



The Role of South Africa in Research in Africa

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science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

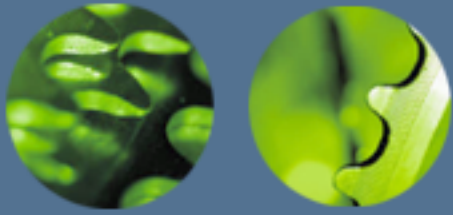
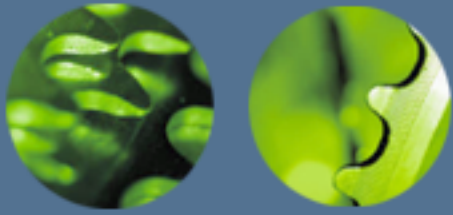


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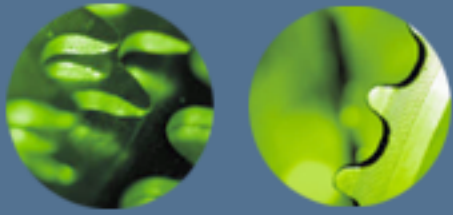
Vision and Mission

- Vision: To create a prosperous society that derives enduring and equitable benefits from S&T
- Mission: To develop, coordinate and manage a NSI that bring about max HC, sustainable economic growth and improved quality of life
- NR&DS (2002): coordinating an effective and a functioning S&T system.



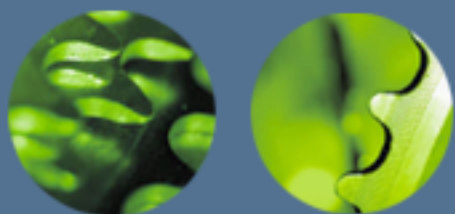
SA's Education System

- DBE: responsible for basic education (over R150 billion including provinces, 26 000 schools, 12.5m learners)
- DHET: responsible for Higher Education (over R23 billion for universities, 23 [+2] universities, 1m students)
- DST: responsible for research development and support, and innovation across the national system of innovation (R5.5 billion, 7 000 students supported, 18 Dinaledi schools)
- In 2011, 0.5% of SA population comes from other African countries hence the above departments support some of those who are students.



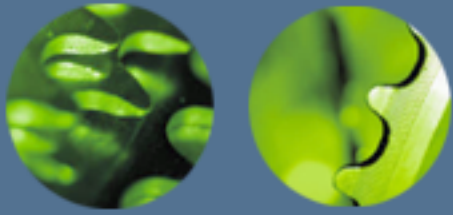
SA's Education System - NDP

- Produce more than 100 doctoral graduates per million of population (about 5 000 PhDs per year) with more of them in SET; from the current 34 doctoral graduates per million of population (about 1 700 PhDs per year)
- 75% of university academic staff to have PhDs; from the current 35%
- PhD graduates dominant drivers of new knowledge production in HEIs and the NSI

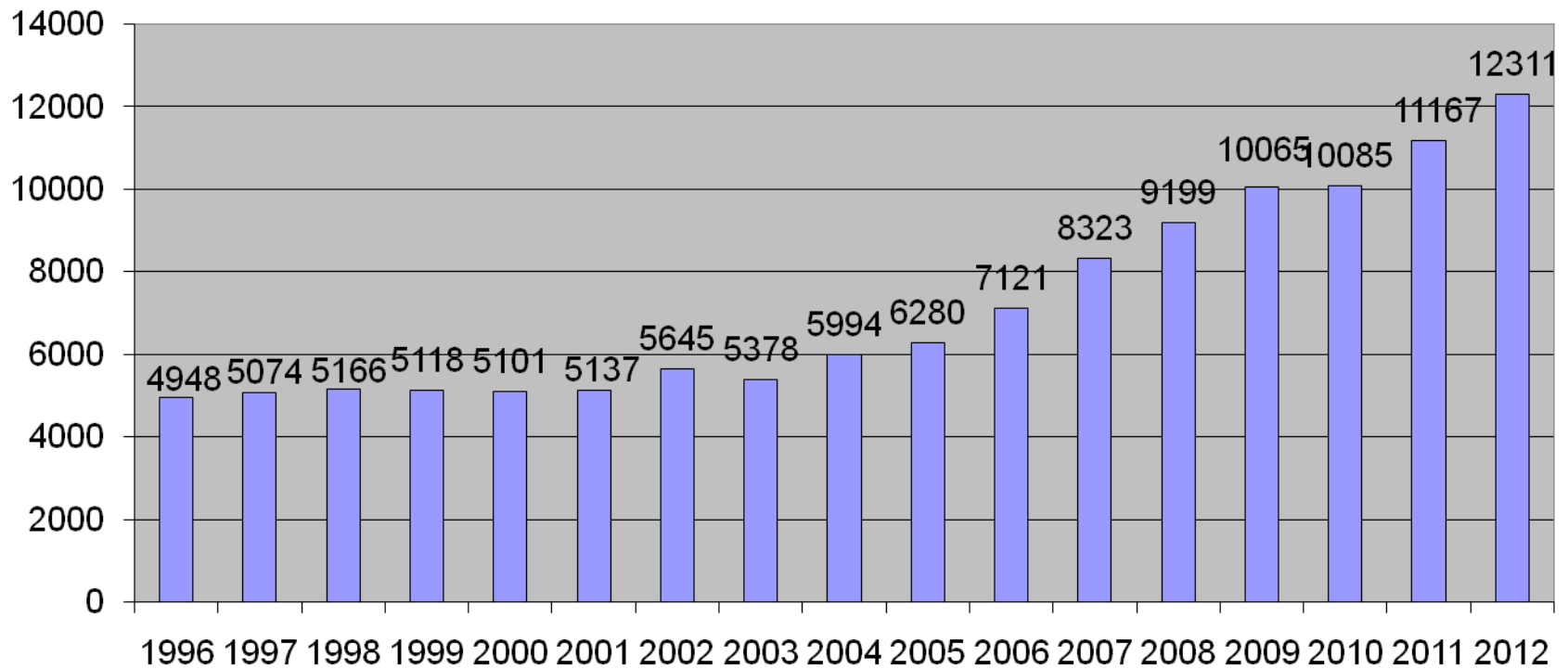


SA's Research System (1): HCD provision - a fairly static picture

	2006/07	2007/08	2008/09	2009/10	2010/11
Headcount of R&D personnel	58 706	59 334	58 895	59 494	55 531
Researchers (headcount of PhDs)	6 973	7 756	8 143	8 498	7 456
Public sector researchers (headcount of PhDs)	5 998	6 686	6 729	7 305	6 561
Private sector researchers (headcount of PhDs)	942	1 032	1 368	1 143	839
Female researchers (% of all researchers)#	39.7	40.3	39.7	40.8	42
Total FTE researchers per 1000 employees	1.5	1.5	1.4	1.5	1.4

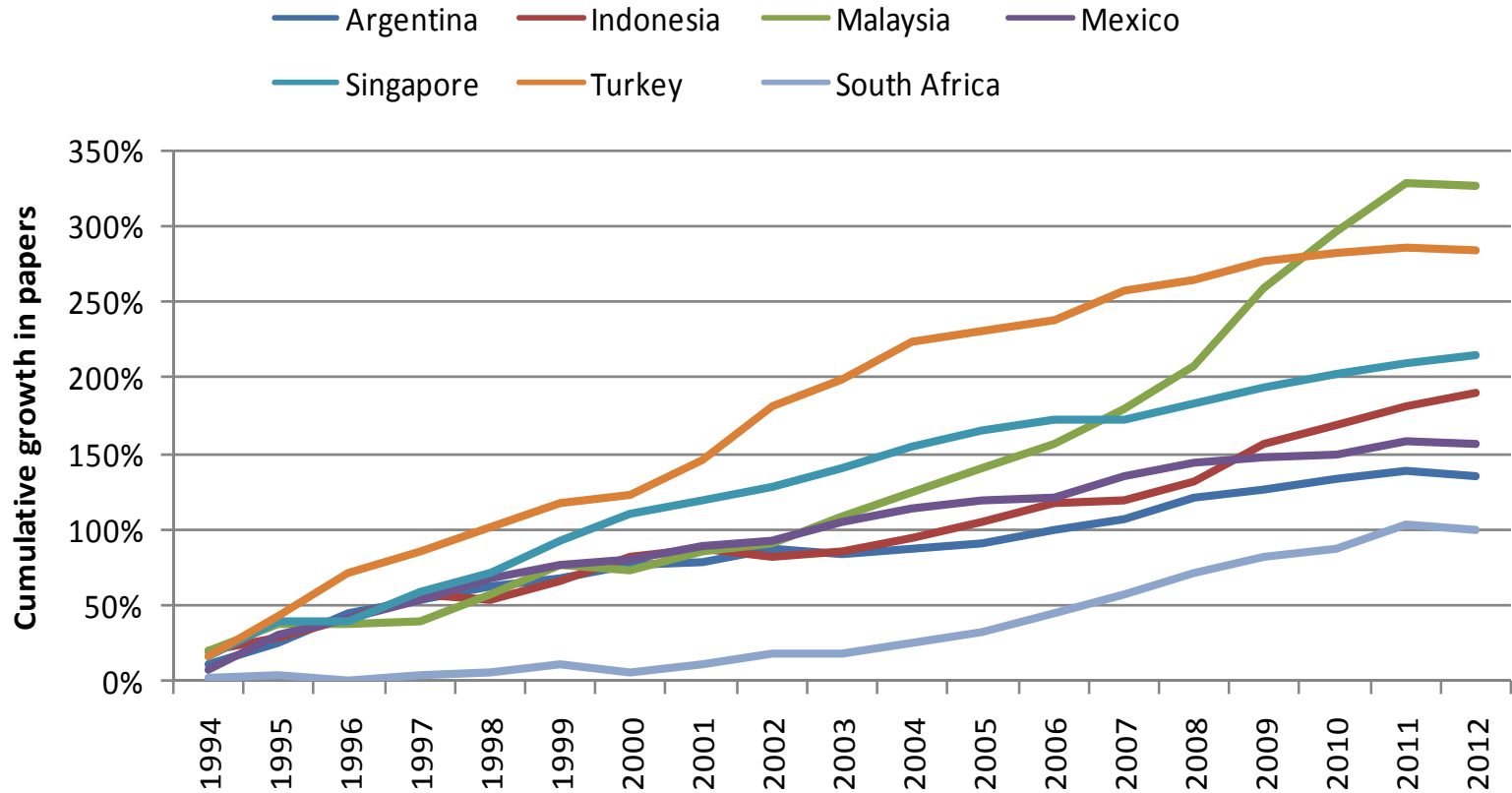


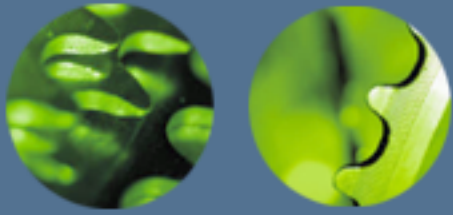
SA's Research System (2): Outputs: Doubling in 8 years





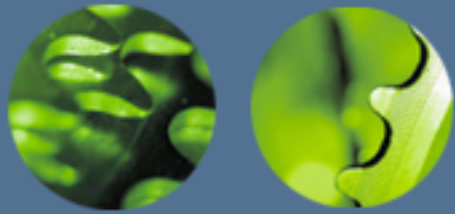
SA's Research System (3): Rate vs emerging economies: lagging behind





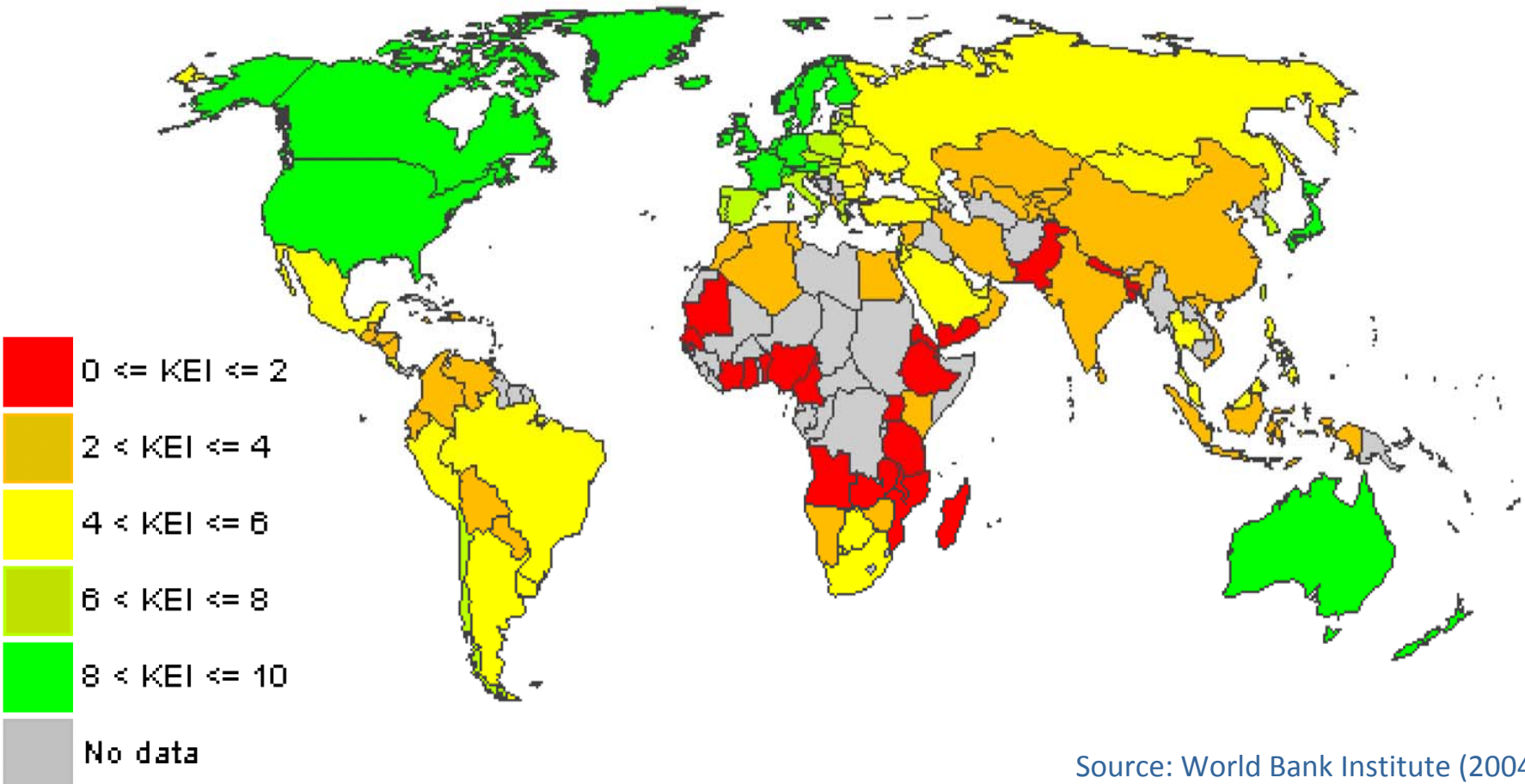
Priority Skills and Research Areas

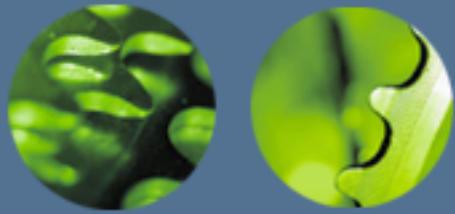
- **The five grand challenges:**
 - The bio-economy,
 - Expanding the limits of space science and technology,
 - In search of energy security,
 - Science and technology in response to global change,
 - Human and social dynamics.
- **The five geographical advantage areas:**
 - Astronomy,
 - Human palaeontology,
 - Biodiversity,
 - Antarctic research, and
 - Indigenous knowledge.
- **Scarce and Critical Skills**
 - Engineering and built environment
 - Animal and Human health Sciences
 - Natural and physical sciences, including agricultural sciences
 - Economic sciences – esp accounting and actuarial sciences
 - Social sciences – esp teacher education



Why Transnational Research Partnerships Africa (1)

Global Knowledge Economy Indices (KEI)





Why Transnational Research Partnerships Africa (2)

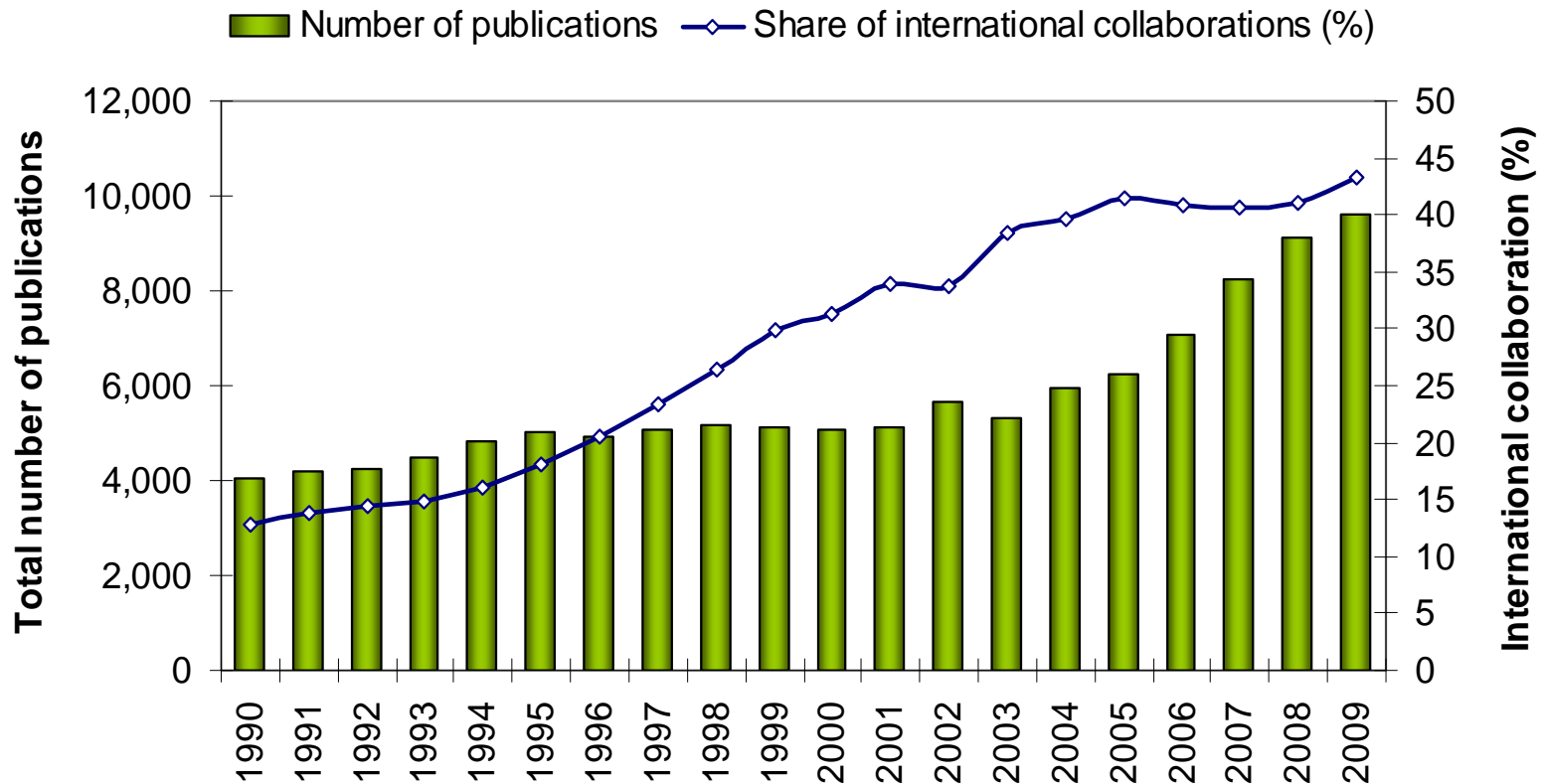
Global Research Report 2010: (For the years 1999 to 2008)

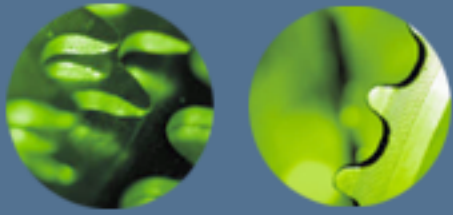
Region	Number of Countries	Research Papers (per year)
Central	More than 30	7 100
North	6	10 500
South	14	27 000

- An uneven distribution of research and innovative capacity at both country and regional levels. For scale, it should be appreciated that the total of about 27,000 papers per year is about the same volume of published output as The Netherlands
- A further breakdown demonstrates that African science— is dominated by three nations: Egypt in the north, Nigeria in the middle, and South Africa in the south



Why Transnational Research Partnerships Africa (3)





Why Transnational Research Partnerships Africa (4)

Host to a number of global science projects (in addition to geographic advantage areas):

- SKA – 8 African partner countries
- Southern SALT - largest optical telescope in the southern hemisphere, and equal to the largest in the world. Telescope is able to gather more than 25 times of light than any existing African telescope, and it can detect objects a billion times too faint to be seen by the naked eye
- ICGEB, AIMS, ALC, PAU Component of Space Science and Technology???
- CoEs – emerging Africa Focus



SA's Role in Research in Africa (1)

AU/NEPAD Africa's S & T Consolidated Plan of Action Overview:

- AU/NEPAD Africa's Science and Technology Consolidated Plan of Action (CPA) endorsed by the African Union Summit of Heads of State and Government in 2006

Main pillars:

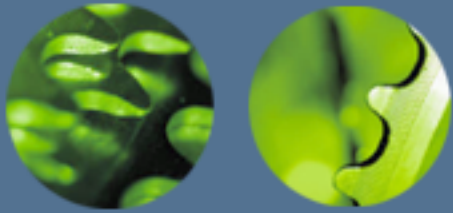
- knowledge production
- capacity building
- technological innovation



SA's Role in Research in Africa (3)

Focus Areas : S&T CPA

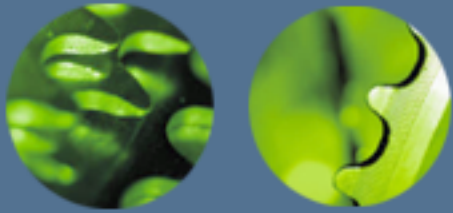
Biodiversity, Biotechnology and Indigenous Knowledge	Energy, Water and Desertification	Material Sciences, Manufacturing, Laser and Post-Harvest Technologies	Information and Communication Technologies and Space Science and Technologies	Mathematical Sciences
<p>Conservation and sustainable use of biodiversity</p> <p>Safe development and application of biotechnology</p> <p>Securing and using Africa's Indigenous Knowledge base</p>	<p>Building a sustainable energy base</p> <p>Securing and sustaining water</p> <p>Combating drought and desertification (deforestation)</p>	<p>Building Africa's capacity for material sciences</p> <p>Building engineering capacity for manufacturing</p> <p>Strengthening the African Laser Centre (ALC)</p> <p>Technologies to reduce post harvest food loss</p>	<p>Information and communication technologies</p> <p>Establishing the African Institute of Space Science (AISS)</p>	<p>Establishment of an African Mathematical Institutes Network (AMI-Net)</p>



SA's Role in Research in Africa (4)

NEPAD & SADC allocation for 2014/15

- African Laser Centre-Host CSIR/NLC: 4.5m
- African Institute for Mathematical Sciences: 3m
- Water Sciences Centres of Excellence: 1.2m
- African Biosciences Network: 3m
- Research and Innovation management: 1.5m

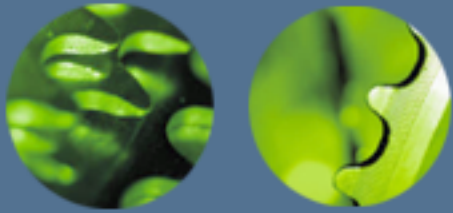


SA's Role in Research in Africa (6)

NRF Support: New Generation of Researchers: Citizenship

	% South African	% Rest of Africa	% Other
BTech/Hons	99.8 %	0.1 %	0.1 %
Masters	95.9 %	4.1 %	0 %
Doctoral	84.0 %	12.4 %	3.6 %
Post Doctoral	46.9 %	12.7 %	40.4 %

Ministerial Guidelines on achieving equity in the distribution of bursaries



SA's Role in Research in Africa (7)

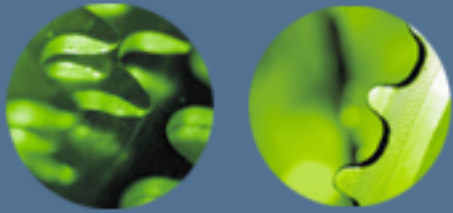
The DST African Scholarships Programme for Innovation Studies supported:

103 black students in 2008

- 63 Masters students
- 40 Doctoral students
- 37% are women

179 students were supported in 2009

- 135 Masters students
- 44 Doctoral students



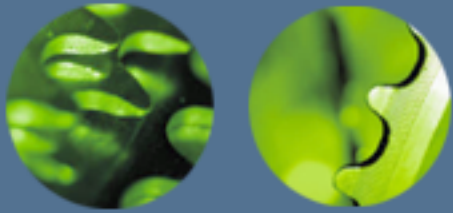
SA's Role in Research in Africa (8)

- The DST African Scholarships Programme for Innovation Studies supported:
 - 103 black students in 2008 (63 M; 40 Ds with 37% being women)
 - 179 students in 2009 (135 Ms; 44 Ds)
- The SKA SA HCDP - provided 140 grants, fellowships and bursaries mainly in radio astronomy; of 37 (26%) have been to individuals from other African states
- The National Astrophysics and Space Science Programme (NASSP) has about 25% of postgraduate students from African states.



SA's Role in Research in Africa (9)

- African Institute for Mathematical Sciences (AIMS) A South African Pan African Institute. Bursaries in Mathematical Sciences:
 - 54 postgraduate diploma (2 South Africans),
 - 2 Masters students.
- African Laser Centre:
 - 10 Masters students supported (2 South Africans)
 - 12 PhD student supported (1 South African)
- Southern Africa Network of Biosciences (SANBio-NEPAD Initiative):
 - 6 Masters
 - 1 PhD

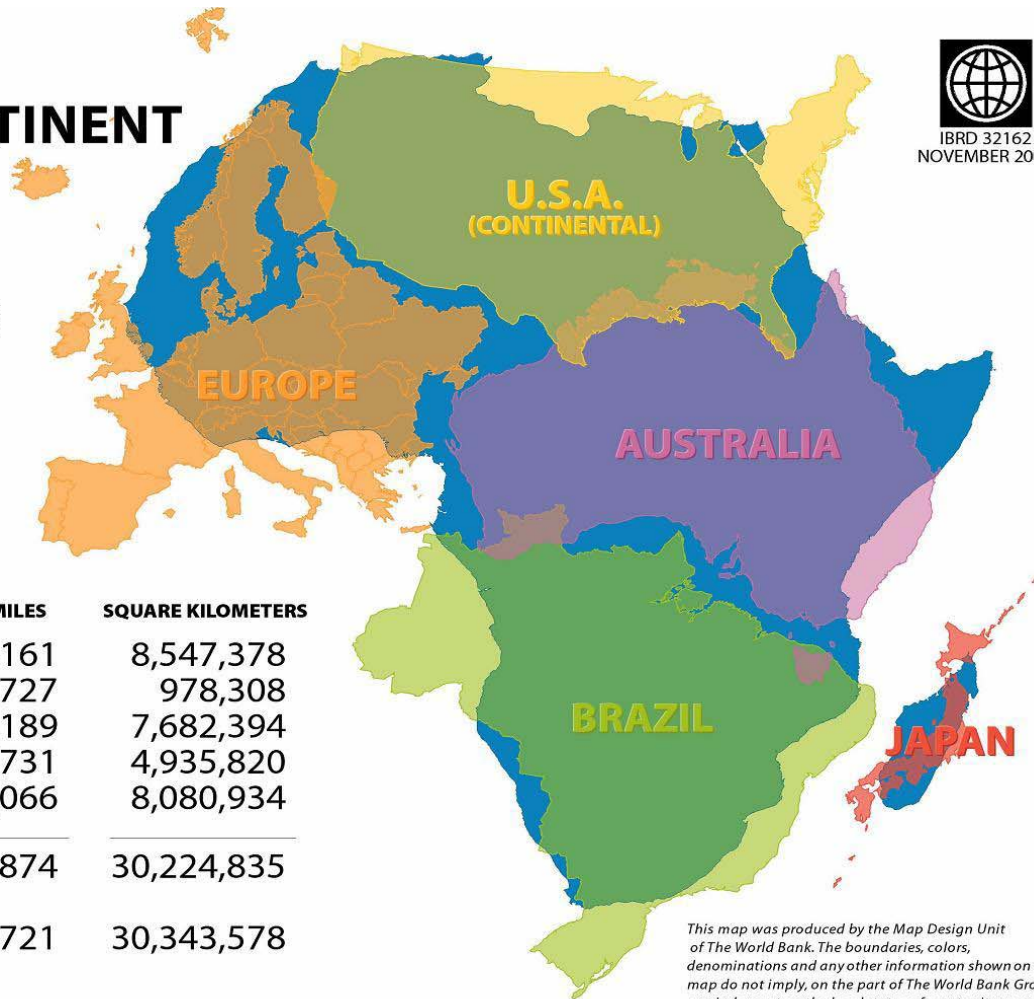


In conclusion

SIZE OF THE AFRICAN CONTINENT COMPARED TO OTHER LAND MASSES



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	SQUARE MILES	SQUARE KILOMETERS
BRAZIL	3,300,161	8,547,378
JAPAN	377,727	978,308
AUSTRALIA	2,966,189	7,682,394
EUROPE	1,905,731	4,935,820
U.S.A. (Continental)	3,120,066	8,080,934
TOTAL	11,669,874	30,224,835
AFRICA (including MADAGASCAR)	11,715,721	30,343,578

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