



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

2016/17
ANNUAL REVIEW
REPORT



CeSTII
Centre for Science, Technology
& Innovation Indicators

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CONTENTS

CONTENTS	1
WHY MEASUREMENT MATTERS	2
SOLID FOUNDATIONS, NEW BEGINNINGS	3
INTERNATIONAL ADVISORY COMMITTEE	4
FLAGSHIP PROJECTS	7
THEME 1: MEASURING R&D CAPACITY IN SOUTH AFRICA	7
R&D Survey 2014/15	7
SA R&D Survey In Brief	8
THEME 2: MEASURING INNOVATION CAPACITY IN SOUTH AFRICAN FIRMS	9
Review of the Business Innovation Survey	9
THEME 3: NEW INDICATOR DEVELOPMENT	10
IP&TT Baseline Survey	10
COLLABORATION & NETWORKS	11
FORMAL INSTITUTIONAL LINKAGES	11
National Centre for Technology Management, Nigeria	11
VISITING RESEARCHERS	11
National Commission on Research, Science and Technology, Namibia	11
HSRC Annual Innovation and Development Lecture	12
Research Visit by Dr Isabel Bortagaray of the University of the Republic, Uruguay	12
An Interview with Dr Isabel Bortagaray	13
CONFERENCES & CONVENINGS	15
OECD National Experts on Science and Technology Indicators	15
Southern African Development Community Regional Workshop on Capacity in Data Development in Science, Technology and Innovation and STI Policy Implementation for Sustainable Development in Africa	16
HSRC Social Science Research Conference	16
OECD BLUE SKY FORUM 2016: Towards the Next Generation of Data and Indicators	17
New Partnership for Africa's Development, African Science, Technology and Innovation Indicators Programme	17
R&D Survey Workshops with Higher Education Respondents	18
OECD Symposium on Technology, Innovation and Inclusive Growth: Future Perspectives	18
SOCIAL OUTREACH	19
Mandela Day 2016	19
ABOUT CESTII	20
TEAM CESTII	20
CESTII TEAM PROFILES	21
KEY CESTII STAKEHOLDERS	24

WHY MEASUREMENT MATTERS



Prof. Crain Soudien

Chief Executive Officer: Human Sciences Research Council

The survey research performed by the Centre for Science, Technology and Innovation Indicators (CeSTII), the data it generates through this research, and the varied capacity building roles that CeSTII plays, all have ripple effects in many different domains of national, regional and international evidence-based policymaking, as well as within the HSRC.

At the national level, CeSTII's R&D survey results form an integral part of the evidence base informing the planning and co-ordination of the National System of Innovation (NSI). The Draft White Paper on Science, Technology and Innovation, released in mid-2017 for comment, draws extensively from the most recent R&D data. R&D data for 2014/15, and the results of the IP & Technology Transfer baseline survey, were widely reported across the national media in April 2017; and these data provided the basis for discussion by not only government policymakers, but also civil society, higher education and business, including at a policy roundtable event held at the Innovation Hub, Pretoria, which attracted over 150 participants.

Regionally, CeSTII continues to collaborate closely with African member states, such as Namibia's National Commission on Research, Science and Technology (NCRST), on R&D and innovation data analysis. In January 2017, a delegation from NCRST visited the HSRC for a one-week training course facilitated by CeSTII statisticians, in preparation for the launch of Namibia's first innovation survey in 2017. CeSTII also works on data validation with the African Science and Technology Indicators Initiative (ASTII), a programme of the New Partnership for Africa's Development (NEPAD), supporting member states from across Africa to ensure the rigour and coherence of STI measurement.

Internationally, research data we curate is regularly submitted to the Organisation for Economic Co-operation and Development (OECD) for inclusion in global repositories of R&D and innovation statistics, and CeSTII's research leaders are regular participants at

the annual OECD Working Party of National Experts for Science and Technology Indicators (NESTI). CeSTII's presence with DST at the most recent NESTI meeting in Paris to discuss revisions to the Oslo Manual and the implementation of the Frascati Manual (2015), once again affirmed CeSTII's role as a credible voice within global measurement circles. It brings to this role the advantage of sitting in a 'southern' space and bringing insights from the global south into the innovation discussion. The enormity and privilege of being able to perform this role sits heavily on CeSTII. It approaches this burden, however, with more than a sense of duty. The moment is a great opportunity to review concepts and to add to their capacity to illuminate and describe contexts and situations that do not ordinarily appear in standard measurement models.

CeSTII is also building the capacity of the next generation of R&D and innovation survey leaders. In 2016/17, CeSTII trained doctoral interns and post-doctoral fellows, and grew the capacities of its core administrative and research cohort. These professionals were exposed to the full range of fieldwork, research communication and research management tasks, helping them to gain critical administrative and research skills.

Research is impactful if it generates outcomes with the potential to effect larger scale changes in policy, practice or behaviour. The research that CeSTII performs regularly informs policymaking processes nationally and internationally, and the credibility of CeSTII's work enables it to continue to perform this role while developing new research directions that can assist in bridging measurement gaps.

SOLID FOUNDATIONS, NEW BEGINNINGS



Dr Glenda Kruss

Deputy-Executive Director: CeSTII, Human Sciences Research Council

The Centre for Science, Technology and Innovation Indicators underwent significant organisational change in the 2016/17 financial year. This is a process that is continuing as we reinforce our core business and explore new research areas.

The Centre for Science, Technology and Innovation Indicators (CeSTII) contributes official statistics for science, technology and innovation (STI), a function that is generally performed by national statistical agencies in other countries. The South African Department of Science and Technology (DST) provides ring-fenced funding to CeSTII for these and related analytical and research activities. The requirements to adhere to national and international data quality standards, for meeting local STI measurement needs and for ensuring comparability with internationally accepted practices, has shaped CeSTII's role in the HSRC in a distinctive manner. It is strategically inserted into national, regional (SADC and Africa-wide) and global research and policy communities concerned to promote the role of STI in development.

CeSTII has built up a rich database with 15 years of trend data on R&D and innovation that can be mined. Most of CeSTII's research has centred on the national research and experimental development surveys (R&D Survey) and the innovation surveys, with the addition of a survey of Intellectual Property and Technology Transfer from publicly funded research in 2014, which was launched in April 2017. This means that CeSTII is well placed to respond and contribute to new concerns to understand how knowledge, technology and innovation can be oriented to address poverty, inequality and unemployment, and promote inclusive growth and development.

There is a growing recognition that Africa needs STI led development. However, the dominant innovation and economic models adopted can widen inequality and exclude the majority from its benefits, particularly if applied without careful consideration of the context. There is growing support for a shift from a predominant

emphasis on the goal of promoting growth and competitiveness to emphasise inclusive socio-economic development – but little experience in how to intervene and to measure the impact of interventions. These shifts provide a framework to guide and orient CeSTII's expanding research agenda and work programme over the next five years.

Going forward, our strategic challenge and focus for the 2017/18 year is to stabilise the CeSTII team, and strengthen its capacity to deliver on its core mandate: to conduct the national R&D and business innovation surveys effectively and with improvements to the quality of the data. In the medium to long term, CeSTII faces the challenge to be a thought leader, to conceptualise new research and extend the scope and analysis of our current surveys, to be able to develop measures and indicators to contribute to a broader framework of innovation and inclusive development. Pilot work and stakeholder engagement processes to set the research agenda (and to take into account the outcomes of the current White Paper process), will be initiated in 2017/18.

While there remains much capacity building to be done, CeSTII staff are motivated to contribute to the academic literature on STI policy and indicators in emerging economies. In line with the HSRC's current strategic focus on poverty, inequality and unemployment, and the recommendations of the BIS review reported on in this publication, CeSTII's strategic planning for the FY2017/18, which took place in the final quarter of FY2016/17, incorporates a dedicated project to explore measurement of innovation in the informal sector.

I hope that you will enjoy learning more about our work and team through this annual review report.

INTERNATIONAL ADVISORY COMMITTEE

An independent and international advisory committee provides the Centre for Science, Technology and Innovation Indicators with advice on the conceptualisation, planning, development and implementation of the research agenda. In February 2017, a new Committee was constituted.*



Prof. Fred Gault (Chair)

Fred Gault is a 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)

Sunil Mani 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 is specialised 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*. Sunil Mani holds a PhD in Economics from Jawaharlal Nehru University, New Delhi and has done post-doctoral research at the University of Oxford.

* The Committee's secretariat is based at CeSTII and includes Dr Glenda Kruss (Deputy-Executive Director: CeSTII); Gerard Ralphs (Programme Manager & Policy Analyst); and Zinziswa Hlakula (Administrative Officer). To contact the secretariat, write to gkruss@hsrc.ac.za.



Mr Petrus Letaba (MBA)

Petrus Letaba 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

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 master 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

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 the Science and Policy Research Unit (SPRU), 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 Pedro Mendi

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 a 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

Ann Kingiri is a science, technology and innovation (STI) researcher with a focus on inclusive and sustainable development in Africa. Ann 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 a policy research settings. She has over 20 years of experience working with the public, private sector and development partners in the area of development particularly targeting Africa. Currently she is Senior Research Fellow and previously the Director of Research at African Centre for Technology Studies (ACTS), a development policy think tank, working to harness STI applications of for sustainable development.



Dr Susan Cozzens

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).

FLAGSHIP PROJECTS

In 2016/17 the Centre for Science, Technology and Innovation Indicators re-doubled its efforts to deliver on flagship projects in three key thematic areas.

THEME 1: MEASURING R&D CAPACITY IN SOUTH AFRICA

R&D Survey 2014/15

The South African National Survey on Research and Experimental Development 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. In 2016, the CeSTII R&D survey team completed fieldwork for the 2014/15 cycle of the survey, and initiated fieldwork for 2015/16 cycle.¹

Statistical quality assurance of the 2014/15 results in terms of the South African Statistical Quality Assessment Framework (SASQAF) was performed through the R&D Survey Clearance Committee, headed up by Statistics South Africa. The 2014/15 survey's *Statistical Report* and *Main Analysis Report* were both publically released in early April 2017 at a high level multi-stakeholder policy roundtable, entitled "Is South Africa using its knowledge base to increase economic efficiency?"² "The 2014/15 R&D survey shows an improving positive outlook for R&D investment in South Africa," reflects South African Minister of Science and Technology, Naledi Pandor, in her preface to the *Main Analysis Report*. "This is the fourth consecutive year that GERD has increased in real terms, after the contraction in 2009/10."



¹ The 2013/14 results, published in May 2016, are reported on in the *HSRC Integrated Annual Report 2015/16*. <http://www.hsrc.ac.za/en/about/strategic-documents/annual-reports>

² To watch a live recording of the event visit https://youtu.be/J0gp_ejfpXs

SA R&D Survey In Brief

The South African National Survey of Research and Experimental Development presents statistical indicators about the level of investment in R&D, trends and the structure of sectors performing R&D. This information forms the basis for setting and monitoring relevant policy targets and priorities. South Africa has undertaken R&D surveys since the 1960s. CeSTII has undertaken this task since 2001 under the auspices of the Department of Science and Technology.

“ We are on the march in terms of increasing our R&D investment, ensuring that we stimulate the creation and emergence of vibrant innovative start up companies in our country, enhancing our skills pool in ensuring we have the technical expertise to derive value from the new changes evident in our country and ensuring that we have appropriate mechanisms to respond to the ever-changing nature of research and development activity in our country. So I am pleased to submit these reports to the public of SA.”

**Minister of Science and Technology,
Naledi Pandor (12 April 2017)**

Box 1. Headline results from the 2014/15 survey

Gross Expenditure on R&D (GERD) increased from 0.73% in 2013/14 to 0.77% in 2014/15.

The largest performer of R&D in 2014/15 was the business sector (45.3% of GERD), followed by higher education (28.5% of GERD), then higher education (17.1%), government (6.5%) and not-for-profit organisations (2.7%).

In Rand terms, expenditure on R&D by sector in 2014/15 was recorded as business (R13.3 billion), higher education (R8.4 billion), science councils (R5 billion), government (R1.9 billion) and not-for-profit organisations (R779 million).

Government provided the most funding for R&D in South Africa in 2014/15, notably R12.9 billion or 43.9% of total R&D funding. The business sector contributed R12 billion to R&D in South Africa, or 40.8% of total R&D funding. Foreign sources of R&D funding comprised 12.2% of total R&D funding or R3.6 billion.

While expenditure on basic research increased from 23.8% of GERD in 2010/11 to 24.3%, expenditure on experimental development dropped to 26.9% in 2014/15 from 28.9% in 2013/14. Expenditure on applied research increased from 47.3% of GERD in 2013/14 to 48.8% of GERD in 2014/15.

In terms of R&D personnel, the headcount grew by 5.2%, from 68,838 in 2013/14 to 72,400 in 2014/15.

Full report available at <https://goo.gl/6qX1Nf>

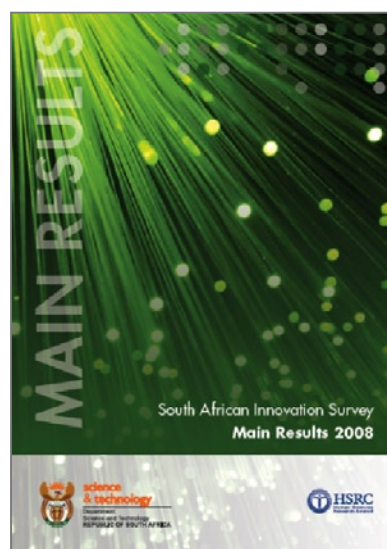
THEME 2: MEASURING INNOVATION CAPACITY IN SOUTH AFRICAN FIRMS

Review of the Business Innovation Survey

The South African Business Innovation Survey (BIS) is a second flagship survey performed by CeSTII for the DST. Since 2005, CeSTII has conducted three rounds of the BIS, covering the periods 2002-2004, 2005-2007 and 2010-2012. These surveys have followed the methodology set out in the Oslo Manual, though measurement of innovation has tried, where possible, to take into account the distinctive context of South Africa—being in Africa, the Global South, and characterised as a middle income country, with both highly and weakly developed economic structures, and pressing socio-economic challenges.

A number of challenges were faced in the performance of the most recent Business Innovation Survey (2010-2012). An immediate problem was the low response rate, but this highlighted key conceptual and methodological issues, such as whether the survey is measuring what it should and whether the methodology is appropriate for the South African context. As a result, DST, as the survey's core funder, identified the need for a comprehensive review of the BIS.

Working closely with the DST, in 2016 CeSTII embarked on a dedicated project to review the BIS. Its goals? To reflect on the innovation theory and methodology underpinning the BIS in the context of the review of the third edition of the Oslo Manual, which is currently underway; and to propose amendments to the survey instrument and sample frame in line with developments across the South African economy.



The review process was necessarily in-depth and incorporated three components: first, an internal and critical self-assessment; second, an external review by a specialist consultant, incorporating an international comparative perspective; and third, the oversight of a BIS Review Steering Committee consisting of stakeholders such as the National Advisory Council on Innovation (NACI), Statistics South Africa, the Technology Innovation Agency (TIA), and the DST. Incorporating the results of the review, the next Business Innovation Survey will cover the period 2014-2016, with fieldwork expected to commence in August 2017.

Box 2. Three key recommendations of the BIS review

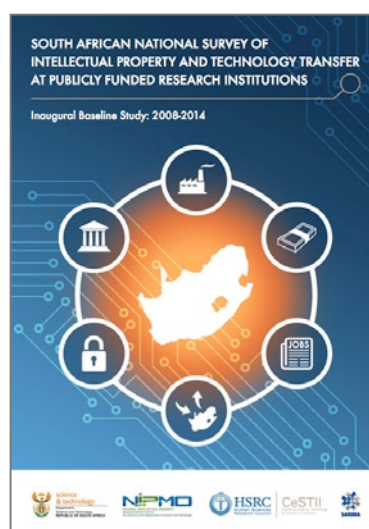
1. Recognise the limitations and value of standard approaches to innovation measurement.
2. The Oslo/CIS methodology should continue as the framework for innovation measurement in the formal sector.
3. DST and CeSTII should consider other, more suitable methodologies to fill measurement gaps.

THEME 3: NEW INDICATOR DEVELOPMENT

IP&TT Baseline Survey (2008-2014)

In 2016/17 the CeSTII team worked toward the completion of a research partnership project involving the DST, the National Intellectual Property Management Office (NIPMO), and the Southern African Research and Innovation Management Association (SARIMA). The *South African National Survey of Intellectual Property and Technology Transfer in Publicly Funded Research Institutions: Inaugural Baseline Study (2008-2014)* was launched in April 2017 at the Innovation Hub in Pretoria.¹ “This inaugural survey is an important addition to a portfolio of instruments that are used in assessing the performance of the South African National System of Innovation (NSI),” writes Minister of Science and Technology, Naledi Pandor, in her preface to the report. “The survey helps to define, in practical terms, specific indicators that government and its stakeholders, including the broader community of technology transfer practitioners, can use to measure the capacity, outputs and targeted outcomes and ultimately impacts of publicly funded R&D.”

The South African National Survey of Intellectual Property and Technology Transfer at Publicly Funded Research Institutions Project was embarked on to establish the baseline indicators that are required to track overall activity in Intellectual Property (IP) management and Technology Transfer (TT). The survey was sent to all ‘institutions’ as defined in the Intellectual Property Rights from Publicly Financed Research and Development Act (IPR Act), which are the 23 Higher Education Institutions (HEIs) and the 10 Schedule 1 institutions or Science Councils (SCs). Valid responses were obtained from 24 institutions. Of these, 23 indicated that they have either established a dedicated office of technology transfer (OTT), have dedicated TT individuals or are members of a regional office.



Box 3. Headline results from the IP&TT Baseline Survey (2008-2014)

- Management of technologies, patent families, trade mark families, registered design families and new patent applications filed increased more rapidly than the increase in research expenditure, which indicates acceleration of these activities relative to research expenditure. On average, 100 new technologies were added annually between 2011 and 2014 to the portfolio managed by respondent institutions.
- There has been a quadrupling in the actual number of licences executed per year in the period. Of significance is that more than 88% of this revenue accrued consistently each year to the same four institutions that have well-established TTFs. The majority of IP transactions yielded less than R100 000 per year.
- In total, 45 start-up companies were formed over the period to commercialise the institutions’ technology, 73% of which were based on publicly funded IP.

Full report available at <https://goo.gl/DegXp9>

¹ To watch the livestream recording visit https://youtu.be/J0gp_ejfpXs

COLLABORATION & NETWORKS

The Centre for Science, Technology and Innovation Indicators interacted with a range of collaborators in 2016/17. 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.

FORMAL INSTITUTIONAL LINKAGES*

National Centre for Technology Management (NACETEM), Nigeria

Recognising the shared interests of NACETEM and CeSTII, the Nigerian and South African counterparts concluded a memorandum of understanding for collaboration and sharing data on R&D and innovation in Africa in the last quarter of the 2016/17 financial year. CeSTII is represented by Deputy-Executive Director, Dr Glenda Kruss, and NACETEM by Dr Abiodun Egbetokun, who is Head: Science Policy and Innovation Studies.

Learn more about NACETEM | <https://goo.gl/5THXPq>

*The Centre for Science, Technology and Innovation Indicators also worked toward the preparation of an MOU with Namibia's NCRST, which was concluded in May 2017. CeSTII's 2017/18 Annual Review Report will document joint activities undertaken in more detail.

L-R: Loyiso Maciko, Precious Mudavanhu, Moses Sithole, Nelago Indongo, Leickness Simbayi, Cheryl Moses, Lwando Kondlo, Loide Ughengo, Firdous Khan, Gernot Piepmeyer, Grant Balie, Crain Soudien, Modikoe Patjane, Glenda Kruss, Charles J Hangara, Diina Shuluka. Photo credit: G Ralphs

VISITING RESEARCHERS

National Commission on Research, Science and Technology (NCRST), Namibia

A delegation from the NCRST attended a weeklong training workshop on analysing innovation data, held from 16-20 January 2017 at the HSRC Cape Town offices. Dr Moses Sithole and Precious Mudavanhu, who work on South Africa's R&D and innovation surveys, led the training on behalf CeSTII and the HSRC.

Welcoming participants HSRC CEO, Prof. Crain Soudien, highlighted the challenge of inequality faced by South Africa and Namibia, urging CeSTII and NCRST to consider the link between STI surveys and the social and developmental realities that survey data reflect. He also encouraged the organisations to actively explore the development of new indicators.

Dr Diina Shuluka from NCRST reminded participants that Namibia's first innovation survey results are imminent, and thanked the HSRC and CeSTII for their training inputs. "We appreciated their uncompromised sharing of information and experiences," Prof. Nelago Indongo from the University of Namibia also said.

Learn more about NCRST | <https://goo.gl/XZfspR>



HSRC Annual Innovation and Development Lecture

3 March 2017 | Cape Town, South Africa



Photo credit: K. J. Joseph

Honouring the life and academic contributions of former HSRC researcher, Jo Lorentzen, Prof. K. J. Joseph of the Centre for Development Studies, Kerala, India, and editor of the journal *Innovation and Development*, used the opportunity of the lecture to emphasize the importance of learning, interaction, and competence building in the context of agricultural innovation systems. Joseph's presentation covered case studies from China and India. The lecture was livestreamed and can be viewed on YouTube (see links below).

Watch lecture

*Part 1: <https://youtu.be/YdfZpZVHMAU>

Part 2: <https://youtu.be/dpVrPi8fdFo>

*Due to technological problems, please note the sound in Part 1 is only available from the 28th minute onward.

“ Let me conclude with the words of Jo Lorentzen: A poor country that invests little in R&D is not necessarily one in which no innovation takes place. It is only when innovation in low-income countries becomes better understood that policy can begin to address problems whose solutions have eluded the poor for a long time.”

Prof. K. J. Joseph

Research visit by Dr Isabel Bortagaray of the University of the Republic, Uruguay

February 2017 | Cape Town, South Africa



Photo credit: G. Ralphs

Isabel Bortagaray holds a PhD in public policy from the Georgia Institute of Technology (2007), and works at the Institute for Sustainable Development, Innovation and Social Inclusion at the University of the Republic, Uruguay. For three years, Bortagaray was responsible for the Latin America and the Caribbean programme on Science, Technology and Innovation at Canada's International Development Research Centre. She has an extensive research trajectory in the field of innovation, science, and technology policy in developing countries, including Argentina, Colombia, Costa Rica, El Salvador, Panamá, and Uruguay.

An Interview with Dr Isabel Bortagaray

What were your motivations for visiting HSRC as a research fellow.

Looking back on what was a very fruitful visit indeed, I would say there were a few main motivations for me. I value highly the work of the HSRC generally and, in particular, its work in the field of STI Studies through its Centre for Science, Technology & Innovation Indicators (CeSTII). CeSTII's work has in fact for some time now been a reference point for my own work in the Latin American context, and the CeSTII director, Dr Glenda Kruss, and I worked closely together in 2016 on a project concerning innovation and inclusive development, which provided some of the background for my visit in 2017.

The idea of working with Dr Kruss and her team to help to develop an agenda for research on the theme of Innovation for Inclusive Development (IID) in the context of South Africa was a challenging and interesting prospect for me. As this is a relatively new area for CeSTII, the timing of my visit was also fortuitous and provided an opportunity to share some of the older and newer ideas I have been working on with the team. Third, CeSTII's work on building the capacity of scholars is very closely aligned to with the work I do in Uruguay, in terms of teaching, mentoring, and research. In a number of different ways, therefore, it was a strong match.

What topics/initiatives did you work on while a visiting fellow at CeSTII?

There were three main streams of work that I engaged in during my visit. The first stream involved bringing new perspectives and approaches to CeSTII in terms of research content. In this regard, I delivered a HSRC Seminar on the topic of STI for Inclusive Development (see seminar abstract overleaf), as well as engaged in a number of informal theoretical and methodological discussions with the CeSTII team.

The second stream concerned research support for CeSTII researchers. The team has many strengths in terms of data management and data analysis, and my goal was to work with these strengths to connect the data questions to broader themes within the STI

and inclusive development research agenda. Here, I worked specifically on abstract development with the CeSTII team as a way of encouraging journal writing skills and thinking about the framing of research in the context of academic publishing. The third stream of work concerned pinning down some of the discussions and topics that arose during my visit into articles for publication. I worked on two pieces during my time at CeSTII, including one which will be published in the January-March issue of the HSRC Review.

What are some of the insights/lessons you take with you as a result of your time at CeSTII? HSRC?

I found it extremely interesting to be a member of the CeSTII team at a time when the organisational momentum in CeSTII and HSRC is changing quickly. The CeSTII team demonstrated great openness to collaboration, which is very encouraging from an international linkage perspective. I should also say that my visit provided an important opportunity to explore a number of challenging conceptual issues, such as the work on innovation in informal settings. In other ways, the experience pushed me to try to get more familiar with the SA and African contexts. Indeed, there is room for cross-fertilisation and learning between Latin America and Africa, and in particular from the case of South Africa is interesting to find so many interesting groups and an innovative research agenda. There are lots of commonalities between our two regions and I think more research collaboration between the two regions is needed on topics of mutual interest and concern.

*This interview was prepared by Gerard Ralphs, Programme Manager & Policy Analyst in the Centre for Science, Technology & Innovation Indicators (gralphs@hsrc.ac.za).

“The team has many strengths in terms of data management and data analysis, and my goal was to work with these strengths to connect the data questions to broader themes within the STI and inclusive development research agenda.”

Dr Isabel Bortagaray



HSRC SEMINAR invitation

Science, Technology and Innovation for inclusive development: Concepts and approaches

Date: 09 February 2017 | **Time:** 13h30 – 15h00 | **Venues:** Pretoria, Durban and Cape Town

Guest Speaker: Isabel Bortagaray, Institute of Sustainable Development, Innovation and Social Inclusion (IDIIS), University of the Republic, Uruguay

The 1996 White Paper on Science and Technology's priority concern was for science, technology and innovation to advance and improve South Africa's competitiveness, but equally, to improve the quality of life for all. Reviews of the national system of innovation indicate that inclusion in access, participation and benefit sharing for all role-players remains an elusive goal. DST is currently working at the global STI policy frontier, to design a dedicated strategic focus on Innovation for Inclusive Development (IID). IID is defined as "innovation that addresses the triple challenge of inequality, poverty and unemployment and enables all sectors of society to equitably access the STI infrastructure, participate in creating and actualizing innovation opportunities, as well as enabling all individuals to share in the benefits of innovation to advance development goals". How to design policy strategies and interventions to achieve these goals in an integrated manner across government is a major challenge.

This presentation contributes to stimulate the South African debate, by analyzing key concepts and approaches to promote science, technology and innovation for inclusive development. It attempts to 'unpack' the wide range of concepts used, and to overview related experiences that are being implemented in various global contexts, particularly, in Latin American countries. Finally, it introduces a set of questions and challenges to inform an STI for inclusive development research agenda.

Kindly RSVP by 7 February 2017

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 DST.

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Pretoria : HSRC Video Conference, 1st floor HSRC Library Human Sciences Research Council, 134 Pretorius Street, Pretoria, Happy Solomon, Tel: (012) 302 2368, e-mail: hsolomon@hsrc.ac.za or [Gina Mshengu](mailto:Gina.Mshengu@hsrc.ac.za), e-mail: GMshengu@hsrc.ac.za

Social science that makes a difference

CONFERENCES & CONVENINGS

OECD National Experts on Science and Technology Indicators

27-30 March 2017 | Paris, France

Dr Moses M. Sithole attended and represented CeSTII and the HSRC at the National Experts on Science and Technology Indicators (NESTI) Meeting 2017 held at the OECD Headquarters in Paris.

Participation of CeSTII in OECD-led Science, Technology and Innovation (STI) fora began shortly after it was established in 2002 and began conducting national R&D and Innovation surveys to produce STI indicators on behalf of the Department of Science and Technology (DST).

With South Africa's Ten-year Innovation Plan which aims to transform the country into a knowledge economy and with CeSTII's main mandate being to measure the country's innovation capacity, it is crucial that South Africa and CeSTII continue to engage in the OECD's work on STI. There are four specific reasons this is important:

- To remain abreast with topical, contemporary and emerging issues in the area of STI.
- To be not only a passive user of the OECD methodology for conducting R&D and innovation surveys which is documented in the Frascati and Oslo Manuals, respectively, but also contribute to the changes in the methodologies by sharing the lessons learned during the conduct of these surveys.
- To be able to benchmark South Africa's STI statistics with OECD countries and internationally.
- To be able contribute comparable R&D and innovation data to OECD scoreboards.



L-R: Dr Moses Sithole (HSRC), Prof Fred Gault (UNU-MERIT), Mr Godfrey Mashamba (DST). Photo credit: M. Sithole

Box 4. Benefits for CeSTII from participation at the 2017 NESTI meeting

- Lessons learned from other countries on the implementation of the new revised Frascati Manual released in 2015.
- Exposure to the proposed changes for the new revised Oslo Manual that is expected to be released in 2018.
- Understanding of the various methodologies for analysing microdata of the business sector of the R&D survey for deepening knowledge on the impact of government support for R&D, with the intention of informing STI policy.

Learn more about NESTI | <https://goo.gl/3fkvSM>

Southern African Development Community Regional Workshop on Capacity in Data Development in Science, Technology and Innovation and STI Policy Implementation for Sustainable Development in Africa

21-22 November 2016 | Johannesburg, South Africa

The goals of the workshop were to enhance capacity of African statisticians and STI policy makers in effective data collection, analysis and reporting to inform policies and strategies for mobilising STI for attaining the SDG targets. "CeSTII is already involved in training African countries on achieving greater consistency in their data collection on R&D and innovation, and for this reason this workshop complemented that work," said CeSTII's Dr Nazeem Mustapha who attended the workshop with Dr Hlamulo Makelane. "It is encouraging that SADC member states have agreed to a regional framework on STI and collaboration is an welcome effort to enhance capacity building among member states," said Makelane.

Learn more about SADC STI Secretariat
<https://goo.gl/PpNuYU>

HSRC Social Science Research Conference

22-23 September 2016 | Gauteng, South Africa

This flagship HSRC event focussed on poverty and inequality, reflecting the HSRC's core research agenda and strategic direction. More than 250 researchers attended from all over South Africa, including and especially from the five offices of the HSRC. CeSTII was well-represented in the conference proceedings (see Table 1). Two staff members, namely Dr Nazeem Mustapha and Dr Firdous Khan, chaired sessions during the conference entitled "Human capabilities and psycho-social factors in responding to poverty and inequality" and "Social conditions, values, identity, culture and partnerships" respectively. "Attending the conference gave CeSTII researchers a platform on which to showcase their research and to collaborate with researchers from all over the country in the policy space," said Khan.

Learn more about HSRC's 2016 Conference
<https://goo.gl/M4q2Ee>

Table 1. CeSTII research presentations at 2016 HSRC Conference

PAPER TITLE	PRESENTERS
CORPORATE SOCIAL RESPONSIBILITY IN THE SOUTH AFRICAN FORESTRY INDUSTRY: A WESTERN CAPE PERSPECTIVE	Mr Theodore Sass (CeSTII) & Dr Richard Knight (University of the Western Cape)
INTERFACE OF MASS MEDIA AND SEXUAL BEHAVIOUR OF ADOLESCENT MALES IN NKONKOBÉ MUNICIPALITY, EASTERN CAPE, SOUTH AFRICA. A DESCRIPTIVE ANALYSIS.	Ms Sinovuyo Takatshana (CeSTII) & Dr Jabulani G. Kheswa (University of Fort Hare)
IDENTIFICATION OF BIOMARKERS FOR THE EARLY DETECTION OF PROSTATE CANCER	Dr Firdous Khan (CeSTII)
A STUDY INVESTIGATING INVESTMENT AND ITS IMPACT ON YOUTH UNEMPLOYMENT IN EASTERN CAPE	Ms Babalwa Siswana (BRICS Research Centre) & Mr Loyiso Maciko (CeSTII)
POLICY IMPLICATIONS OF INVESTMENTS AND HUMAN RESOURCES IN PUBLIC AGRICULTURAL RESEARCH IN SOUTH AFRICA	Dr Moses Sithole, Ms Cheryl Moses, Ms Natalie Vlotman & Ms Natalie Le Roux (CeSTII)
HARNESSING INNOVATION FOR ECONOMIC AND SOCIAL DEVELOPMENT IN THE EASTERN CAPE	Ms Babalwa Siswana (BRICS Research Centre) & Mr Loyiso Maciko (CeSTII)

OECD BLUE SKY FORUM 2016: Towards the Next Generation of Data and Indicators

19-21 September 2016 | Ghent, Belgium

The OECD BLUE SKY 2016 forum brought together nearly 400 participants from 48 different countries, and was attended by CeSTII's Dr Neo Molotja and Precious Mudavanhu. "The key points arising from the discussions included the discussion on the significant disconnect between STI users and producers of STI data, statistics and analysis," said CeSTII statistician, Precious Mudavanhu.

According to Mudavanhu: "A number of issues were raised during the discussion that could help CeSTII as a producer of STI data, statistics and analysis. For example, there is a demand for simple STI indicators for monitoring and benchmarking STI systems that speak directly to the evidence needs of policymakers. The tension between evidence-based policymaking and policy-based or driven evidence was also a key discussion topic, as was the distinction between indicator-driven policy and evidence-based policy."

"Participants were also advised to be on the lookout for potential abuses of STI indicators that oversimplify reality on the sole basis of what can be easily measured and that can also distort their interpretation," she said.

Learn more about the OECD BLUE SKY FORUM 2016
<https://goo.gl/D9uLrt>

New Partnership for Africa's Development, African Science, Technology and Innovation Indicators Programme

3-5 May 2016 & 14-20 August 2016 | Seychelles

Dr Neo Molotja participated in two NEPAD ASTII training workshops targeted at capacity building for the Seychelles research community. The workshops were held at the Guy Morel Institute, University of Seychelles. "The training focussed on how to collect national R&D and innovation data, but also assisted the Seychelles with finalising their questionnaires," said Molotja. "From CeSTII's perspective, the workshops were useful in helping us to reflect on the kinds of data we don't collect in South Africa, because we have such a large system, relative to the Seychelles."

Learn more about ASTII | <https://goo.gl/ZTp8DA>

R&D Survey Workshops with Higher Education Respondents

26 & 29 July 2016 | Cape Town & Pretoria, South Africa

Two R&D Survey respondent workshops were held at the HSRC offices in Cape Town and Pretoria in July 2016. A total of 16 public South African universities and one private university were represented at the events, together with the DST. "The overall experience from the workshop informed us about some of the concerns universities had," said CeSTII's Natalie Vlotman, the workshop's organiser. "We were able to gauge which questions respondents found difficulty in answering. In addition, discussions highlighted ambiguities that needed to be addressed. From these discussions, action points were derived to suitably assist universities with the completion of the survey questionnaire."

Box 5. Workshop Goals

- Improve quality of data collected for HE focusing on specific items such as the calculation of headcounts (HC) and full time equivalents (FTEs).
- Validation of the Higher Education sector data
- Communicate changes arising from the revision of the 2015 Frascati Manual and the impact on the R&D Survey going forward.
- Provide a platform for respondents to interact and share experiences or concerns around data collation for R&D Survey.

Learn more about CeSTII R&D workshops for the HE sector | n.vlotman@hsrc.ac.za

OECD Symposium on Technology, Innovation and Inclusive Growth: Future Perspectives

28-29 April 2016 | Paris, France

This OECD symposium brought together leading experts and policymakers from advanced, emerging and developing economies and discussions focused on the impact of the main technologies behind disruptive innovations/changes. "CeSTII is exploring with the Department of Science and Technology a project to develop indicators of innovation for inclusive development," said Cheryl Moses and Dr Firdous Khan, who attended the event on behalf of CeSTII. "This symposium was therefore the perfect starting point for a scoping exercise in terms of what is needed to initiate this project."

Box 6. Key Symposium Questions

- What is the potential of new technologies as engines of growth? What factors are critical to competing in the emerging global economy?
- How disruptive are technologies such as automation, for industry and people? How do they impact income distribution?
- What are the key implications for policy? What can be done to support the successful implementation of technology to serve inclusive growth?

Learn more about OECD Symposium 2016 <https://goo.gl/GvdLPS>

SOCIAL OUTREACH

Mandela Day 2016

18 July 2016 | Cape Town, South Africa

Members of the CeSTII team, Dr Firdous Khan, Theodore Sass and Natasha Saunders, spent 67 minutes on 18 July feeding and treating youths at the Pikkieland Daycare Centre in Caledon Street, Cape Town. In addition to sending donations of cash and goods, HSRC staff assisted with assembly of food packs. "Nelson Mandela was the perfect example of humble kindness and believed wholly in the spirit of Ubuntu," said Khan. "He imparted this characteristic to all South Africans and in turn each year we celebrate him and his life by paying tribute for 67 minutes on Mandela Day. We remembered a great icon by paying tribute to the sacrifice the hardships he endured."



Natasha Saunders, Dr Firdous Khan and Theodore Sass (all front row) at the Pikkieland Daycare Centre, Cape Town. Photo credit: S. Khan

ABOUT CESTII

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

CeSTII is the leader in the field of national surveys that underpin benchmarking, planning and reporting on R&D, innovation and technology transfer in South Africa, adapting best practice international methodologies for measurement of science, technology and innovation (STI) indicators, within a framework of innovation for inclusive development.

Established in 2001, CeSTII's core business is to:

- Conduct national R&D and innovation surveys on behalf of the South African Department of Science and Technology, and,
- Produce national indicators from the survey results to provide inputs for policy makers and a basis for international comparisons.

Our goals

- Build the institutional capabilities of CeSTII researchers to achieve its mandate.
- Undertake statistical surveys to national and international quality standards that support the measurement and analysis of STI indicators in South Africa.
- Contribute to and deepen the 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.
- Contribute to data sharing, knowledge sharing and exchange with national, regional and global STI measurement and policy communities and other actors in the South African national system of innovation.
- Lead a new research agenda to inform the design of measures and indicators that can support and promote a national strategy of innovation for inclusive development, in line with the HSRC research focus on poverty and inequality.

TEAM CESTII



Photo credit: HSRC (2017)

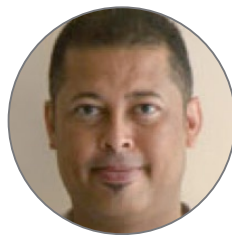
CESTII TEAM PROFILES

“ If there is a common denominator in CeSTII it is this: our researchers are passionate about their work, its potential impact, and want to learn and build their careers in the field.”

Dr Glenda Kruss



Dr Glenda Kruss*
Deputy-Executive Director



Dr Nazeem Mustapha
Chief Research Specialist



Dr Moses Sithole
Chief Research Specialist



Dr Neo Molotja
Senior Research Specialist



Dr Il-Haam Petersen
Senior Research Specialist



Gerard Ralphs
Programme Manager
& Policy Analyst



Dr Firdous Khan
Post-Doctoral Fellow



Dr Hlamulo Makelane
Post-Doctoral Fellow



Dr Saahier Parker
Research Specialist

* Dr Glenda Kruss joined CeSTII as Deputy-Executive Director on 1 November 2016. <http://www.hsrc.ac.za/en/news/view/appointment-of-ded>

“ We value the diversity of our academic backgrounds, skills and inter-disciplinarity in CeSTII – from statisticians and data analysts, to economists, R&D specialists, development studies specialists and more.”

Dr Glenda Kruss



Cheryl Moses
Chief Researcher



Natalie Vlotman
Chief Researcher



Mario Clayford
Senior Researcher



Mr Jerry Mathekga
Senior Researcher



Sinovuyo Takatshana
Researcher



Loyiso Maciko
PhD Research Intern



Theodore Sass
PhD Research Intern



Yasser Buchana
PhD Research Intern



Thembinkosi Zulu
Masters Research Intern

“ Our team members have been acknowledged as experts in the SADC, through Africa and internationally, and are committed to growing and deepening the visibility of CeSTII, to produce outputs that can influence policy.”

Dr Glenda Kruss



Nhlanhla Malaza
Masters Research Intern



Ndiyakholwa Ngqulu
Masters Research Intern



Janine Senekal
Masters Research Intern



Precious Mudavanhu
Statistician



Lwando Kondlo
Statistician



Lindiwe Binda
Data Analyst



Natasha Saunders
Assitant Director



Maria Maluleke
Financial Administrator



Gina Mshengu
Administrator

KEY CESTII STAKEHOLDERS

Table 2: How CeSTII interacts with its stakeholders		
STAKEHOLDER	CITY/COUNTRY	WHAT WE WORK ON TOGETHER
Department of Science and Technology	Pretoria/South Africa	Working closely at the research-policy nexus to conduct the annual R&D Survey and Business Innovation Survey, and the production of official STI statistics in partnership with Stats SA, the OECD and NESTI. Information sharing to enhance frame maintenance and coverage improvement for the surveys.
Stats SA	Pretoria/South Africa	Ensuring compliance with SA Statistical Quality Framework through the R&D survey Clearance Committee, and provision of the survey samples methodological support.
BRICS Research Centre, HSRC	Cape Town/South Africa	Provision of national R&D and innovation data and indicators according to required templates.
National Advisory Council on Innovation	Pretoria/South Africa	Collaboration on research and advocacy on innovation for inclusive development, as well as a cooperation on regular data and outputs sharing to contribute to the creation of a national STI portal.
Technology Innovation Agency	Pretoria/South Africa	Collaboration on Business Innovation Survey advocacy.
South African Development Community SADC Secretariat	Gaborone/Botswana	Technical advisory support on the implementation of science, technology and innovation policies and indicators in the region.
NEPAD Planning and Coordinating Agency	Pretoria/South Africa Malabo/Equatorial Guinea/Addis Ababa/ Ethiopia	Collaboration with the ASTII programme to provide training on STI indicators and in the writing of the African Innovation Outlook. Training network includes collaboration with the African Observatory of Science, Technology and Innovation and the UN Institute of Statistics. Provision of national R&D and innovation data and indicators according to required templates.
OECD	Paris/France	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	Paris/France	Provision of national R&D and innovation data and indicators according to required templates.
NACETEM, Nigeria	Ile-Ife/Nigeria	Share expertise and co-author comparative papers on R&D and innovation in SA and Nigeria as the largest economies in Africa.
NCRST, Namibia	Windhoek/Namibia	Share expertise and co-author comparative papers on R&D and innovation in SA and Namibia as regional neighbours.



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