



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



National
Research
Foundation

DST-NRF Centre of Excellence in Scientometrics and STI Policy

Launch
3 April 2014



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Tshwane University
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We empower people

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RESEARCH WORK PROGRAMMES

WPI: Science, Technology and Innovation Indicators

AIM: *To strengthen expertise in the design, development and production of indicators of the research and innovation system, including science, technology and development, and linkages between research and innovation.*

The flagship project in WPI is the *South African STI Indicators Project*. The project will generate a comprehensive and critical review of existing STI indicators and their relevance for the South African NSI. The project will culminate in a biennial publication (*The South African STI Indicators Report*) which will present the latest statistics on:

- Human resources stocks and flows
- Knowledge transfer, exchange and flows
- Institutional connections and linkages (such as research networks)
- Sectoral, regional or city/agglomeration research and innovation systems
- Commercialisation and developmental impacts
- User innovation in firms
- Research performance: individual, team and institutional.

WP2: STI Policy for Development

AIM: *To synthesise the activities of the CoE toward its policy analysis role. It will study the dynamics shaping science, technology and innovation capabilities, and the way the various actors engage in this process.*

Scientific research has long been acknowledged to be an important driver for technological innovations. In emerging economies, such as SA, it is important to extend the scope from science and technology-led innovation to a broader conception. WP2 will take on this challenge by systematically mapping the actors and activities taking place within innovation systems that result in innovation and technological change. Given the dynamic and constant evolution of innovation systems (as new actors, activities and conditions emerge), it is important that the analysis of systems incorporates foresight tools that contribute to the analysis of transitions and transformation of innovation systems within a longer-term scope. A first project under this work programme will address the challenge of developing new indicators aligned with the revised Sustainable Development Goal framework following 2015, thereby contributing to policy for employment, poverty reduction and the promotion of equality.

Assessment of the social impact of research (as opposed to the scientific impact of research) represents uncharted territory...

WP3: Human development for STI

AIM: To obtain a better understanding of the dynamics of human development, and STI in SA and on the African continent. A specific focus will be on the role of HEI's in developing human resources for S&T.

The work programme will build on human development metrics, including the tertiary education sector studies developed by CREST and CHET to integrate existing data and indicators, develop new indicators and improve our understanding and utilisation of the indicators. However, assessing performance in higher education not only deals with indicators outputs and efficiency, but also with the demographics (race, gender, qualifications and nationality) of knowledge producers. The project will go beyond the development and refinement of performance indicators. We will produce critical studies of the underlying dynamics of the trends and patterns that indicators refer to. This work focuses on issues such as strengthening the academic core, the pact between national and institutional policies with regards to higher education and its role in development, and the coordination and connectedness between the policies and activities of government, universities and external groupings.

WP4: Science communication, evaluation and impact

AIM: To study the nexus of issues related to science communication, dissemination, uptake and utilisation strategies and the measurement of scientific and social impact.

In the first five years of the work, our attention will focus on two areas of work: the first on current trends in the communication system of science (with a focus on South Africa and selected African countries), and the second to achieve an in-depth understanding of the challenges of measuring the social impact of research. The first project will examine the complexity of developments in the communication system of science in SA in a global context. The communication system of science that disseminates scientific research and findings within and beyond scientific communities is experiencing dramatic changes. We will research the impact of some of these changes (such as those derived from the ICT revolution and include new electronic publication media, new ways of organising peer review and editorial management systems, as well as the application of quantitative indicators in different contexts) on the communication behaviours and practices of scientists.

Assessment of the social impact of research (as opposed to the scientific impact of research) represents uncharted territory, given the diversity of opinions and approaches as to what is feasible and under what conditions. A second project under this work programme will consolidate and deepen research and scholarship in this domain and its application to research in Africa. This will be pursued mostly through case studies of successful research uptake and impact in a variety of domains.

EDUCATION AND TRAINING

Building the next generation of scientometricians and STI policy analysts for the African continent

CREST currently offers a Masters and Doctoral programme in Science and Technology Studies. A specialisation in Research Uptake and Utilisation was introduced in 2013. It is planned to introduce another specialisation (Science Communication) in 2016.

The current Masters and PhD Programme will be strengthened through the inclusion of new modules that exploit the combined strengths of the members of the partnership and their networks. The CoE will offer annual full-time scholarships for Masters and PhD students in STS in pursuit of the goal to build the individual capacity of current and future generation scholars in this field at an accelerated pace. We shall also explore other funding and support pathways (NRF- and DST-supported scholarships and internships for staff) to sustain an annual intake of between ten and 15 new students every year from South Africa, other African countries and further afield.

Short courses in scientometrics and science and innovation policy

The CoE partnership has an excellent track record in a wide range of short courses in Science and Technology Studies (STS). Because of differential demand in this field we have over the years offered short courses in:

- Bibliometrics and scientometrics
- Research Evaluation, Research Performance Measurement
- Institutional planning with a focus on performance indicators
- R&D Surveys
- Science Communication
- Research Impact Assessment and
- Innovation Metrics.

In addition to continue offering these courses, other short course options will be explored and further developed. We will increasingly investigate delivering these short courses using the latest online technology in order to increase coverage to the broadest range of audiences in Africa. We will do so in partnership with bodies such as SARIMA, AOSTI, Research Africa and other agencies in this field.

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DATA CONSOLIDATION

A multiplicity of STI data sources exist that could serve to inform the assessment of the South African STI system. However, some of these data sources are currently underutilised in terms of their potential value for STI assessment, as they are managed by different agencies (DHET, NRF, CeSTII) and are not readily available to external parties.

Over the past 15 years, CREST has invested significant resources to build its own databases on the NSI, including SA Knowledgebase – the only dedicated database of SA journal articles (since 1990) that contains detailed demographic information on authors. CREST’s ability to exploit large datasets has been significantly enhanced through two recent developments: In 2010, Sabinet agreed to provide CREST with the micro-data on all SA periodicals. In December 2012, CREST purchased the Thomson Reuters WoS world micro-data including SCI-Extended,

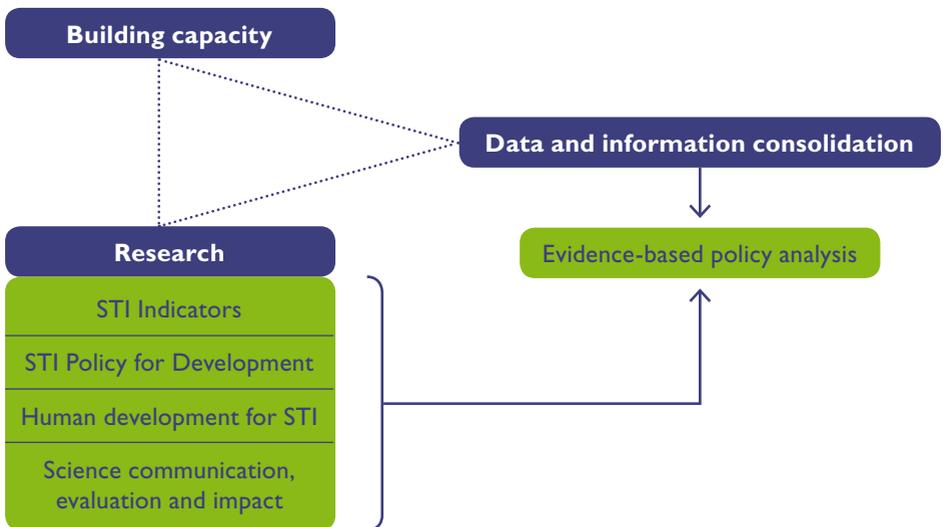
SSCI, AHCI and Conference Proceedings for the period 1980 onwards.

CHET has been collecting and publishing open data on South African higher education (including high-level knowledge outputs) since 2009. CHET also publishes an open dataset on performance indicators for eight flagship African universities.

Hence, our priorities for the next five years:

- To develop an integrated database architecture for the consolidation of existing data and information sources in the NSI
- To integrate African Knowledgebase into a single database with the WoS databases.
- To develop a portal of STI for Africa that will bring all these databases into a single, user-friendly and interactive search space.

THE COE VISION



THE PARTNERSHIP: THE CORE TEAM

The CoE brings together a wealth of experience and expertise in the field of bibliometrics, scientometrics, science and innovation policy, higher education studies, the sociology of science, science communication, research evaluation and research impact assessment. Over the past five years alone, the constituent centres of the CoE produced more than 55 peer-reviewed journals articles, 33 books and chapters in books, 145 scholarly presentations and more than 100 technical and commissioned reports. In addition 10 Masters and Doctoral students graduated from CREST's programme in Science and Technology Studies. There are currently 36 students enrolled in these two programmes.

CREST (Lead Centre)

The Centre for Research on Evaluation, Science and Technology was established on the 1st of January 1995. It currently has a staff of 11 people. In addition 5 extraordinary professors and visiting fellows are attached to the Centre.



Johann Mouton



Nelius Boshoff



Sara Grobbelaar



Milandr  van Lill



Michael Kahn



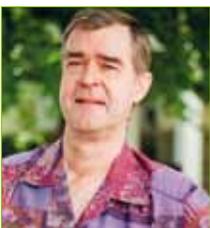
Marina Joubert



Marthie van Niekerk



Lynn Lorenzen



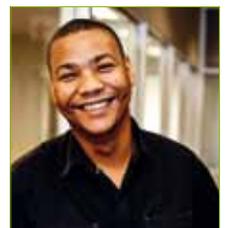
Johann Spies



Astrid Valentine



Annemarie Visagie



Nigel Jansen

IERI (Co-host)

The Institute for Economic Research on Innovation was officially launched on the 14th September 2004 by the then Deputy Minister (Science and Technology) and now Minister: Derek Hanekom. It currently has a staff of five academics and a senior administrator. In addition 2 extraordinary professors and various visiting and associate fellows are affiliated to IERI.



Rasigan Maharajh



Mario Scerri



Erika Kraemer-Mbula



Lindile Ndabeni

CHET (Institutional collaborator)

The Centre for Higher Education Trust was established in 1996. It is a network organization with a director and an administrator. Support services are outsourced and products are project-related. CHET has an international board of 8 high-profile higher education specialists and 20 fellows. CHET's Higher Education Research and Advocacy Network in Africa (HERANA) have 50 participants from 12 countries.



Nico Cloete



Tebogo Moja



Angela Mias



Charles Sheppard



Ian Bunting



Tracy Bailey

CWTS (Institutional collaborator)

The Centre for Science and Technology Studies at the University of Leiden was established in 1989 (under its Dutch name Centrum voor Wetenschappen en Technologie Studies). Currently the research centre engages a wide range of studies with regards to the dynamics of scientific research and its connections to innovation, society and evidence-based science policy. CWTS is one of the world's leading institutes for scientometrics and bibliometrics. Its 26 researchers and academic staff are organised into three chairs for full professors and five working groups on key research themes.



Robert Tijssen

INTERNATIONAL PARTNERS

In addition to the core team presented above, the partnership also boasts an impressive list of international scholars in a wide range of complementary fields. These scholars add immense value to the CoE and have all expressed their desire and commitment to participating in the different work programmes of the new Centre.



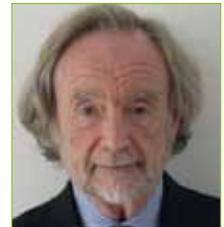
Peter Weingart



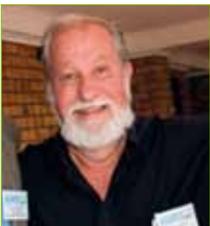
Arie Rip



Ulrich Schmoch



Fred Gault



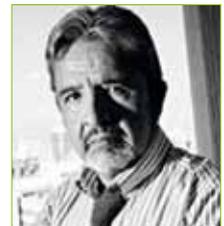
Claes Brundenius



Manuel Castells



Peter Maassen



Fernando Calderón

In character,
in manner,
in style,
in all things,
the supreme excellence
is

simplicity

— *Henry Wadsworth Longfellow*





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