



AFRICAN REGIONAL
INTELLECTUAL PROPERTY
ORGANIZATION



ORGANISATION AFRICAINE DE
LA PROPRIÉTÉ
INTELLECTUELLE



JAPAN PATENT OFFICE



GOVERNMENT OF THE
REPUBLIC OF ZIMBABWE



FUNDING R&D IN AFRICAN RESEARCH INSTITUTIONS



**SOUTH AFRICAN
RESEARCH CHAIR:**

Intellectual Property,
Innovation and Development

Prof Caroline B Ncube



7 November 2019

WIPO/ARIPO/OAPI (WAO) Conference on Intellectual Property (IP),
Innovation and Value Addition for Business Competitiveness and Sustainable
Development in Africa

Overview

- Science in Africa – a snapshot
- The importance of funding
- R&D funding sources
- Incentivizing commercialisation
- North – South Collaboration
- Recommendations

EDUCATION

Science will unlock Africa's potential — if it is funded

Esther Ngumbi 06 Jul 2018 00:00



Bonisile Luthuli – an Africa Health Research Institute PhD student. (Africa Health Research Institute)

Source: [Mail & Guardian](#)

Science in Africa: a snapshot

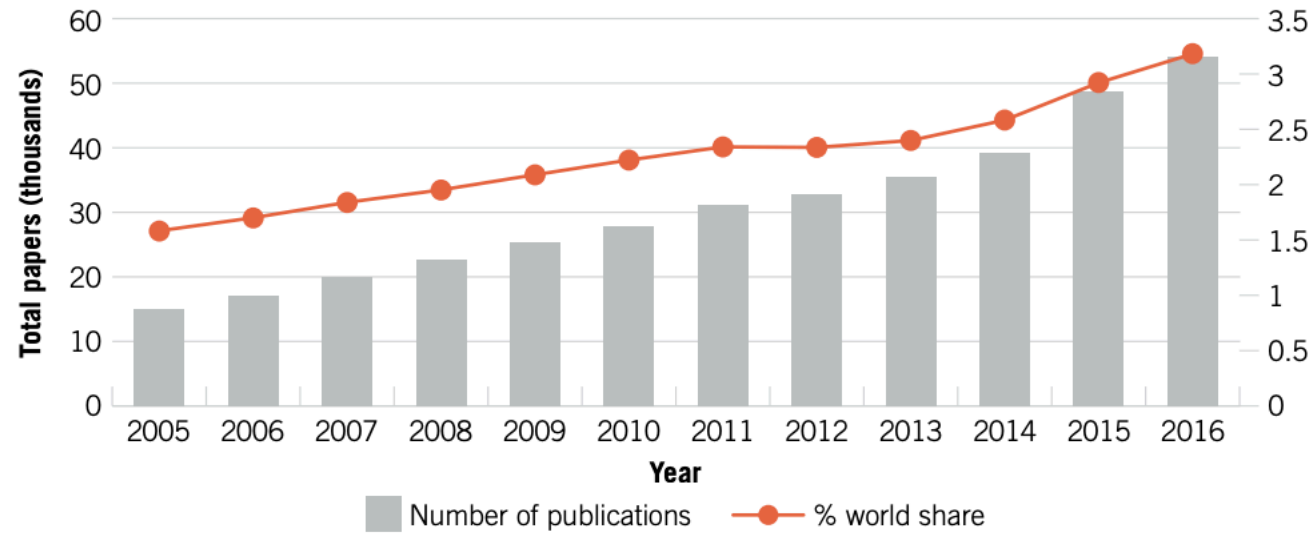
- Measurement using various criterion
 - Bibliometric analysis of research output
 - Research infrastructure and the general state of laboratories
 - Quality of library resources
 - Levels of funding for ongoing research and scholarship
 - Quality of research management and support

Science in Africa: a snapshot

14

THE NEXT GENERATION OF SCIENTISTS IN AFRICA

Figure 4: Africa world share and number of scientific publications (articles and reviews only): 2005–2016



Source: Beaudry, Mouton & Beaudry 2018, 14.

Science in Africa: a snapshot

Low productivity in 1980 - 2000

- weak scientific institutions: fragile research centers and institutes, non-sustainable scientific journals, ineffectual scientific societies and academies of science;
- dependence on international funding for R&D (which was low);
- individualism in research rather than institution building;
- inadequate reproduction of the scientific and academic work-force (decline in the number of doctoral programmes and doctoral students); and
- weak inscription of science in African societies.

Rising since 2000

- Small but robust institutions where pockets of significant science are now found.
- Science is publicly supported by the government,
- and there is reasonable political stability and good governance of the science system.
- Well-established links and collaborative networks with strong research establishments elsewhere in the world.
- Share of world publications rising
- Citation impact rising

Science in Africa: a snapshot

LOW

- Dependence model after independence
- Political events and civil wars (suspension of external funding & brain drain);
- 1980 – 1990: Economic Structural Adjustment programs' focus on primary & secondary education at the expense of higher education
- Research funded by international agencies is sometimes disconnected from 'national science systems'
- Low investment in science by African governments;

HIGH

- Increasing investments in African science.
 - e.g. World Bank 2014: US\$150 million to finance 19 university-based centers of excellence in 7 countries in West and Central Africa.
- strengthening African science institutions
 - science granting councils; research chairs and centres of excellence; doctoral programmes and training; scientific databases and scientific journals

Sources of R&D funding

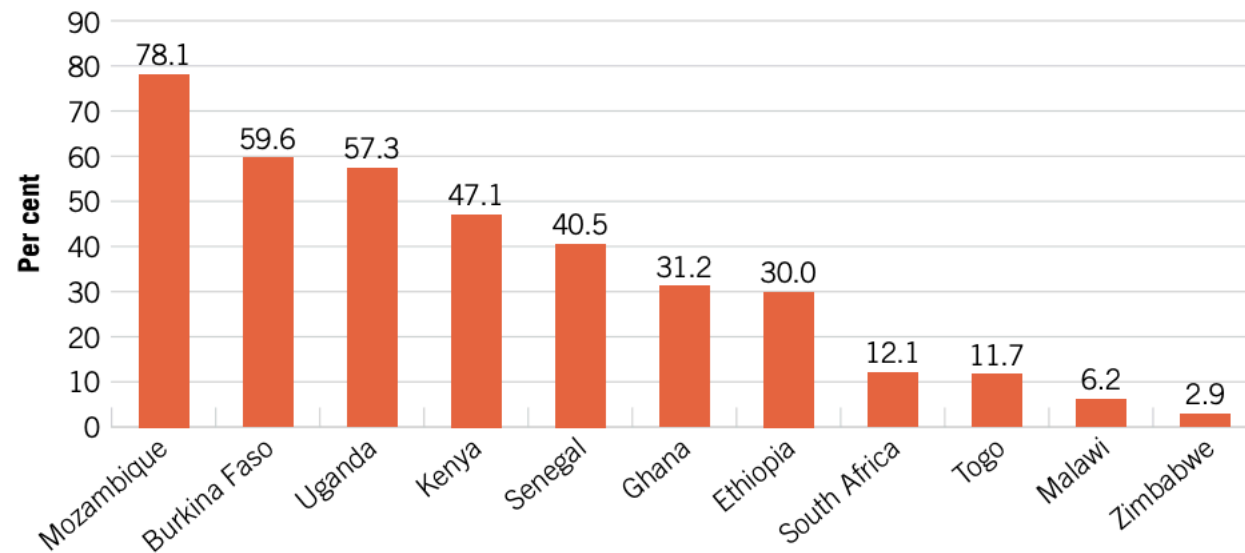
- Low levels of gross domestic expenditure on R&D (GERD)
 - E.g. Sub-Saharan Africa < than 0.5% of gross domestic product (GDP)
- Private funding also generally low, with some outliers
 - E.g. South Africa > 40% of the total R&D expenditure.

Source: Beaudry, Mouton & Beaudry 2018, 9 - 10.

Sources of R&D funding

- Foreign funding relatively high

Figure 2: Proportion of international funding for R&D by country (2010 or latest year)



Source: ASTII R&D surveys 2010 or latest year available

Source: Beaudry, Mouton & Beaudry 2018, 9 - 10.

International research and funding agencies

- Examples:
 - International development and aid organisations: Sida/SAREC, NORAD, Carnegie, Ford, Rockefeller, USAID, IDRC e.t.c
 - international research bodies: the CGIAR institutes, WHO research institutes etc
- Role:
 - support continuity in research programmes in the countries where they are located;
 - Channel R&D funding through their international donors;
 - form networks of collaboration and expertise that cut across national boundaries;
 - provide employment to local scientists in countries where research employment is limited;
 - Have good research facilities and laboratories
- Note: Sometimes not aligned to the national R&D priorities of individual countries

Source: Beaudry, Mouton & Beaudry 2018, 7.

Supporting IP exploitation and commercialization

- National Incentives

- e.g. National IP Management Office, South Africa
- Framework: IPR Act, Technology Innovation Agency Act, National Research Foundation
- Awards & monetary benefits for individual & institution

INCENTIVE		
Tipping Point	Stamina	Benefit and Impact
1. NIPMO - Actionable Disclosures [6.1.1]	1. NIPMO Certificate of Recognition (SA patent and PBR) [6.2.1]	1. NIPMO and IPR Act Benefit Sharing [6.3.1]
2. NRF Rating [6.1.2]	2. DHET Creative and Innovation Outputs [6.2.2]	2. NIPMO Innovation Awards at SAWiSA [6.3.2]
	3. NRF Rating [6.2.3]	3. NIPMO Innovation Awards at NSTF [6.3.3]

See Sibanda, 2018; NIPMO Guideline, 2019

North-South Collaboration

- Significant tool for mobilizing resources by African universities
- Studies have shown that collaboration results in higher levels of publication, more visibility & citation for African scholars
- Presents some challenges:
 - Requires strong institutions
 - Well aligned devolution of duties, roles & responsibilities with good central co-ordination
 - Commitment to medium to long term collaboration
 - Malleability and flexibility
 - Funder reporting requirements
 - Partner institutions' policies and processes
 - Overhead costs to partner institutions
 - National fiscal and research administration landscapes



openAIR

AFRICAN INNOVATION RESEARCH



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AK4D

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uOttawa


UNIVERSITY OF JOHANNESBURG

 **ieri**
Institute for Economic Research on Innovation
TSHWANE UNIVERSITY OF TECHNOLOGY


UKaid
from the British people



Social Sciences and Humanities Research Council of Canada

Conseil de recherches en sciences humaines du Canada

Canada



IDRC | CRDI

International Development Research Centre
Centre de recherches pour le développement international

QUEEN ELIZABETH
Scholars

OpenAIR partnership (2007 ...)

Research 'hubs'

- Canada (uOttawa)
- Egypt (AUC)
- Kenya (Strathmore)
- Nigeria
- South Africa (UJ and UCT)

Research

- 15 African countries
- Large network of researchers
 - Includes New and emerging researchers
 - Doctoral & post-doctoral fellowships
- Significant research output
- Multiple sources of funding
- Disciplines: law, innovation, statistics, economics ...



Recommendations satellite event Pretoria, South Africa

- build techno parks to promote regional innovation
- promote the exploitation of intellectual property
- promote innovation to address the challenges of the water, Energy and food Nexus
- foster synergies between innovation and industrialization (promote collaboration)
- undertake policy reforms that will facilitate greater investment in research and development



Africa Innovation Summit 2018



Recommendations for African states

- Increase GERD in order to:
 - Strengthen institutions; improve research infrastructure & resources; retain scientists; train new cohorts (doctoral programs)
- Support publicly funded institutions in their efforts to adopt more collaborative approaches
 - E.g. align national research agendas with regional goals, so that easier to collaborate.
- Ensure a conducive environment for private funders and donors to support research
 - E.g. tax incentives
- Support institutions' entrepreneurship & commercialisation efforts
 - Create an enabling framework
 - Combine support for individuals & institutions

Resources

- Catherine Beaudry, Johann Mouton & Heidi Prozesky (ed.s) [*The Next Generation of Scientists in Africa*](#), 2018
- Jennifer Brant and McLean Sibanda [*South Africa: IP Management and the Commercialization of Publicly Funded Research Outcomes*](#), 2018
- *Africa Innovation Summit 2018: Addressing Africa's Challenges, Report*
- OpenAIR [*Annual Report*](#), 2017
- NIPMO [*Guidelines for the Operation of Incentives for Intellectual Property Creators*](#), 2019

Thank you!



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