



Highlights from South Africa's Research and Development Profile

*Look at the context in which scientific
cooperation which SA is being developed!*

Gross Domestic Expenditure on R&D (GERD)

- In 2008/2009 the South African GERD was equivalent to **21 041 Million Rands** which represent **0.92% of the Gross Domestic Product (GDP)**. In other countries/regions GERD was as follows:
 - Brazil: 1.1%
 - Europe (average 2007): 1.77%**
 - OCDE (average 2007): 2.28%
- In South Africa around 70% of the GERD is dedicated to: Engineering Sciences (24.4%), Natural Sciences (20.6%), Medical and Health Sciences (14.8%) and Information and communication technologies (13.1%).
- The **business enterprise sector is the highest R&D performer** in South Africa in terms of R&D Expenditure: the private sector's R&D expenditure is **58.6%** and has been increasing in the past few years. It increased from 8 243 millions Rands in 2005/06 to 12 332 million Rands in 2008/09.
- The **Government is the main funder of R&D in South Africa** with 45.7% of the GERD, while the business sector contributes with 42.7% of the GERD.

Researchers

- In 2008, South Africa had a total of **19 320 researchers** full time equivalent (FTE) representing 1.41 researchers per 1 000 employees.
- **The number of business researchers has progressed strongly** in this country **between 1997 and 2007** at an average annual rate of 19%. This is five times the increase in Europe for the same period and the highest increase registered by the OECD after Portugal (21.9%) and well above the OECD average (3.3%).
- The increase in the number of scientists in Africa between 1998 and 2003 (+52%) would be explained essentially by the augmentation of FTE researchers in South Africa (+66%).
- In 2008/09, **women represented 39% of total researchers** in South Africa, more than in France (27.4%), for example.
- South Africa has a total of **1 274 doctoral graduates** or **26 doctorates per million of the country's population**. This is a low performance compared to other countries and one of the major challenges of the South African system. However, *this can be also an opportunity for senior European researchers in SA as they can help SA research institutions to supervise PhD students to increase the doctorates production in areas of scarce skills.*



Scientific publications

- In the African continent, scientific production is dominated by South Africa with 47 000 papers produced between 1999 and 2008.
- Although Africa's total scientific publications are lower than Brazil's, the impact factor of South Africa's publications is above China, Brazil and the Latin America average.
- The number of articles co-published in South Africa with European co-authorship has not stopped increasing since 1987, from 5% to 30% in 2008, and is above the total of articles co-published with other countries or regions since 1997.

About openness to international and European researchers

- In the country, 27% of doctoral graduates in 2007 were non South Africans and among them 18% came from other African countries. **The percentage of foreign doctoral graduates in South Africa in 2007 is superior to the share of foreign doctoral students (2006) in Japan (16.8%), Sweden (20.6%) and United States (26.3%).**
- In 2010, **South Africa is among the 25 top destinations of American students** with an increase of 12% compared to the previous year.
- **11.16% of South African applications filed under the Patent Co-operation Treaty (PCT) involved international co-invention.** This percentage is above the OECD average (7.7%) and it is still over the EU27 (10.82%) and USA (10.84%) percentage of PCT applications with co-inventions.
- Among the South African patent applications filed under the Patent Co-operation Treaty (PCT) that involved international co-invention, **Europe represented the most important partner in co-inventions among the three major regions** (USA, Europe, Japan) with 5.19% in comparison with the United States (3.2%) and Japan (0.07%).
- In addition, **Compared to the BRIC** (Brazil, Russian Federation, India, China), **South Africa has the highest percentage of co-inventions registered with Europe (47%) followed by Brazil (43%).**

Regional impact

- **South Africa is the second among the Top 10 host countries for African students.** In fact, South Africa (which hosts 55 405 African students in 2008) is only behind France (104 823 African students) and ahead United States (33 924) and UK (30 884) among others.
- There is a **high representation of non-South African doctoral graduates among the black doctoral graduates.** In 2007, 338 of the 405 black doctoral students in South Africa were non South African. In the same year, 27% of the doctoral students in South Africa were from abroad. Among them 9% comes from the Southern Africa Development Community (SADC) and 9% comes from other African Countries.

For European researchers and institutions this can be an attractive factor since their cooperation with South African partners can have an impact at the regional level.