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# DST-NRF Centre of Excellence in Scientometrics and STI Policy

## 2014 Annual Activity Report



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# DST-NRF Centre of Excellence in Scientometrics and STI Policy

## 2014 Annual Activity Report

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Faculty of Arts and Social Sciences, Stellenbosch University, South Africa

**Physical address:**  
Room 4032  
Wilcocks Building  
Ryneveld Avenue  
Stellenbosch

**Postal address:**  
Private Bag XI  
Matieland 7602  
South Africa

**Contact person:**  
Heidi Prozesky  
Tel: +27 21 808 9464  
Fax: +27 21 808 3691  
hep@sun.ac.za  
[www.sun.ac.za/scistip](http://www.sun.ac.za/scistip)

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# Glossary and abbreviations

<b>ASSAF</b>	Academy of Science for South Africa	<b>NORAD</b>	Norwegian Agency for Research and Development
<b>BRICS</b>	The acronym for an association of five major emerging national economies: Brazil, Russia, India, China and South Africa	<b>NRF</b>	National Research Foundation
<b>CEO</b>	Chief executive officer	<b>PhD</b>	Doctor of Philosophy
<b>CHE</b>	Council on Higher Education	<b>R&amp;D</b>	Research and development
<b>CHET</b>	Centre for Higher Education Transformation	<b>RDF</b>	Research Directors' Forum
<b>CoE</b>	Centre of Excellence	<b>SADC</b>	Southern African Development Community
<b>CREST</b>	Centre for Research on Evaluation, Science and Technology	<b>SAIS</b>	Southern Africa Innovation Support Programme
<b>CWTS</b>	Centre for Science and Technology Studies	<b>SARChI</b>	South African Research Chairs Initiative
<b>DFID</b>	Department for International Development	<b>SARIMA</b>	Southern African Research and Innovation Management Association
<b>DRUSSA</b>	Development Research Uptake in sub-Saharan Africa	<b>SMART</b>	An acronym for 'specific, measurable, acceptable, robust and timeous'
<b>DST</b>	Department of Science and Technology	<b>SME</b>	Small and medium-sized enterprise
<b>GLOBELICS</b>	Global network for economics of learning, innovation, and competence building systems	<b>STEM</b>	The acronym for the academic disciplines of science, technology, engineering, and mathematics
<b>HERANA</b>	Higher Education and Research Advocacy Network in Africa	<b>STI</b>	Science, technology and innovation
<b>HIV/AIDS</b>	Human immunodeficiency virus and acquired immune deficiency syndrome	<b>STIAS</b>	Stellenbosch Institute for Advanced Studies
<b>IDRC</b>	International Development Research Centre	<b>STS</b>	Science and technology studies
<b>IERI</b>	Institute for Economic Research on Innovation	<b>SU</b>	Stellenbosch University
<b>KNUST</b>	Kwame Nkrumah University of Science and Technology	<b>THRIP</b>	Technology and Human Resources for Industry Programme
<b>MRC</b>	Medical Research Council	<b>TUT</b>	Tshwane University of Technology
<b>MUST</b>	Mbarara University of Science and Technology	<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization

# Foreword by the Director



The idea that knowledge, and specifically science, is a major driving force in modern societies pervades public debate in general, and science and technology policy discourse in particular. Increasingly, the progress of societies, the quality of life of their citizens and the success of their economies are considered dependent on their ability to develop and implement effective policies and strategies for the production, distribution and application of knowledge – education, scientific research, R&D, and technology. This is no less true for South Africa where the establishment of a true knowledge society is hugely contingent on a healthy, robust and sustainable science and innovation system.

The DST-NRF Centre of Excellence in Scientometrics and Science, Technology and Innovation Policy (SciSTIP) has two overarching and intrinsically linked missions: (1) to conduct and promote scientometric studies and scholarship; and (2) to conduct and promote STI policy studies. It is a Centre for Excellence devoted primarily to strengthening research,

scholarship and postgraduate capacity in South Africa. It is also committed to making a contribution to STI scholarship on the African continent.

These are the five research focus areas for the Centre's SciSTIP research programmes and projects, and postgraduate training and education: (1) Science in (South) Africa: history, governance, state and trends; (2) Human resources for science and technology: the next generation of scientists, scholars and knowledge professionals; (3) Research evaluation: assessing the uptake, utilisation and impact of research; (4) Science and technology and innovation studies; and (5) Communication in and of science. These focus areas bring together diverse fields and disciplines: scientometrics and bibliometrics, science, technology and innovation (STI) studies, STI policy, the sociology of science and technology, the history and philosophy of science, research evaluation, research performance studies, science communication and the public understanding of science and technology, research in higher education studies, and other related fields.

This report documents our activities since SciSTIP was officially established on 1 April 2014, until 31 December 2014. Even though this period constituted the inception phase of SciSTIP, the report gives ample evidence of the energy that already exists in the SciSTIP partnership. As this partnership develops and expands, and with the guaranteed funding from DST and NRF, we are confident that we will achieve our strategic goals and stay true to our mission to pursue excellence in science, technology and innovation studies.

**Prof Johann Mouton**  
*Director: SciSTIP*

# Introduction

## HISTORICAL BACKGROUND

SciSTIP constitutes a partnership between four entities: the Centre for Research on Evaluation, Science and Technology (CREST, [www.sun.ac.za/crest](http://www.sun.ac.za/crest)) at Stellenbosch University (SU) as host, the Institute for Economic Research on Innovation (IERI, [www.ieri.org.za](http://www.ieri.org.za)) at Tshwane University of Technology (TUT) as co-host, and two institutional partners: the Centre for Higher Education Transformation (CHET, [www.chet.org.za](http://www.chet.org.za)) and the Centre for Science and Technology Studies (CWTS, [www.cwts.nl](http://www.cwts.nl)) at the University of Leiden.

The origin of the host institution, CREST, can be traced back to the Centre for Interdisciplinary Studies (CENIS), which was established in 1995 as a research centre within the then Faculty of Arts at SU. CENIS was established with the explicit aim to undertake and promote interdisciplinary studies in the social sciences research, and conduct and promote research in the 'meta-fields' of the methodology and sociology of the social science.

In its early years, the research portfolio of the Centre was quite wide-ranging with interdisciplinary studies on values, academic development, the role of intellectuals in society, social science methods, social theory and sociology of science. It was also at this time that the Centre was contracted to undertake the *Survey on research and scholarship* as part of DACST's *National Research and Technology Audit*. This project brought about a new focus in the work of the Centre with subsequent research increasingly focusing on science and technology policy, sociology of knowledge and science, and research in higher education institutions.

The renaming and repositioning of CENIS as the Centre for Research on Science and Technology (CREST) in 2003 consolidated this change and signified a fundamental commitment to research issues in the field of the social and ethical study of science and technology. The new name of the Centre, with its focus on public R&D and its social consequences, was launched at a function in Stellenbosch on Thursday 25 September 2003, with Dr Ben Ngubane, then Minister of Arts, Culture, Science and Technology as the guest speaker.

The main research aims of CREST have subsequently been reformulated as follows: to conduct research on the nature of science and technology with specific reference to science and technology policy in South Africa and Africa; and to

conduct research on, and improve, the 'meta-fields' of methodology and sociology of science. In 2010 CREST was reconstituted as a Type-2 centre in terms of SU's *Policy for Centres, Bureaux and Institutes*. This means that the Centre has the same status as an academic department and can therefore award degrees.

In 2005 CREST entered into a strategic partnership with CWTS at the University of Leiden – one of the world leaders in bibliometric and scientometric studies and information products. The CWTS information system includes licensed versions of several major international bibliographic databases such as the *Web of Science* and *Scopus* (research publications) and *PATSTAT* (patents). CWTS has over the last 20 years accumulated extensive information management expertise on designing and upgrading such large databases, which each consist of many millions of records, and developing high-performance software and user-interfaces for data-mining and statistical analysis. CWTS is also a partner of information suppliers such as Elsevier and SciELO. The partnership between CREST and CWTS has resulted in several joint research studies since 2005. It is also since 2005 that Robert Tjissen has been affiliated to CREST – at first as a visiting professor; later as extraordinary professor.

In 2008, CREST also established a partnership with CHET to cement their mutual interest in the design and analysis of university-level indicators. Following the report by the National Commission on Higher Education (1996) in South Africa, CHET was formed to contribute to strengthening the knowledge base on the role and functions of higher education in Africa by combining traditional higher education studies with more general scholarly reflections on the change dynamics of higher education. CHET has done ground-breaking work in the development of performance indicators that enables universities countrywide to better assess their performance relative to DHET targets, to their own institutional targets and to the performance of their peers. This data tool (<http://www.chet.org.za/data/sahe-open-data>) is also of use to higher education researchers, analysts, policy-makers and other decision-makers seeking a more detailed, empirically based picture of South African higher education.

CHET has over the past 20 years established itself as the most influential 'think tank' in higher education studies in South Africa. After publishing *Transformation in higher*

*education: global pressures and local realities* in 2006, the Centre decided to focus more on institutional performance (differentiation) and become more involved in higher education studies beyond South Africa. As such, it has defined the agenda for current debates on differentiation in higher education, higher education and development and university performance measures.

The Institute for Economic Research on Innovation (IERI) (<http://www.ieri.org.za>) was originally established in 2002 in the Faculty of Economic and Management Studies at the former Technikon North West as a support platform for the African Renaissance initiative that became the New Partnership for Africa's Development (NePAD). IERI remained dormant until the establishment of the Tshwane University of Technology (TUT) and the recruitment of the founding Chief Director in 2004. IERI was officially launched by the Ministry of Science and Technology in September that year and has in the subsequent 11 years generated significant research, teaching and community engagement outcomes for the National System of Innovation.

IERI is a public-good research organisation with a core competence in the analysis of systems of innovation. The central mandate of IERI remains to provide research, capacity-building and community engagement in this field of research. Specifically, IERI engages in the following broad tasks: a) Conducts research on the political economy and policy dimensions of Innovation and Development; b) Contributes thought-leadership on the relationship between Knowledge and Development across Economic, Social and Political domains; c) Builds capabilities and competences in the understanding of the political economy and policy dimensions of Innovation and Development; and d) Focuses across Local, Provincial, National, Regional and International territories and geo-political boundaries.

IERI hosted the third International Conference of the Global Network for the Economics of Learning, Innovation and Competence Building Systems (GLOBELICS) in South Africa in 2005 and also piloted its first teaching and learning intervention: Masters in Comparative Local Development. The latter was the result of the collaboration between Southern African and European Higher Education Institutions. In 2006, IERI served as the Technical Service Agency for the Socio-Economic Country Assessment of South Africa in the African Peer Review Mechanism (APRM) process whilst also conducting

extensive field-research on Cooperatives in the Ekurhuleni Metropolitan Municipality.

In 2007, IERI launched an intensive comparative analysis of the national systems of innovation of Brazil, Russia, India, China and South Africa (BRICS) in partnership with collaborators drawn locally and internationally, and funded by the IDRC. IERI was also granted a South African Research Chair (SARChI) in Innovation Studies for the period 2007-2012. IERI also hosted the Southern African Node of the Millennium Project (SAMP) which is a global participatory-futures research network, and was involved with the establishment of a National Strategic Planning competency in the South African Presidency in 2008-2009. Together with the SARChI, IERI also launched the African Journal of Science, Technology, Innovation and Development (AJSTID), an international peer-reviewed journal that addresses various aspects of systems of innovation in Africa in 2009.

IERI has also successfully delivered an extensive ten-module Short Learning Programme in partnership with the DST called Science, Technology and Innovation for South Africa (STISA). STISA sought to enhance the analytical and planning capacity of public servants within the DST and other departments and endow their managerial staff with a solid grounding in the theory and application of the systems of innovation approach to economic development. IERI delivered STISA through four cohorts over four years. In its 11 years of existence, IERI has also made significant contributions to the fields of Political Economy, Innovation Studies, Futures Research and Public Policy Analysis.

Senior staff of CREST and IERI have also contributed to various national science policy commissions, studies and reports including the NRTA, NR&DS, the 10-year Plan, the OECD Review of the NSI, the Ministerial Report of the Science System and the DHET Committee on the Revision of the Funding Framework.

SciSTIP draws on the respective strengths of these partners and their reciprocal involvement in the conceptualisation, design and implementation of different projects in the overall portfolio of the Centre. It 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.

## A CoE IS BORN

SciSTIP was established on 1 April 2014 and officially launched on 3 April 2014 by the then Minister of Science and Technology, Derek Hanekom.

*From left to right: Prof Eugene Cloete (Vice-Rector: Research and Innovation, SU), Min. Derek Hanekom, Prof Johann Mouton (Director: SciSTIP) and Prof Albert van Jaarsveld (CEO: NRF)*



A scientific conference held on 6 and 7 November 2014, hosted by CREST, marked the scientific launch of the DST-NRF Centre of Excellence in SciSTIP. Delegates were welcomed by Prof Eugene Cloete (Vice-Rector: Research and Innovation) on behalf of SU and Prof Lulama Makhubela (Deputy Vice-Chancellor: Postgraduate Studies, Research & Innovation) on behalf of TUT.



A detailed planning meeting was held in Stellenbosch over four days (11-14 May 2014) involving all team members of the Centre. The attendees also included Prof Peter Maassen from the University of Oslo, and Dr Romillah Maharaj from the NRF. The primary purpose of the meeting was to clarify and refine, for the first time, the core focus and core research focus areas of the Centre. To this end, the 11 team members were first each given the opportunity to present their research specialisation areas and interests, but particularly the types of research they would be conducting under the auspices of SciSTIP. These presentations were then discussed in depth during small-group discussions. In addition, a common decision-rule framework for research projects was established, and the Centre's project portfolio was consolidated. The meeting also provided a platform for an extensive discussion on two issues: capacity-building (including an expansion of the current master's and PhD in Science and Technology Studies [STS] offering and supervision capacity) and short courses. Finally, NRF staff were given an opportunity to convey information, field questions and participate in discussions on the NRF's management and administration expectations, with a particular focus on reporting and inter-partner agreements.



In his welcoming speech, the Director-General of the DST, Dr Phil Mjwara, highlighted SciSTIP's enormous potential to provide appropriate STI indicators for tracking and steering national STI initiatives, as well as for assessing the contribution of new R&D-led initiatives in the South African economy.



Dr Gansen Pillay, Deputy CEO: Research and Innovation Support and Advancement at the NRF, stressed the partnership aspect of SciSTIP in working with universities and research organisations in its various activities. He underlined SciSTIP's role in bringing together the best scientific minds, both locally and internationally, across its research focus areas.



SciSTIP director, Prof Johann Mouton, elaborated on SciSTIP's five focus areas in his presentation on a road map for excellence in scientometrics and STI scholarship. He introduced the notion of 'interpretive bibliometrics' as a defining feature of its intended work in the field of bibliometrics. 'Metrics will not be produced for the sake of having metrics, but will be interpreted in a particular context and in the light of the path dependency of the entity – e.g. organisation or scientific field – being assessed, Prof Mouton explained.



This value-adding element was echoed by Prof Paul Wouters, director of CWTS at Leiden University, who emphasised that measurements are not intrinsically meaningful, but need to be made meaningful. According to Prof Robert Tijssen, a researcher at CWTS and an extraordinary professor at CREST, the challenge for SciSTIP is to produce indicators that are considered SMART – specific, measurable, acceptable, robust and timely.

Other presenters at the conference included international speakers, such as Profs Peter Weingart (University of Bielefeld and recent recipient of the SARCH Chair in Science Communication), Peter Maassen (University of Oslo) and Arie Rip (University of Twente).



Dr Erika Kraemer-Mbula, the then acting director of the IERI at TUT, the co-host of SciSTIP, outlined their research plans, including the development of indicators for innovation and measures of the socio-economic impact of science and technology at the systemic level. She also stated the need to include a focus on social innovation in the activities of SciSTIP, a need that had also been raised by other delegates.

Lively debates and discussions over the two days revealed that there are high expectations of SciSTIP and its position in the South African science system, both as a service provider and an agency of high-level fundamental research. The latter – high-quality research to be published in leading peer-reviewed journals – will be at the core of SciSTIP's activities.

This scientific launch coincided with a four-page advertising supplement in the Mail & Guardian Newspaper (M&G), published on 7 November 2013. The supplement consisted of 12 stories and visuals, coordinated and finalised in collaboration with staff members at CREST. This supplement was distributed as an insert in the normal M&G print run (70 000), while an extra 1 000 copies were delivered to CREST for direct distribution.

This scientific launch coincided with a four-page advertising supplement in the Mail & Guardian Newspaper (M&G), published on 7 November 2013.

# Publications

## PUBLISHED IN 2014

Research output by members of SciSTIP for the period 1 April to 31 December 2014 encompasses nine articles in peer-reviewed journals, six book chapters and a contribution to a peer-reviewed, international conference proceeding. Three of the six book chapters appeared in two books that were edited by SciSTIP members, and which constitute the second and fifth volumes in a series of five books that bring together the results of intensive IDRC-funded research on the national systems of innovation in the BRICS countries.

Reflecting the strengths of the Centre's host, CREST, in the area of commissioned research for funders such as the IDRC, a total of 18 reports were produced during the reporting period, of which the majority originated from CREST. These primarily constitute a variety of bibliometric profiles, in particular of collaboration between South Africa and 12 other countries. Others report on science-granting councils in sub-Saharan African countries and flagship universities in Africa, as well as an evaluation of the Southern Africa Innovation Support Programme. IERI at TUT produced two working papers on the broad themes of innovation and development.

Publications listed under this heading are of two kinds: publications that already have a reference to SciSTIP (indicated by an \*) and publications that were published with the institutional affiliation of the partners only (CREST, IERI, CHET and C WTS).

### Articles in peer-reviewed journals

Bakuwa, J. 2014. The role of laypeople in the governance of science and technology. *International Journal of Humanities and Social Science*, 4(5):121–128. [http://www.ijhssnet.com/journals/Vol\\_4\\_No\\_5\\_1\\_March\\_2014/15.pdf](http://www.ijhssnet.com/journals/Vol_4_No_5_1_March_2014/15.pdf)

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Articles in peer-reviewed journals	9
Chapters in books	6
Chapters in conference proceedings	1
Books (edited collections)	2
Research reports	18
Working papers	2

\*Boshoff, N. 2014. Types of knowledge in science-based practices. *JCOM: Journal of Science Communication*, 13(3):A06. [http://jcom.sissa.it/archive/13/03/JCOM\\_1303\\_2014\\_A06/JCOM\\_1303\\_2014\\_A06.pdf](http://jcom.sissa.it/archive/13/03/JCOM_1303_2014_A06/JCOM_1303_2014_A06.pdf)

\*Boshoff, N. 2014. Use of scientific research by South African winemakers. *JCOM: Journal of Science Communication*, 13(01):A01. [http://jcom.sissa.it/archive/13/01/JCOM1301\\_2014\\_A01/JCOM\\_01\\_2014\\_A01.pdf](http://jcom.sissa.it/archive/13/01/JCOM1301_2014_A01/JCOM_01_2014_A01.pdf)

\*Cloete, N. 2014. The South African higher education system: performance and policy. *Studies in Higher Education*, 39(8):1355–1368. DOI: 10.1080/03075079.2014.949533

Grobelaar, S., Gauché, P. & Brent, A. 2014. Developing a competitive concentrating solar power industry in South Africa: current gaps and recommended next steps. *Development Southern Africa*, 31(3):475–493. DOI: 10.1080/0376835X.2014.891971

Ho, Y-S. & Kahn, M. 2014. A bibliometric study of highly cited reviews in the Science Citation Index Expanded. *Journal of the Association for Information Science and Technology*, 65(2):372–385. <http://online.library.wiley.com/doi/10.1002/asi.22974/epdf>

Kahn, M.J. 2014. The rise of the BRICS and resource nationalism: challenge and opportunity for Africa's innovation systems. *African Journal of Science, Technology, Innovation and*

*Development*, 6(5):369–381. DOI: 10.1080/20421338.2014.970424

\*Scerri, M. 2014. Modes of innovation and the national systems of innovation of the BRICS economies. *STI Policy Review*, 5(2):20–42. <http://www.stipolicyreview.net/index.asp>

\*Winnik, J.J. & Tijssen, R.J.W. 2014. R&D dynamics and scientific breakthroughs in HIV/AIDS drugs development: the case of Integrase Inhibitors. *Scientometrics*, 101(1):1–16. DOI 10.1007/s11192-014-1330-7

### Chapters in books



\*Cloete, N. & Gillwald, A. 2014. South African informational development and human development: rights vs. capabilities, in Castells, M. & Himanen, P. (eds.). *Reconceptualizing development in the global information age*. Oxford: Oxford University Press. 140–174. DOI:10.1093/acprof:oso/9780198716082.003.0007 <http://www.oxfordscholarship.com>

Reflecting the strengths of the Centre's host in the area of commissioned research, a total of 18 reports were produced during the reporting period.

/view/10.1093/acprof:oso/9780198716082.001.0001/acprof-9780198716082-chapter-7

Kahn, M. 2014. STEM education in the quest to build a new South Africa, in Freeman, B., Marginson, S. & Tytler, R. (eds.). *The age of STEM educational policy and practice across the world in science, technology, engineering and mathematics*. New York: Routledge. 278–291. <http://www.routledge.com/books/details/9781138785953/>

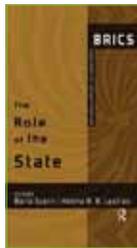
Kahn M., De Melo, L.M. & Matos, M.G.P. de. 2014. The financing of innovation, in Kahn, M., De Melo, L.M. & De Matos, M.G.P. (eds.). *Financing innovation: BRICS national systems of innovation*. New Delhi: Routledge India. 1–20. <http://www.idrc.ca/EN/Resources/Publications/openebooks/039-8/index.html>

Ndabeni, L. 2014. National systems of innovation and small enterprise development in South Africa, in Arroio, A. & Scerri, M. (eds.). *The promise of small and medium enterprises: BRICS national systems of innovation*. New Delhi: Routledge India. 203–240. <http://www.idrc.ca/EN/Resources/Publications/openebooks/036-7/index.html>

Scerri, M., Soares, M.C.C. & Maharajh, R. 2014. The co-evolution of innovation and inequality, in Soares, M.C.C., Scerri, M. & Maharajh, R. (eds.). *Inequality and development challenges: BRICS national systems of innovation*. New Delhi: Routledge India. 1–18. <http://www.idrc.ca/EN/Resources/Publications/openebooks/032-9/index.html>

Schmoch, U. & Kahn, M.J. 2014. Technologie und Innovationspolitik, in De la Fontaine, D., Müller, F., Hofmann, C. & Leubolt, B. (eds.). *Das politische System Südafrikas*. Berlin: Springer VS. <http://www.springer.com/springer+vs/politikwissenschaft/vergleichende+politikwissenschaft/book/978-3-531-18476-0>

## Books



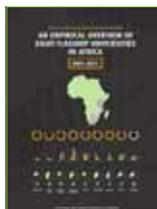
Kahn, M., De Melo, L.M. & Matos, M.G.P. de. (eds.). 2014. *Financing innovation: BRICS national systems of innovation*. New Delhi: Routledge India. <http://www.idrc.ca/EN/Resources/Publications/openebooks/254-9/index.html>

Soares, M.C.C., Scerri, M. & Maharajh, R. (eds.). 2014. *Inequality and development challenges: BRICS national systems of innovation*. New Delhi: Routledge India. <http://www.idrc.ca/EN/Resources/Publications/openebooks/032-9/index.html>

## Reports

Boshoff, N. 2014. *Science granting councils in sub-Saharan Africa: country report for Zambia*. Stellenbosch University: CREST.

Boshoff, N. 2014. *Science granting councils in sub-Saharan Africa: country report for Zimbabwe*. Stellenbosch University: CREST.



Bunting I., Cloete, N. & Van Schalkwyk, F. 2014. *An empirical overview of eight flagship universities in Africa: 2001–2011*. A report of the HERANA. Cape Town: CHET. [Online]. Available: <http://chet.org.za/books/empirical-overview-eight-flagship-universities-africa-2001-2011>

CREST 2014. *Bibliometric profile of the state of energy research in South Africa*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and Brazil*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and China*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and France*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and India*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and Italy*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and Japan*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and Norway*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and Russia*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and South Korea*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and Switzerland*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and the United Kingdom*. Stellenbosch University: CREST.

CREST 2014. *Bibliometric profile of research collaboration: South Africa and the United States*. Stellenbosch University: CREST.

Mouton, J., Gaillard, J. & Van Lill, M.H. 2014. *Science granting councils in sub-Saharan Africa*. (Supported by the IDRC). Stellenbosch University: CREST. [http://horizon.documentation.ird.fr/exl-doc/pleins\\_textes/divers14-05/010062130.pdf](http://horizon.documentation.ird.fr/exl-doc/pleins_textes/divers14-05/010062130.pdf)

Scerri, M., James, C., Lehtonen, T & Lindroos, H. 2014. *Mid-term evaluation of the Southern Africa Innovation Support Programme (SAIS)* (Funded by the Ministry for Foreign Affairs of Finland). Kielce: Economic Policy and Regional Development Ltd. <http://www.saisprogramme.com/wp-content/uploads/2014/06/SAIS-Mid-Term-Evaluation-Report-Summary-May2014.pdf>

### Contributions to peer-reviewed conference proceedings

Maharajh, R. 2014. Innovation, indicators and development challenges of the BRICS, in Neves, R.C.B das & Farias, T.G. de (eds.). *Proceedings of the Vth BRICS Academic Forum*. Rio de Janeiro, Brazil: Institute for Applied Economic Research. 97–110. <http://www.i0.iadb.org/intal/intalcdi/PE/2015/15263.pdf>

### Working papers

Gault, F. 2014. Innovation indicators and their applications: implications for Africa. Working paper No. WP2014-005. Pretoria: IERI, TUT.

Kraemer-Mbula, E., Maharajh, R., Motala, E., Ndabeni, L., Osha, O. & Scerri, M. 2014. Revisiting some of the theoretical and policy aspects of innovation and development. IERI 10th anniversary working paper: Pretoria: IERI, TUT. [http://www.ieri.org.za/sites/default/files/outputs/IERI\\_Working\\_Paper\\_2014\\_1.pdf](http://www.ieri.org.za/sites/default/files/outputs/IERI_Working_Paper_2014_1.pdf)

## ACCEPTED FOR PUBLICATION IN 2015

During the reporting period, a number of publications were also submitted and accepted for future publication. In addition to three articles in peer-reviewed journals, last year also saw the submission of two books for publication in 2015: one focusing on knowledge production in African higher education, while the other concerns the state of the doctorate in South Africa. A total of 18 of the chapters in these collections were contributed by SciSTIP-affiliated authors. Moreover, three other chapters in books on innovation, as well as the Southern Africa chapter in the 2015 UNESCO science report, will be published this year by members of the Centre's co-host, IERI.

### Articles in peer-reviewed journals

Kahn, M.J. BRICS cooperation in science, technology and innovation: rhetoric and realities. *Contexto Internacional*.

Kahn, M.J. Social entrepreneurship, the innovation system, and South Africa's struggle against AIDS. *Tchnovation*.

Kahn, M.J. Mobility of the highly skilled: toward a non-racial South Africa. *Science, Technology and Society: An International Journal*.

Mouton, J., Boshoff, N. & James, M. A survey of doctoral supervisors in South Africa. *South African Journal of Higher Education*.

Winnink, J.J. & Tijssen, R.J.W. 2015. Early stage identification of breakthroughs at the interface of science and technology: lessons drawn from a landmark publication. *Scientometrics*, 102(1):113–134. DOI 10.1007/s11192-014-1451-z.

Winnink, J.J., Tijssen R.J.W. & Van Raan, A.F.J. Theory-changing breakthroughs in science: the impact of research teamwork on scientific discoveries. *Journal of the Association for Information Science and Technology*.

### Chapters in books



Bailey, T. The roles of national councils and commissions in African higher education system governance, in Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. 171–202. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

Bunting, I., Cloete, N., Li Kam Wah, H. & Nakayiwa-Mayega, F. Assessing the performance of African flagship universities, in Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. 32–60. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

Cloete, N., Bunting, I. & Maassen, P. Research universities in Africa: an empirical overview of eight flagship universities, in Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. 18–31. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

Cloete, N. & Maassen, P. Roles of universities and the African context, in Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. 1–17. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

Cloete, N., Maassen, P., Bunting, I., Bailey, T., Wangenge-Ouma, G. & Van Schalkwyk, F. Managing contradictory functions and related policy issues, in Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. 260–289. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

Cloete, N., Moja, T., Ouma, G., Langa, P., Nakayiwa-Mayega, F. & Ssembatya, V. Rankings in Africa: important, interesting, irritating or irrelevant? In Hazelkorn, E. (ed.). *Global rankings*

and the geo-politics of higher education. London: Taylor & Francis.

Cloete, N. & Mouton, J. The demand for a doctorate: global, African and South African contexts, in Cloete, N. & Mouton, J. (eds.). *The doctorate in South Africa: data, discourse and policies*. Cape Town: African Minds.

Cloete, N., Sheppard, C. & Bailey, T. South Africa as a PhD hub in Africa?, in Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

Comins, N. & Kraemer-Mbula, E. Innovation hubs in Southern Africa, in Adesida, O., Karuri-Sebina, G. & Resende-Santos, J. (eds.). *Innovation Africa*. London: Emerald.

Kraemer-Mbula, E. University linkage and engagement with knowledge users at the community level, in Mohamedbhai, G., Frempong, G. & Addy, A. (eds.). *University research governance and national innovation systems in West and Central Africa*. Accra: Association of African Universities Printers. [http://www.aau.org/sites/default/files/english/publications/university\\_research\\_governs\\_in\\_west\\_central\\_africa.pdf](http://www.aau.org/sites/default/files/english/publications/university_research_governs_in_west_central_africa.pdf)

Mouton, J. Models of doctoral education and supervisory styles, in Cloete, N. & Mouton, J. (eds.). *The doctorate in South Africa: data, discourse and policies*. Cape Town: African Minds.

Mouton, J. Productive practices in doctoral education, in Cloete, N. & Mouton, J. (eds.). *The doctorate in South Africa: data, discourse and policies*. Cape Town: African Minds.

Mouton, J. & Cloete, N. Conclusions and suggestions, in Cloete, N. & Mouton, J. (eds.). *The doctorate in South Africa: data, discourse and policies*. Cape Town: African Minds.

Mouton, J., Gaillard, J. & Van Lill, M. Functions of science granting councils in sub-Saharan Africa, in Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. 148–170. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

Scerri, M. Modes of innovation and the prospects for economic development in South Africa and Tanzania, in Kuhlmann, S. & Ordóñez-Matamoros, G. (eds.). *Science, technology and innovation policy in developing countries: rationales and relevance*. Cheltenham: Edward Elgar.

Sheppard, C., Bunting, I. & Mouton, J. Quality, in Cloete, N. & Mouton, J. (eds.). *The doctorate in South Africa: data, discourse and policies*. Cape Town: African Minds.

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Van Schalkwyk, F. University engagement as interconnectedness: indicators and insights, in Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. 203–229. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

## Books

Cloete, N., Maassen, P. & Bailey, T. (eds.). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds. <http://www.chet.org.za/books/knowledge-production-and-contradictory-functions-african-higher-education>

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Cloete, N. & Mouton, J. (eds.). *The doctorate in South Africa: data, discourse and policies*. Cape Town: African Minds.

## Reports

Kraemer-Mbula, E. & Scerri, M. Southern Africa, in *UNESCO science report 2015*. Paris: UNESCO Publishing. <http://www.unesco.org/new/en/natural-sciences/science-technology/prospective-studies/unesco-science-report/>

# Education and training

CREST launched two dedicated postgraduate programmes in STS in 1997 (MPhil in STS) and in 1998 (PhD in STS). Since its establishment a total of 12 masters students and 7 doctoral students have graduated from these two programmes. The programmes introduce students to the social, political, economic, epistemological, historical and ethical dimension of science as a complex human system. They involve teaching of and student participation in 10 specialised modules in STS, as well

as supervised research in STS. The MPhil in Science and Technology Studies is the only specialised postgraduate programme in the methodology of STS in South Africa. It has attracted students from across the country and from various disciplines.

In 2014, 10 master's and 11 doctoral students were registered for these programmes. The titles of their theses are listed below, according to the research focus areas of SciSTIP.

## Science in South Africa: history, governance, state and trends

Degree	Short title	Student	Supervisor	Co-supervisor
MPhil	A shift from theory to innovation? An evaluation of the evolution of South African research frontiers	T Klarenbeek	J Mouton	R Tijssen
MPhil	The NRF International Bilateral Funding Programme: benefits to participating students	F Mazibuko	N Boshoff	–

## Research evaluation: assessing the uptake, utilisation and impact of research

Project type	Short title	Student	Supervisor	Co-supervisor
PhD	Relevance, effectiveness and impact of PhD thesis outcomes to environmental and natural resource management policies formulation in Ghana: Issues of research uptake and utilisation	H Andoh	J Mouton	–
PhD	Research uptake management: A strategic framework for institutionalising research uptake at Kwame Nkrumah University of Science and Technology	V Ankamah-Lomotey	J Mouton	S Grobbelaar
PhD	The impact of scientific research in the Southern African water sector	N Elema	J Mouton	–
PhD	The politics of research utilisation: The determinants of research utilisation by legislators in South Africa	J Koch	M Kahn	J Mouton
PhD	Communicating biodiversity: The uptake of wildlife population research data in Northern Botswana	M Morrison	N Boshoff	–
PhD	The state of social science research for policy utilization in Zambia	F Moyo	J Mouton	S Grobbelaar
PhD	An evaluation of uptake of research into medicinal natural products: A case study of niprisan, an anti-sickling drug in Nigeria and glucanol forte, an anti-diabetic from Madagascar	O Osoniyi	J Mouton	–
PhD	The societal impact of health research funded by the South African MRC	K Ramahlape	N Boshoff	–
MPhil	Research utilisation at the University of Nairobi, Kenya	D Mbui	N Boshoff	–
MPhil	Research utilisation at the University of Ibadan, Nigeria	E Owoaje	N Boshoff	–

Project type	Short title	Student	Supervisor	Co-supervisor
MPhil	Utilisation of research produced by the College of Medicine and Health Sciences, University of Rwanda	T Nyandwi	N Boshoff	–
MPhil	Utilisation of research produced by the College of Science and Technology, University of Rwanda	S Mutarindwa	N Boshoff	–
MPhil	Improving knowledge transfer in public universities in Ghana: A case study of university–industry collaborations at KNUST	C Logah	R Tijssen	–

### Science and technology and innovation studies

Degree	Short title	Student	Supervisor	Co-supervisor
PhD	Effective commercialisation of intellectual property emanating from a South African university	J Stofberg	J Mouton	–

### Communication in and of science

Project type	Short title	Student	Supervisor
PhD	Development of indicators for the South African publics' relationship with science	S Parker	J Mouton
PhD	Public understanding of global climate change in Malawi: An investigation of factors influencing perceptions, attitudes and beliefs about global climate change	J Bakuwa	J Mouton
MPhil	Research collaboration at KNUST, Ghana	F Owusu-Nimo	N Boshoff
MPhil	A bibliometric study of research collaboration in Uganda	A Basaza	N Boshoff
MPhil	Publication output of Obafemi Awolowo University, Ile-Ife, Nigeria: A comparison of Scopus and Web of Science	M Akanmu	N Boshoff

### Graduates



Stefanie Baumert  
(December 2014)

#### **University politics under the impact of societal transformation and global processes – South Africa and the case of Stellenbosch University, 1990–2010**

<http://hdl.handle.net/10019.1/95959>

This study examines how university politics in South Africa were negotiated after 1990 at national and institutional levels. The ways in which different role players at Stellenbosch University understood recent international trends in higher education is analysed. It is demonstrated how this understanding brought about institutional change that led to inter- and transnationalisation at SU. SU has embarked on a purposeful and strategic process of internationalisation at a comparatively early stage. In its approach to the challenges of societal transformation and global processes, SU initially favoured the 'efficiency' discourse over the 'redress' discourse in order to pave the way for becoming an internationally esteemed research university.



Japhet Bakuwa  
(March 2015)

#### **Public understanding of global climate change in Malawi: An investigation of factors influencing perceptions, attitudes and beliefs about global climate change**

This study sought to investigate factors that influence the perceptions, beliefs and attitudes towards climate change in Malawi. Previous research on the public understanding of climate change conducted elsewhere suggests that people's beliefs, perceptions and attitudes do influence support for both voluntary and policy initiatives to address climate change and adaptation to it. The findings of this study affirm the hypothesis that the impact of climate change on livelihoods of Malawians living in rural locations influences their perceptions, beliefs and attitudes towards climate change. Additionally, the findings suggest that public education about climate change remains key to promoting understanding of climate change.

# Information brokerage and networking

During the course of 2014, individual partners of SciSTIP were involved in organising a number of high-level seminars, workshops and policy dialogues.

## **Rethinking development in the global information age: implications for Africa. Seminar with Manuel Castells**

(<http://chet.org.za/files/resources/Rethinking%20Development%20Final%205%20June%2014.pdf?download=1>)



At the beginning of June 2014, SciSTIP hosted a two-day seminar with Prof Manuel Castells at the Wallenberg Research Centre of the Stellenbosch Institute for Advanced Studies (STIAS). This was an initiative of Prof Nico Cloete of CHET and a follow-up to a previous (August 2011) seminar, also with Prof Castells, *Informational development and human development: South Africa in a global perspective*. The result of this effort was a volume called *Reconceptualizing development in the global information age*, edited by Manuel Castells and Pekka Himanen, and published in October 2014.

The purpose of the 2014 seminar, *Rethinking development in the global information age: implications for Africa*, was to present the analyses contained in this book and to bring together a select group of academics and policy-makers to engage in debate on the implications of this analysis for South Africa and

Africa at large. Again, the longer-term aim of the seminar was to produce a publication.

The seminar commenced with a public lecture by Prof Castells, a world-renowned sociologist, researcher and author on communication and the information society. He is the author of 26 books and co-author and editor of a further 22 books, and is one of the world's most often-cited social science and communications scholars. His other achievements include several international awards, the chairmanship and directorship of various international institutions and bodies, and 15 honorary doctorates.

The seminar further consisted of seven presentations by various represented organisations on development paths for South Africa and Africa. In addition to presentations by the director of SciSTIP, the then acting director of IERI and by the director of CHET (co-host and partner institutions of

SciSTIP, respectively), the director of the Centre of Excellence in Food Security, together with its node head, also presented a paper. Other organisations that contributed to the presentations included the South African National Treasury, Congress of South African Trade Unions, African Futures Institute, University of Mauritius, South African Cities Network and Research ICT Africa.

## **Differentiation seminar: Where are we and what can we do?**

(<http://chet.org.za/files/resources/Draft%20Programme%20Differentiation%20October%202014%20Formatted.pdf?download=1>)

A seminar and high-level policy dialogue, co-hosted by SciSTIP and CHET, took place over two days in October 2014 in Stellenbosch. It focused on diversity and differentiation in the South African higher education sector, with presentations on the first day during a session titled 'Where are we now?',



Manuel Castells (in the middle), with (from left) Nico Cloete (Director: CHET), Paul Cluver (Wine producer and former Chair: SU Council), Johann Mouton (Director: CREST and DST-NRF Centre of Excellence in Scientometrics and STI Policy) and Hendrik Geyer (Director: STIAS).

providing a historical policy-overview on the topic; a report on the current implementation of the differentiation policies by the Department of Higher Education and Training (DHET); a reflection on differentiation and funding; and current views of the university sector on differentiation and that sector's strategies in this regard. Other topics addressed during this first session included research differentiation, differentiation within institutions, and differentiation in the Further Education and Training (FET) college sector.

The second day of the seminar was devoted to an action-oriented session, entitled 'What can we do?' and which involved the drafting of proposals on a feasible way forward regarding differentiation, with a particular focus on quantitative indicators. In a series of empirically based papers, four aspects of differentiation indicators – programme (the academic cores of universities), research (or high-level knowledge production), financial and transformation – were outlined and consolidated as possible components of a template for planning and targeting. The seminar led to the conclusion that the efficiency of public investment in the university sector simply had to be increased in order to fund the twin imperatives of development and transformation – and only a differentiated system stood a chance of doing that.

In addition to contributions by Profs Johann Mouton and Nico Cloete (SciSTIP Director and CHET Director, respectively), Dr Charles Sheppard (Director, Management Information at Nelson Mandela Metropolitan University [NMMU]), and Prof Ian Bunting (Emeritus Professor at the University of Cape Town [UCT]), the seminar included, for the first time, senior officials from both the departments of Higher Education and Training, and Science and Technology, the CEO of Higher Education South Africa (HESA, the association representing all universities), and a representative spread of senior university personnel.

### **Higher Education Research and Advocacy Network Seminar**

(<http://chet.org.za/files/resources/Programme%20only.pdf?download=1>)

After two years of consultations, the Higher Education Research and Advocacy Network (HERANA)



*Dr Florence Nakayiwa Mayega (Makerere University, Uganda) talking to Ms Claudia Frittelli (Carnegie Corporation of New York)*

was formed in 2008 to engage with universities in Africa. HERANA was established with funding support from the US Foundation Partnership (Ford, Carnegie, Rockefeller and Kresge Foundations) and the Norwegian Agency for Research and Development (NORAD). It currently comprises more than 50 participating academics and university administrators from Africa, Europe and the US, who are led and coordinated by the SciSTIP partner, CHET.

HERANA's aim is to investigate the complex relationships between higher education and development in the African context. This international research project, the longest and largest of its kind in Africa, started with the collection of data at both the national and institutional levels at universities in eight African countries. These included the University of Botswana, University of Cape Town (South Africa), University of Dar es Salaam (Tanzania), Eduardo Mondlane University (Mozambique), University of Ghana (Legon), University of Nairobi (Kenya), University of Mauritius and Makerere University (Uganda). These universities were selected because each had been the most prominent national university in its country since independence, and because each has broad, flagship goals built into its vision and mission statements.

The third phase of HERANA was launched at a meeting co-hosted by SciSTIP and CHET in Stellenbosch late in 2014 (18–21 November). At the meeting, Prof Nico Cloete, director of CHET, communicated the deliverables of this third phase to attendees, while the next day's presentations focused on research-intensive universities in Africa in general, and University Eduardo Mondlane in particular; and considered ways of supporting, strengthening, incentivising and measuring knowledge production at African universities.

The third day was dedicated to updating data on the 'academic core' of the participating universities for 2012 to 2014, and analysis of research funding sources at each institution – two key activities envisaged for HERANA 3. Issues of data collection and management were also discussed. The meeting provided an opportunity to reflect on reports from the second phase of HERANA, which centred on the topics of university engagement; student engagement and democratic citizenship; and the roles and functions of higher education councils. Returning to the primary theme of the HERANA 3 meeting, the last day of the seminar comprised institutional presentations from representatives of the universities participating in HERANA.

### CREST co-hosts annual Research Directors' Forum

In 1998 CREST established and convened the first meeting of the Research Directors' Forum (RDF). This would eventually become an annual event where Deans and Directors of Research would meet to discuss matters of common interest and exchange ideas about common policy and practical concerns. Between 1998 and 2014 11 RDF-meetings were convened – supported in 2003–2006 by a generous grant from the Council on Higher Education (CHE). These meetings would typically be addressed by leaders and prominent scholars in research policy and research management in South Africa, but also by international experts in various fields. These experts included Prof Arie Rip (Twente), Peter Weingart (Bielefeld), Robert Tijssen (Leiden), Ton van Raan (Leiden) and Linda Butler (Canberra).

At its 2004 meeting in Stellenbosch, the RDF decided to establish a society for professionals working in the field. This decision led to the formation of SARIMA, which held its inaugural meeting in Hout Bay the following January of the following year. The RDF continues to meet from time to time, but it is fair to say that CREST played a major role in the professionalisation and eventual institutionalisation of the field of research management in South Africa.



Approximately 50 researchers and research managers attended the 2014 RDF, held at CREST in November, with a focus on the value of metrics in research management. CREST director, Prof Johann Mouton, introduced the idea of the 'age of measurement' and focused on the importance of context and purpose of measurement. He was joined by panel members Dr Therina Theron (SU), Dr Bertie Fielding (University of the Western

Cape), Dr Rob Drennan (NRF) and Prof Gideon de Wet (North-West University) to debate the topic. Dr Nees Jan van Eck (CWTS, Leiden University) demonstrated two open-source citation tools ('VOSviewer' and 'CitNetExplorer') – both developed at CWTS. The Forum concluded with a presentation and discussion on the professionalisation of research management and the way forward for SARIMA, led by Dr Therina Theron and Maryke Hunter-Hüsselman, both from SU's Division for Research Development.

In addition to these high-level policy dialogues facilitated by SciSTIP, the Centre's members also performed various information brokerage and networking functions by presenting papers at a variety of national and international conferences, workshops and seminars. These include three plenary or keynote presentations: one at an international conference and two in South Africa. Eleven papers were presented at foreign conferences and other events, while more than 20 papers were presented at South African conferences. Information brokerage over the reporting period also took the form of various media events, including two press releases – one for each launch – and more than 20 other articles in the media.

### Plenary/keynote presentations

#### At foreign (non-South African) conferences

Kraemer-Mbula, E. 2014. State of the art of STI indicators in Africa. 12th GLOBELICS International Conference: Partnerships for Innovation-Based Development. 28–31 October; Addis Ababa, Ethiopia.

#### At South African conferences

Kraemer-Mbula, E. 2014. Panellist: Innovation and transdisciplinary knowledge for action. Conference on 20 Years of South African Democracy: So where to now? 13 November; Pretoria.

Tijssen, R.J.W. 2014. Global benchmarking of African university–industry R&D interactions: from university rankings to science-innovation systems. Research Evaluation and Performance Measurement 2014 Conference. 6 May, Cape Town.

### Papers presented

#### At foreign (non-South African) conferences/workshops/seminars

Boshoff, N. 2014. Mapping the categories and overlapping roles of stakeholders in university research in Nigeria and South Africa. Paper presented at the XVIII ISA World Congress of Sociology, 15 July, Pacifico Yokohama, Yokohama, Japan.

Grobelaar, S. 2014. A strategic approach to institutionalising research uptake management. 12<sup>th</sup> Annual Southern African Research and Innovation Management Association Conference, 10 July, Gaborone, Botswana.

Kahn, M. 2014. Research evaluation: the quest for maximum impact. International workshop: Science Assessment and Research Integrity, 9 April, Beijing, China.

Kahn, M. 2014. SMEs and the telemetry system of innovation. Conference of the International Association for Management of Technology, 22–26 May, Washington, United States of America.

Kahn, M. 2014. Globalization of research through regional collaboration: South Africa's role in SADC innovation policy and practice. 12<sup>th</sup> Annual SARIMA Conference, 8 July, Gaborone, Botswana.

Kahn, M. 2014. BRICS cooperation in science, technology and innovation: rhetoric and realities. Conference: The BRICS Group in the Spotlight: An Interdisciplinary Approach, 6–7 November, Parma, Italy.

Maharajh, R. 2014. Science and ideology revisited: BRICS and the collapse of the neoliberal paradigm in economics. Conferência BRICS No Século XXI, 21 May, Rio de Janeiro, Brazil.

Mouton, J. 2014. Science in Africa. The International Economic Forum of the Americas Conference of Montréal (20<sup>th</sup> edition): The Foundation for the Next Era of Growth, 11 June, Montréal, Canada.

Scerri, M. 2014. Modes of innovation and the BRICS national systems of innovation. BRICS in the XXI Century Conference, 20–23 May, Rio de Janeiro, Brazil.

- Scerri, M. 2014. Systems of innovation and STI policy: from theory to practice. Critical Mass Training Workshop, Ministry of Science and Technology, Federal Democratic Republic of Ethiopia, 9–14 August, Bahir Dar, Ethiopia.
- Tijssen, R.J.W., Dijksterhuis, M. & Grobbelaar, S. 2014. Universities and inclusive innovation: fledging innovation systems in the Western Cape of South Africa. Innovation & Governance in Development Conference, 26–28 November, Maastricht, the Netherlands.
- At South African conferences/ workshops/seminars**
- Boshoff, N. 2014. The postdoctoral landscape in South Africa with specific reference to the postdoctoral experience. Presentation given at the SARIMA Capacity Building Breakaway for Postdocs, 22 September 2014, STIAS, Stellenbosch.
- Cloete, N. 2014. The demand for a doctorate: global, African and South African contexts. SciSTIP Seminar: The Doctorate in South Africa: Policies, Discourses and Statistics, 16 May, Cape Town.
- Cloete, N. 2014. The doctorate: policies and statistics. Rhodes Doctoral Colloquium, July, Rhodes.
- Cloete, N. 2014. Comprehensive universities in South Africa: a cluster of misfits. University of Johannesburg Leadership Seminar, 30 September, Johannesburg.
- Cloete, N. 2014. Performance in knowledge production in the South African system and seven African flagship universities. SciSTIP Scientific Launch Conference, 6 November, Stellenbosch.
- Grobbelaar, S. 2014. Pathways towards an integrated development role: a learning approach. University of Fort Hare Colloquium, 7 October, Fort Hare.
- Grobbelaar, S. 2014. Some thoughts on monitoring and evaluation for research uptake management. DRUSSA Conference, 10 December, Cape Town.
- Kahn, M. 2014. Toward the Stellenbosch innovation district. 2<sup>nd</sup> Stellenbosch Innovation Conference, 30–31 October, Stellenbosch.
- Kahn, M. 2014. Innovation in practice in Southern Africa: insights from the SAIS regional study. Southern Africa Innovation Forum, 5–6 November, Johannesburg.
- Kraemer-Mbula, E. 2014. Responding to local and global challenges: ST&I policy in the 21<sup>st</sup> century. SciSTIP Scientific Launch Conference, 7 November, Stellenbosch.
- Mouton, J. 2014. South African doctoral education: models of supervision and supervisory styles. SciSTIP Seminar: The Doctorate in South Africa: Policies, Discourses and Statistics, 16 May, Cape Town.
- Mouton, J. 2014. Science and innovation in Africa: some preliminary observations. 6 June, STIAS, Stellenbosch.
- Mouton, J. 2014. Mapping social sciences research in South Africa: overview of results. DFID Seminar, 19 June, Pretoria.
- Mouton, J. 2014. Science granting councils in sub-Saharan Africa (supported by the IDRC). NRF seminar, 20 June, Stellenbosch.
- Mouton, J. 2014. The bibliometric challenge of measuring research performance (and quality). SU Annual Research Indaba, 22 August, Stellenbosch.
- Mouton, J. 2014. Measuring differentiation in knowledge production at SA universities. CHET Differentiation Seminar: Where Are We and What Can We Do? 3 October, Stellenbosch.
- Mouton, J. 2014. Research performance measurement/metrics. RDF Workshop, 5 November, Stellenbosch.
- Mouton, J. 2014. A roadmap for excellence in scientometric and STI scholarship. SciSTIP Scientific Launch Conference, 6 November, Stellenbosch.
- Mouton, J. & Tijssen, R. 2014. Research performance and bibliometrics. HERANA 3 Meeting, 19 November, Stellenbosch.
- Mouton, J. 2014. Mapping social sciences research in South Africa: critical perspectives on the ASSAf Humanities consensus report. ASSAf Seminar, 9 December, Pretoria.
- Scerri, M. 2014. Perspectives on science, technology and innovation diplomacy. Seminar on South Africa's Science and Technology Diplomacy: Redefining South Africa's Science and Technology Diplomacy, 13 May, DST, Pretoria.
- Scerri, M. 2014. The emergence of BRICS: a new phenomenon in the global innovation system? HSRC BRICS Seminar Series. 14 October, videoconferencing facilities in Pretoria, Durban and Cape Town.
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# The SciSTIP team and partners

## CREST



Johann Mouton



Heidi Prozesky



Tracy Bailey



Isabel Basson



Nelius Boshoff



Jan Botha



Sara Grobbelaar



Johann Hendricks



Marina Joubert



Michael Kahn



Milandré van Lill



Marthie van Niekerk



Nigel Jansen



Rolene Langford



Lynn Lorenzen



Lenny Poole



Herman Redelinghuys



Shaun Smith



Johann Spies



Astrid Valentine



Annemarie Visagie



Jacques Gaillard

## IERI



Rasgjan Maharajh



Mario Scerri



Erika Kraemer-Mbula



Lindile Ndabeni



Sanya Osha



Lucas Madia



Fred Gault

## CHET



Nico Cloete



Tebogo Moja



Peter Maassen



Ian Bunting



Patricio Langa



Angela Mias



Florence Nakaywa-Mayega



Gerald Ouma



Charles Sheppard



Francois van Schalkwyk

## CWTS



Paul Wouters



Robert Tijssen



Clara Calero-Medina



Rodrigo Costas



Jos Winnink



Alfredo Yegros









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