Critical Studies in Higher Education Transformation (CriSHET) at Mandela University.



What strengthens or threatens democracy?

The Centre for the Advancement of Non-Racialism and Democracy's (CANRAD) research programme addresses democracy and difference at the intersections of race, class, gender and sexuality.

Of all possible systems of governance, democracy holds the most potential for people to be treated with human dignity, irrespective of differences such as race, class, gender and sexuality. This vision of democracy, strengthened by non-racialism and gender, sexual and social justice, forms the focus of CANRAD's research programme.

"We are looking at the current threats to democracy, such as the

race and gender populisms that have risen in South Africa and globally. At CANRAD we are concerned with making sense of these and the pressures they are placing on democracy," says Christi van der Westhuizen, author, academic, political commentator and media columnist, who joined CANRAD as Associate Professor in January 2019 to lead the research programme.

Prof van der Westhuizen has written a number of books engaging with these issues, including *Sitting Pretty – White Afrikaans Women in Postapartheid South Africa* and *White Power & the Rise and Fall of the National Party*. She explains that when people lose faith in democracy, they may turn to populist movements in the



Prof Christi van der Westhuizen

hope these will solve their problems. Such movements generally apportion blame to outsiders or marginalised figures, for example, racialised others, immigrants, lesbians and gays, or women who do not conform to patriarchal structures. People start seeing the source of their difficulty in 'strangers', instead of identifying the actual political and economic reasons.

"We are therefore examining neoliberalism, not only as economic policy but as a form of rationality or how human life is organised," Prof van der Westhuizen explains. "It is an elite form of power that concentrates wealth in the hands of a tiny minority. As an authoritarian phenomenon it stymies democracy. We are looking at how it manifests in South Africa and globally. With socio-economic

"We are therefore examining neoliberalism, not only as economic policy but as a form of rationality or how human life is organised."

inequality at a historical high, people are really suffering and even the middle class is shrinking with people dropping into a kind of underclass."

Current conditions have led to the rise of a new class, the *precariat*, who frequently have more than one job to survive, and this includes formerly middle class people. In South Africa, where we have structural unemployment, the precariat is further characterised by people who have never held formal jobs due to failures in the economy. This includes a high percentage of young people classified as NEETs (not in employment education and training) and with no hope of it. They are making ends meet in precarious ways, such as in the informal sector or even by begging.

CANRAD doctoral student Natalia Flores-Garrido researches this "precarity". She followed Prof van der Westhuizen from her former post with the University of Pretoria, as did master's student Zandile Tose, who is researching *Constructions of womanhood in the ANC*.

"CANRAD research sets out to make sense of a number of social, economic and political problems with depth and nuance," says Prof van der Westhuizen. "CANRAD's work is not policy focused but it can form the basis of policies to address pressing problems."

Given CANRAD's emphasis on engagement, Prof van der Westhuizen makes a point of taking these debates into the public domain through ongoing media columns, interviews on radio and television and popular and academic presentations. "Part of our work is to get the research out there and inspire critical thinking, also among citizens and the general public," she says. "We regard the scholarship of engagement as an essential component of an inclusive and just democracy."



Multi and transdisciplinary focus in research

Nelson Mandela once said he admired those with independent minds because they “make you see problems from all angles”. Similarly, Nelson Mandela University recognises the value of diverse voices, skills, expertise and knowledge in co-creating new approaches and solutions.

The synthesis or contribution of knowledge from a range of disciplines allows us to move beyond a domain-specific approach and to address issues holistically. Transdisciplinary research is well under way in our university, and is the foundation of our Ocean Sciences Campus, our interprofessional education model for health care professionals and many research engagement projects.





Maasai woman and man on the beach in Zanzibar

One ocean hub

Nelson Mandela University is part of the One Ocean Hub, an ambitious new five-year research programme, funded by the UK Government through their Global Challenges Research Fund.

The £20-million (±R358-million) programme is led by the University of Strathclyde in Scotland and aims to tackle threats to the world's oceans, specifically in developing countries.

Bridge the disconnects

Researchers and postgraduate students from diverse disciplines at Nelson Mandela University are working with 50 partners in the One Ocean Hub, led by Professor Elisa Morgera, Director of the Strathclyde Centre for Environmental Law & Governance, who says: "The One Ocean Hub will bridge the current disconnects across law, science and policy to empower local communities, women and youth – who are particularly impacted by decision-making – to co-develop research and solutions."

The university's hub members include: Professor Patrick Vrancken (SARChI Chair in Law of the Sea and Development in Africa), Professor Mandy Lombard (SARChI Chair in Marine Spatial Planning), Professor Rose Boswell (Executive Dean of the Faculty of Arts), Professor Janine Adams (SARChI Chair in Shallow Water Ecosystems), Professor Hennie van As (Director: FishFORCE and Centre for Law in Action), Dr Bernadette Snow (Director: Institute for Coastal and Marine Research (CMR)), Dr Kerry Sink (CMR Research Associate and Marine Programme Manager at the South African National Biodiversity Institute (SANBI)).

Transformative governance for a blue society

One of five focus areas in the One Ocean Hub, *Transformative governance for an inclusive, innovative and responsible blue society* looks at socio-economic decision-making for ocean management. The university's transdisciplinary project team is working with the Nelson Mandela Bay municipality, ports and tourism authority and other stakeholders, using Port Elizabeth and Algoa Bay as a study



Prof Lombard says the One Ocean Hub “is both challenging and energising, as it is not only about good science and good law, it is equally about culturally and economically connecting with the ocean, about sustainable, better governed fisheries and about looking to the near future when the technology becomes available to push fishing and mining capabilities into deeper and deeper waters.”

Culturally connecting with the ocean

Prof Rose Boswell proposes that the Faculty of Art’s participation in the One Ocean Hub should be to engage with the natural sciences, law and business economics through foundational courses in ethics, public management, cultural awareness and indigenous knowledge, and literary conceptions of the sea.

Prof Boswell says: “In 2018, we offered the following water and ocean-focused engagements: a literature colloquium on literary metaphors of the sea; a series of colloquia on water, led by Prof Andrea Hurst, who holds our SARChI Chair in Identities and Social Cohesion; an architecture exhibition entitled *The Way of Water* by the School of Architecture’s Dr Magda Minguzzi, as well as my exhibition entitled: *Indian Ocean Africa*.”

Mauritian-born Prof Boswell’s exhibition consisted of photographs from her anthropological field research in the south-west Indian Ocean islands of Zanzibar, Madagascar and Mauritius. “To understand the earth’s oceans, one must also understand the people who inhabit coastal areas and islands,” says Prof Boswell.

area and looking at everything from the ocean economy, to marine genetics, to international law, to estuaries and the deep sea.

Different maritime zones, different rules

Prof Patrick Vrancken’s and Prof Mandy Lombard’s research teams are partnering towards achieving one of the One Ocean Hub’s goals: to establish “Integrated legal and decision-making frameworks, balancing ocean conservation and sustainable use for fair and equitable benefit sharing”.

Prof Vrancken explains: “You have laws governing the internal waters such as our bays; then you have laws governing the territorial sea extending 12 nautical miles. Beyond this is the exclusive economic zone (EEZ) which extends as far as 200 nautical miles from the coastal baselines.” Prof Lombard adds: “South Africa has just enacted the Marine Spatial Planning Act. We are developing the scientific evidence and engaging with policy and the law inside our EEZ and in the adjacent high seas.”



Seaweed cultivation, east coast of Africa



Era of the ocean

Based in the city of Port Elizabeth, situated on a coastline that spans approximately 3000 kilometres along three oceans – the Atlantic, Southern and Indian Ocean – Nelson Mandela University is perfectly placed to be the hub for ocean sciences in Africa and the Western Indian Ocean: oceansciences.mandela.ac.za.

The oceans cover 70% of our planet and are a critical source of oxygen, food, marine resources, employment and subsistence. But they are under increasing threat from human activity.

What is encouraging is that a growing network of outstanding local and international research and innovation initiatives are working to better understand these vast bodies of water and to implement solutions for their conservation and sustainable development.

Nelson Mandela University partners with the national and international marine and maritime research community on several key programmes, collaborating with countries such as Britain and Norway, and several coastal countries in Africa. The university also partners with other South African universities, the Nelson Mandela Bay Metro, government and key industry players.

The faculties and the dedicated Ocean Sciences Campus (the first of its kind in South Africa) offer a range of qualifications and programmes to support ocean sciences development, conservation and a sustainable, well managed blue economy.

The Institute for Coastal and Marine Research (CMR) is the largest on the Ocean Sciences Campus. Headed by Dr Bernadette Snow, it has members from all seven faculties and is made up of:



Dr Bernadette Snow

- Academic staff members and technicians: 54
 - Research Associates, Professional Associates & Research Fellows: 46
 - Associate Members: 27
 - Support Members: 12
 - News Members: 32
- cmr.mandela.ac.za

The CMR includes the following SARCHI Chairs:

- Shallow Water Ecosystems (Professor Janine Adams);
- Marine Spatial Planning (Professor Mandy Lombard);
- Law of the Sea and Development in Africa and bilateral SARCHI Chair in Ocean Science and Marine Food Security (Professor Mike Roberts);
- Identities and Social Cohesion (Professor Andrea Hurst).

The CMR is a key role-player in the One Ocean Hub international research collaboration, and will host the Regional Hub Coordinator. Dr Snow, Professor Patrick Vrancken, Professor Mandy Lombard

and Dr Kerry Sink, a PEW Fellow at Nelson Mandela University, are on the Hub Executive as co-investigators.

Dr Snow was instrumental in organising two major international ocean sciences conferences held at Nelson Mandela University in March 2019: the Second International Indian Ocean Expedition (IIO-E2) and the South Africa–Norway Research Cooperation on Blue Economy, Climate Change, the Environment and Sustainable Energy (SANOCEAN). In January 2020, the CMR will host an important think tank conference to explore and understand transformation and transformative ocean governance.

CMR Engagement and Research

The CMR ensures that research is shared with society in the form of public events, lectures, outreach programmes, marketing material and training.

Research within the CMR takes place in three broad, interlinked research areas:

Living Resources and Marine Food Security: This covers projects studying and sustainably developing coastal and marine living resources, which are, or can be, utilised as food sources.

Biodiversity, Conservation and Management: This includes projects broadly relating to understanding, protecting and managing coastal and marine ecosystems – both for conservation and sustainable human use.

Global Change: Projects under this theme are aimed at monitoring and understanding change, both anthropogenic and natural, and how that change affects coastal and marine systems and human communities dependent on them.





Fisheries law enforcement is transdisciplinary by nature

Organised fisheries crime ranges from illegal fishing to human trafficking and forced labour, fraud, forgery, corruption, money laundering and tax and customs evasion.

“The extent of organised fisheries crime globally is so huge that it is effectively a parallel economic system, undermining sustainable economic growth and posing a significant challenge to fisheries law enforcement agencies across the world,” says Professor Hennie van As, director of the Centre for Law in Action and head of South Africa’s first Fisheries Law Enforcement Academy, FishFORCE.

FishFORCE was established by the university in 2016, in partnership with the Norwegian Ministry of Foreign Affairs and South Africa’s Department of Agriculture, Forestry and Fisheries, to equip enforcement agencies to handle the increasingly complex investigations and prosecutions of fisheries crime.

FishFORCE and the Centre for Law in Action is part of the transdisciplinary One Ocean Hub research programme. As Prof van As explains: “Fisheries law enforcement is transdisciplinary by nature, requiring expertise in law, criminology, police science, fisheries science, fisheries management and marine living resources conservation.”

In 2018 Prof van As and a research associate in the Department of Public Law, Phil Snijman, contributed to a publication by the United Nations Office on Drugs and Crime titled *Rotten Fish: A guide on addressing corruption in the fisheries sector*.

FishFORCE postgraduate research

A cornerstone of FishFORCE is to facilitate research and innovation to equip fisheries law enforcement officers with the most up-to-date information, techniques and tools. FishFORCE research associates and postgraduate students conduct multidisciplinary research



FishFORCE training in Tanzania. The FishFORCE Academy is helping to build fisheries law enforcement capacity along the east coast of Africa.



FishFORCE training on Fisheries Crime Law Enforcement in South and East Africa, led by Professor Hennie van As and attended by Kenyan and South African officials and universities. The Kenyan delegation included representatives from the University of Nairobi School of Law & School of Biological Sciences; Office of the Director of Public Prosecutions, Kenya; Kenyan State Department for Fisheries & the Blue Economy, Kenya Marine & Fisheries Research Institute; Kenya Coast Guard Service. The South African officials were from the Department of Agriculture, Forestry & Fisheries (DAFF).

South Africa or through Zimbabwe, Lesotho, Swaziland, Namibia and Angola. The biggest destination is Hong Kong.

For example, FishFORCE master's students are, inter alia, looking at the implementation of the Port State Measures Agreement (an agreement whereby vessels engaged in illegal

activities can be denied access to a country's harbours), and the effectiveness of legislation regulating marine living resources, specifically the powers and functions of fisheries control officers.

Two doctoral proposals have been submitted: Hashali Hamukuaya's proposal is to research drug trafficking linked to the poaching of marine living resources in Namibia, and Dumisani Appollos is to research the effectiveness of prosecution in marine related prosecutions in South Africa.

that includes: analysis and evaluation of law enforcement gaps, focusing on the development of national and international law and policies; research on how to protect marine living resources; how to collaborate in cross-border and international fisheries crime control; and effective sentencing.

Cases prosecuted as Illegal, Unreported, Unregulated (IUU) fishing have had very limited success, with penalties amounting to a rap on the knuckles and being seen as "the cost of doing business" by culprits. Instead, as van As argues, "they should be addressed under the Prevention of Organised Crime Act, with severe penalties of 25 years to life. "It is encouraging to see that three recent major abalone racketeering cases have done this, with sentences of 18 to 20 years."

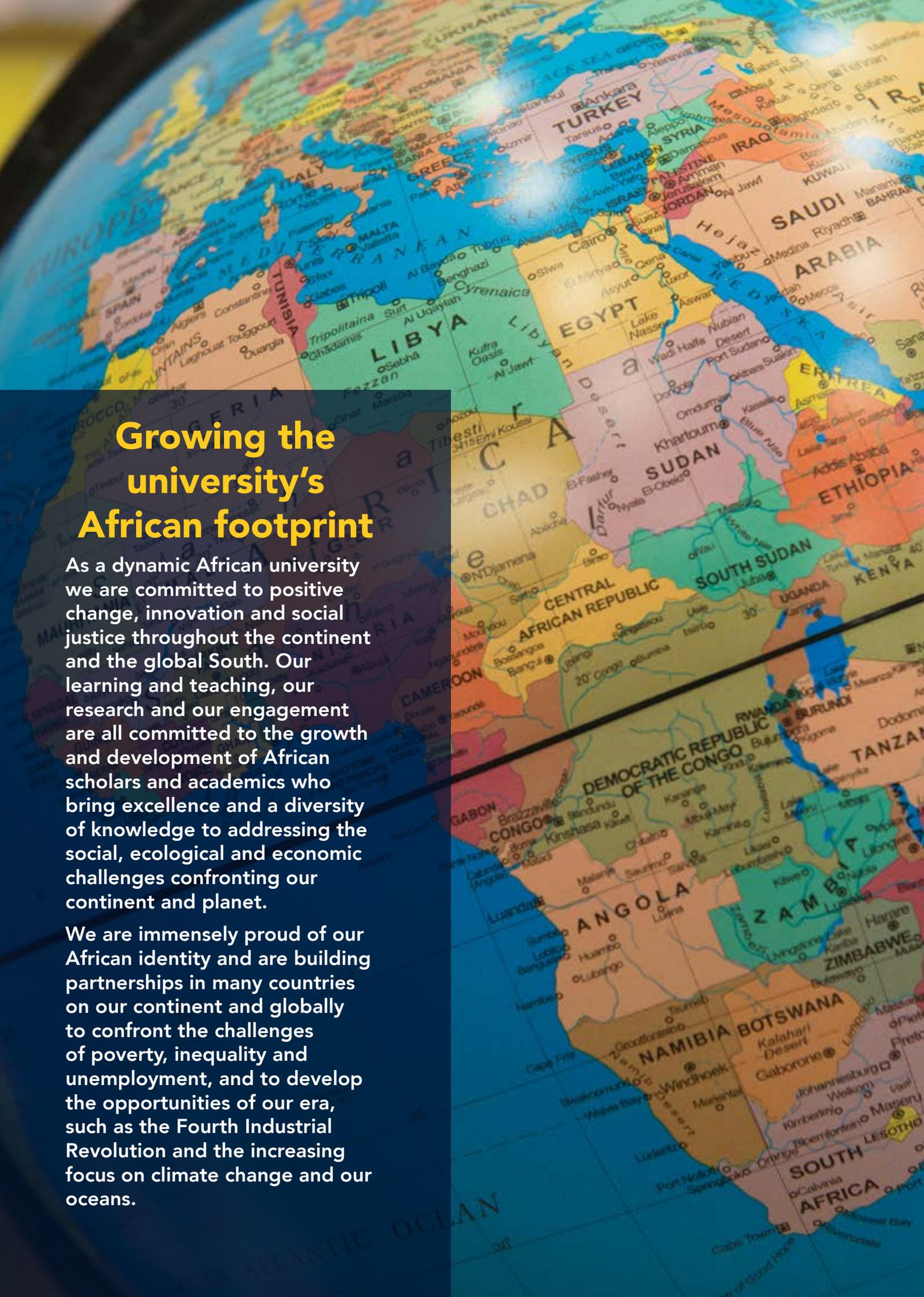
Training

FishFORCE's training courses provide formal qualifications, such as a Higher Certificate in Criminal Justice and a Diploma in Law Enforcement – qualifications specifically aimed at professionalising the sector and promoting fisheries law enforcement as a career choice. Fisheries control officers, police officers and prosecutors are being trained at FishFORCE academies in South Africa and Kenya, with other academies opening in Angola, Namibia, Mozambique, Tanzania, Madagascar, Mauritius and Seychelles.

Together with the National Prosecuting Authority (NPA), the academy is getting to the bottom of why prosecutions for fisheries-related crimes often fail, continues van As. "We are now collaborating with the South African Police Service (SAPS), Defence Force, NPA and Home Affairs to develop a combined offensive."

"We are also assisting with training along the Indian Ocean Rim, including countries like Indonesia. Organised fisheries crime knows no borders," says Prof van As.

Prof van As says the main smuggling routes for abalone and other illegally harvested marine living resources are either directly from



Growing the university's African footprint

As a dynamic African university we are committed to positive change, innovation and social justice throughout the continent and the global South. Our learning and teaching, our research and our engagement are all committed to the growth and development of African scholars and academics who bring excellence and a diversity of knowledge to addressing the social, ecological and economic challenges confronting our continent and planet.

We are immensely proud of our African identity and are building partnerships in many countries on our continent and globally to confront the challenges of poverty, inequality and unemployment, and to develop the opportunities of our era, such as the Fourth Industrial Revolution and the increasing focus on climate change and our oceans.



The innovative KaziKidz programme, which will soon be rolled out to 300 schools across the Eastern Cape before expanding into Africa, aims to get children active and healthy.

School health research expanding into Africa

When it comes to the health and well-being of disadvantaged children, the needs are great. As a dynamic African university intent on serving the needs of society, Nelson Mandela University is expanding its groundbreaking research into the health of children and teachers in under-resourced schools and the valuable tools that have come out of it, into other African countries.

Modern lifestyles are affecting our health, with many people not as active as they used to be, less nutritious meals and stress levels higher than ever.

For children, poor health affects their classroom performance and prevents them from reaching their full potential; and the poorest schools are affected most.

Two years of research into schoolchildren's health has led to the development and piloting of a unique practical programme, geared towards getting children active and healthy.

The curriculum-aligned KaziKidz toolkit for children – which includes hundreds of lessons for Grade 1 to 7 pupils in four areas: physical education, moving-to-music, health and hygiene, and nutrition education – is being piloted in eight disadvantaged primary schools in Nelson Mandela Bay, with the aim of rolling it out to 300 Eastern Cape schools by 2020, and from there expanding it to other African countries.

KaziKidz and KaziHealth – targeting teachers' health – form part of the broader KaziBantu programme, which developed out of a partnership between Nelson Mandela University, the University of Basel in Switzerland, and the Swiss Tropical and Public Health



Institute. It is funded by the Novartis Foundation, and endorsed by the Eastern Cape departments of health and education.

“The ultimate goal is to expand the KaziBantu project to other parts of the African continent and beyond. Discussions are currently underway with institutions and researchers from Tanzania, Ivory Coast, Namibia, Botswana, Mauritius and various European regions,” says Nelson Mandela University’s Prof Cheryl Walter, the South African principal investigator of the KaziBantu project.

KaziBantu, which means “active people” in Swahili and isiXhosa, emerged from the successes of an earlier Swiss–South African research study – the Disease, Activity and Schoolchildren’s Health (DASH) project – which started in 2014.

The two-year DASH study aimed at improving the health and well-being of Grade 4 children in eight disadvantaged schools in Port Elizabeth’s township and northern areas, with weekly physical

activity and dancing-to-music lessons, health and hygiene lessons, nutritional supplementation and deworming.

“From the DASH study, we identified that there was a great need out there for an intervention looking after the health and well-being of children, particularly in disadvantaged settings,” says Prof Walter.

“KaziBantu builds on the DASH study findings and looks at consolidating physical literacy and healthy living in schoolchildren and teachers ... We are piloting KaziKids and KaziHealth in eight quintile 3 (no-fee) schools.”

The KaziKidz teaching material is linked to the existing Life Orientation programme within the CAPS curriculum and is a resource that teachers can use, she says.

KaziHealth focuses on improving the health of teachers through



high-tech testing and monitoring of their individual health risks, along with expert lifestyle coaching. It is aimed at reducing cardiovascular disease risk, and improving physical activity and physical fitness, nutrition and diet, and psychosocial health.

"This is probably the first study of its kind looking at the health of teachers in this depth," said Prof Walter.

KaziHealth also comes with an interactive cellphone app, which provides teachers with tips on how to manage risk areas, as well as self-help tools for nutrition, physical activity and stress management.

Prof Walter is working closely with Swiss principal investigator Prof Uwe Pühse, from the University of Basel, who was recently awarded a UNESCO research chair, which will be "twinned" with Nelson Mandela University.

Pühse said the purpose of the Chair was to promote an integrated system of research, training, information and documentation on physical activity and health in educational settings, especially in Africa.



Prof Cheryl Walter

"We have a challenge, a task, and a responsibility to make a difference to the health and well-being of children and teachers, particularly in disadvantaged settings."

"We are hoping this Chair, with its endorsement from UNESCO, will provide us with the avenue for really expanding the project," said Walter.

The KaziBantu team is also planning to develop Short Learning Programmes on KaziKidz and KaziHealth for in-service teachers, to be rolled out next year to schools in South Africa and further afield.



In service to society

Nelson Mandela dedicated his life to the advancement of a more equal and just society, placing huge importance on education as a force for good and essential to true progress. The university honours his legacy in dedicating our intellectual asset base in service to society – driving research, innovation and engagement that is geared towards solving current and future societal problems, including environmental degradation, food insecurity, poverty, population migration and global inequity.

This year, the university moved towards establishing its Hubs of Convergence – community spaces where the institution engages with citizens across the Nelson Mandela Bay Metro to find solutions to problems that affect them. These and so many other projects are reflective of scholarly work focused on the public good and changing the world for all.



Hubs of convergence

Driven by a deep-seated need to rethink the way in which the institution carries out its engagement with communities, Nelson Mandela University has initiated the first of a series of conversations with the Nelson Mandela Bay community towards the first “hub of convergence” in the city.

The conversation was a result of a commitment made by the university and articulated by Vice-Chancellor, Professor Sibongile Muthwa in her inaugural address last year, where she posited that the role of a university should be to have its scholarship make a meaningful impact on communities.

In her address Prof Muthwa said: “Our university will establish its first Hub of Convergence between the university and community. These hubs will be physical spaces where the university meets the community to engage on common platforms to find solutions to practical problems. The hubs will provide an outward focus, and will benefit from the intellectual and other assets of the university,

and the conscious wisdom of the communities that surround us.”

The initial gathering of multiple stakeholders – from government, private sector, non-governmental organisations and civil society – from across the Bay was held at the Govan Mbeki Multipurpose Sports and Community Centre in May this year.

“We need to redefine the purpose of engagement and reposition it with communities to make a meaningful contribution to overcoming societal challenges,” Prof Muthwa said.

“This is particularly important, as we bear a special responsibility associated with the name Nelson Mandela to align our intellectual resources to the historic task of creating a non-racial, equal and democratic society.”

Through the Hubs of Convergence, the university intends to commit its resources, skills, assets and knowledge to working with government, the private sector, non-governmental organisations and civil society.





Transkei coast

Coastal communities and climate change

Local economic development is closely linked to climate change and building resilience in coastal communities, particularly rural and working class communities. “We engage with coastal communities in Nelson Mandela Bay and along the Transkei coast to identify the potential for sustainable livelihoods,” says Professor Janet Cherry, head of the Department of Development Studies.

The Transition Township research project in Kwazakhele, Nelson Mandela Bay, is a long-term engagement, aimed at creating a local circular economy by developing neighbourhood cooperatives that produce renewable energy (PV solar and biogas) and fresh vegetables in a sustainable manner (using grey and captured water), and recycle waste, including plastic waste.

The project responds to two of the university’s priorities:

- Transdisciplinarity – the project spans economics, development, agriculture, engineering, human settlements and environmental management;
- Collaboration with disadvantaged communities.

“Because local economic development is closely linked to climate change, it’s imperative to build resilience into coastal communities, particularly rural and working class communities,” says Prof Cherry. “We are increasingly researching the coastal and marine environment and ecological economics, working with the other departments in the School of Economics, Development and Tourism and with the Institute for Coastal and Marine Research.”



They are currently working with communities along the Transkei coast, identifying potential livelihoods through marine resources and tourism, as well as in marine resource and ecosystem services management. Several master's and doctoral students are involved in this transdisciplinary research, which links in with developing the local economy in financially stressed coastal areas, and empowering and skilling people to manage the resources.

Prof Cherry explains that while the blue economy purports to include sustainability and fair and equitable access to marine resources, there is a marked disjuncture between sustainable coastal and marine ocean management and the idea of the ocean economy. "The focus seems to be far more on the development of the shipping industry, exploitation of offshore oil and gas, and exploitation of marine life," says Prof Cherry. "In other words, on exploiting the oceans for human profit rather than the preservation of environmental and ecological balance and a more just, sustainable sharing of resources."

As the blue economy gains traction, she emphasises the need for research and engagement to play a key role in bridging this disjuncture.



"Because local economic development is closely linked to climate change, it's imperative to build resilience into coastal communities, particularly rural and working class communities."

Prof Janet Cherry



Nelson Mandela Bay – what it could offer

***An Economic Development and Growth Strategy for Nelson Mandela Bay: Transforming Obstacles into Opportunities* is the title of an extensive document submitted to the Nelson Mandela Bay Metro in July 2018.**

In 2017, the Nelson Mandela Bay Metro commissioned Prof Ronney Ncwadi of the School of Economics, Development and Tourism, and Dr Deon Pretorius of the Department of Development Studies to produce a substantive economic development strategy document for the Metro.

Prof Ncwadi, a macro economist, and Dr Pretorius, a development economist, presented their findings at a gathering in the city hall of people from business, government, the university and civil society.

“We looked at the obstacles blocking or inhibiting economic development and growth in this coastal city that has two harbours and all the potential opportunities of the blue economy,” says Prof Ncwadi.

The document sets the scene as follows: *The City is blessed with a diversity of people and cultures, nurtured some of the world’s outstanding achievers, has some of the world’s best beaches, a huge bountiful bay, two ports, five significant river valleys run through it and the auto-industry legacy has given rise to a strong production capability. A common vision seeks to understand what needs to change and identify what is core to its identity; what must be enhanced but remain constant.*

Prof Ncwadi and Dr Pretorius recommended, inter alia, that a Coalition of Change Champions be formed, as well as a centralised strategic planning and implementation unit to look at the city as a whole and build a layered, multi-use zonal development map of the city. Intrinsic to this are key questions, such as: how easy is it for people to start or grow businesses in the metro; what red tape gets in the way of this; why aren’t we seeing significant infrastructure mobilisation with new revenue streams; and where are the creative connections?



“The opportunities in the City and Metro are immense if we can, for example, establish Nelson Mandela Bay as a manufacturing and production site of excellence; leverage Coega EDZ’s agro-processing and light manufacturing potential; and optimise the IT, tourism, creative and ocean/marine/maritime sector,” says Prof Ncwadi.

They wrote: *There is an industry of multiple types and forms of service providers waiting to be developed in the area of business and industry working with education and training institutions to develop programmes and curricula that are more responsive to local needs. Opportunities for success lie where funding is shared between government and industry. An outcome of constructive and well-functioning government-industry partnerships is that education and training is supplemented by local and community-based funding.*

Oceans Economy Projection

Operation Phakisa: Oceans Economy estimates that the oceans economy has the potential to contribute up to R177-billion to

Gross Domestic Product (GDP) by 2033 (compared to R54 billion in 2010) and create approximately one million jobs (compared to 316 000 in 2010).

However, in order to realise the high level targets for the Oceans Economy the following is required:

- To realise a GDP contribution of R177-billion by 2033, South Africa would require a real growth rate of approximately 1.82% per annum from 2015; and
- To realise the creation of one million jobs by 2033 South Africa would require a real employment growth rate of approximately 4.9% per annum from 2015.

Operation Phakisa: Oceans Economy’s progress to date for directly funded Oceans Economy project impacts includes:

- Government has unlocked investments amounting to approximately R 29.4 billion in the Oceans Economy.
- Over 7093 jobs have been created in the various sectors.

Oceans Economy Focus Areas and Enablers



Marine Transport and Manufacturing



Offshore Oil and Gas



Aquaculture



Marine Protection Services and Ocean Governance



Small Harbours and Coastline Development



Coastal and Marine Tourism



**Skills Development and Capacity Building
Research, Technology and Innovation**



Advocate Lindi Coetzee

Street law expands to assist communities

Street law is all about taking law to the streets, to ensure ordinary people understand and use the law to protect themselves, and also develop the values and attitudes of democratic citizenship.

For the past 27 years, senior law lecturer, Advocate Lindi Coetzee has been encouraging final-year law students to use street law to promote access to justice within their communities – and now she’s taking the programme a step further.

“I am busy with a pilot that attempts to redesign the initial community training programme into one that includes all three pillars of academia, namely research, teaching and engagement,” says Coetzee.

Currently, all final-year law students at Mandela University must complete a lecture-based Legal Practice course, and two practical components, Street Law and Law Clinic.

In the redesigned Street Law component, Coetzee aims to involve the students in action research to determine the legal literacy levels of selected areas or groups of people.

Students are expected to analyse the data obtained, and produce a research report. Focusing on key topics in the report, they design interactive learning material, which they use to empower their community clients to address their legal issues.

“Apart from teaching students the values of ubuntu and giving back to the community, they learn research skills, and improve their own knowledge of the law by teaching others.”

This idea for the pilot was sparked in June 2018, when Coetzee, with the research chair for Human Settlements, Prof Sijekula Mbanga, and the NGO, Human Action Settlements Group, used action research to determine the housing-related legal problems people were experiencing in Nelson Mandela Bay.

For the Law Clinic component, Coetzee has designed a model mobile law clinic, initially set up at community venues in Motherwell, Helenvale and Uitenhage, where final-year students, under supervision, assist members of the community with their legal problems.

“Feedback from my students is that this is invaluable experience that can never just be gained from the classroom,” said Coetzee.



Leveraging resources

The university requires significant funding to maintain financial sustainability and at the same time boost our development trajectory. The establishment of the Strategic Resource Mobilisation Office (SRMO) in the office of the Vice-Chancellor grew out of this, as has the drive for faculties, chairs, centres and institutes to apply to national and international organisations to fund strategic equipment and projects.

The university also looks at how to reduce core running costs and contribute to a more sustainable, lower carbon footprint. One of the major projects in 2018 was the construction of an R18m solar farm on south campus. This green power plant provides at least 10% of south campus' electricity requirements.

Grants contribute considerably to the university's research capacity, and several significant grants have been awarded to the institution, some of which are mentioned in this chapter.

NRF National Equipment Programme (NEP)

Professor Paul Watts, the holder of the SARCHI Chair in Microfluidic Bio/Chemical Processing successfully applied to the NRF's National Equipment programme (NEP) Programme for funding for a flow reactor, specifically the KiloFlow pilot scale system. The NRF/NEP approved R2.2 million, two-thirds of the funding, with Nelson Mandela University contributing the remainder.

The KiloFlow is a turnkey system comprising pumps, reactors, heat exchangers, temperature control and pressure regulation, which is designed to enable researchers to readily access extreme temperatures, reaction times (seconds to minutes) and pressure conditions. It enables previously "forbidden" transformations and intensified processes to be executed within a conventional laboratory setting.

The NRF/NEP applications were assessed by an external peer-review panel against set criteria, including:

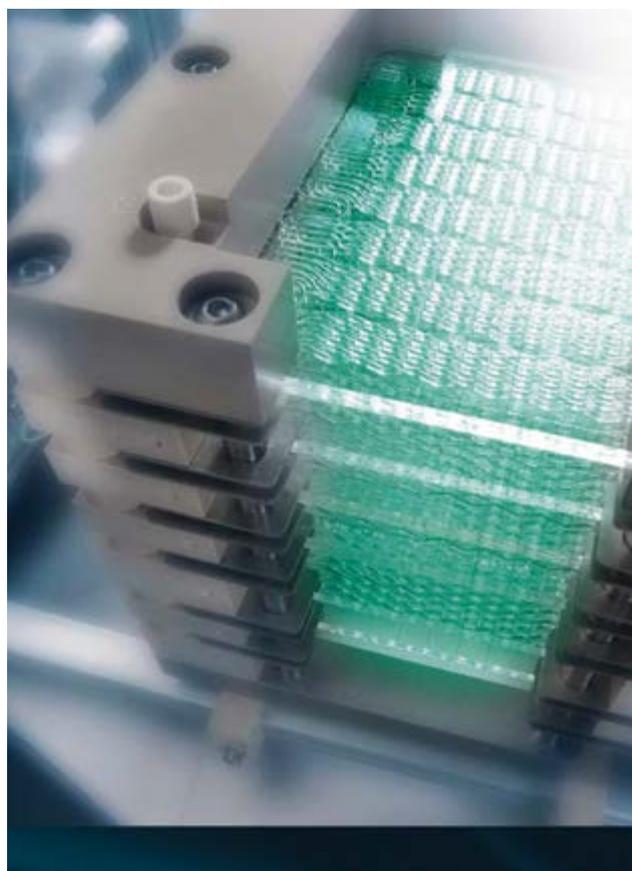
- Management Plan;
- Scientific Merit;
- Human Resource Development; and
- Regional, National and International Collaboration.

Project purpose and system advantages

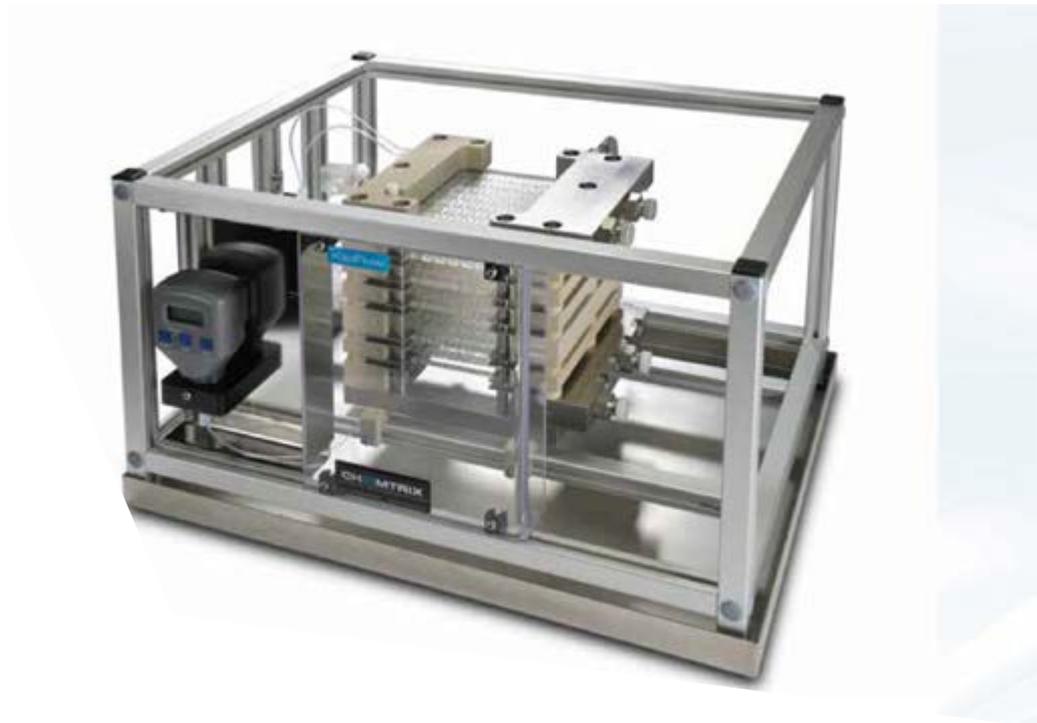
The flow reactor will be used to establish a versatile and flexible continuous flow pilot-scale production system to demonstrate the feasibility of producing intermediates and drugs in South Africa. Key projects include the manufacture of drugs to treat AIDS, TB, malaria, cancer and flu.

The system permits rapid, predictable scale-up from milligrams to kilograms per hour without re-optimisation from laboratory studies. This will allow processes developed at research and development

level to be evaluated at multi-kilogram scale production. It safely controls reaction conditions on a gram to kilogram scale, in a standard fume hood; and it is flexible, as the configuration of the reactor holder can be adjusted to attain the desired production capacity for a range of multi-step processes.



The turnkey KiloFlow system



European Union (EU) grants

Professor Darelle van Greunen, Director of the Centre for Community Technologies (CCT) has secured three EU grants since 2016.

Applying for EU funding is a long, arduous process, requiring meticulous detail and well-written, attractively presented content. Obtaining a grant often depends on the reputation of both the institution and the applicant, including their network of mentors, collaborators and colleagues, locally and globally.

“Being passionate about your work and what you hope to achieve is always essential, but one has to bear in mind that the expert who is reading and reviewing your proposal is looking for what is unique about your research; how it opens up new knowledge and addresses key problems facing society,” says Prof Darelle van Greunen.

“Collectively, EU agencies tend to prioritise research related to poverty alleviation, climate change, sustainable agriculture, food security, clean energy and water, economic development, health, education at all levels, enhancing governance, women and children empowerment, peace and democracy.”

**Mobile Health For Africa (mHealth4Afrika) –
Grant value: €3-million (±R50-million)
Kick-off meeting: November 2016
Project completed in April 2019**

The mHealth4Afrika project, led by Prof van Greunen, is the only EU-funded Horizon 2020 project that was awarded to South Africa, out of seven national submissions. Horizon 2020 is the biggest EU Research and Innovation programme ever undertaken, aimed at achieving breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.

**Common Good First – Grant value: €1-million
over three years (± R15.5-million)
Kick-off meeting: November 2017
Project finishes October 2019**

Common Good First is funded by the European Union’s Erasmus+ programme, a funding stream open to school and youth education, further and higher education, and adult education. In 2016, Erasmus+ received 736 applications, of which 147 projects were funded, one of them being Common Good First. Glasgow Caledonian University (GCU) is the European lead and the CCT at Nelson Mandela University is the South African lead.



Prof Darelle van Greunen

**LEAP-AGRI Project Africa (EU/NRF) – Grant value: R2.7 million (SA portion)
Kick-off meeting: September 2018
Due to be completed in 2021**

The aim of this project is to develop a green-energy driven technology solution to support on-site fertiliser production in Africa, providing affordable, green-made fertilisers to local small-scale farms. This will contribute to the development of sustainable agriculture and food systems in Africa. This research consists of novel concepts such as using low-cost raw material, small-scale decentralised production of fertiliser, integration with renewable energy and improving resource management by using ICT and mobile technology. Eindhoven University of Technology in the Netherlands is the European project partner, the CCT's Prof Van Greunen is the principal investigator for South Africa, with Prof Paul Watts as the co-investigator.

Other grants received:

- *A five-year South African Cultural Observatory (SACO) grant worth R70 million by the Department of Arts and Culture.* Hosted by Nelson Mandela University, the partners include Rhodes University, the University of Fort Hare and the University of KwaZulu-Natal. The SACO supports the collection and analysis of data, influences policy, shares insights and builds on intellectual capacity in cultural and creative industries across the arts, culture and heritage sectors in South Africa.
- *A multi-million-rand National Research Foundation Shallow Marine and Coastal Research Infrastructure grant.* Nelson Mandela University Ocean Sciences researchers, in partnership with the South African Environmental Observation Network (SAEON) and the South African Institute for Aquatic Biodiversity (SAIAB), are researching the near-shore marine environment to monitor long-term changes in variables (such as temperature, oxygen, sea levels and biodiversity) in the context of climate change.
- *A multi-million rand grant from the Department of Science and Technology and the University Trust to the African Centre for Coastal Palaeoscience.* Novel research is being conducted on the development of early modern humans along South Africa's southern Cape coast, the site of the world's earliest evidence of human consciousness. The grant includes funds to establish a palynology laboratory and purchase equipment and microscopes, used, inter alia, to study fossilised pollen.



Collectively, EU agencies tend to prioritise research related to poverty alleviation, climate change, sustainable agriculture, food security, clean energy and water, economic development, health, education at all levels, enhancing governance, women and children empowerment, peace and democracy."

Environmental stewardship and sustainable livelihoods

Socially, environmentally and economically, Nelson Mandela University is a committed driver of change towards a more sustainable society. We are focused on research and innovation aimed at meeting the many challenges confronting our everyday and our future.

Environmental stewardship and sustainable livelihoods is an institutional research theme for the university, building on the strengths of our sciences and humanities. It extends to research on sustainable human settlements, resource economics and the innovative engagement of the Faculty of Health Sciences with vulnerable communities challenged by high levels of poverty.







And then there was one – the Last Knysna elephant

Only one elephant remains in the Knysna forest and surrounding fynbos: a mature female. There is enormous pathos and tragedy in this finding.

The final Knysna elephant is the last truly wild, free-roaming elephant in South Africa and the southernmost in the world. The finding that she is the last was confirmed by a rigorous camera trap survey, using 72 passive infrared-triggered cameras, 24/7 from July 2016 to October 2017 in the Knysna elephant range.

This 185km² range includes the Garden Route National Park, privately owned commercial timber plantations and privately owned forested land. The Knysna elephants have always moved directionally and seasonally along clearly defined elephant pathways between feeding patches and water in the area.

The research was written up in a peer-reviewed article entitled "And Then There Was One: a camera trap survey of the declining population of African Elephants in Knysna, South Africa", to appear in *African Journal of Wildlife Research* this year.



“There has been a debate for years now about how many Knysna elephants there are, as they are difficult to see or locate,” says Professor Graham Kerley from the Centre for African Conservation Ecology at Nelson Mandela University.

Prof Kerley is one of six renowned mammal researchers who collaborated in the research and co-authored the article. The others are: Lizette Moolman, Melanie de Morney and Dr Sam Ferreira from the South African National Parks Scientific Services; Prof André Ganswindt from the Mammal Research Institute at the University of Pretoria, and Dr Joyce H. Poole from ElephantVoices, Norway.

“To have it confirmed that there is only one Knysna elephant left is a shock to many as there is a deep aura of mystique and mythology around them, fuelled by their elusiveness, and by stories like Dalene Matthee’s *Circles in a Forest*,” says Prof Kerley. “It talks about the destruction of the great indigenous Outeniqua forests and the hunting and persecution of elephants over the centuries.”

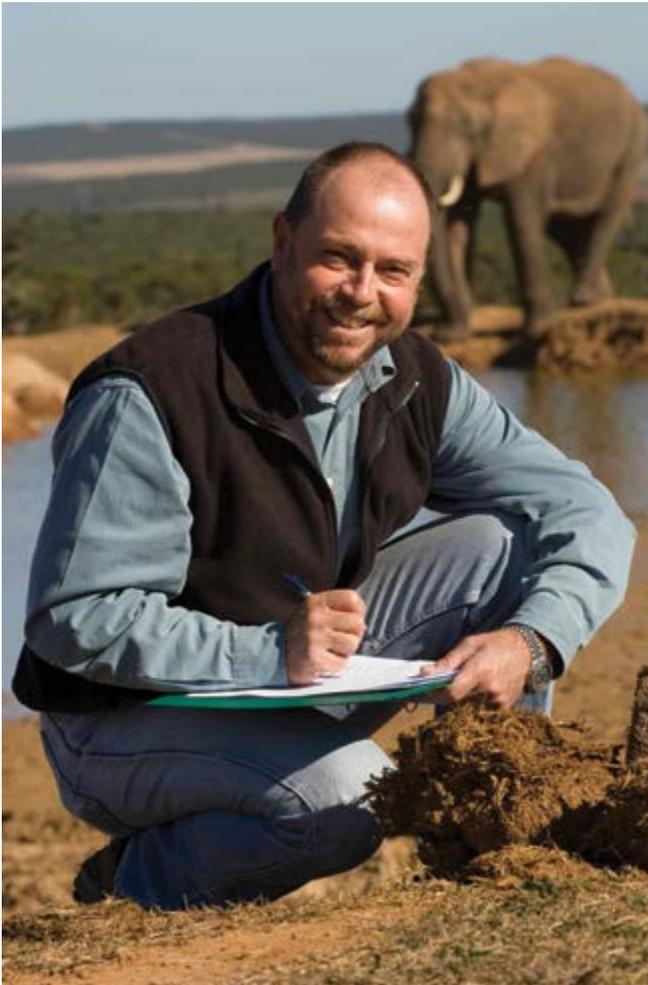
To conduct the survey, the 72 cameras were deployed at 38 locations within one metre of elephant-used roads and paths, at a height of 1–1.5 m. Recent technological improvements in camera trap technology makes it a widely used, reliable application in ecological studies.

“The cameras were all active for 15 months, and covered the range evenly during this time, ensuring there were no gap areas where elephants might reside undetected,” explains SANParks scientist Moolman.

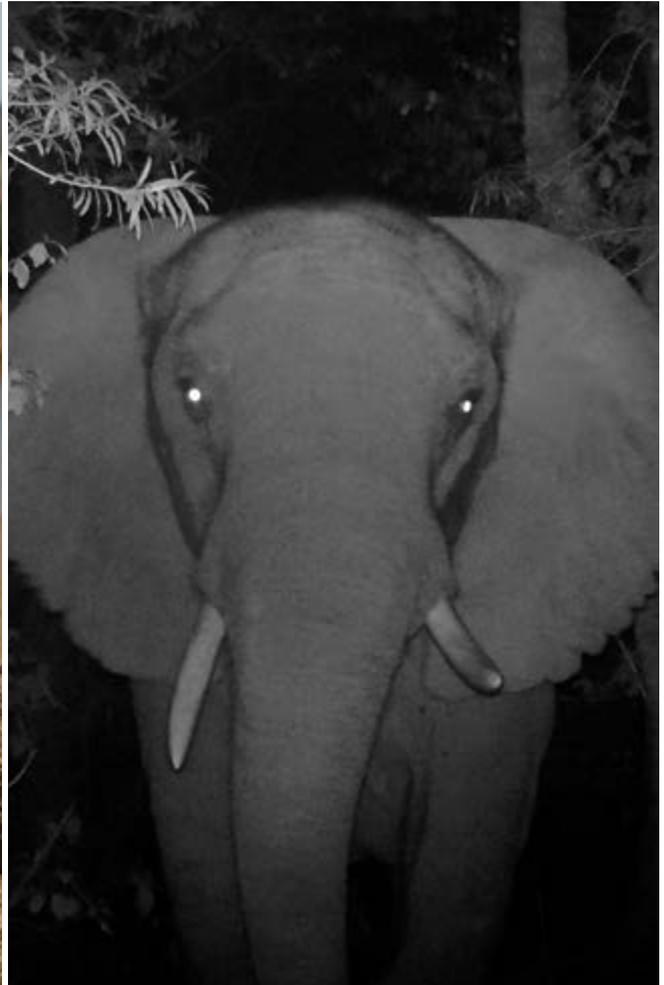
A total of 5195 elephant photographs or video clips were captured. All of these solely identified one heavy, round-bodied adult female, aged about 45, with a uniquely patterned wrinkled forehead, unique ear notch patterns, and relatively wide-spaced asymmetrical unbroken tusks.

Historically the Knysna elephants (which are of the same species as all the savanna elephant populations in South Africa, *Loxodonta africana*) roamed in their thousands as a continuous population for hundreds of kilometres along the southern Cape coast and inland to the Orange River. They had access to thickets, fynbos and Karoo habitat. Over the past 300 odd years they were forced, as a result of hunting, persecution and human encroachment, to retreat into the forest as a refugee population.

Managing the last Knysna elephant is a huge challenge because she is very shy and avoids humans. “The option of capturing her and moving her to another area with other elephants could be traumatic and dangerous for her,” says Prof Kerley.



Prof Graham Kerley



Where to now?

What options do we have for the last Knysna elephant, given failed attempts to bring other elephants to the forest?

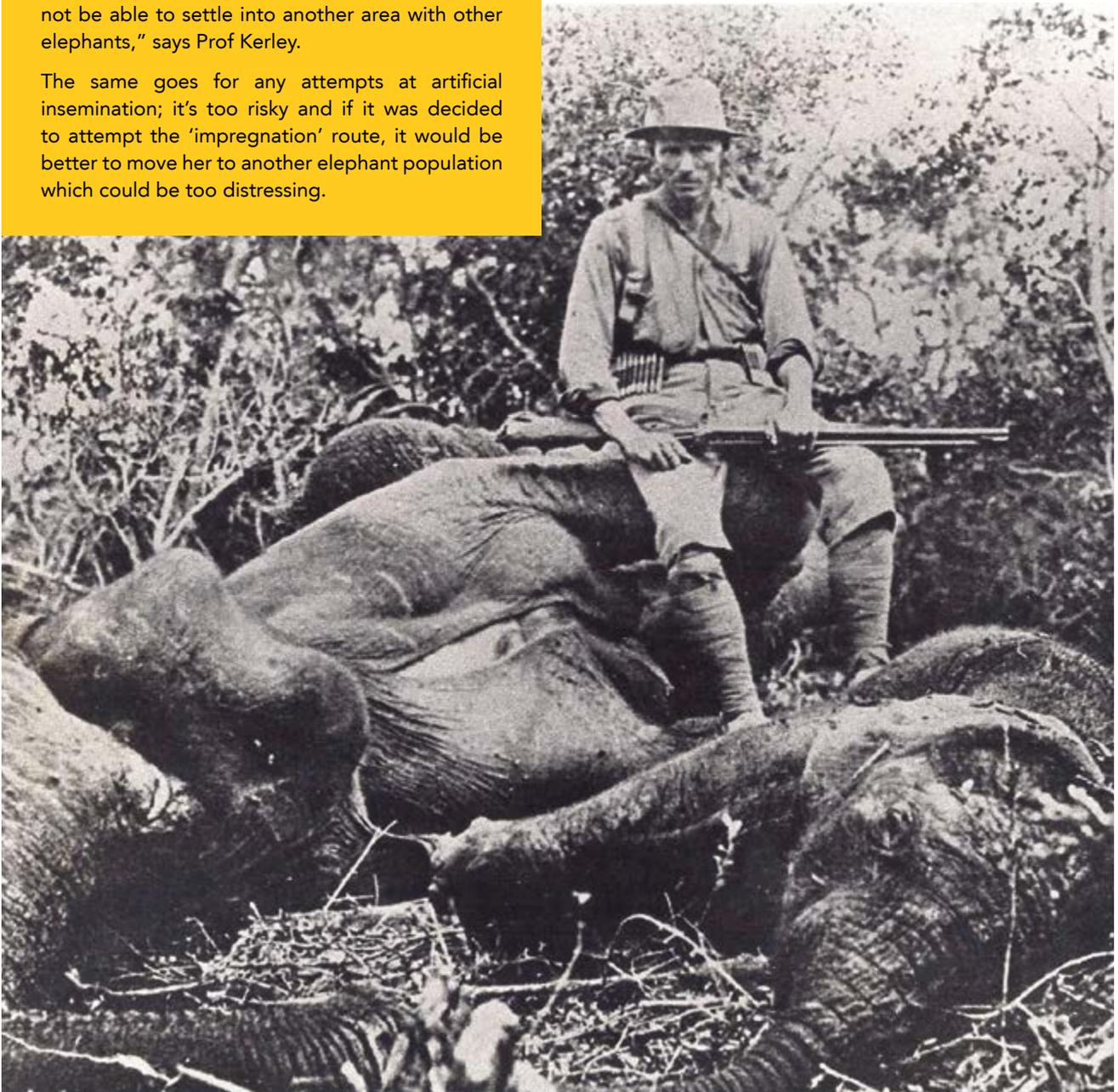
Since she has the same genetics as the Addo and Kruger populations, scientists have considered whether or not she should be translocated out of the forest to a herd.

“The option of capturing her and moving her somewhere else would be dangerous for her and we don’t know if it would even be of any value to her, as she only knows the forest and might not be able to settle into another area with other elephants,” says Prof Kerley.

The same goes for any attempts at artificial insemination; it’s too risky and if it was decided to attempt the ‘impregnation’ route, it would be better to move her to another elephant population which could be too distressing.

He says a major voice that needs to be considered in the decision about her management, is the people of Knysna – who, in all probability, would not want to see her go. “It comes down to a societal decision as it is no longer a population decision, it is about the last Knysna elephant’s well-being”.

“It is ultimately our fault that we are down to the last elephant here. She is the metaphor for our treatment of biodiversity and all species that live on this planet with us. The saying ‘the elephant in the room’ could not be more apt; she is telling us we are making some big mistakes and we are going to lose a lot more than her if we don’t substantially change how we treat and value biodiversity.”





The biosphere inside us

The International Mixed Research Unit (UMI) is a new collaborative research and training hub established by the French National Research Centre (CNRS), the University of Lyon and Nelson Mandela University.

The UMI will be based at the Sustainability Research Unit (SRU) on the university's George Campus. With the theme *Reconciling ecological and human adaptations for biosphere-based sustainability (Rehabs)*, the research is at the confluence of conservation and sustainability science, with a strong focus on promoting longer social-ecological systems research.

Professor Hervé Fritz has been instrumental in putting together the UMI partnership, building on the existing strong academic partnership between the institutions.

Funding provided by the partner institutions is predominantly for PhD candidates and postdoctoral fellows, but some master's level students will be considered. There will be reciprocal research visits between France and South Africa, with a cotutelle agreement envisaged so that PhDs will be recognised both by Nelson Mandela University and the University of Lyon.

"The idea is to develop an understanding of the position and effect of humans in the overall ecosystem, in the way the biosphere works, and how the natural environment benefits humans. Linked to this is how you set up the governance of these critical issues," Prof Fritz explains.

"We address this through cross-cutting projects, such as a project researching how to make multifunctional landscapes sustainable in

delivering the ecosystem services humans rely on. And another on how to manage livestock farming hand-in-hand with environmental stewardship so that livelihoods and the environment can both flourish. Or how to plan a town around ecological services, such as water; how to incorporate biodiversity in livelihoods in the face of climate change, and what adaptations are required to cope with environmental risks.

“The project would include citizens and stakeholders as we need to bring them together to create or strengthen the ecological connection. By unravelling how people understand the environment and ecosystems, and how they practise their production systems, we can look at how changes could be introduced to advance production, ecosystem and biosphere sustainability.”

Excerpts from the UMI proposal document read: *As this continent transforms over the next few decades, it will offer unique opportunities to explore ecosystem-based solutions and new adaptation pathways to global change, to improving human well-being while considering the sustainability of the biosphere.*

The societal context of this transdisciplinary hub initiative stems from the conference Seedbeds of Transformation for Africa: The

Role of Science with Society and the Sustainable Development Goals in Africa, held in May 2018 in Port Elizabeth. (seedbeds.futureearth.org).

Africa is expected to be the fastest developing continent in the next 30 years. The associated infrastructure development in the context of climate change will impact on Africa’s ecosystems and will lead to the emergence of several ecological frontiers – areas where the ecological foundation of Africa’s growth could be chipped away or destroyed altogether by development.

We should therefore adopt the vision that all sustainable development goals are interconnected. Hence solutions for promoting biosphere-based sustainability sciences and achieving inclusive environmental governance increasingly rely on the use of a social-ecological system lens to frame research questions, and inter- and transdisciplinary methods to conduct our studies.

Sustainability Research Unit

W: sru.mandela.ac.za

CNRS Institute Ecology & Environment

W: www.cnrs.fr/inee

“The idea is to develop an understanding of the position and effect of humans in the overall ecosystem, in the way the biosphere works, and how the natural environment benefits humans.”



Prof Hervé Fritz

Faculty Emerging Excellent Teachers of the Year



Faculty Emerging Excellent Teacher of the Year

Jasmine Goliath

Faculty of Business and Economic Sciences

“I view my role as a facilitator of knowledge and an enabler of active learning.”



Faculty Emerging Excellent Teacher of the Year

Teri-Lynne Fogarty

Faculty of Health Sciences

“Find the potential in individual students and nurture that to bring success in the future workplace and in so doing liberate their potential.”



Faculty Emerging Excellent Teacher of the Year

Advocate Dumisani Appollos

Faculty of Law

“Good teaching requires an understanding of learning.”



Faculty Excellent Teachers of the Year



Faculty Excellent Teacher of the Year

Dr Fouzia Munir

Faculty of Arts

“I believe the beauty of students’ strengths should be appreciated. They should be given opportunities to achieve their full potential while being active participants in their own learning.



Faculty Excellent Teacher of the Year

Shelley Saunders

Faculty of Business and Economic Sciences

“Students should feel free to express themselves and be exposed to current trends in the business and marketing field in my classes. In this way, they can excel and reach their full potential.



Faculty Excellent Teacher of the Year

Carmel Mahomed

Faculty of Education

“To teach is to serve, to co-exist in symbiotic relationships with students, to facilitate learning and to co-create knowledge in a respectful space that ensures equilibrium between cognition and emotions.



Faculty Excellent Teacher of the Year

Thandiwe Hlam

Faculty of Education

“I believe students should get opportunities to construct their own knowledge, exploring the truth, analysing the information, and making decisions for their own learning, using the language of their own choice.”



Faculty Excellent Teacher of the Year

Grant Phillips

Faculty of Engineering, the Built Environment and IT

“I want to make my students as enthusiastic about engineering as I am. I believe enthusiasm leads to satisfaction in the work environment and ultimately is the secret to success in one’s career.”



Faculty Excellent Teacher of the Year

Mariaan Buckle

Faculty of Health Sciences

“Students are more than just a number – underpins my teaching philosophy.”

Faculty Excellent



Faculty Excellent Teacher of the Year

Tanya Wagenaar

Faculty of Law

Teaching and learning will remain an adventure if we keep finding new challenges to the process.



Faculty Excellent Teacher of the Year

Dr Gaathier Mahed

Faculty of Science

Each one, Teach one.

Nelson Mandela University Emerging Excellent Teacher of the Year



Nelson Mandela University Emerging Excellent Teacher

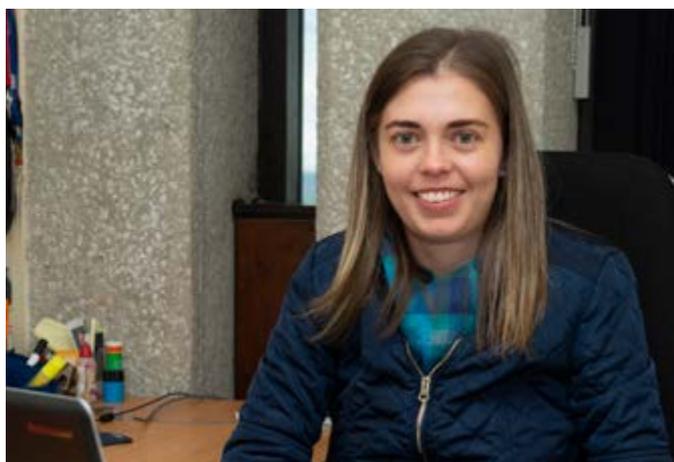
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Teaching & Learning Team Awards



Nelson Mandela University Teaching Excellence Team Award

Carpe Diem Team: Anne-Mart Olsen (leader), Dr Florence Southway Ajulu, Dr Thoko Batyi, Eunice Champion, Linda Mostert and Ronelle Plaatjes

“We need to create a conducive learning experience enabling a sense of “being”, where students participate in the knowledge construction and actively contribute to develop their academic and professional identity.”



Creative Awards



Creative Award

Architecture: Dr Magda Minguzzi for Exhibition and Performance (The Spirit of the Water)

“We are designers and researchers. We are citizens and neighbours first.”



Creative Award

Photography: Leonette Bower for Exhibition (#Storyofmylife)

“Documentary photography has taught me to photograph with more than just my eyes so that the viewer can see what a moment felt like.”



Creative Award

Music: David Bester for Performance (Violin)

“Music has taught me the value of not merely hearing, seeing, and speaking, but instead to listen, observe and express. The ability to communicate in this medium is one of the biggest gifts.”



Engagement Awards



Emerging Engagement Excellence Award

Dr Johan Westraadt

Working with a wider audience allowed me to learn new ways in which we could make a meaningful impact with the research we do.



Engagement Excellence Team Award

Mr Michael Barry and the "I Mpilo Y Amanzi" Production Team

The arts make an important contribution to the well-being of our University. It contributes in many tangible and intangible ways to the creation of a healthier creative community.



Engagement Excellence Team Award

Dr Jennifer Jansen and the Missionvale Clinic P- Project Team

We make a living by what we get, but we make a life by what we give.
– Winston Churchill.



Engagement Excellence Project Award

Zurina Abdulla and the Children in Conflict with the Law Project

“Meaningful community engagement must be based on “Ubuntu” – it has to be participative, inclusive, mutually beneficial and sensitive to power relations as well as diversity.



Engagement Excellence Award Social Sciences and Humanities

Dr Magda Minguzzi and “The Way of the Water” Team

“We are designers and researchers. We are citizens and neighbours first.



Engagement Excellence Award Stem

Prof Graham Kerley

“Engagement is about the university and its staff and students adding value to society, by providing our leadership, expertise and sense of commitment to build capacity and grow knowledge.



Innovation Awards



Innovation Excellence Award

Prof Paul Watts

Faculty of Science

“The vision is that new technology is used within South Africa to manufacture generic drugs; then we would not need to tender overseas and could create jobs and a new manufacturing industry here.



Innovation Excellence Project Award

uYilo Project – Mr Hitten Parmar, Dr Nico Rust and Mr Xander Theron

“We contribute to advancements in industries, eMobility and battery technologies locally and globally to benefit South Africa’s leadership and to solve societal, economic and competitiveness challenges.

Emerging Researchers of the Year



Faculty Emerging Researcher of The Year

Dr Amina Jakoet-Salie

Faculty of Arts

“If we work together and trust one another to sort out the problems of today, we can eliminate the problem of having to sort out a weeks’ problems in one day.



Faculty Emerging Researcher of the Year

Mr Thandolwethu Nomarwayi

Faculty of Arts

“I’m passionate about teaching and research; studying and working in an environment where ideas are challenged and contested, keeps me going on a daily basis.

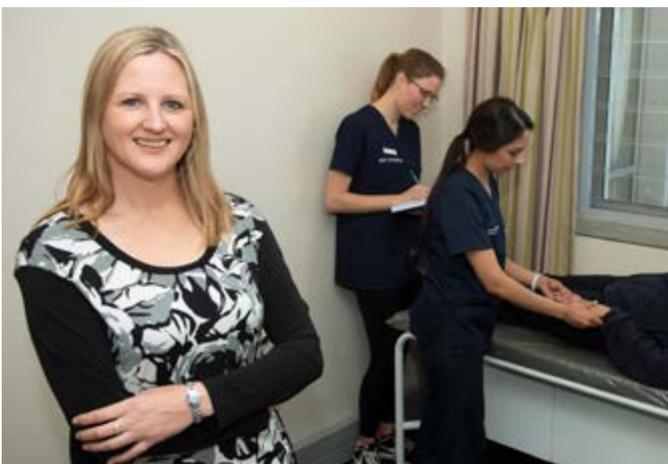


Faculty Emerging Researcher of the Year

Mr Chris Allen

Faculty of Engineering, the Built Environment and IT

“As a practice-based researcher, I focus on case studies or similar research, to provide implementable solutions to the challenges we face in the built environment while simultaneously positively impacting society and our students.



Faculty Emerging Researcher of the Year

Dr Esmarie van Tonder

Faculty of Health Sciences

“Find the problem you were born to solve and pursue it with all you have.

– Myles Munroe



Faculty Emerging Researcher of the Year

Dr Lynn Biggs

Faculty of Law

“The yearning for learning and the passion for teaching is strengthened through active research and participative engagement.



Faculty Emerging Researcher of the Year

Dr Tineke Kraaij

Faculty of Science

“Rooted in my deep appreciation of nature, I am passionate about doing research that has applied value to environmental management and effective conservation.

Faculty Researchers of the Year



Faculty Researcher of the Year

Prof Marius Crous

Faculty of Arts

“Arguments never finish; criticism is never over, and it is always about the process, and not the thing itself. – Mary Beard, Professor of Classics at Cambridge



Faculty Researcher of the Year

Prof Paul Poisat

Faculty of Business and Economic Sciences

Following a transdisciplinary team-based approach has yielded noteworthy results; however, the true value lies in the collaboration and community of learning.



Faculty Researcher of the Year

Prof John Smallwood

Faculty of Engineering, the Built Environment and IT

Given that health and safety (H&S) is a 'life and death' issue in the construction industry, means that research relative thereto does 'make a difference'.



Faculty Researcher of the Year

Prof Ilse Truter

Faculty of Health Sciences

Like peeling an onion, research is something that you have to experience to understand. Sometimes you find there is nothing and sometimes it brings tears to your eyes as a result of a newfound perspective.



Faculty Researcher of the Year

Dr Joanna Botha

Faculty of Law

“Three capacities are essential to humanity today. Critical examination of oneself and one’s tradition, to see oneself as being bound to other human beings and to think about being in a different person’s shoes.



Faculty Researcher of the Year

Prof Janine Adams

Faculty of Science

“My research investigates the health of South Africa’s estuaries and appropriate conservation and management responses and is driven by my desire to bridge the science-policy-practice divide.

Research Excellence Awards



Nelson Mandela University Research Excellence Award

Prof Andre Calitz

Faculty of Science

“Collaboration and teamwork are important for me. I encourage fellow academics and postgraduate students to further their studies, to become part of research teams and publish research findings.



Nelson Mandela University Research Excellence Award

Prof Patrick Vrancken

Faculty of Law

“Research only contributes to changing the world if it changes the minds.

Researcher of the Year



Nelson Mandela University Researcher of the Year Award

Prof Pierre Pistorius

Faculty of Science

“By researching marine top predators, I attempt to provide a meaningful interface between science, management and outreach, while at the same time indulging endless curiosity these beasts inspire.

FACULTY OF ARTS

Visiting Professor: Prof Evgeny Pashentsev, Moscow State University Russia

Conferences hosted by the faculty

- BH21: Being Human[e] in the 21st Century Conference. 2018.
- SAHUDA: National Dean's Conference. 2018.

Staff presenting at conferences:

- South African Association of Political Science, SAAPS, National Conference. October 2018.
- National Association of African American Studies and Associates (NAAS). Dallas, Texas. February 2018.

FACULTY OF BUSINESS AND ECONOMIC SCIENCES

Visiting professors

- Prof John Beck, Michigan State University, USA
- Prof Mike Hoffmeister, Ostfalia University of Applied Sciences, Wolfsburg, Germany
- Prof Zhang Gangfeng, Zhejiang University, China
- Prof. Dr. Werner Fees, Georg-Simon-Ohm Management Institute, Nurnberg
- Prof Geoff Bick, University of Cape Town
- Prof K Kondlo, University of Johannesburg
- Prof Raymond Parsons, North-West University
- Prof Orlando R. Kelm, University of Texas
- Dr Kim Tan
- Prof Portia Ndlovu, Massachusetts Maritime Academy
- Prof Naima Saeed, University of Agder
- Prof Lisa Ottinger, University of Kansas
- Prof J Makuwira, Malawi University of Science and Technology

Conferences hosted by the faculty

- South African Accounting Association (SAAA) Teaching and Learning Conference. December 2018.

Papers presented at the following conferences:

- Ben-Africa Conference. Maputo, Mozambique. November 2018.
- EDAMBA Annual General Assembly Germany. September 2018.
- EIASM Conference Brussels. December 2018.
- IBC Conference 2018. Mauritius. September 2018.
- IEASA Conference. Centurion. August 2018.
- Kenia Research (African Pathway Programme). November 2018.
- LEADEREX 2018. Johannesburg. September 2018.
- SABSA LEKGOTLA. Sandton. July 2018.
- World Ocean Science Summit. Hong Kong, China. November 2018.
- Indian Ocean Rim Association Meeting. Seychelles. September 2018.
- EDAMBA Symposium. Barcelona, Spain. January 2019.
- AABS Conference. Cape Town. June 2019.
- Ben-Africa Conference. Mombasa. November 2019.

- Ethiopia Research (African Pathway Programme) January 2019.
- Nigeria Research (African Pathway Programme) February 2019.
- Africa Strategy Execution Conference (ASEC). Johannesburg. April 2019.
- AMBA Global Conference. Istanbul, Turkey. May 2019.
- SACCLA Conference. Durban. July 2019.
- SAPS & SBS Seminar. Johannesburg. August 2019.
- IBC 2019. Hermanus. September 2019.
- EDAMBA Annual Meeting & General Assembly UK. September 2019.
- 5th Annual International Symposium. Athens, Greece. July 2019.
- IAME Conference. Athens, Greece. June 2019.
- International Business Conference. 2018.
- British Accounting and Finance Association's accounting Education conference: Brighton, UK. May 2018.
- Institute of Internal Auditors' (IIA) International Conference. Dubai. May / June 2018.
- British Accounting and Finance Association's accounting Education conference. Belgium. May 2019.
- South African Accounting Association's (SAAA) Teaching and Learning Conference. December 2018.
- South African Accounting Association's (SAAA) Biennial conference. Johannesburg. June 2019.
- South African Institute of Tax Practitioners (SAIT): Student Tax Conference. Cape Town. 2018 / 2019.
- Emerging Markets Conference Board (EMCB). Johannesburg. April 2018.
- 8th Advances in Hospitality and Tourism Marketing and Management Conference (AHTMM). Bangkok, Thailand. June 2018.
- Emerging Markets Conference Board. Ghaziabad, India. January 2019.
- International conference on social science, arts, business and education. Paris, France. December 2018.
- Second International Conference on Advances in Finance, Marketing and Business. Antalya, Turkey. June 2019.
- Public sector conference, Western Cape. 2018.
- International Conference on Business, Economics, Social Science & Humanities. Dubai-UAE. June 2019.
- Global Business and Technology Association (GBATA2019). Paris, France. July 2019.
- International Conference on Business, Information, Tourism, and Economics (BITE2018). Bangkok, Thailand. August 2018.
- Global Business and Technology Association (GBATA) 2018. Bangkok, Thailand. July 2018.
- The 12th International Business Conference (IBC). Le Meridien, Mauritius. September 2018.
- Academy of World Business Marketing and Management Development conference. Athens, Greece. July 2018.
- African Finance Journal Conference. Kenya. April 2018.
- 30th Annual Conference of the Southern African Institute for Management Sciences (SAIMS). Stellenbosch. September 2018.
- 9th Annual International Conference on Social Sciences. George. August 2018.
- Annual international conference of the Emerging Markets Conference Board (EMCB). Johannesburg. April 2018.

- Annual Conference of the Southern Institute for Management Scientists. Stellenbosch. September 2018.
- The Future of Labour. Johannesburg. September 2018.
- 9th Annual Conference of the International Initiative for Promoting Political Economy. Pula, Croatia. September 2018.
- IMBeR Future Oceans2. Brest, France. June 2019.
- AMSA 2019. Perth, Australia. June 2019.
- Opening up Development 2019. United Kingdom. June 2019.
- DevNet Conference. New Zealand. December 2018.
- Public Private Partnership Conference, Zimbabwe. May 2018.
- 4th Pan-African Enterprise Research Council International Conference. Virgin Islands, USA. June 2018.
- 2018 BRICS Think Tank International Conference. Fudan, China. June 2018.
- The Sustainable Blue Economy Conference. Nairobi. November 2018.
- Shanghai Forum 2019. Fudan, China. May 2019.
- Africa Rail 2019 Conference. Johannesburg. May 2019.
- African Finance, Banking and Insurance Conference. Nairobi, Kenya. April 2018.
- The Eleventh Global Studies Conference. Granada, Spain. July 2018.
- ISERD (International Society for Engineering Research and Development)-475th International Conference on Economics, Management and Social Study. Cape Town. October 2018.
- WCMRI (World Conference on Multidisciplinary Research & Innovation). Dubai. December 2018.
- International Conference on Tourism, Marketing & Hospitality (MTC18Geneva Conference). Geneva, Switzerland. July 2019.
- ITSA/TESA international conference. August 2018.

FACULTY OF EDUCATION

Visiting professors

- Prof Keith Topping (UK)
- Prof Peter Smagorinsky (US)
- Prof Carolyn McKinney (UCT)

Conferences hosted by the faculty:

- International Literacy conference, LITASA, Missionvale Campus. 2018.

FACULTY OF ENGINEERING, THE BUILT ENVIRONMENT AND IT

Conferences hosted by the faculty:

- SAMRC Research Symposium. East London. August 2018.
- ISIRC Research Conference. Glasgow, Scotland. September 2018.
- SAICSIT 2018. September 2018.
- 2018 Cisco Academy Safari Conference. June 2018.
- 10th CIDP Postgraduate Conference. February 2018.
- 9th EPPM Conference. September 2018.
- 1st ARCOSH Conference. June 2019.
- Batteries and Electric Vehicles Conference. October 2018.
- SASUF 2019 Symposium. May 2019.

FACULTY OF HEALTH SCIENCES

Visiting professors

- Prof Kjersti Lie Holtar, Norway
- Prof Ingrid le Coultre, Hogeschool van Arnhem and Nijmegen
- Prof Paul van der Hoek, Hogeschool van Arnhem and Nijmegen
- Prof David Okeyo, Kenya Nutritionists and Dieticians Institute
- Dr Mary McMahan, Queensland University
- Prof Ludger Kolhoff, Ostfalia- Hochschule Wolfenbüttel, Germany
- Prof Mochael Wilhelm, University of North Carolina, Wilmington
- Prof Uwe Pühse
- Prof Markus Gerber
- Prof Geert Savelsbergh
- Prof Pierre Lafranch
- Prof Stephen Seiler
- Prof Hans de Ridder
- Prof Pierre Lafranch
- Prof Denver Hendricks
- Dr Stephanie Lukas, St Louis College of Pharmacy
- Prof M Mboya, NEPAD agency (African Union Rep)
- Prof Stefanie Seeling, Department of Nursing - University of Osnabruck of Applied Sciences (Germany)
- Mr N Khoza, NEPAD agency (African Union Rep)
- Dr Andrea Knopp, James Madison University (USA)
- Prof Cathrine Hoyo, North Carolina State University, USA
- Prof Paschal Etusim, Abia State University, Uturu Nigeria
- Prof Moses Chimbari, UKZN, Durban, SA
- Prof Ann Thomson, University of Manchester
- Dr Pierre Molumba, uMoya-NILU Consulting (Pty) Ltd
- Dr Jimmy Kihara, KEMRI Kenya
- Dr Lucy Ochola, Institute of Primate Research, Nairobi, Kenya
- Dr Melusi Thwala, CSIR South Africa
- Wouter Le Roux, CSIR South Africa
- Prof Angela Mathee, MRC South Africa
- Prof Joel Konde, UNIKIN Kinshasa, Congo
- Prof Ana, UI Ibadan, Nigeria
- Dr Caradee Wright, MRC South Africa
- Dr Nisha Naicker, MRC South Africa
- Dr Melusi Thwala, CSIR South Africa
- Dr Jeremiah Gathirwa, KEMRI, Kenya
- Prof Jennifer Keiser, Swiss Tropical and Public Health Institute, Basel, Switzerland
- Prof Hoyo Cathrine, North Carolina State University
- Dr Jean-Pierre Mfuamba Mulumba, uMoya-NILU Consulting (Pty) Ltd

CONFERENCES HOSTED BY THE FACULTY

- Life through Movement International Conference. October 2018.

Papers presented at the following conferences:

- SASA (Sugar Association of South Africa Symposium), Stellenbosch. February 2018.
- Elma Philantropies Conference. Cape Town. June 2018
- Nutrition Congress. Bloemfontein. September 2018
- Agriculture, Food and Aqua conference. Bloemfontein. November 2018.



- 10th Pan African Congress of Radiology and Imaging Conference. Accra, Ghana. February 2019.
- 24th South African Psychology Congress. September 2018.
- International Test Commission Conference. Montreal, Canada. 2018.
- ATINER Conference. Athens, Greece. 2019.
- 15th European Conference on Psychological Assessment. Brussels, Belgium. 2019.
- Annual Career Development Practitioner Congress. Gauteng. June 2019.
- Australian Centre for Career Education Conference. Shepparton and Greensborough, Victoria, Australia. November 2018.
- Psychological Society of South Africa Annual Conference. 2018.
- International Conference of Humanities, Social Sciences and Education. Lisbon, Portugal. 2019.
- 13th Annual International Conference on Psychology. Athens, Greece. May 2019.
- 2018 International Conference of Humanities Social Sciences and Education. Lisbon, Portugal.
- Africa Health Exhibition and Congress. May 2019.
- 43rd FEBS Congress, Prague, Czech Republic. July 2018.
- 2nd International Conference on growing trend in practical and academic research. Dubai. November 2018.
- International Conference on Intercultural Social Work. Manipal, India. Nov 2018.
- South African Medical SAAMS-AMECA Conference. Cape Town.
- National symposium on strengthening families. North West University. March 2018.
- Life Through Movement International Conference 2018. Port Elizabeth. October 2018.
- Critical Power Symposium 2018. Provo, Utah, USA.
- North American Society for the Psychology of Sport and Physical Activity. Denver Colorado, USA. June 2018.
- FIP. Glasgow. September 2018.
- Mylan MyPharmacy National Summit. Van der Bijl Park. May 2018
- 2018 PainSA Congress. Johannesburg. May 2018.
- Fourth Training Workshop and Symposium MURIA Group. Windhoek, Namibia. June 2018.
- PSSA National Conference. Johannesburg. June 2018.
- South African Association of Health Professions Education (SAAHE) Conference. Durban. June 2018
- 34th International Conference on Pharmacoepidemiology & Therapeutic Risk Management. Prague, Czech Republic. August 2018.
- 7th ISPOR South Africa Chapter Conference 2018. Johannesburg. September 2018.
- First Conference of Biomedical and Natural Sciences and Therapeutics (CoBNeST). Stellenbosch. October 2018
- ISPOR Annual European Congress. Barcelona, Spain. November 2018
- SAAHIP national conference (South African Association of Hospital and Institutional Pharmacists). March 2019.
- SASOCP national conference (South African Society of Clinical Pharmacy). June 2019.
- 4th Health Training Institutions International Research Conference. Gabarone, Botswana. September 2018.
- United Scientific Group: Second International conference on Nursing Science and Practice, London, United Kingdom. August 2018.
- 2nd International Conference on Nephrology. Cape Town. November 2018.
- International Conference on Community Nursing and Public Health. Cape Town. November 2018.
- 6th Global Conference for Qualitative Health Research. South Africa. March 2018.
- Lugina Africa Midwives Research Network. Malawi. June 2018.
- 8th International Conference on Health, Wellness, & Society. London, United Kingdom. September 2018.
- South African Sociological Association 28th Annual Congress. Cape Town. July 2018.
- 9th Annual Ecohealth and Wellbeing Research Conference. Vereeniging. November 2018.
- Postgraduate Supervision Conference. Stellenbosch. March 2019.

FACULTY OF LAW

Visiting professors

- Prof Lilla Crouse, Adjunct Professor Public Law, 2018 and 2019.
- Prof Glenn Goosen, Adjunct Professor Public Law, May 2019.

Conferences hosted by the faculty:

- 10th Private Law and Social Justice Conference. August 2018.
- Family Law Colloquium. September 2018.
- 2019 Hate Bill Seminar / Conference. May 2019.
- International strategic dialogue, "Tightening the net". Port Elizabeth. March 2019.

Papers presented at the following conferences:

- 10th Private Law and Social Justice Conference. Port Elizabeth. August 2018.
- Family Law Colloquium. Port Elizabeth. September 2018.
- 8th Annual International Conference on Law, Regulations and Public Policy. Singapore. June 2019.
- 8th Putrajaya International Conference On Children, Women, Elderly And Persons With Disabilities. Kuala Lumpur, Malaysia. July 2019.
- South African Medico-Legal Association Foundations of Medico-legal Practice course. Port Elizabeth. January 2018.
- International Forum on Disability Management Conference. Vancouver, Canada. October 2018.
- ILERA 2018 World Congress Seoul. South Korea. July 2018.
- ILERA African Regional Congress. Mauritius. May 2018.
- ASSAf-TWAS-AAAS Regional Workshop on Science Diplomacy. Gauteng. May 2018.
- 7th Annual Conference of the African Society of International Law. Antananarivo. October 2018.
- 4th bi-annual German – South African Dialogue on Democracy. Mannheim, Germany. 13 July 2018
- INHS Biennial Conference. Oshawa, Canada. May 2018.
- 3rd Annual Conference on Law and Development. Leiden, Netherlands. September 2018.
- 2018 Conference on Authentication in Art Conference. The

- Hague, Netherlands. June 2018.
- 8th Advances in Hospitality and Tourism Marketing and Management (AHTMM) Conference. Bangkok, Thailand. June 2018.
 - Architecture of the Global Law Enforcement Training Conference. Asan City, Republic of Korea. June 2018.
 - African Regional Conference on the Environment. Cape Town. November 2018.
 - * 6th Global Fisheries Enforcement Training Conference (GFETW). Bangkok, Thailand. February 2019.
 - Southern African Development Community Fisheries Task Team meeting. Windhoek, Namibia. March 2019.
 - Conference on South Africa - Norway Cooperation on Ocean Research, Launching Conference. Port Elizabeth. March 2019.
 - "Growing Blue" on the sustainable and shared use of the oceans. Maputo, Mozambique. May 2019.
 - International Legal Aid Group Conference. Ottawa, Canada. June 2019.
 - 2018 FishCRIME Symposium Copenhagen, Denmark. October 2018.

FACULTY OF SCIENCE

Visiting professors

- Prof Daniel Fortin (Department of biology at Université Laval). (2018)
- Prof Charles Breen (ISAKA group, a university consortium operating as an African-centred community of practice for management of social ecological systems). (2019)
- Prof Wayne Freimund (Department of Parks, Recreation and Tourism Management (PRTM) at Clemson University). (2019)
- Prof Herve Fritz (Adjunct Professor)
- Prof Dirk Roux (Adjunct Professor)
- Prof Leonard Santana (NWU) – 2018
- Prof James Allison (NWU) – 2018
- Prof Oksana Ryabchenko (AgroBioTech Research Center, Ukraine) – 2018
- Dr Bruno Ebner (Institute of Stochastics, Karlsruhe Institute of Technology (KIT), Germany) 2019
- Prof Sonali Das (Research associate) from University of Pretoria
- Dr. Peter Carrington, from Lancaster University,
- Prof Gunther Eggeler, Ruhr University Bochum, Germany.
- Prof Angus Kirkland, Oxford University
- Prof Peter van Aken, Stuttgart Center for Electron Microscopy, Max Planck Institute for Solid State Research,
- Prof Joachim Bollmann – Freiberg University in Germany.
- Prof Peter van Aken, Stuttgart Center for Electron Microscopy, Max Planck Institute for Solid State Research
- Prof Felix Toteu - Cameroon
- Prof Abimbola Sowemimo (University of Lagos - August 2018)

Conferences hosted by the faculty

- 8th South African Conference on Photonic Materials (SACPM). Port Elizabeth. May 2019.
- United Kingdom - South Africa Workshop 2018: International Workshop on Functional and Nanomaterials, In-situ Microscopy, Correlative Microscopy and New Techniques. Port Elizabeth.

- May 2018.
- Primate Ecology and Genetics Conference. Port Elizabeth. August 2018.
- Iphakade Conference. Clarens. October 2018.

Papers presented at the following conferences:

- 5th European Conference for Conservation Biology (ECCB 2018). Jyväskylä, Finland. June 2018.
- SA Wildlife Management Association Annual Symposium. BelaBela. September 2018.
- 2nd International Jackal Symposium. Greece. Nov 2018.
- Symposium of Contemporary Conservation Practice. Howick. November 2018.
- South African Institute of Computer Scientists and Information Technologists
- International business conference
- The Genetic and Evolutionary Computation Conference
- 8th International conference on Cryptology and Information Security Theory
- 18th Global Information Technology Management Association
- South African Computer Lecturers Association Annual Conference
- Southern Africa Telecommunication Networks and Applications Conference
- International Education Association of South Africa
- 2nd Innovative and Creative Education and Technology International Conference
- IEEE International Conference on Computing, Electronics & Communications Engineering (iCCECE)
- South African Institute of Computer Scientists and Information Technologists
- International business conference
- The Genetic and Evolutionary Computation Conference
- 8th International conference on Cryptology and Information Security Theory
- 18th Global Information Technology Management Association
- South African Computer Lecturers Association Annual Conference
- Southern Africa Telecommunication Networks and Applications Conference
- International Education Association of South Africa
- 2nd Innovative and Creative Education and Technology International Conference
- IEEE International Conference on Computing, Electronics & Communications Engineering (iCCECE)
- Stockholm Seminars, Stockholm Resilience Centre. November 2018.
- Insaka Symposium on Transformative Conservation. Johannesburg. June 2019.
- Science and Policymaking Summit, British Council. House of Lords, British Parliament, United Kingdom. July 2019.
- International Conference on Ecological Sciences. Rennes, France. October 2018.
- International Conference on Communication and Information Science. Harare, Zimbabwe. August 2018.
- The International Society for Business and Industrial Statistics (ISBIS) Conference. Greece. 2018.
- South African Statistical Association (SASA) Conference. Johannesburg. 2018



- South African Solar Energy Conference (SASEC). Durban. 2018.
- International Conference on Computational Statistics (COMPSTAT). Romania. 2018.
- South African Renal Congress. Johannesburg. 2018.
- International Workshop on Simulation (IWS). Spain. 2018.
- 2nd International Statistical Conference in Croatia (ISCCRO). Croatia. 2018.
- 8th South African Conference on Photonic Materials (SACPM). May 2019.
- European Materials Research Society (EMRS) conference. Nice, France. May 2019
- 5th Sensors, MEMS and Electro-Optical Systems (SMEOS). October 2018.
- Photonic West SPIE OPTO Conference. San Francisco, United States. February 2019.
- 3rd International Conference on Intelligent Systems, Metaheuristics Swarm Intelligence (ISMSI2019). Maldives. March 2019.
- IEEE International Frequency Control Symposium. California, USA. May 2018.
- 26th International Conference on Optical Fibre Sensors (OFS-26). Lausanne, Switzerland. September 2018.
- 7th International Conference on Nanoscience and Nanotechnology in Africa (NanoAfrica 2018). Durban. April 2018.
- AfriCORR18 - African Corrosion Congress. July 2018. Johannesburg.
- 10th Citrus Research Symposium. Drakensberg. August 2018.
- XII-th International Conference on Ion Implantation and Other Applications of Ions and Electrons (ION 2018). Kazimierz Dolny, Poland. June 2018.
- SHIM-ICACS: 28th International Conference on Atomic Collisions in Solids (ICACS-28) & 10th International Symposium on Swift Heavy Ions in Matter (SHIM). Caen, France. July 2018.
- 51st Annual Meeting of the Society for Invertebrate Pathology & International Congress on Invertebrate Pathology and Microbial Control. Queensland, Australia. August 2018.
- 1st International Conference "Electron Microscopy of Nanostructures" ELMINA2018. Belgrade, Serbia. August 2018.
- 19th International Microscopy Congress (IMC19). Sydney, Australia. September 2018.
- TopFuel 2018. Prague, Czech Republic. October 2018.
- European Cetacean Society – 32nd Conference. La Spezia, Italy. April 2018.
- Gordon Research Conference - Deep Carbon Science. Rhode Island, USA. June 2018.
- Colloquium of African Geology (CAG27) Conference. Aveiro, Portugal. July 2018.
- 4th National Global Change Conference. Polokwane. December 2018.
- First African Bioacoustics Community Conference. Cape Town. December 2018.
- Sustainable Sanitation Waste & Water Management conference. Cape Town. November 2018.
- Geological Society of South Africa: GeoCongress. Johannesburg. July.
- Biennial Conference of the Society of South African Geographers: Geography and Community: research, learning, impact. Bloemfontein. October 2018.
- 22nd Conference of the Southern African Society for Quaternary Research. Mossel Bay. January 2019.
- FEBS2019 (Federation for European Biochemical Societies Congress). Prague, Czech Republic. July 2018.
- International Conference on Toxic Cyanobacteria. May 2019.
- FEBS, Federation for European Biochemical Societies Congress. July 2019.
- International Conference on Toxic Cyanobacteria. May 2019.
- Food safety and security conference. Irene. 2018.
- ATLAS Ti User Conference. Berlin, Germany. 2018
- SARF/IRF/PIARC Regional Conference for Africa. Durban. October 2018.
- Asphalt Technology, (ICAT 2018). Prague, Czech Republic. May 2018.
- International Conference on Nanoscience and Nanotechnology in Africa (NanoAfrica2018). Durban. April 2018.
- 24th National Rubber Conference. Cape St Francis Bay. April 2019.
- International conference on composites, biocomposites and nanocomposites. Port Elizabeth. November 2018.
- Joint 2nd Pan-African Crystallography Conference and 2nd African Light Source. Accra, Ghana. January 2019.
- Analitika 2018 conference. Pretoria. July 2018.
- Flow Chemistry India 2018. Mumbai. January 2018.
- Flow Chemistry Congress 2018. Miami. November 2018.
- 43rd National Convention of South African Chemical Institute. Pretoria. December 2018.
- 4th ACS Nigeria International Chemical Sciences Symposium. Lagos, Nigeria. March 2019.
- 30th IFSCC congress. Munich, Germany. September 2018.
- International Symposium on Metal Complexes (ISMEC 2018). Florence, Italy. June 2018.
- 43rd National Convention of the South African Chemical Institute. December 2018.
- CPAC Rome Workshop. Rome, Italy. March 2018.
- CPAC Summer Institute. Seattle, USA. July 2018.
- Grand Challenges Annual Meeting 2018, Berlin, Germany. October 2018.
- Biotechnology Innovation & Regulatory Science. Kilimanjaro, Tanzania. October 2018.

Change the World

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YEARS OF MANDELA

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