Teaching Programme overview
UJ-TRCTI

SARChI
TRANSFORMATIVE
INNOVATION, 4IR
AND SUSTAINABLE
DEVELOPMENT

UNIVERSITY
OF
JOHANNESBURG

The UJ-TRCTI

The University of Johannesburg's DSI/NRF/ Newton Fund Trilateral Research Chair on Transformative Innovation, the Fourth Industrial Revolution and Sustainable Development's (UJ-TRCTI) was started in 2019 and is headed by Prof. Erika Kraemer-Mbula. Prof. Erika is a leading African researcher in the field of innovation, the informal economy and the Fourth Industrial Revolution (4IR). The Chair is trilateral and the other two parts of the Chair are based at The African Centre for Technology Studies (ACTS) in Nairobi, Kenya (under Dr. Ann Kingiri) and The Science Policy Research Unit (SPRU) at the University of Sussex, UK (under Dr. Rob Byrne).

The Chair's mission is to develop and test new theoretical frameworks and policy solutions. It does this to understand transformation, in the context of innovation, the 4IR and from an African perspective. Specifically, the Chair is interested in unpacking the social and technological relationships that explain the rate, direction and patterns of (radical) innovation adoption, diffusion and use. This is a process involving not only technologies but also changes in consumer practices and needs, the skills and capabilities of all actors involved, infrastructures, governance, regulation, industry structure and cultural meanings.

The Chair focuses its attention on studying and providing policy advice on transformation, innovation and the 4IR across five main thematic areas:

1. **Digital transformation:** advanced digital technologies are increasingly available to marginalised communities. These technologies enable emerging innovation practices that are not generally captured in the literature.

2. **Green and just transitions:** innovative solutions emerging from marginalised communities, often adhere to the principles of recycling, reusing, and repurposing, with positive environmental outcomes. Including marginalised/vulnerable communities in considerations of innovation also lead to more inclusive outcomes.

3. **Innovation & wellbeing:** marginalised communities are those excluded from mainstream social, health, economic, educational, and/or cultural life. Understanding alternative innovation practices and their relation to the wellbeing of marginalised communities is central to inclusive development

4. **Alternative innovation practices:** this thematic area explores modalities of innovation and innovation activities that are out of the mainstream. This includes innovation in "unseen" spaces, such as the informal economy and marginalised communities.

5. **Governance of STI policy and systems:** promoting more transformative innovation and ensuring 4IR technologies address societal challenges requires new ways of thinking about STI systems and the policy used to promote these.

The focus of UJ-TRCTI's post graduate programmes

At this time there is significant attention to 'innovation' – especially technology-based product innovation relating to the 4IR (e.g. artificial intelligence, robotics, gene editing or quantum computing). Such innovation is being considered in everything from cryptocurrencies and financial solutions to ways the world can tackle climate change and global health challenges. It is promoted in firms, in households, in communities and organisations and can be an individual or a group endeavour. It can be conducted by the public, private or third sectors.

Innovation in all these cases relates to the conceptualisation, design, development, piloting *and* roll out and uptake of these products. We therefore talk about innovation as a process (not a 'thing'). In the Chair we also recognise that there is more than just product focused innovation. Innovation – especially on the African continent (where we experience unreliable infrastructure, high levels of unemployment and an often difficult regulatory regime) – must also occur at the level of processes (improvement in the way things happen), business models (the way things are packaged) and organisational models (the way things are managed). For some people it is also possible to talk about social innovation (innovative ways of working together to solve social challenges).

When considered as a process, innovation relies on people and organisations and most importantly how these two elements work together. This requires flows of knowledge and learning and longer term competences to be built. These flows and building of competences are dependent on the rules and values that underpin how people and organisations work together. These rules and values are often called institutions.

Being cognisant of these complex relationships between different structures (people and organisations) and institutions brings into focus the notion of 'agency' and the degree of power different actors have. This is important at a range of levels from the micro level of families and households, through to the meso level of organisations and networks to the macro level of nations.

The Chair is focused on innovation that is **transformative**. We refer here to innovation that can address societal challenges including inequality, poverty and climate change. A related term that is used increasingly is 'directionality' or the rationale and expected impact of innovation processes. A key element here is the importance of ensuring innovative activity is focused not on achieving economic growth of companies or nations but on addressing a broader set of pressing societal challenges.

Thus, the Chair is also focused on how transformative innovation – particularly but not exclusively related to the 4IR – fits with development processes. The definition of **development** here refers to what was termed by Robert Chambers as 'good change'. As such it relates strongly to our notion of transformation. The concept of development in this context is often considered in relation to economics (and measured in relation to gross domestic product and similar indicators) but also in relation to society and social issues (and measured more holistically using measures like the human development index). There is a whole field of study dedicated to issues of economic and social development called development studies. If you are not familiar with this field, you will become so through your studies.

However, for the most part, the programmes in the Chair are focused on the field of 'innovation studies'. It grew up around critically considering how development occurred, especially at what might be called the macro level: how innovation interacts with economic development of nations. Studies in this field have investigated how innovation by firms can create opportunities for economic growth for a country (e.g. bringing in more foreign direct investment), they have looked at how to promote regional development through focusing on the promotion of particular types of firm or industry in particular parts of a country (e.g. development of textile clusters or more recently the greening of ports or the role of export-processing zones). There has been a focus in the last few years on 'mission thinking' and the promotion of specific large scale projects in very targeted areas as a way of boosting industrial sectors and the economy as a whole.

However, not all of this work has focused only on the impact of economic development at macro (national) level. As already noted, there is an increasing focus on the impact of innovation on individual households and communities. There is also a large body of work on the

directionality of innovation efforts and the importance of science, technology and innovation (STI) policy being directed towards transformation – to a specific focus on sustainability and inclusion.

As each study programme is different and all students undertake their own unique study, the depth and combination of these aforementioned issues that are studied will differ. However, we expect all of our students to come out of the programmes with a well-rounded understanding of the core literature and debates within innovation and development studies affecting African countries and to be part of a community of scholars working in this area.

The programmes offered by the Chair

There are two post-graduate programmes offered by the Chair:

1. Masters of Philosophy (MPhil) with specialization in Innovation and Sustainable Development
2. Doctor of Philosophy (DPhil) with specialization in Innovation and Sustainable Development

From 2024 we also expect to offer a full PhD in Innovation and Development and are in the process of developing a series of short learning programmes on transformative innovation policy.

The objectives of our programmes

Upon completion of our post-graduate programmes students should, in general, be able to:

1. Analyse relevant theories and concepts on innovation systems and be able to apply interdisciplinary approaches when solving problems.
2. Evaluate historical trends in academic thought and policy emphasis with regards the relationship between innovation and development.
3. Conduct independent research through development of a research proposal, primary data collection and analysis which adds theoretical, methodological and empirical value to the field of African innovation and development studies.

The MPhil (research) format

The MPhil by research is conducted over two years full time (three years part time). This requires students to write a dissertation.

The MPhil is made up of the following main phases in full time mode:

a. Induction – months 1-3
b. Proposal writing – months 1 – 6
c. Proposal defence – month 6/7
d. Research, analysis and write up – months 7 – 18
e. Thesis compilation and examination – months 19 – 24

MPhil students are also expected to have produced one journal paper or book chapter that is suitable for publication.

The DPhil format

The DPhil is conducted over three years full time (five years part time) and is conducted predominately as a DPhil by publication. This requires students to write four journal papers and to write a wraparound text (introduction and conclusion chapters) that create a single thesis document.

The DPhil is made up of the following main phases in full time mode:

f.   Induction – months 1-3

g.   Proposal writing – months 1 – 8/9

h.   Proposal defence – month 9/10

i.   Fieldwork and publication write up – months 10 – 24

j.   Thesis compilation and examination – months 25 - 36

Studying at UJ-TRCTI

The Chair provides a unique study location being based in a leading South African university and having connections to key loci of research and policy thinking through our partners in SPRU in the UK and ACTS in Kenya. In addition, the Chair has a broad range of visiting scholars who provide additional input and support to the Chair.

We aim to provide an inclusive and open setting for post-graduate study where students are expected to ask critical questions and become actively engaged in the broader work of the Chair.

Both programmes require students to be physically present in Johannesburg. There is no virtual learning option. Dedicated desk space is provided for students and the office has backup power and wifi.

Students will be supported by two supervisors, access to a peer mentor and group supervision sessions. Students will be expected to regularly present their work internally and externally. Limited support is available for conference attendance and we encourage our students to become part of a broader academic community that fits their studies.

Where do our graduates go?

Our students tend to follow two routes after their studies. Many of our students return to or take up a career in government or the third sector working on science, technology and innovation issues Many of these jobs involve developing policy or supporting the funding of research and/or commercialisation of innovation. Examples of these organisations include the South African Department of Science and Technology, the Southern African Development

Community and innovation hubs across the continent. A small number of our graduates work in research based consultancy firms and/or move into the private sector.

The other main career route of our graduates is to remain in academia/ the research community. For those not already working in academia and research when they start their studies with us, there are various opportunities available. The Chair runs a vibrant post-graduate research fellows programme at University of Johannesburg and our partner organisation in Kenya, ACTS, is regularly looking for researchers for its research programmes. The Chair is part of a broader network of academics working in the field of innovation and development studies providing a source of potential opportunities into other post-doctorate opportunities, research fellowships and lectureships.

For more information

For more information on these programmes and/or to speak to our Teaching and Learning Programme Director, please email: ujtrcti@uj.ac.za

We recommend that all potential students speak to our Programme Director before or during the application process to ensure we can support your research idea.

As part of the application process you will be required to have an interview with the Programme Director and submit an initial outline of your research ideas in the form of a short research proposal. This is in addition to the online application documentation requested by the university.