

Steps in the Statistical Value Chain (SVC): South African Statistical Quality Assessment Framework (SASQAF), Statistics South Africa

**CENTRE FOR SCIENCE,
TECHNOLOGY AND
INNOVATION INDICATORS**

**2018/19
ANNUAL REVIEW
REPORT**



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R&D AND INNOVATION DATA: A CALL TO ACTION



Prof. Crain Soudien

Chief Executive Officer, Human Sciences Research Council

The work of the HSRC's Centre for Science, Technology and Innovation Indicators contributes vital evidence in assessments of South Africa's national system of innovation. In the context of a new national administration and White Paper, CeSTII has a critical role to play in orienting the measurement agenda towards more inclusive growth and development.

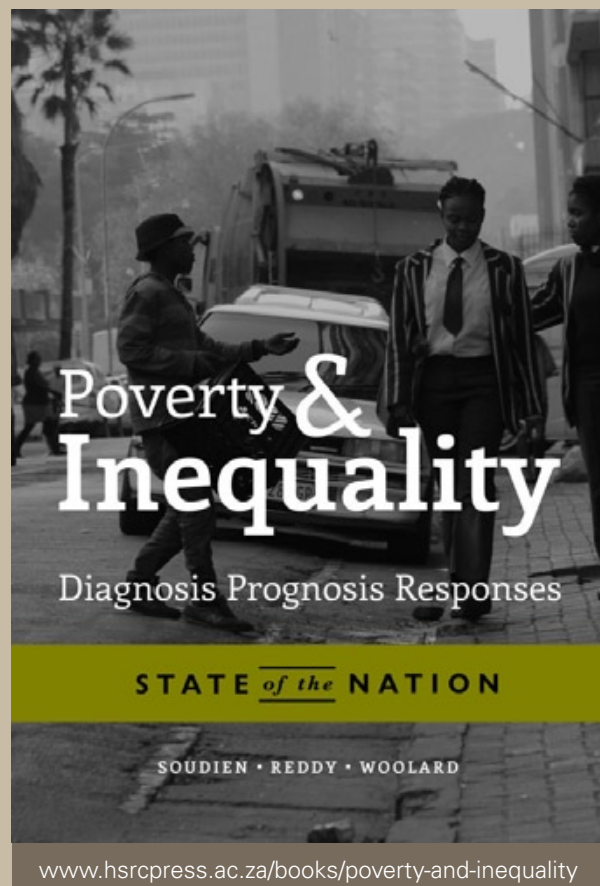
On 4 March 2019, I delivered a lecture at the University of Cape Town, entitled 'Poverty and Inequality: Diagnosis, Prognosis and Responses', as part of the commemoration of the HSRC's 50/90 anniversary and as part of the dissemination of a flagship HSRC publication, *State of the Nation 2018*.

The lecture, which is freely available on YouTube¹, dedicates some time to interrogating what value can be gleaned from datasets produced by the country's universities and think tanks about the particular manifestation of poverty and inequality in South Africa.

We know for example from the invaluable panel data produced in the National Income Dynamics Survey (NIDS) that poverty in South Africa has abated somewhat, while inequality has deepened.

South Africa's R&D and innovation datasets are vital tools for researchers, policy-makers, and institutional leaders across the public and private sectors. The data these surveys generate routinely provide snapshots of the state-of-play in companies, universities, non-profit organisations, and in government. They point to new pathways for their own development but taken together, the data shows us how we can move entire sectors forward.

The Centre's work towards new measures of innovation, most notably in the informal sector, will add new impetus to our track record.



¹ <https://youtu.be/xULJithun7k>

2018/19 IN REVIEW



Dr Glenda Kruss

Deputy-Executive Director: CeSTII, Human Sciences Research Council

In March 2019, CeSTII launched the first standardised survey of innovation in the informal sector in South Africa, at the Mpumzuza Traditional Administrative Centre in Kwa-Zulu Natal. Working in close collaboration with the HSRC's Human and Social Development programme, the survey samples informal businesses from the Sweetwaters area, and aims to fill a major gap in our understanding of innovation in South Africa.

This research design was informed by a project researching the capabilities of informal enterprises to innovate by drawing on the knowledge and technology of universities, science councils, and other formal intermediary actors in local innovation and production systems. Supported by the National Research Foundation, three in-depth case studies using new participatory methodologies such as digital storytelling and photovoice, were undertaken in marginalised and vulnerable communities in Cofimvaba (Eastern Cape), Carnarvon (Northern Cape) and Philippi (Western Cape).

This is but one of the key research areas keeping us busy. The CeSTII team leading the South African Business Innovation Survey 2014-2016 concluded their fieldwork effort and doubled down on data analysis in preparation of a high-level Cabinet briefing paper. Through consultation with a wide range of key stakeholders and interested parties in the private and public sectors, the team also planned for a baseline innovation survey of agricultural businesses.

A flagship annual project reports R&D expenditure and performance data across five institutional sectors. In close alignment with the precepts of the Statistical Value Chain featured on this report's cover, the SA R&D Survey team completed fieldwork and reporting

for the 2016/17 survey cycle, initiated fieldwork for the 2017/18 cycle, and explored pathways to digitalise survey operations to enhance efficiency and effectiveness. Progress was also advanced on case study research to understand how selected state-owned enterprises are geared to perform R&D and innovation, in terms of their human and technological capabilities.

Part of CeSTII's mission in 2018/19 has been to foster greater uptake of data. Roadshow events, hackathons, industry-focussed events, regional forums, seminars and public lectures are just some of the activities CeSTII has undertaken with our partners in 2018/19, which you can read about in this publication.

Finally, through our relationship with the Department of Science and Innovation (formerly the Department of Science and Technology), CeSTII prioritises the advancement of collaboration with national and African country partners, to share learning, build networks, enhance capacity, and improve the uptake of data and research on STI measurement for inclusive development.

The CeSTII team worked tirelessly in 2018/19 on a wide range of projects and research outputs, and can be proud of their efforts.

ABBREVIATIONS AND ACRONYMS

ACTS	African Centre for Technology Studies	NIDS	National Income Dynamics Survey
AISA	Africa Institute of South Africa	NRF	National Research Foundation
ARC	Agricultural Research Council	NSI	National System of Innovation
ASTII	African Science Technology and Innovation Indicators	NSTIIP	National Science, Technology and Innovation Information Portal
BIS	Business Innovation Survey	OECD	Organisation for Economic Co-operation and Development
BRICS	Brazil, Russia, India, China and South Africa	R&D	Research and Development
BUSA	Business Unity South Africa	RIA	Research and Impact Assessment
CCA	Council of Canadian Academies	SA	South Africa
CENTRIM	Centre for Research in Innovation Management	SADC	South African Development Community
CeSTII	Centre for Science, Technology and Innovation Indicators	SAHECEF	South African Higher Education Community Engagement Forum
CINPE	International Center of Economic Policies for Sustainable Development	SciSTIP	Scientometrics and Science, Technology and Innovation Policy, DST-NRF Centre of Excellence
DAFF	Department of Agriculture, Forestry and Fisheries	SFSA	Science Forum South Africa
DPME	Department of Planning, Monitoring and Evaluation	SLF	Sustainable Livelihoods Foundation
DST	Department of Science and Technology	SMU	Sefako Makgatho Health Sciences University
DUT	Durban University of Technology	SONA	State of the Nation Address
GERD	Gross Domestic Expenditure on R&D	SPRU	Science and Policy Research Unit, University of Sussex
GSB	Graduate School of Business – University of Cape Town	Stats SA	Statistics South Africa
HSD	Human and Social Development	STI	Science, Technology and Innovation
HSRC	Human Sciences Research Council	The dti	The Department of Trade and Industry
IERI	Institute for Economic Research on Innovation	TUT	Tshwane University of Technology
IFPRI	International Food Policy Research Institute	UCT	University of Cape Town
IID	Innovation for Inclusive Development	UJ	University of Johannesburg
NACETEM	The National Centre for Technology Management	UN	United Nations
NACI	National Advisory Council on Innovation	UNESCO	United Nations Educational, Scientific and Cultural Organization
NCRST	National Commission on Research Science and Technology	UNISA	University of South Africa
NEPAD	New Partnership for Africa's Development	UP	University of Pretoria
NESTI	National Experts on Science and Technology Indicators, OECD	US	University of Stellenbosch
		WITS	University of Witwatersrand

ABOUT CESTII

The Centre for Science, Technology and Innovation Indicators is a statistical and policy research unit located within the Human Sciences Research Council.



OUR VISION

The Centre for Science, Technology and Innovation Indicators seeks to be a leading Centre for the measurement of science, technology and innovation, with a growing national, continental and global footprint, impact and reputation rooted in high-quality research evidence, strong networks of researchers, policy makers and practitioners, and the deployment of cutting edge research technologies that improve the quality and quantity of output. The work of CeSTII will be supported by an ethos of teamwork and inclusive diversity, shared learning, creativity, and a commitment to sustainability.



OUR MISSION

To become the leader in the field of national surveys that underpin benchmarking, planning and reporting on R&D, innovation and technology transfer in South Africa. We adapt best practice international methodologies for measurement of science, technology and innovation (STI) indicators, within a framework of innovation for inclusive and sustainable socio-economic development.



OBJECTIVES

- 1 Build the institutional capabilities of CeSTII researchers to achieve its mandate.
- 2 Undertake statistical surveys that support measurement and analysis of STI indicators in South Africa to national and international quality standards.
- 3 Contribute to and deepen analysis of STI indicators in relation to challenges of economic growth and inclusive development, through scientific publications, data sharing, technical briefs and international benchmarking studies.
- 4 Contribute to data sharing, knowledge sharing and exchange with national, regional and global STI measurement and policy communities and other actors in the national system of innovation.
- 5 Lead a new research agenda to inform the design of measures and indicators that can support and promote a strategy of innovation for inclusive development, in line with the HSRC organisational research focus, DST's White Paper and towards national development goals.

INTERNATIONAL ADVISORY COMMITTEE

Prof. Fred Gault

Institute for Economic Research on Innovation (IERI), Tshwane University of Technology

An independent advisory committee, comprising experts from all over South Africa and globally, provides the Centre for Science, Technology and Innovation Indicators with advice on the conceptualisation and implementation of its research agenda.*

CHAIR'S REFLECTION

The CeSTII Advisory Committee consists of eight appointed members from six countries and the HSRC Deputy-Executive Director responsible for CeSTII, **Dr Glenda Kruss**. The Committee met on two occasions in 2018 to review topics of importance to CeSTII and to provide independent advice.

The topics included some discussed in 2017 which required more deliberation:

- The CeSTII Business/Strategic Plan for 2018/19;
- Innovation in the informal economy;
- Innovation for inclusive development; and
- The role of state-owned enterprises.

Topics introduced in 2018 included:

- Setting the policy agenda and the role of CeSTII in the Industry Association Innovation Day which took place on 25 May, 2018; and
- Revisions to the R&D survey to align with the 7th edition for the Frascati Manual, while ensuring that the data collected were relevant to South Africa and its policy-makers.

The Minutes of the Committee recorded its advice which was available to the CeSTII staff.

In addition to the membership of the Committee, CeSTII staff participate actively in the meetings, making presentations, providing information to the Committee

and responding to questions. The Department of Science and Technology (DST) is present as an observer, and one of the members of the Committee comes from the Secretariat of the National Advisory Council on Innovation (NACI). The presence of DST and NACI ensures that matters relevant to CeSTII are shared with other agencies engaged in supporting science, technology and innovation activities.

The Committee, which works electronically, established its way of doing business in 2017. In 2018, it considered how to renew the membership so that it could continue to provide relevant advice to CeSTII from different countries and disciplines within the domain of science, technology and innovation. A renewal of a third of its membership each year is expected to be implemented in 2019.

In summary, the Committee focussed in 2018 on the measurement challenges faced by CeSTII, while recognising that in 2019 time will be spent on how the final version of the White Paper on Science, Technology and Innovation will be implemented, as well as on the analysis of diffusion of the results of the existing surveys.

* The Committee's secretariat is based at CeSTII and includes Dr Glenda Kruss (CeSTII Deputy-Executive Director); Gerard Ralphs (Programme Manager & Policy Analyst); and Vuyiseka Mpikwa (PA to the CeSTII Deputy-Executive Director)

ADVISORY COMMITTEE MEMBERS



Prof. Fred Gault (Chair) is Professor Extraordinaire at the Tshwane University of Technology (TUT) in South Africa and a member of the TUT Institute for Economic Research on Innovation (IERI). He served on the Council of

Canadian Academies (CCA) Panel on the State of Science and Technology in Canada, the CCA Panel on the Socio-Economic Impacts of Innovation Investments, and the U.S. National Academy of Sciences Panel on Developing Science, Technology and Innovation Indicators for the Future. He is a member of the Scientific Council of the Portuguese Observatory of Science, Technology and Qualifications and the South African DST-NRF Centre of Excellence in Scientometrics and Science, Technology and Innovation Policy (SciSTIP).



Prof. Sunil Mani (Vice Chair) is Director and Professor at the Centre for Development Studies (Trivandrum, Kerala, India) and is also Visiting Professor at the National Graduate Institute for Policy Studies (Tokyo, Japan). He has

been a visiting professor at Bocconi University (Italy), the University of Toulouse-Jean Jaurès (France) and the Indian Institute of Management (Calcutta). Sunil Mani also worked at the United Nations University - Merit (Maastricht) as a researcher and head of graduate studies. He specialises in the economics and policy studies of innovation, and one of his most recent publications is a book with Franco Malerba and Pamela Adams, *The Rise to Market Leadership: New Leading Firms From Emerging Countries (2017)*. Sunil Mani holds a PhD in Economics from Jawaharlal Nehru University (New Delhi), and has done post-doctoral research at the University of Oxford.



Dr Petrus Letaba (MBA) is Senior Specialist: STI Measurements and Evaluation at the National Advisory Council on Innovation (NACI) Secretariat. NACI is a statutory advisory body that advises the Minister of Science and

Technology, and through the Minister, the Cabinet. He has extensive experience in data and information management, policy analysis and technology management. He participates on several local and international expert committees on a wide range of issues such as science, technology and innovation policy analysis, and standards development.



Dr Jeffrey Orozco is Professor at the International Center of Economic Policies for Sustainable Development (CINPE) in the National University of Costa Rica. For several years, he has researched the economics of innovation, trade

and environment, and sustainable development. He also teaches in several Masters and PhD programmes. Since 2008, Jeffrey Orozco has coordinated the Innovation Survey in Costa Rica, through the Ministry of Science and Technology.



Dr Erika Kraemer-Mbula

is Associate Professor at the University of Johannesburg and Researcher at the DST-NRF Centre of Excellence in Scientometrics and Science, Technology and Innovation Policy (SciSTIP). Initially trained

as an economist, she holds a Masters in Science and Technology Policy from the Science and Policy Research Unit (University of Sussex), and a doctorate in Development Studies from the University of Oxford. She specialises in science, technology and innovation policy analysis and innovation systems in connection to equitable and sustainable development. In the UK, Erika has held various research positions at the Centre for Research in Innovation Management (CENTRIM) and at the Science and Policy Research Unit (SPRU) at the University of Sussex. In South Africa, she has been Senior Lecturer at the Institute for Economic Research on Innovation (IERI) at Tshwane University of Technology. She has recently co-authored a book on *The Informal Economy in Developing Nations: Hidden Engine of Innovation?* published in 2016 by Cambridge University Press.



Dr Susan Cozzens is Professor

Emerita in the School of Public Policy at the Georgia Institute of Technology. She most recently served as the Vice Provost for Graduate Education and Faculty Development for the campus.

Her research interests are in science, technology and innovation policies in developing countries, including issues of equity, equality and development. Cozzens is active internationally in developing methods for research assessment, and science and technology indicators. Cozzens served as Chair of Public Policy and was Associate Dean for Research in the Ivan Allen College of Liberal Arts. From 1995 through 1997, she was Director of the Office of Policy Support at the National Science Foundation, and before joining Tech, Cozzens spent 11 years on the faculty of Rensselaer Polytechnic Institute. Her PhD is in sociology from Columbia University (1985) and her bachelor's degree is in sociology from Michigan State University (1972, summa cum laude).



Dr Pedro Mendi is Associate

Professor in the Department of Business, Universidad de Navarra. He holds a BA in Economics (1996) from Universidad de Navarra, and a PhD in Economics (2001) from Northwestern University. He has

been a faculty member at Universidad de Navarra, both at the School of Economics, where he is currently Vice Dean, as well as at the Navarra Center for International Development. His research focuses on the economics of innovation and technology transfer and on other selected topics in industrial organisation. His research has been published in journals such as *Journal of Economics and Management Strategy*, *Research Policy*, and *Technological Forecasting and Social Change*.



Dr Ann Kingiri is a science,

technology and innovation researcher with a focus on inclusive and sustainable development in Africa. Ann Kingiri has held managerial positions in the public sector overseeing administration matters

as well as regulatory policy. She has also managed research portfolios and research grants in policy research settings. She has over 20 years of experience working with the public and private sectors, and with development partners in the area of development particularly targeting Africa. Currently, she is Senior Research Fellow at African Centre for Technology Studies (ACTS), a development policy think tank working to harness STI applications for sustainable development.

DATA COMMITTEE



A message from Dr Neo Molotja

(Incoming Data Committee Chair 2019/20)

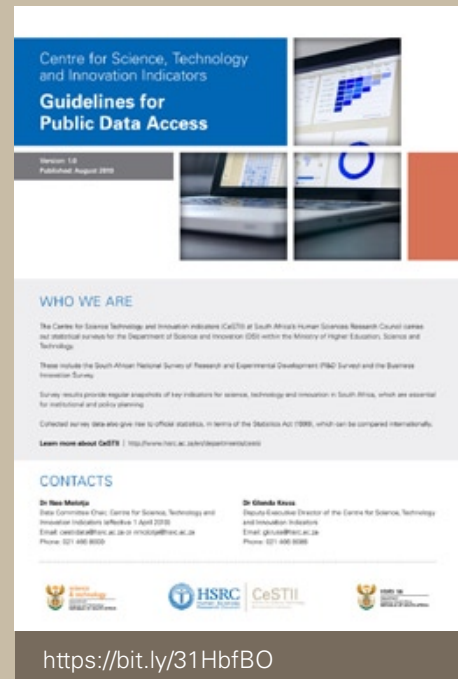
The Data Committee of the Centre for Science, Technology and Innovation Indicators performs a vital role in the processing of data requests from the general public.

We aim to ensure that the confidentiality of our respondents' information is protected at all times and, at the same time, ensure that the data we collect through our surveys is useful and usable by users with legitimate data requests.

In 2018/19, the Committee responded to numerous requests for data, as well as finalised guidelines to enable efficient data access for interested potential users. These guidelines will help to enable access to aggregated and anonymised R&D Survey data, Business Innovation Survey data, and data on intellectual property in publicly-financed institutions.

On behalf of the Committee, I would like to thank **Dr Firdous Khan** for stewarding the work of the CeSTII Data Committee in 2017/18 and 2018/19.

You can contact the Data Committee by writing to cestiidata@hsrc.ac.za or nmolotja@hsrc.ac.za.



47%
OF ALL DATASET DOWNLOADS FROM THE HSRC IN 2018/19 WERE PRODUCED BY CeSTII

469
TOTAL NUMBER OF HSRC DATASET DOWNLOADS IN 2018/19

223
TOTAL NUMBER OF CeSTII DATASET DOWNLOADS IN 2018/19



Data courtesy of HSRC Research Methodology and Data Centre.

RESEARCH THEMES & PROJECTS

Projects in the Centre for Science, Technology and Innovation Indicators are divided into three thematic areas. This section showcases project work carried out in each theme in 2018/19.

THEME 1: MEASURING R&D CAPACITY IN SOUTH AFRICA



Dr Neo Molotja
Theme Leader

SA R&D Survey

The South African National Survey on Research and Experimental Development (R&D Survey) is a flagship annual project for CeSTII, which it performs on behalf of the South African Department of Science and Technology (DST).

Each year the survey reports the latest available data on R&D expenditure and performance across five sectors: higher education, science councils, government, business, and not-for-profit organisations.

With fieldwork for the 2016/17 round of the Survey launched in October 2017, data collection, capture, cleaning, and extractions were finalised in June 2018.

Survey results, approved by the Statistician-General **Risenga Maluleke**, were released by the Department of Science and Technology on 26 October 2018 (Box 1).

Outputs from the project included the Survey's statistical report, main report, metadata report, evaluation report, and fact sheets for each of the five sectors examined by the Survey.



<https://bit.ly/31G12Fw>

Box 1. Headline results from the 2016/17 survey

Gross Domestic Expenditure on R&D (GERD) increased from 0.80% in 2015/16 to 0.82% in 2016/17.

The business sector remained the largest performer of R&D in 2016/17 (41.4% of GERD), followed by the higher education sector (32.7% of GERD), then science councils (17.2% of GERD), government (5.9% of GERD) and not-for-profit organisations (2.9% of GERD).

In Rand terms, expenditure on R&D by sector in 2016/17 was recorded as: business (R14.781 billion), higher education (R11.659 billion), science councils (R6.136 billion), government (R2.099 billion) and not-for-profit organisations (R1.018 billion).

Government provided the most funding for R&D in South Africa in 2016/17, notably R16.428 billion, representing 46.0% of total R&D funding. The business sector contributed R14.046 billion to R&D in South Africa, or 39.4% of total R&D funding. Foreign sources of R&D funding comprised R4.171 billion of total R&D funding or 11.7%.

Expenditure on applied research increased slightly to 47.8% of GERD in 2016/17 from 47.5% of GERD in 2015/16.

Expenditure on basic research also increased from 24.5% in GERD in 2015/16 to 26.7% in 2016/17 and expenditure on experimental development decreased from 27.1% in 2015/16 to 25.5% in 2016/17.

In terms of R&D personnel, the total headcount grew by 6.8%, from 74 931 in 2015/16 to 80 029 in 2016/17.

Full report > <http://goo.gl/hqACrq>

Continuous survey user engagement is a key feature of the project and, in 2018/19, we conducted site visits to a number of institutions of higher education, and conducted a workshop for the government sector (Box 2).

Box 2. R&D Survey respondent engagement

R&D Survey's HE team visits nine universities

A number of challenges were encountered in the 2016/17 R&D Survey, which negatively impacted on survey data reporting. In responding proactively to these challenges, CeSTII's **Natalie Vlotman** and **Janine Senekal** conducted nine site visits at various higher education institutions in 2018/19. The institutions selected were those which did not respond to the Survey in a previous reference period, as well as additional institutions within the same geographical location. The primary goal of the visits was to encourage participation, strengthen networks with respondents, provide clarity to respondents on issues related to the provision of R&D data, and to provide training, where required. Institutions visited included: University of Stellenbosch (US), Durban University of Technology (DUT), Sefako Makgatho Health Sciences University (SMU), Tshwane University of Technology (TUT), University of Pretoria (UP), University of Johannesburg (UJ), University of Witwatersrand (WITS), University of South Africa (UNISA) and the University of Cape Town (UCT).

Workshop for government sector R&D Survey respondents

Mario Clayford and **Nozibele Gcora** hosted government officials at the HSRC's Pretoria office on 27 March 2019, following on from successful government sector workshop hosted in March 2018. Their goals? To popularise the R&D Survey within the government sector, discuss difficulties encountered by respondents in completing the questionnaire, and to create a platform for same-sector respondents to share learning. Participant departments included: Department of Health, Department of Roads and Transport, the Department of Agriculture, Forestry and Fisheries, and the Department of Planning, Monitoring and Evaluation.

Enhance Analytical Depth and Usage of the R&D Datasets

In 2018/19, we produced a number of analytical outputs on thematic topics, such as green R&D, public sector R&D and R&D expenditure in the social sciences and humanities. These outputs contribute to a suite of products aimed at shaping current policy-level discussions within different fora.



<http://bit.do/e5ci3>

R&D and Innovation in State-owned Enterprises

In response to a request from the Department of Science and Technology, CeSTII developed a case study methodology for investigating R&D and innovation in South African SOEs. In 2018/19 three SOEs were selected for profiling, and key topics for investigation include: human and technological capabilities, research infrastructures, networks, and governance.



<https://bit.ly/2Hb4uQW>

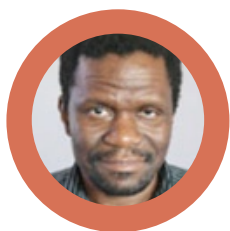


<https://bit.ly/2KHdNe0>



<https://bit.ly/2KyMXE8>

THEME 2: MEASURING INNOVATION CAPACITY IN SOUTH AFRICAN FIRMS



Dr Moses Sithole
Theme Leader

Business Innovation Survey 2014-2016

In September 2017, we launched the Business Innovation Survey, covering the period 2014-2016, to examine the innovation activities in enterprises—from small to very large, and across a range of industries (see *Annual Review Report 2017/18*). In 2018/19 we intensified our fieldwork and advocacy efforts, with the purpose of increasing the response rate; and survey fieldwork was concluded at the end of November 2018. Due to the response rate of 17% being lower than expected at the end of fieldwork, a non-response survey targeting participants who did not respond to the survey was carried out in December 2018. This data was used to adjust weights and to deal with any bias that might materialise due to the non-response from the other firms or participants. On the request of the DST, the survey team produced a preliminary data analysis report, which informed the development of a Cabinet memorandum in March 2019.

BUSINESS INNOVATION SURVEY 2014 - 2016

FOR A MORE INNOVATIVE SOUTH AFRICA



<https://sabizinnovationsurvey.blog/>

Agricultural Business Innovation Survey 2016-2018

One of the recommendations of the 2016/17 review of the Business Innovation Survey was the inclusion of the agricultural sector, as a key component of the South African economy, in future innovation surveys. In consultation with key stakeholders and interested parties, planning for a baseline innovation survey of agricultural businesses was carried out in 2018/19. As part of this, we developed a conceptual report and draft questionnaire to inform multi-stakeholder discussions, in preparation for the launch of fieldwork in early 2019/20.

AGRICULTURAL BUSINESS INNOVATION SURVEY 2016 - 2018

FOR A MORE INNOVATIVE SOUTH AFRICA

*INCLUDING FARMING, FORESTRY AND FISHERIES



<https://sabizinnovationsurvey.blog/>

Industry Associations Innovation Day 2018

Working together with the DST and Business Unity South Africa (BUSA), CeSTII initiated, organised and executed its first Industry Associations Innovation Day, themed 'Innovation, Government and Industry 4.0: Policies, Measures, Incentives'. The event took place at the Riversands Incubation Hub in Gauteng on 25 May 2018, and was attended by over 60 delegates representing a diverse spectrum of industry associations, government departments, universities, and companies.



L-R: Henra Mayer, CEO, Innocentrix; Sunil Geness, President & Director, Information Technology Association; Philippa Rodseth, Executive Director, Manufacturing Circle; Brenda Martin, CEO, South African Wind Energy Association. [Image credit: G. Ralphs]



L-R: Themba Maseko, Business Leadership South Africa; Nonkululeko Shinga, Chief Director: Innovation and Technology, Department of Trade and Industry; Mike Colley, New Knowledge Market Executive, Institute for Futures Research. [Image credit: G. Ralphs]



L-R: Joanne Yawitch, CEO, National Business Initiative; Godfrey Mashamba, Chief Director, Department of Science & Technology; Imraan Patel, Deputy-Director General, Department of Science & Technology. [Image credit: G. Ralphs]

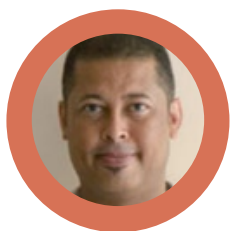
To learn more about what was presented at this event, go to <https://bit.ly/2KjQaYg>

Enhancing the Analysis and Usage of Innovation Data

In 2018/19, we worked with data produced in the Business Innovation Survey 2010-2012 to develop new research briefs for use by firms and government departments. These focussed specifically on the question: Can government stimulate innovation through public funding and procurement in manufacturing and services? We also developed a research brief on the potential of the services sector to contribute to structural economic transformation. Our *Research Brief* series are concise papers based on our ongoing work. Their goal? To provide empirical evidence and informed opinion that decision-makers in the national system of innovation can use to strengthen the quality of their thinking and action.



THEME 3: NEW INDICATOR DEVELOPMENT



Dr Nazeem Mustapha
Theme Leader

In 2018/19, the Centre for Science, Technology and Innovation Indicators delivered work on three projects under its New Indicator Development research theme.

Engagement and Inclusive Development: Building the Interactive Capabilities of Universities and Science Councils



In 2018/19, our focus was on developing a new conceptual framework, research design and methodology, as well as developing research instruments, conducting fieldwork and advocacy, and capacity building.

We developed tools for collecting and analysing data on the interactive capabilities of universities or science councils and 'communities', and for co-producing research outputs. Building on work performed in 2017/18, we have used the local innovation and production systems (LIPS) methodological framework to orient our thinking.

Our research instruments for researching engagement and the dynamic interactive capabilities of communities included photovoice and digital storytelling workshops. Out of these workshops, the team developed a toolbox for using photovoice for research on engagement and knowledge flows, including a detailed guide for the facilitators, a list of required resources, and a booklet including resources for participants. The workshop booklet and programmes have been translated to

Afrikaans and Xhosa, to align with the dominant language in each local setting of the research.

Case study teams carried out fieldwork in all three case study sites. The Carnarvon team completed fieldwork in December 2018; fieldwork for Philippi and Cofimvaba were completed in February 2019; and draft case study reports were completed in March 2019.

The project team also worked with a South African NGO, the Sustainable Livelihoods Foundation (SLF), to develop a guide for the digital storytelling. The SLF also co-facilitated the digital storytelling workshop, which was an opportunity for practical training for the CeSTII team.

The research team members received training on the use of photovoice and digital storytelling methodologies. Both PhD interns and the post-doctoral research fellow assigned to the project have played a leading role in arranging and co-facilitating the workshops. The team is now part of a very small number of researchers in South Africa who are trained in the use of these methods.



Carnarvon photovoice workshop, 29-31 October 2018
[Image credit: A. Erasmus / HSRC]



Philippi photovoice workshop 3-7 December 2018
[Image credit: A. Erasmus / HSRC]



Cofimvaba photovoice workshop, 14-18 January 2019
[Image credit: A. Erasmus / HSRC]

About this project: Funded by the National Research Foundation's Community Engagement Programme, CeSTII aims to understand how actors in formal higher education and research institutions interact with and share their knowledge to the benefit of actors in informal community-based settings, to promote inclusive and sustainable development. This research also aims to identify spaces and opportunities for agency and change, under greatly constrained structural conditions. Contact the project's leader: **Dr Il-haam Petersen** (ipetersen@hsrc.ac.za).

Measuring Innovation in the Informal Sector

Our aim in this project is to develop a standardised tool that can be used to measure innovation in the informal sector arena in South Africa. In our theory of change, the tool should also be applicable in other neighbouring countries, African countries especially. In 2018/19 CeSTII began piloting the baseline survey in Sweetwaters, KwaZulu-Natal in collaboration with the Human and Social Development programme of the HSRC, who have built a research presence in the area and have a good track record of working with the communities. After laying these foundations, the survey was officially launched at an event at the Mpumzuza Traditional Administrative Centre in March 2019.

Using the place methodology, the first major phase of the fieldwork component project involved developing an unduplicated list of businesses in wards 1 and 16 (each with four sub-wards) in the Sweetwaters area. To achieve this goal, our fieldworkers built a list of businesses, and verified the businesses by calling them, going to visit them and/or asking them a few questions about their main activity. Subsequent fieldwork will involve a survey questionnaire of these businesses using handheld devices.

This project will contribute new and essential evidence for policy-making on innovation in the informal sector, and aims to be completed in the 2019/20 financial year.



CeSTII Interviews an informal business owner in the Sweetwaters area [Image credit: A. Erasmus / HSRC]

Towards an Agenda for Measuring Innovation for Inclusive Development

In collaboration with the DST, in 2017/18 CeSTII began work on leading a new national research agenda, building on the concept of innovation for inclusive development (also referred to as IID). In 2018/19, we hosted three IID research and policy seminars, organised in collaboration with the HSRC's Research and Impact Assessment programme (Box 3).

The first and second, held at Philippi Village in Cape Town on 28 November and 4 December respectively, focussed on theoretical and conceptual topics related to measuring innovation in the global South to promote inclusive development. The third, held in March of 2019 at the Mpumza Traditional Administrative Centre, Kwa-Zulu Natal, aimed to build an understanding of how participatory visual methods can facilitate STI measurement and the development of indicators that are grounded in the lived realities of actors that have been traditionally marginalised from the formal national system of innovation (NSI), from the formal economy and from decision-making processes.



IID Seminar on Participatory Measurement 27 March 2019
[Image credit: A. Erasmus / HSRC]



Team HSRC. [Image credit: G. Ralphs]

Box 3. IID Seminar titles and speakers

IID Policy Seminar: Measuring innovation in the global South to promote inclusive development – 28 November 2018

Speakers included: **Prof. Anthony Arundel** (UNU-MERIT), **Dr Glenda Kruss** (CeSTII), **Dr Mlungisi Cele** (NACI), **Godfrey Mashamba** (DST) and chaired by **Dr Nazeem Mustapha** (CeSTII).

IID Policy Seminar: Measuring innovation in the informal sector towards inclusive development: “What gets measured...gets done” - 4 December 2018

Speakers included: **Dr Isabel Bortagaray** (Universidad de la República de Uruguay, Montevideo (UdelaR) & HSRC Honorary Research Fellow), **Assoc. Prof. Erika Kraemer-Mbula** (University of Johannesburg), **Dr Nazeem Mustapha** (CeSTII), **Dr Oluseye O. Jegede** (CeSTII), **Nickey Janse van Rensburg** (University of Johannesburg), **Dr Andrew Charman** (Sustainable Livelihoods Foundation), and **Grace Dila** (Owner: Dila's Corner).

IID Policy Seminar: Measuring What Counts: How suitable are our research tools, measures and indicators for promoting innovation for inclusive and sustainable development? - 27 March 2019

Speakers included: **Dr Il-haam Petersen**, **Dr Nazeem Mustapha**, **Dr Glenda Kruss**, and **Xolisa Magawana** (all CeSTII), **Nonhlanhla Mkhize** (DST), **Dr Mlungisi Cele** (NACI), **Prof Alejandra Boni (Sandra)** (CSIC-UPV), **Mhlengi Ngubane** (KZN EDTEA), **Anthony Muteti** (Sustainable Livelihoods Foundation), **Oluseye Jegede** (CeSTII), **Grace Dila** (Owner: Dila's Corner), **Dr Deidre Van Rooyen** (University of the Free State), **Prof. Heidi van Rooyen** (HSRC), and **Diana Sanchez Betancourt** (HSRC).

WHAT IS INNOVATION?

Innovation can mean lots of different things to different people...



It can mean **doing new things or doing things better** to get better outcomes for our businesses, families, or communities.

Innovation is about learning, making a change, and seeing better outcomes.



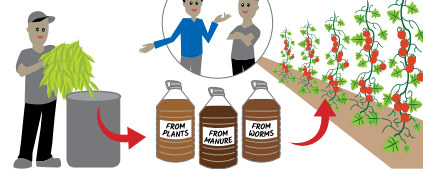
We are working with people in three communities in South Africa to understand their experiences of innovation.



SOME EXAMPLES OF INNOVATION

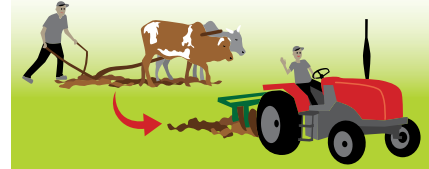
- 1 New or changed goods or services ✓
- 2 New or changed processes for producing goods or services ✓
- 3 New ways for marketing goods or services ✓
- 4 Changes to how we set up our businesses or work places ✓

1 New or changed goods or services



RESULT! Better quality produce, sell to other farmers, improved nutrition, increased income, jobs

2 New or changed processes for producing goods or services



RESULT! Reduced harvest time, reduced labour costs, sustainable farming, improved food security

3 New ways for marketing goods or services



RESULT! Increased tourism, increased income, jobs, improved basic services

4 Changes to how we set up our businesses or work places



RESULT! New partnerships, access to equipment on credit, bigger shop, increased income, jobs, help with security

How does innovation work in your business, family or community?



Top and bottom: Fieldwork tools produced by CeSTII for its pilot work on new indicators.

WHAT IS INNOVATION?

Innovation can mean lots of different things to different people...



It can mean **doing new things or doing things better** to get better outcomes for our businesses, families, or communities.

Innovation is about learning, making a change, and seeing better outcomes.



We are working with people in Sweetwaters in South Africa to understand their experiences of innovation.



SOME EXAMPLES OF INNOVATION

- 1 New or changed goods or services ✓
- 2 New or changed processes for producing goods or services ✓
- 3 New ways for marketing goods or services ✓
- 4 Changes to how we set up our businesses or work places ✓

This is Ethel outside her home. She has been running her shisanyama business for a few years, selling chicken and beef. It was a good business, until lots of other cooks started selling the same meals.



Hello Ethel. How is business?

I'm struggling, Ruth, because of all the other stands.

If you sell pork and sheep liver, maybe you will attract more customers.

Ethel changed her menu, and also made a new sign. Over time, her queues got longer.



Ethel soon realised others were selling pork and sheep liver, too. Ethel heard from a friend that visited her from another province that if she cooked pork and sheep liver in a pot with sauce, the taste would improve.

Hello. I would like to buy a pot for my shisanyama. I need an extra large. Please make legs for the pot so it can stand on ground over a fire.



Ethel's shisanyama business started to grow again, because she could now prepare more shisanyama than her competitors and also the taste was different.



It looks like business is better, Ethel.

I had to make some changes, but now it is better. Thanks for sharing your ideas, Ruth.

How does innovation work in your business or community?



CONFERENCES & OUTPUTS

PRESENTER(S)	PAPER TITLE	CONFERENCE	DATE
Jerry Mathekga	GLOBALISATION, LABOUR AND DEVELOPMENT IN AFRICA: A REFLECTION AND AN ANALYSIS OF THE NATURE OF EMPLOYMENT IN THE LOCAL GOVERNMENT SPHERE IN SOUTH AFRICA	CODESRIA 15 th General Assembly, Dakar	17-21 December 2018
Janine Senekal (Master's Intern)	EMPLOYMENT AND EMPLOYABILITY OF CLINICAL AND RESEARCH PSYCHOLOGY MASTERS ALUMNI	Psychological Society of South Africa Conference, Johannesburg	11-14 September 2018
Janine Senekal (Master's Intern)	LESSONS LEARNT FROM UTILISING GRADUATE TRACER STUDY METHOD AMONG CLINICAL AND RESEARCH PSYCHOLOGY MASTERS ALUMNI	Psychological Society of South Africa Conference, Johannesburg	11-14 September 2018
Nazeem Mustapha, Xolisa Magawana (PhD Intern) & Nozibele Gcora (PhD Intern)	HOW DOES ONE MEASURE INNOVATION IN THE INFORMAL ECONOMY?	HSRC Conference, St George Hotel & Conference Centre, Pretoria	12-14 September 2018
Il-Haam Petersen, Xolisa Magawana (PhD Intern) & Nozibele Gcora (PhD Intern)	HOW DOES ONE RESEARCH INTERACTION AND INNOVATION IN INFORMAL SETTINGS?	HSRC Conference, St George Hotel & Conference Centre, Pretoria	12-14 September 2018
Yasser Buchana (PhD Intern) & Moses Sithole	THE IMPACT OF R&D INVESTMENTS ON HUMAN DEVELOPMENT: THE CASE OF SOUTH AFRICA	HSRC Conference, St George Hotel & Conference Centre, Pretoria	12-14 September 2018
Thembinkosi Zulu & Firdous Khan	ESTABLISHING THE ROLE OF AGRICULTURAL COOPERATIVES IN SUSTAINING HOUSEHOLD FOOD SECURITY: A CASE OF MBIZANA LOCAL MUNICIPALITY	HSRC Conference, St George Hotel & Conference Centre, Pretoria	12-14 September 2018
Ndiyakholwa Ngqulu (Master's Intern)	INVESTIGATING THE ADOPTION AND THE APPLICATION OF LEARNING ANALYTICS IN SOUTH AFRICAN HIGHER EDUCATION INSTITUTIONS (HEIS)	13 th International Conference on e-Learning ICEL 2018	5-6 July 2018
Janine Senekal (Master's Intern)	EMPLOYMENT AND EMPLOYABILITY OF PROFESSIONAL PSYCHOLOGY GRADUATES: A SOUTH AFRICAN TRACER STUDY	(RE) Valuing Higher Education Higher Education Research and Development Society of Australasia Inc.	2-5 July 2018

Continues overleaf...

PRESENTER(S)	PAPER TITLE	CONFERENCE	DATE
Gerard Ralphs	FOLLOWING THE MONEY: A CRITICAL REVIEW OF SOCIAL SCIENCES AND HUMANITIES R&D EXPENDITURE IN SOUTH AFRICA 2005–2014	Southern African Research and Innovation Management Association Conference 2018, Misty Hills, Muldersdrift, Gauteng	30 May-1 June 2018
Glenda Kruss	INNOVATION IN SERVICES: THE POTENTIAL TO CONTRIBUTE TO STRUCTURAL ECONOMIC TRANSFORMATION IN SOUTH AFRICA?	African Unity for Renaissance Conference 2018, St Georges Hotel, Pretoria	23-25 May 2018
Jerry Mathekga	INSTITUTIONS, LEADERSHIP, AND DEMOCRATISATION IN SOUTH AFRICA: REFLECTION AND ANALYSIS.	18 th Annual Africa Conference at the University of Texas at Austin, USA	30 March to 1 April 2018
Nhlanhla Malaza (Master's Intern) & Thembinkosi Zulu (Master's Intern)	R&D EXPENDITURE IN THE PUBLIC AND PRIVATE SECTORS IN SOUTH AFRICA	South African Local Government Association Conference, Cape Town	27-29 March 2018

HSRC SEMINAR SERIES 2018/19

The Human Sciences Research Council seminar series is a key dissemination channel for our research to reach target audiences in South Africa and beyond. Each programme of the HSRC contributes to the series by showcasing results of research at various points within the research cycle. In 2018/19 CeSTII led a few seminars, with speakers from the CeSTII team as well as invited guest speakers.

invitation
HSRC Seminar Series

Science, Technology & Innovation (STI) measurement and practice in Russia and South Africa

Presenters
Dr. Ekaterina Streltsova is a senior research fellow of the Institute for Statistical Studies and Economics of Knowledge, National Research University Higher School of Economics (Moscow, Russia). She holds a PhD in Sociology and has been involved into the numerous research projects of ISSEK HSE in the field of STI measurement. She is a member of the expert group responsible for the assessment and upgrade of the STI statistics in Russia.
Dr Saahier Parker is a Research Specialist at the Centre for Science Technology and Innovation Indicators (CeSTII) unit of the Human Sciences Research Council (HSRC). He has more than a decade experience in running large, national STI surveys and has published extensively within the field. Dr Parker obtained a PhD in Science and Technology studies from the University of Stellenbosch, developing new STI measurement indicators.

Date: 25 July 2018 **Time:** 12:30 – 14:00 **Venues:** Pretoria, Durban and Cape Town

Science, Technology, Engineering and Mathematics (STEM) remain vitally important at driving inclusive development and economic growth. This is more important within emerging economies that have a long technological catch-up process in order to meaningfully compete globally. Science, Technology & Innovation (STI) have been identified as the key success factors in navigating many of these developmental challenges. How do we measure national performance in ways that remain locally relevant and internationally comparable?
Coinciding with the 30th annual BRICs summit, this seminar presents lessons from the R&D surveys in Russia and South Africa, as well as discuss some unique characteristics within each system of innovation. Topics will include standardised methodologies, organization of data and recent survey results. This exchange hopes to highlight areas of common interest and comparison as well as sharing experience and developing solutions to emerging issues and challenges experienced in initiating surveys of this nature in both Russia and South Africa.

Pretoria: HSRC Video Conference, 1st Floor HSRC Library Human Sciences Research Council, 134 Pretoria Street, Pretoria. Contact : Aileen Coombes, Tel: (011) 702 9111, e-mail: acoombes@hsrc.ac.za
Cape Town: HSRC, Merivale House 110-118 Buitengracht Street, Cape Town. Contact : Catherine Erasmus, Tel: (021) 966 7672, e-mail: cerasmus@hsrc.ac.za
Durban: The Annex, 5th Floor, 430 North Mableton Ridge, Durban. Contact: Edithson Khaya, Tel: (031) 242 5468, cell: 083 288 2786, e-mail: khaya@hsrc.ac.za

The HSRC seminar series is funded by the Department of Science and Technology (DST). The names and logos appearing therein do not constitute an approval by the DST.

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Social science that makes a difference

Science, Technology & Innovation (STI) Measurement and Practice in Russia and South Africa – 25 July 2018

Presented by **Dr Ekaterina Streltsova**, Institute for Statistical Studies and Economics of Knowledge, National Research University Higher School of Economics (Moscow, Russia) and **Dr Saahier Parker**, CeSTII.

invitation
HSRC Seminar Series

Developing Knowledge and Innovation Indicators for the Informal Sector in Africa

Presenter:
Dr Oluseye G. Jegede
Senior Researcher, SARCHI Industrial Development Unit, University of Johannesburg, SA
African Research Fellow, CeSTII, Human Science Research Council, Cape Town, SA
Research Fellow, AISPI, Obafemi Awolowo University, Ile-Ife, NG

Chair:
Dr Nazeem Mustapha
Centre for Science, Technology and Innovation Indicators (CeSTII)

Date: 3 July 2018 **Time:** 9:30 – 11:30 **Venues:** Pretoria, Durban, Cape Town and Sweetwaters

This study contributes to the growing literature on innovation in the informal sector in Nigeria. It explores the available metrics for measuring innovation as published in different literatures, and goes further to harmonise these metrics and modify them for the informal sector measurement of innovation and innovation capability. This new metric was tested using two hundred informal ICT enterprises at the Ojoja Hardware Cluster in Nigeria, which is the ICT hub of West Africa. The main research instrument was a set of questionnaires designed to capture the core objective of the research. All two hundred questionnaires were retrieved and found suitable for analysis. The questionnaires elicited information on the socio-demographic characteristics of the enterprises, the attributes of the Ojoja cluster, the strength of the enterprises, the strength of the cluster, the extent of innovations within the cluster, and the proximity advantages drawn from clustering and from being members of trade association. Spearman's Correlation and Binary Logistic Regression was used to determine the direction and impact of the various independent variables (representing determinants of innovation capability) on the dependent variable (extent of innovation as a proxy for innovation capability). The interesting findings from the study serve as vital inputs for policy-making, theory and practice.

Ojoja Hardware Cluster, Nigeria (Source: Oluseye Jegede)

Pretoria: HSRC Video Conference, 1st Floor HSRC Library Human Sciences Research Council, 134 Pretoria Street, Pretoria. Contact : Aileen Coombes, Tel: (011) 702 9111, e-mail: acoombes@hsrc.ac.za
Cape Town: HSRC, Merivale House 110-118 Buitengracht Street, Cape Town. Contact : Catherine Erasmus, Tel: (021) 966 7672, e-mail: cerasmus@hsrc.ac.za
Durban: The Annex, 5th Floor, 430 North Mableton Ridge, Durban, 4001. Contact: Edithson Khaya, Tel: (031) 242 5468, cell: 083 288 2786, e-mail: khaya@hsrc.ac.za
Sweetwaters: 1st Floor Orpen, Mthatha Road, Sweetwaters Tel: 031 024 1000

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Social science that makes a difference

Developing Knowledge and Innovation Indicators – 3 July 2018

Presented by **Dr Oluseye Jegede**, CeSTII / HSRC African Research Fellow.

invitation  **HSRC**
Human Sciences Research Council

HSRC Seminar series in collaboration with the Centre for Science, Technology and Innovation Indicators (CeSTII)

Employment destinations of clinical and research psychology Masters alumni: Results from a graduate tracer study

Presenter:
Mrs Janine Senekal (UWC/CeSTII)
Chairs:
Dr Glenda Kruss (CeSTII)
Prof. Mariu Smith (UWC)

Date: 5 June 2018 **Time:** 12:30 – 13:30 **Venues:** Pretoria, Durban and Cape Town

The transformation initiatives within the higher education sector of South Africa have focused on key issues, including low enrolment and high attrition rates. These issues are exacerbated at postgraduate level. Graduate tracer research has been used internationally to empirically assess graduate issues, yet has been minimally and sporadically utilised in the South African context. This seminar will provide a brief overview of the results of a cross-sectional, online graduate tracer study survey that was conducted among a population of postgraduate alumni with professional Masters in clinical and research psychology at the University of the Western Cape. There is a noted shortage of psychological professionals in South Africa, reducing access to mental health care services for the population and increasing the strain on practicing psychologists. It is therefore important to identify how these highly skilled professional psychology graduates are absorbed into the labour market, before identifying how these capacity constraints can be mitigated.

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Cape Town: HSRC Parliament House 138 148 Buitengeweg Street, Cape Town, Western Cape | (021) 462 7822, e-mail: hsrc@hsrc.org.za
Durban: The Atrium, 9th Floor, 431 Peter Mahabane Ridge, Durban, KwaZulu-Natal | (031) 242 5458, cell: 082 798 2796, e-mail: hsrc@hsrc.org.za

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Social science that makes a difference

invitation  **HSRC**
Human Sciences Research Council
HSRC Seminar Series



The impact of innovation activities on employment growth in South Africa

Presenters:
Dr Moses Sithole, Chief Research Specialist, Centre for Science, Technology and Innovation Indicators, HSRC
Yasser Buchana, PhD Intern, Centre for Science, Technology and Innovation Indicators, HSRC

Chair:
Prof. Ivan Turok, Executive Director, Economic Performance and Development, HSRC

Date: 10 May 2018 **Time:** 12:30 – 14:00 **Venues:** Pretoria, Durban and Cape Town

It is widely understood that innovation can contribute to alleviating the scourge of unemployment in upper middle income countries like South Africa, which experience high unemployment rates. However, innovation may also introduce unintended consequences at firm level, such as job losses as a result of product, process or marketing automation. Drawing from an existing methodology, and data from the Business Innovation Survey 2010/2012 dataset, this seminar will explore the relationship between innovation and employment in South Africa by examining the direct and indirect effects of different types of innovation activity on employment growth. Specifically, analysing the link between innovation and employment at firm level yields vital insights into: 1. the factors that influence innovation activity, 2. the direct and indirect effects of different types innovations on employment growth, as well as 3. the impact innovations aimed at saving costs may have on employment. The seminar will take the form of a short presentation on the study's methodology, followed by an evidence-based dialogue between Dr Moses Sithole and Yasser Buchana, which will be aimed at unpicking and interrogating the results of the research, and elaborating key questions for discussion with the audience.

Pretoria: HSRC Video Conference, 1st floor HSRC Library Human Sciences Research Council, 124 Pretorius Street, Pretoria, Gauteng | hsrc@hsrc.org.za | (011) 302 2813, e-mail: uwc@hsrc.org.za
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Social science that makes a difference

Employment Destinations of Clinical and Research Psychology Masters Alumni: Results from a Graduate Tracer study – 5 June 2018

Presented by **Mrs Janine Senekal**, CeSTII Master's Intern.

The Impact of Innovation Activities on Employment Growth in South Africa – 10 May

Presented by **Dr Moses Sithole**, Chief Research Specialist and **Yasser Buchana**, PhD Intern (CeSTII).

COLLABORATION & NETWORKS

The Centre for Science, Technology and Innovation Indicators interacted with a range of collaborators in the 2018/19 financial year. Our networks help us to deliver on our goals more efficiently and effectively. As a public research institute, we also want to share our expertise nationally, regionally and globally.

AFRICAN RESEARCH AGENDA

CeSTII leads SADC Regional Consultative Forum on STI Indicators



In 2018/19 CeSTII collaborated with the HSRC's Africa Institute of South Africa, the Department of Science and Technology, and the SADC Secretariat, to convene a learning forum for officials from 10 SADC Member States, including Botswana, South Africa, Tanzania, Seychelles,

Angola, Namibia, Lesotho, ESwatini, Zimbabwe, and Mozambique. Entitled 'Towards a research and training agenda for STI measurement in the SADC: A consultative forum for information sharing and learning', the event was organised to coincide with a validation meeting of the 1st SADC R&D investment report (18-20 March 2019).

CeSTII's **Dr Glenda Kruss, Dr Moses Sithole, Dr Neo Molotja, Dr Nazeem Mustapha, and Gerard Ralphs** presented learning from the CeSTII experience on topics such as adapting to the new Oslo and Frascati manuals, global comparability and local relevance, and new measures. The gathering also included a brainstorm session on a future research and training agenda, which will inform future engagement, and capacity building around STI indicators in the region.

“ Thanks again to all for ensuring we have a successful meeting.”

Ms Anneline Morgan, Senior Technical Advisor, SADC Secretariat, 22 March 2019



Anneline Morgan, Senior Technical Advisor, SADC Secretariat [Image credit: A. Nematandani/HSRC]



Antonio Alcochete, Angola [Image credit: A. Nematandani/HSRC]



Godfrey Mashamba, Chief Director: Science and Technology Investment, Department of Science and Technology, South Africa [Image credit: A. Nematandani/HSRC]



Dr Glenda Kruss, Deputy-Executive Director, Centre for Science, Technology and Innovation Indicators, South Africa [Image credit: A. Nematandani/HSRC]



The forum was held at the CSIR International Convention Centre [Image credit: A. Nematandani/HSRC]

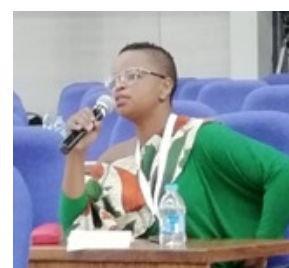
CeSTII at Science Forum South Africa 2018

Each year CeSTII participates in the DST-led Science Forum South Africa event, where different stakeholders come together to discuss matters involving research, innovation, science and technology. **Dr Glenda Kruss** conceptualised and moderated a panel discussion on STI indicators in the SADC region, which was entitled 'Global Comparability and Local Relevance'.

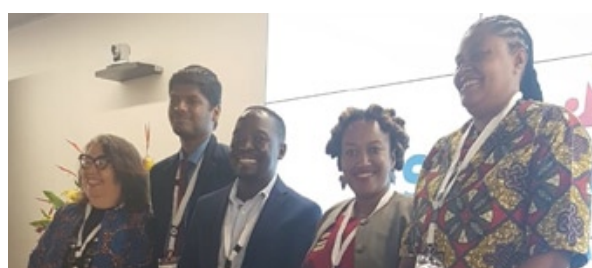
Speakers included **Mr Godfrey Mashamba** (Department of Science and Technology, South Africa), **Ms Anneline Morgan** (SADC Secretariat), **Ms Lwandle Simelane** (National Commission on Research, Science and Technology of Namibia, Namibia), **Dr Norton Titus** (National Commission on Research Science and Technology, Namibia), and **Mr Joseph Raj Xavier** (National Institute of Science Technology and Innovation, Seychelles).



Dr Tichaona Mangwende (NEPAD)
[Image credit: G. Kruss]



Kgomotson Matlapeng (South Africa)
[Image credit: G. Kruss]



The panel took place at SFSA 2018, Pretoria.
[Image credit: G. Kruss]

DIALOGUES & CONSULTATIONS	DATE	CITY, COUNTRY	ATTENDED BY
SADC Regional Consultative Forum on STI Indicators	18-19 March 2019	Pretoria, South Africa	Dr Glenda Kruss, Dr Nazeem Mustapha, Dr Neo Molotja, Gerard Ralphs
Science Forum South Africa	13-14 December 2018	Pretoria, South Africa	Dr Glenda Kruss, Dr Nazeem Mustapha, Theodore Sass, Yasser Buchana
SA-EU Dialogue on 4IR	10-12 December 2018	Pretoria, South Africa	Dr Glenda Kruss, Theodore Sass, Yasser Buchana
Draft White Paper Consultation Forum	9 November 2018	Pretoria, South Africa	Dr Glenda Kruss
NSI Forum on International Opportunities	24 August 2018	Cape Town, South Africa	Gerard Ralphs
NSTIIP Technical Forum	26 June 2018	Online	Gerard Ralphs , Dr Glenda Kruss
Panel on Innovation and Industrialisation at African Unity Renaissance Conference	23 May 2018	Gauteng, South Africa	Dr Glenda Kruss, Gerard Ralphs
Technology Innovation Conference	February 2018	Gauteng, South Africa	Dr Glenda Kruss, Gerard Ralphs, Cheryl Moses

VISITING RESEARCHERS

Professor Fred Gault, UNU-MERIT/ Tshwane University of Technology



Dr Moses Sithole (CeSTII), Dr Glenda Kruss (CeSTII), Dr Neo Molotja (CeSTII), Prof. Fred Gault, Dr Nazeem Mustapha, during Prof. Gault's academic visit at CeSTII, Cape Town. [Image credit: G. Ralphs]

On the invitation of **Dr Glenda Kruss**, **Prof. Fred Gault** conducted an academic visit at CeSTII where he met with research staff, including the R&D and innovation survey teams. The results of the visit, which took place on 16-18 July 2018, included sharing of advice, research articles and reports, and co-publication ideas. Prof. Gault is the current chair of CeSTII's International Advisory Committee. He has been serving in that capacity since the new committee was constituted in February 2017.

Dr Oluseye Jegede, CeSTII African Research Fellow



Dr Oluseye Jegede during his HSRC Seminar on Nigeria's Otigba Hardware Cluster. [Image credit: G. Ralphs]

Dr Oluseye Jegede was appointed as CeSTII's African Research Fellow in 2017/18, and performed his first research visit to CeSTII from 1-7 July 2018. During this period, Dr Jegede participated in CeSTII project discussions, collaboration discussions with CeSTII and other HSRC programme, as well as delivered an HSRC Seminar on innovation in Otigba (see Page 17). Dr Jegede is based at Obafemi Awolowo University, Ile-Ife, Nigeria.

Prof. Anthony Arundel, UNU-MERIT



Prof. Anthony Arundel delivers a public lecture on 'Innovation in the public sector', at the HSRC's Cape Town office. [Image credit: G. Ralphs]

As part of the HSRC's continued recognition of the life and work of innovation scholar, **Jo Lorentzen**, **Anthony Arundel** (UNU-MERIT) was invited to deliver a public lecture at the HSRC's Cape Town office. The lecture was chaired by Acting CEO of the Centre for Public Service Innovation, **Qinisile Delwa**. Entitled 'Innovation in the public sector', it examined innovation data from Europe, Scandinavia and Australia, where surveys on public sector innovation have been carried out. Using these data, Arundel argued that innovation rates in the public sector are considerably higher than innovation rates in the private sector. Additionally, a 2015 study on public sector innovation in the EU found that 'knowledge scanning' innovation outperformed policy-driven and bottom up innovations. Knowledge scanning involves examining what others in the environment are doing in order to inform innovation. The key lesson for public sector innovators, said Arundel: "Don't panic. Work carefully. Collaborate. Draw on the capabilities of the organisation." Government interest in public sector innovation has been linked to an interest in the share of government contribution to GDP, but also to solving complex demographic, environmental or health challenges, he said.

During his week at the HSRC in November 2018, Arundel also met with team members of all key CeSTII projects, as well as with individual researchers, to discuss their work and to share learning.

HIGH-LEVEL FORA

CeSTII joins forces with National Advisory Council on Innovation to host NACI Western Cape roadshow event

South Africa's National Advisory Council on Innovation (NACI) plays a vital role in the national system of innovation. This role includes providing regular monitoring reports of key indicators. To advance collaboration with NACI, CeSTII co-hosted an event at Cape Town's Philippi Village entitled 'Disruptive digitalisation, transformative change and inclusion: How do we design a responsive measurement agenda in South Africa?'. The purpose of the event, held on 20 July 2018, was to provide a Western Cape-based forum for the provincial launch of NACI's 2017 national STI indicators report.



L-R: Dr Glenda Kruss sums up discussions at the 2018 NACI Provincial Roadshow Western Cape workshop. [Image credit: A. Erasmus/S. Khan HSRC]

The event attracted around 80 delegates, and included welcome remarks by **Prof. Crain Soudien** and **Dr Mlungisi Cele**, a keynote address by **Dr Azar Jammie** (Econometrix), and panellists from DST (**Kgomotso Matlapeng**), the Technology Innovation Agency (**Garth Williams**), Western Cape Economic Development Partnership (**Jodi Allemeier**), Stellenbosch University (**Dr Albert Strever**) and the HSRC (**Dr Michael Gastrow**).



Thembinkosi Zulu (CeSTII), Nhlanhla Malaza (CeSTII), Dr Moses Sithole (CeSTII). [Image credit: A. Erasmus / HSRC]



“ The most important thing that I want to be conveying to you colleagues is the urgency of what we are doing here. I cannot emphasize enough how important this work on science and innovation is in the context in which we find ourselves. The context is such that we have to find ways of making innovation urgently come to understand what inclusion means.”

**Prof. Crain Soudien, CEO:
Human Sciences Research Council**

SADC Formally Designates CeSTII as Advisor on STI Indicators

In 2018/19, CeSTII's status as a technical and policy advisory unit for SADC was formalised. As part of its work, CeSTII's **Dr Nazeem Mustapha** participated in a Reference Group on STI Indicators, responsible to develop a regional strategy and report for the SADC science ministers in June 2018. This entailed participation in two Reference Group meetings, held 4-5 April and 7-8 May 2018, to develop an indicator framework, as well as advice on the production of a research questionnaire sent to all SADC member countries as part of developing a foundation of sub-regional STI indicators. To learn more about CeSTII's work with SADC, write to nmustapha@hsrc.ac.za.



KEY STAKEHOLDERS

STAKEHOLDER ORGANISATION	HOW CeSTII ENGAGES
CORE PARTNERS	
Department of Science and Technology	<ul style="list-style-type: none"> Work closely at the research-policy nexus to conduct the annual R&D survey and bi-annual innovation survey and the production of official STI statistics in partnership with Statistics South Africa, the OECD and NESTI.
National Advisory Council on Innovation	<ul style="list-style-type: none"> Collaboration on research and advocacy, hosting the NACI indicators provincial roadshow, as well as a standing arrangement for regular data and outputs sharing, to contribute to the creation of a national STI portal.
Statistics South Africa	<ul style="list-style-type: none"> Ensuring compliance with SA Statistical Quality Assessment Framework through the R&D Survey Clearance Committee, and provision of the Business Register and survey samples for the surveys and associated methodological support.
REGIONAL PARTNERSHIPS	
African Union-NEPAD National Planning Commission	<ul style="list-style-type: none"> Collaboration with the ASTII programme to provide training on STI indicators and in the writing of the African Innovation Outlook. Training network includes partnership with the African Observatory on Science, Technology and Innovation, and the UN Institute of Statistics. Provision of national R&D and innovation data and indicators according to required templates.
South African Development Community SADC Secretariat	<ul style="list-style-type: none"> Technical expert advisers on the implementation of science, technology and innovation policies and indicators in the region.
NACETEM, Nigeria	<ul style="list-style-type: none"> Share expertise and co-author comparative papers on R&D and innovation in SA and Nigeria.
NCRST, Namibia	<ul style="list-style-type: none"> Training, share expertise and co-author comparative papers on R&D and innovation in SA and Namibia.

Continues overleaf...

STAKEHOLDER ORGANISATION	HOW CeSTII ENGAGES
GLOBAL PARTNERSHIPS	
OECD/NESTI	<ul style="list-style-type: none"> • Provision of national R&D and innovation data and indicators according to required templates. • Participation in discussions to revise and implement changes to Frascati and Oslo manuals.
UNESCO	<ul style="list-style-type: none"> • Provision of national R&D and innovation data and indicators according to required templates.
REDeSIST, Federal university of Rio de Janeiro, Brazil	<ul style="list-style-type: none"> • Research collaboration on local innovation and production systems, and innovation measurement.
IFPRI / ARC	<ul style="list-style-type: none"> • Research collaboration on STI measurement in the agricultural sector.
PROJECT-BASED COLLABORATIONS	
SA Innovation Summit	<ul style="list-style-type: none"> • Information sharing and advocacy.
Science Councils (Medical Research Council, Council for Scientific and Industrial Research and Agricultural Research Council)	<ul style="list-style-type: none"> • Share expertise and co-author analytical papers drawing on R&D and innovation datasets to address new questions.
Bertha Centre in the Graduate School of Business at UCT	<ul style="list-style-type: none"> • Collaboration on NRF project and training of Master's students in social innovation.
Southern African Higher Education Community Engagement Forum	<ul style="list-style-type: none"> • Advocacy partner on NRF project, around community engagement, innovation and inclusive development.
BRICS Research Centre, HSRC	<ul style="list-style-type: none"> • Provision of national R&D and innovation data and indicators according to required templates.
Business Unity South Africa	<ul style="list-style-type: none"> • Advocacy partner on BIS and R&D surveys/STI measurement.
Sustainable Livelihoods Foundation	<ul style="list-style-type: none"> • Assist with digital storytelling, photovoice and place-based methodologies.



SPECIAL INITIATIVE: INNOVATION-DATA | USERx | DESIGN HACKATHON

The National Science, Technology and Innovation Information Portal is a brand new resource developed by the National Advisory Council on Innovation (NACI) to showcase the country's data on science and innovation. In 2018, CeSTII teamed up with the NACI and the SA Innovation Summit to deliver an intensive three-day hackathon, where seven mentor-led teams competed for their share of the spoils.

By Gerard Ralphs & Stevens Mocheki

Themed 'Putting South Africa's innovation data to work', the hackathon took place between 11-13 September 2018 at the Cape Town Stadium. It coincided with the 2018 SA Innovation Summit, an annual calendar event that attracts thousands of entrepreneurs, thought leaders, exhibitors, international visitors, and sponsors. In moving toward wider use and uptake of CeSTII-produced data through digital media, a hackathon model, used increasingly by actors across sectors, provided an excellent opportunity for us to channel ideas and expertise from multiple sources towards a single data challenge.

Mentor-led teams

Exceeding own expectations, the event attracted a strong multi-sectoral, multi-disciplinary cohort of participants—from businesses, design and media schools, research institutions, local community IT forums, government departments and the IT sector. Leading innovation scholar and process facilitator, **Dr Pieter Van Heyningen**, walked participants through a high-level panel discussion, followed by a problem statement definition exercise. The seven mentor-led teams were then presented with an anonymised and aggregated survey dataset from the 2008 South African Business Innovation Survey. The ultimate goal for the teams? To develop and then pitch their ideas for solutions to curate South Africa's past innovation survey datasets on NACI's STI information portal that responded to specific user experiences.

HACKATHON

**PUTTING
SOUTH AFRICA'S
INNOVATION
DATA TO WORK**

TEAM	PROBLEM STATEMENT	PITCHING SCORE (AVERAGE /100) ²
Team 1	How can we add analytical tools to present and augment the data on the NSTIIP in order to better inform its users as well as benefit its stakeholders?	53.9
Team 2	How can the Innovation Hub stakeholders utilise the Business Innovation Survey data to gain insight and assist them in making strategic decisions for their sustainable development?	74.6
Team 3	How can the Business Innovation Survey be designed to improve the response rate?	67.9
Team 4	Given that business leaders want to compare their firms innovation efforts to those of similar firms, how do we build an easy to use dashboard to summarise the Business Innovation Survey data in a simple and understandable manner that allows for quick insight extraction.	68.1
Team 5	How can a business intelligence tool play a meaningful and strategic role in helping SMME'S improve their performance through taking an innovation test?	69.4
Team 6	How can policy-makers assess the relative performance of innovative & non-innovative sectors through an interactive dashboard to implement appropriate industrial policy support measures?	65.3
Team 7	How can government use an interactive dashboard to help non-specialist users access innovation survey data?	67.4

Winners and prizes

Even though all the teams did an excellent job to develop interesting solutions under pressure, it was a proposal by Team 2 that impressed the judges the most, with Teams 5 and 4, respectively, following suit.

All the members of teams participating in the hackathon received tokens of appreciation from the organisers and sponsors of the event, which included Winetech, the South African Innovation Summit, the HSRC Press, and two anonymous cash prize donors

- **1st Prize, R5,000**
- **2nd Prize, R1,000**
- **3rd Prize, R600**



² Each team gave a presentation or pitch on their user journey design, and these were assessed and judged by a panel of seven judges looking at the factors: Appreciation of the challenge; Understanding of multiple user journeys; Execution of a solution; Creativity and innovation; Quality of pitch; and 'Gut feel'.

THE INNOVATION HUB

THE PROBLEM

INNOVATION ACTIVITIES
INNOVATION SPONSOR
FINANCIAL SUPPORT

FAQ

CHAT WITH US...

THE INNOVATION HUB

HOW CAN THE INNOVATION HUB STAKEHOLDERS UTILISE THE BIG DATA TO GAIN INSIGHT AND ASSIST THEM IN MAKING STRATEGIC DECISIONS FOR THEIR SUSTAINABLE DEVELOPMENT?

INNOVATION ACTIVITIES
INNOVATION SPONSOR
FINANCIAL SUPPORT

FAQ

CHAT WITH US...

THE INNOVATION HUB

THE SOLUTION:

INNOVATION ACTIVITIES
INNOVATION SPONSOR
FINANCIAL SUPPORT

FAQ

CHAT WITH US...

THE INNOVATION HUB

THE USERS CAN:

- CUSTOMISE DATA ON THE PORTAL TO SUIT THEIR IMMEDIATE NEEDS.
- SHARE OPEN DATA INFORMATION DIRECTLY THROUGH SOCIAL MEDIA PLATFORMS
- INTERACT WITH OTHER STAKEHOLDERS (LIKE SHARE IDEAS)

INNOVATION ACTIVITIES
INNOVATION SPONSOR
FINANCIAL SUPPORT

FAQ

CHAT WITH US...



Lessons and inspiration

Hackathons are typically events where passionate professionals and/or students in technology and business development gather to actively participate in different teams in an effort to create a solution. This provides a networking opportunity for the people participating and attending the event, and also a place to learn new things from mentors and other teammates. Above all, hackathons can help in creating or introducing multiple perspectives in approaching a problem to arrive at a solution. "This event points to a new modality of working with public data and tech, and an excellent learning moment for CeSTII and the HSRC," says CeSTII's **Dr Glenda Kruss**.

Next steps

The results of the hackathon will feed directly into a NACI project entitled 'Upscaling the National Science, Technology and Innovation Information Portal'. It will also be used to inform CeSTII data analysis that is better oriented to diverse users and stakeholders. "Within the context of the release of the new White Paper, this event represented a significant opportunity for DST, NACI and CeSTII to go beyond talking to actual working with stakeholders, including students and young professionals," says **Kruss**.

To learn more about this event, write to Gerard Ralphs (gralphs@hsrc.ac.za).

MENTORS

- Team 1: **Suzanne Wolhuter**, Technology Transfer Manager, Rhodes University
- Team 2: **Dr Glenda Kruss**, Director, Centre for Science, Technology and Innovation Indicators, HSRC
- Team 3: **Prof. Michael Kahn**, Extraordinary Professor, University of Western Cape & Stellenbosch University
- Team 4: **Dr Hamilton Mphidi**, Deputy Director: Innovation Support & Technology Transfer, Vice Rectorate: Research, Innovation & Engagement, Tshwane University of Technology
- Team 5: **Graham Smale**, Founder, Facilitator & Coach, innoSindo
- Team 6: **Claire Busetti**, NACI Counsellor & Government Liaison, SiMODiSA
- Team 7: **Linda Nordling**, Managing Editor, Research Africa

JUDGES

- **Kgomotso Matlapeng**, Senior Policy Analyst, Department of Science and Technology (Chief Judge)
- **Tim Gane**, Director, Private Label
- **Bernd Oellerman**, Director: Regional Industrial Development, the DTI
- **Molefi Mathibeli**, Systems Developer, Department of Science and Technology
- **Prof Thomas Thurner**, Research Chair: Innovation in Society, Cape Peninsula University of Technology
- **Cheryl Heinemann**, Chief Researcher, HSRC CeSTII
- **Adi Eyal**, Director, OpenUp



Team 2 brainstorming sessions. [Image credit: Organisers]



Team 6 participants, Marcia Joubert (Data Science Academy) and Dr Firdous Khan (CeSTII). [Image credit: Organisers]

HACKATHON

PUTTING SOUTH AFRICA'S INNOVATION DATA TO WORK

11-13 September 2018
Level 5 | Alcove | Cape Town Stadium

Logos: science & technology, NACI, HSRC, CeSTII, SUSTNET, SA Innovation

<https://bit.ly/33Qt9nh>



Winning Team team with mentor, Dr Glenda Kruss. [Image credit: Organisers]



Hackathon facilitator, Dr Pieter Van Heyningen (Sustnet). [Image credit: Organisers]

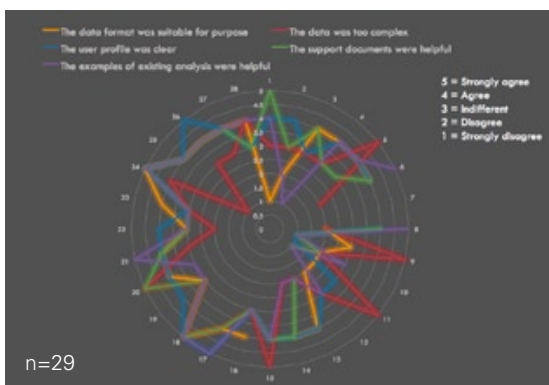
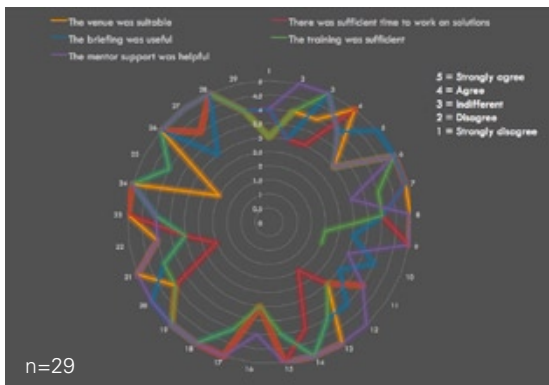


Dr Albert Strever, Winetech, presented wine to each participating team. [Image credit: Organisers]



Pitching session in action. Judging panel and audience. [Image credit: Organisers]

EVALUATION RESULTS



WHAT DID YOU VALUE MOST ABOUT THE HACKATHON EXPERIENCE?

ability activity awesome challenge coming creating creative data
 different engagement exercises experience
 exposure gained government group importance information institution
 learning limited meeting mentor met
 minds opportunity people portable possible pressure problem real
 relationships short solutions solving space teams
 teamwork thank training will work young

WHAT DID YOU LEARN?

achieve analysis bi broadly capturing century collaboration concept create
 data design drive exists experience goal grow idea
 heating importance improving incorporates innovative
 innovation leadership learn learned
 lot management mentor okay pitch power project rewarding sa
 solutions system team teamwork think tools value will
 work youth

CESTII IN THE MEDIA

The Centre for Science, Technology and Innovation Indicators works actively to promote its research through a dedicated outreach strategy. We respond to calls from the media for comment, but also position our research findings for public consumption through opinion editorials.

HEADLINE	DATE	PUBLICATION	LINK (WHERE AVAILABLE)
Dear Mr President: What SA science wants from SONA	7 February 2019	Research Professional Africa	https://bit.ly/30rqGhw
Foreign funding drops in latest R&D spending data	1 November 2018	Research Professional Africa	https://bit.ly/2wc3TbK
SA universities have doubled researcher numbers in a decade – but SA business isn't coming to the party (Sarah Wild)	26 October 2018	Business Insider	https://bit.ly/2EmlRfX
In depth: SA's proposed science policy	13 September 2018	Research Professional Africa	https://bit.ly/2YIR1Gh
SA's social science spend ill-matched to national challenges	2 August 2018	Research Professional Africa	https://bit.ly/30yJviN
<ul style="list-style-type: none"> • Innovation: More needed in business • Committed to harnessing SA's potential • Assessing innovation in SA's enterprises • Measuring science, technology and invention 	28 June 2018	Business Day & Financial Mail	
Innovation can defeat poverty and inequality, if we do it right (Felicity Duncan)	19 June 2018	BizNews	https://bit.ly/2W1DZGa
Interview with Dr Glenda Kruss	18 June 2018	SAFM	
Ngula Ya Vutivi (Interview with Dr Hlamulo Makelane)	7 June 2018	SABC 2	https://bit.ly/2HMoB7d
SA services sector can help tackle poverty	6 June 2018	The Messenger South Africa	https://bit.ly/2WK6ogT
Interview with Dr Glenda Kruss and Dr Moses Sithole	5 June 2018	Cape Talk	
How South Africa's services sector can help tackle poverty and inequality	4 June 2018	The Conversation	https://bit.ly/2Q4ldHv
SOEs must double their research—report	29 March 2018	Research Professional Africa	https://bit.ly/2Qh5aHv

OUR STAFF

CAPACITY ENHANCEMENT

Training of CeSTII staff is a key component of our core business and integral to the broader HSRC mandate. We recruit Master's and PhD Research Interns periodically, and aim to provide an environment in which they can receive the necessary support to ensure that they are well capacitated for their professional and career growth, as researchers in South African national system of innovation.

CeSTII Trainees in 2018/19:

- **Yasser Buchana**, enrolled for a PhD Degree at University of Cape Town (graduated in 2018)
- **Janine Senekal**, enrolled for a Master's Degree at University of Western Cape (graduated in 2018)
- **Thembinkosi Zulu**, enrolled for a Master's Degree at University of Zululand (graduated in 2019)
- **Nhlanhla Malaza**, enrolled for a Master's Degree at University of KwaZulu-Natal
- **Xolisa Magawana**, enrolled for a PhD Degree at University of South Africa
- **Nicole van Rheede**, enrolled for a PhD Degree at University of Cape Town
- **Nozibele Gcora**, enrolled for a PhD Degree at University of Cape Town

CESTII 2018 LEKGOTLA

Our strategic planning and team building session for 2018/19 was held at the Wash House conference venue, near Table Mountain. The convening provided an opportunity for the team to review CeSTII's threats and weaknesses, and to explore opportunities and strengths.



Team challenge: Theme 2 team uses old paper survey questionnaires to construct the tallest tower possible. [Image credit: G. Ralphs]



Theme 1 team. [Image credit: G. Ralphs]



Theme 3 team. [Image credit: G. Ralphs]



The winner? [Image credit: G. Ralphs]

GETTING TO KNOW CESTII'S POST-DOCTORAL RESEARCH FELLOW



Dr Yasser Buchana graduated at the University of Cape Town in December 2018 with a PhD in Information Systems. His doctoral thesis, *Generative Mechanisms of IT-enabled Organizational Performance in Resource-Constrained EMS Organisations in South Africa*, has already gained traction in the Department of Health. Stevens Mocheki, a DST-NRF Intern at CeSTII, interviewed Dr Buchana in early 2019 about his career path and goals.

How have CeSTII and the HSRC supported your academic journey so far?

I applied for a HSRC PhD Research Internship at CeSTII in 2015, after a fellow PhD student at University of Cape Town told me about the vacancy. I attended an interview, and got a call in December 2016 asking me if I was still interested in the position. I accepted without hesitation. This is my third year with CeSTII now, and I am loving every bit. When I started at CeSTII, I was already at the final stage of my PhD research, but the support I got from colleagues was enormous and greatly appreciated. Indeed, I received moral support from all corners of CeSTII, this gave me the strength and motivation to complete and submit my thesis. The forty percent time allocated to HSRC Research Interns to carry out their academic work was more than enough. This shows that the HSRC also cares about the academic achievements and professional growth of their interns.

What projects are you currently working on and what role do you play?

I am currently heading a project called *Measurement of Agricultural Business Innovation in South Africa*, with the support of CeSTII's Research Director and other team members. This involves surveying approximately 1,700 companies in the farming, fisheries and forestry industries of the South African economy. Before that, most of my time was dedicated to supporting a much larger project, the South African Business Innovation Survey 2014 – 2016, which examined innovation activities in South African firms across the industrial and services sectors.

Can you tell our readers about the conferences you have attended while at CeSTII?

Since joining CeSTII, I have presented at two conferences. The first was the Americas Conference in Information Systems (AMCIS), held in Boston in 2017. This was a huge conference, attended by thousands of academics and practitioners, and which contained many presentations and activities. This was really an eye-opener for me, as it was the first time I had presented a paper at a conference of such magnitude. The second was the HSRC Conference in 2018, held in Pretoria, where I presented a paper that I was working on in collaboration with Dr. Glenda Kruss and Dr. Moses Sithole on science, technology and innovation indicators. I hope to present at other conferences soon.

Tell us about your publications and your plans for publishing, going forward.

I have published one paper, based on my doctoral work, in the *Electronic Journal of Information Systems in Developing Countries*. This is one of the leading journals within the field of ICT for development.

I also have a paper submitted for publication in the *Information Systems Journal*, one of the top eight journals in the field of Information Systems. I am currently working on revisions to the article as part of the journal's peer-review process.

In terms of my outlook for publications, my focus and interest is shifting from Information Systems to Innovation Systems. With my formal training and background in

Information Systems, I have now discovered a passion for Innovation Systems ever since I started working here at CeSTII. I really love what I am doing at the moment.

Can you tell our readers a bit about your own life story and how this influenced you to pursue an academic career?

I was born in Rwanda and lost my father in 1997, when I was only 10 years old. My father had a large influence on me. I still feel his presence and still remember his teachings more than 20 years after his passing. He taught me the value of formal education from an early age. My mother, on the other hand, gave me the freedom to explore what I wanted to do. That allowed me to craft my own path in life. I am what who I am today because of the both of them.

What drives you as a person? What is your “life philosophy”?

As a practicing Muslim, my philosophy in life is influenced a lot by my religious beliefs, and I am driven by the need and hunger to make a difference in whatever I do; be it professional, academic or social.

What is your vision for the future?

One thing about me is that I am not a corporate person; I am not a nine-to-five person. So I don't envision myself working a nine-to-five job that has nothing to do with research. The corporate world is not for me. I am an academic, through and through. While still at CeSTII, I want to embed myself in the academic field of STI measurement space until I find my niche. I want to do as much as I can in terms of publications and developing myself until I have my own voice in this field. For the distant future, at some stage I would like to go back to academia, teach and do research there. Having worked as an assistant lecturer in academia before, there is nothing more fulfilling than seeing graduates you taught become important people because of your work. The one thing that will remain constant is my love and aspirations for research.

HSRC Seminar Series on Innovation and Development in collaboration with the Centre for Science, Technology & Innovation Indicators

invitation

Can information technology really boost performance in resource-constrained emergency healthcare organisations? A critical realist perspective

Presenter: Yasser Buchana, Centre for Science, Technology and Innovation Indicators, HSRC
Chair: Dr Moses Sithole, Centre for Science, Technology and Innovation Indicators, HSRC

Date: 3 October 2017 **Time:** 12h30 – 13h30
Venues: Pretoria, Durban, Cape Town

Information and communication technologies (ICT) have been widely promoted as a mechanism for poverty eradication, wealth creation and well-being. While the term ‘development’ remains contentious, the use of ICT has become ubiquitous within healthcare organisations in developing countries. However, the typically telecentric approach of early ICT4D thinking and practice has thrown up as yet unanswered questions of sustainability, scalability, and evaluation.

Due to high levels of poverty and the resource constraints this creates, many people in developing countries remain excluded from the full benefits ICT can offer public healthcare organisations. In these resource-constrained contexts, emergency medical services (EMS) organisations face particular challenges when it comes to the use of ICT as tool for performance enhancement. Since the provision of emergency services to sick and injured patients involves intensive use of ICT, an investigation into the relationship between ICT use and organisational performance, in the context of resource-constrained EMS organisations, is therefore essential. This seminar will explore the micro-level ICT mechanisms that can enable EMS organisations in resource-constrained settings to achieve their performance outcomes. It will focus on how these micro-level mechanisms actually work, and what can be done to improve them.

The HSRC seminar series is funded by the Department of Science and Technology (DST). The views and opinions expressed therein as well as findings and statements of the seminar series do not necessarily represent the views of the DST.

Cape Town: HSRC, 110-118 Merchant House, Ballegracht Street, Cape Town, Contact: Carmen August, Tel: (021) 4680004, Fax: (021) 461 0299 or e-mail: caugust@hsrc.ac.za
Durban: The Atrium, 3rd Floor, 430 Pines Mikulka Ridge, Berea, 4001, Contact: Rubenani Khan, Tel: (031) 242 5400, cell: 083 788 2196 or email: rkhan@hsrc.ac.za or hringani.zulu@hsrc.ac.za
Pretoria: HSRC Value Centres, 5th Floor HSRC Library Human Sciences Research Council, 134 Pretorius Street, Pretoria. **Achille Goolbslagh**, Tel: (012) 302 2823 or e-mail: agoolbslagh@hsrc.ac.za

Social science that makes a difference



[Image credit: Jonathan S. Anzuluni (@iamSudiJons)]

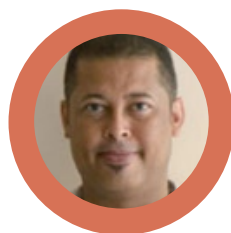
TEAM CESTII



Dr Glenda Kruss
Deputy-Executive Director



Dr Moses Sithole
Research Director



Dr Nazeem Mustapha
Chief Research Specialist



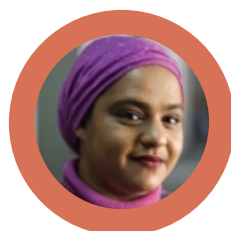
Dr Neo Molotja
Senior Research
Specialist



Dr Il-Haam Petersen
Senior Research
Specialist



Dr Saahier Parker
Research Specialist



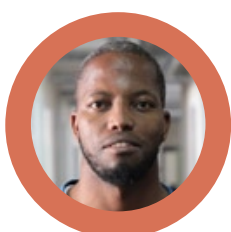
Dr Firdous Khan
Post-Doctoral Fellow



Dr Hlamulo Makelane
Post-Doctoral Fellow



Dr Yasser Buchana
Post-Doctoral Fellow



Dr Kgabo Ramoroka
Chief Researcher



Cheryl Heinaman
Chief Researcher



Natalie Vlotman
Chief Researcher



Sibusiso Innocent Ziqubu
Data Analyst



Curtis Bailey
Data Analyst



Precious Mudavanhu
Statistician



Jerry Mathekga
Senior Researcher



Mario Clayford
Senior Researcher



Nozibele Gcora
PhD Research Intern



Xolisa Magawana
PhD Research Intern



Theodore Sass
PhD Research Intern



Nicole Van Rheede
PhD Research Intern



Nhlanhla Malaza
Master's Research Intern



Ndiyakholwa Ngqulu
Master's Research Intern



Janine Senekal
Master's Research Intern



Thembinkosi Zulu
Master's Research Intern



Lindiwe Binda
Database Analyst



Natasha Saunders
Fieldwork Manager



Maria Maluleke
Financial Administrator



Gerard Ralphs
Programme Manager
& Policy Analyst



Ziniswa Hlakula
Administrator



Vuyiseka Mpikwa
PA to Deputy-Executive
Director



Audrey Mahlaela
Research Assistant
(Business Innovation
Survey 2014-2016)



Refiloe Mokitlane
Research Assistant
(Business Innovation
Survey 2014-2016)



Ncebakazi Somtsewu
Research Assistant
(Business Innovation
Survey 2014-2016)



**Nkhandedzeni
Nedzungani**
Research Assistant
(Business Innovation
Survey 2014-2016)



Innocentia Hlazo
Research Assistant
(Business Innovation
Survey 2014-2016)



Siyasanga Mpehle
Research Assistant
(Business Innovation
Survey 2014-2016)



Viwe Sigenu
Research Assistant
(Business Innovation
Survey 2014-2016)



Mbo Moss
Research Assistant
(Business Innovation
Survey 2014-2016)



Musa Hlungwani
Research Assistant
(Business Innovation
Survey 2014-2016)



Phathu Mushanganyis
Research Assistant
(Business Innovation
Survey 2014-2016)



Pelonomi Kgagodi
Research Assistant
(Business Innovation
Survey 2014-2016)



Tebogo Maluleke
Research Assistant
(Business Innovation
Survey 2014-2016)



Siyabonga Sibulawa
Research Assistant
(Business Innovation
Survey 2014-2016)



Khetha Gwala
Research Assistant
(Business Innovation
Survey 2014-2016)



Tintswalo Baloyi
Research Assistant
(Business Innovation
Survey 2014-2016)



Lezaan Muller
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Survey 2014-2016)



Ayanda Daniso
Research Assistant
(Business Innovation
Survey 2014-2016)



Mbulelo Mshudulu
Research Assistant
(Business Innovation
Survey 2014-2016)



Nokukhanya Tiyane
Research Assistant
(Business Innovation
Survey 2014-2016)



Mieta Klaasen
Office Cleaner



Chantal Instain
Office Cleaner



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Human Sciences
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