



Country Report – South Africa



STINT
The Swedish Foundation for International
Cooperation in Research and Higher Education

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Background

Recognising the importance of intelligence and analyses for the development of international strategies for higher education and research on various levels within the knowledge system, STINT has compiled a series of brief country reports with a focus on the academic profile and performance.

Released as a pilot series of three countries – Brazil, Japan, and South Africa – these country reports aim to provide national overview using current and reliable data. They give insight into each country's higher education system as well as its respective demographic and economic context.

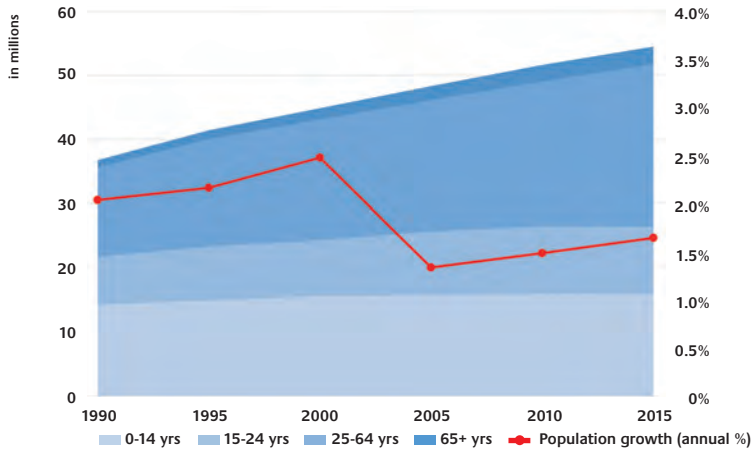
The intention is that both policy-/decisionmakers and practitioners within the Swedish higher education system will utilise these reports in furthering international strategic collaboration on various levels.

The author of this report is Christofer Carlsson, Programme Manager at STINT.

Country data

Currently the African continent is and will be experiencing the largest population growth in the world. Africa's population is expected to double in size by 2050 and with drastically increased life expectancies this demographic youth bulge will pose both challenges and opportunities. Many of these demographic dilemmas South Africa is already facing and are complicated further by one of the world's highest levels of unemployment and income inequality. How this demographic window of opportunity is handled will help determine the trajectory of South Africa's future growth.

Figure 1. South Africa – Demography & population¹

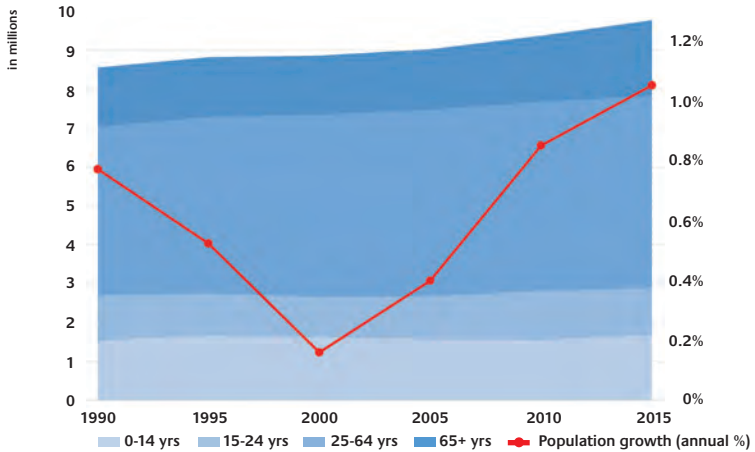


¹ Demographics: Institute for Statistics, UNESCO, accessed on 30/9/2015

Population Growth rate: World DataBank: World Development Indicators, accessed on 30/9/2015

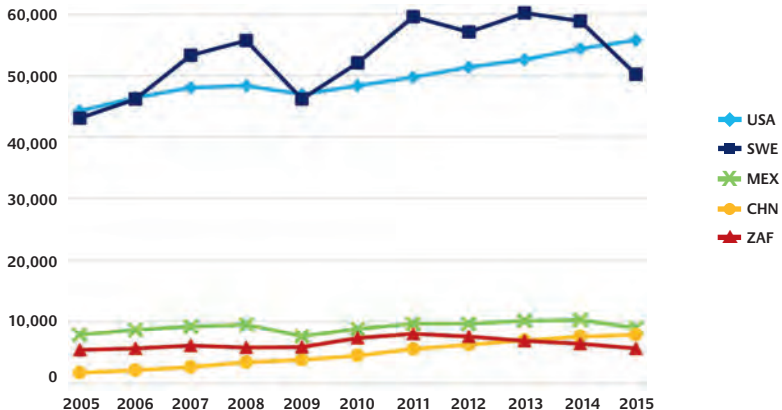
At its opposing end, the population structure of Sweden pose an entirely different set of challenges. With nearly 20 years' greater life expectancy and a decreasing birth rate Sweden's aging society causes an increased dependency ratio on the working age population, further straining the traditional Swedish system of public services and welfare.

Figure 2. Sweden – Demography & population¹



Though at the lowest end of the bracket in Figure 3,² South Africa is classed as an upper-middle-income country by the Worldbank. And though it retains one of Africa's highest GDPs per capita South Africa has seen a steady negative trend since 2011 with figures falling by 28 % in just four years.³

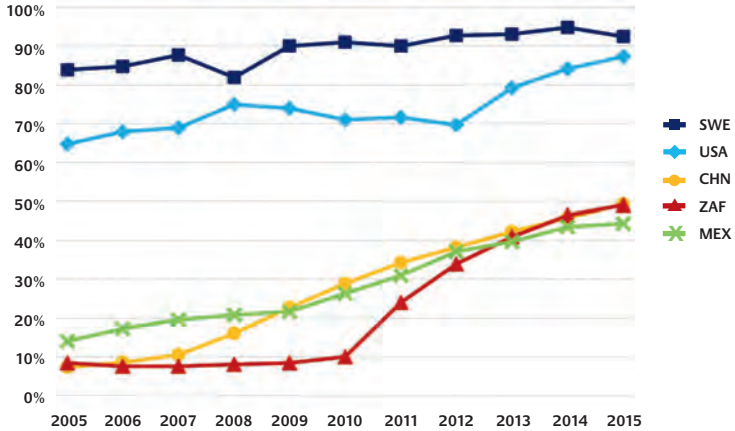
Figure 3. GDP per capita (current USD)³



² N.B. For all country codes the official ISO 3166 has been used as follows:
 SWE-Sweden, USA-United States of America, MEX-Mexico, CHN-China, ZAF-South Africa
³ World DataBank: World Development Indicators, accessed on 19/7/2016

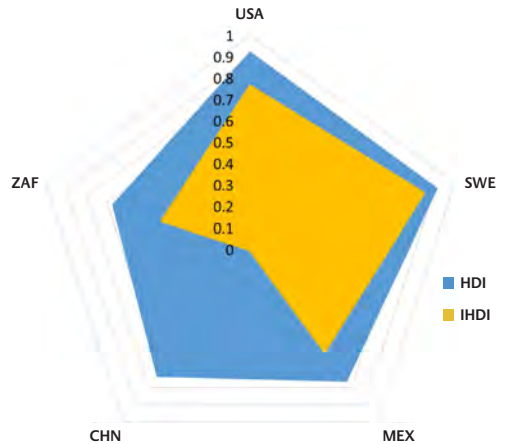
Despite the Sub-Saharan region having some of the highest data communication prices, through a broadened availability of both broadband and smart phones, South Africa has experienced an explosion in the provision of ICT services. The national share of internet users expanded from 10% in 2004 to 49% in 2014. Equally the degree of mobile cellular subscriptions increased by a staggering 340% in the last ten years.⁴

Figure 4. Share of internet users⁵



With regards to the UNDP indices in Figure 5, South Africa has the lowest Human Development Index (HDI) of the reference countries. With an HDI value of 0.666 South Africa ranks as a Medium Development country, positioning it 116th of 188 countries surveyed globally and within the top 10 on the African continent. Though as the HDI is discounted for inequalities in all its three dimensions of human development a drastic drop of 35.7% is seen, showing the existing societal cleavages of the South African society. As a contrary example, we can see that when looking at the IHDI value in the Swedish case the drop is significantly smaller and the country in fact climbs in international rankings.

Figure 5. Human development indices 2014⁶



⁴ ITU: Facts and Figures, accessed on 8/3/2016

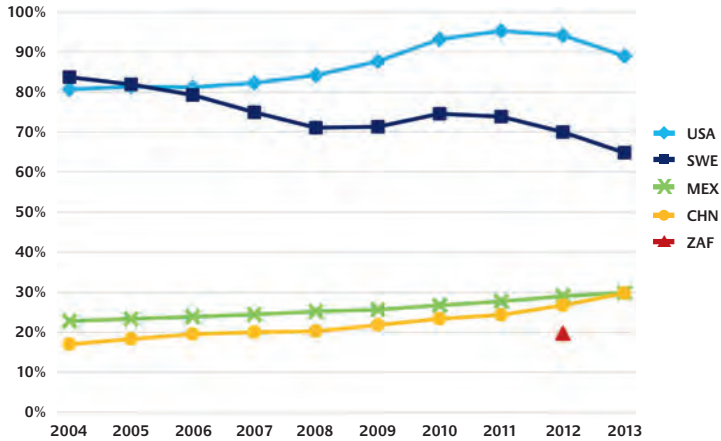
⁵ World DataBank op cit

⁶ UNDP: Human Development Reports, accessed on 13/1/2016, no data point for Chinese IHDI value available.

Academic profile: National level

Though only one data point is available for South Africa we note the low tertiary enrolment ratio for a country that has six of Africa's top ten universities.⁷

Figure 6. Gross enrolment ratio, tertiary, both sexes (%)⁸



The strong regional role of South African higher education is an image reinforced when looking at the significant incoming student mobility volumes in Figure 7. With the ingoing Zimbabwean student body more than 4 times larger than any other nationality, there appears to be a strong emphasis on its bordering Southern African Development Community (SADC) countries.

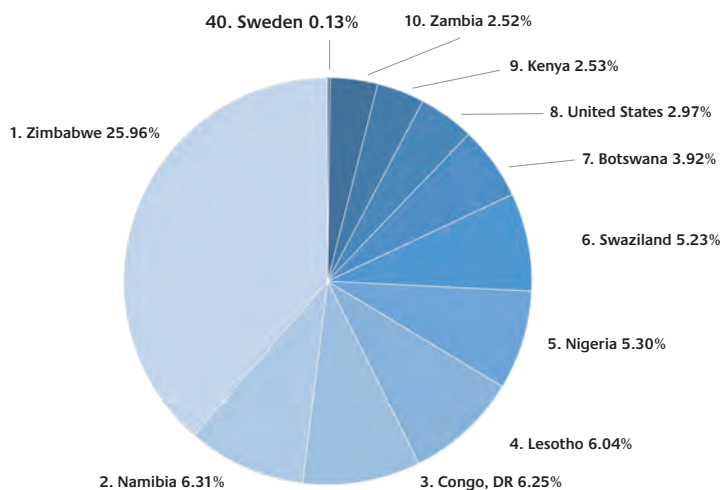
Though whilst looking at the smaller numbers of the outward mobility flows in Figure 8 the South African student body appears to be more sedentary. Here the US and UK are dominant partners, and with South Africa as their main African partner Cuba and Mauritius end up high on the list. The Swedish-South African mobility numbers remain low in both directions.

⁷ Times Higher Education: Top 30 African Universities, accessed on 5/1/2016.

⁸ United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics, accessed on 22/12/2015.

Percentage of total mobile student population – IN

Figure 7. South Africa – Tertiary-level student inflow – 2012⁹

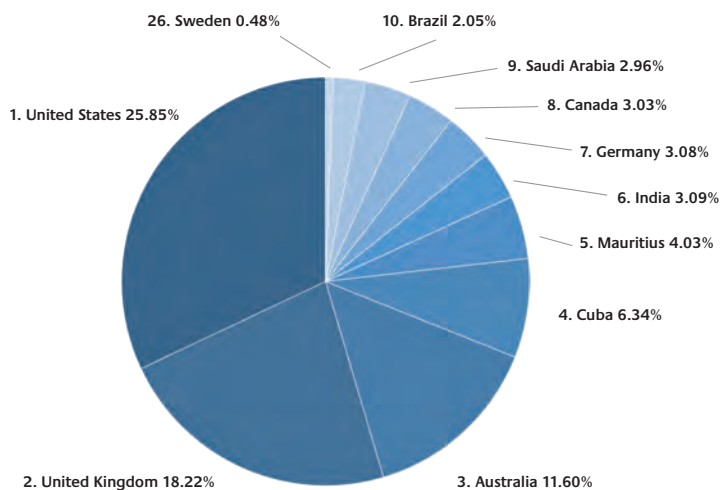


Rank	Country of origin	Mobility volume	% of total student population
1	Zimbabwe	10,993	1.06%
2	Namibia	2,674	0.26%
3	Congo, DR	2,648	0.26%
4	Lesotho	2,557	0.25%
5	Nigeria	2,243	0.22%
6	Swaziland	2,217	0.21%
7	Botswana	1,662	0.16%
8	United States	1,257	0.12%
9	Kenya	1,073	0.104%
10	Zambia	1,066	0.103%
40	Sweden	57	0.0055%
	Total student pop:	1,035,594	100%

⁹United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics, accessed on 22/12/2015

Percentage of total mobile student population – OUT

Figure 8. South Africa – Tertiary-level student outflow – 2012⁹

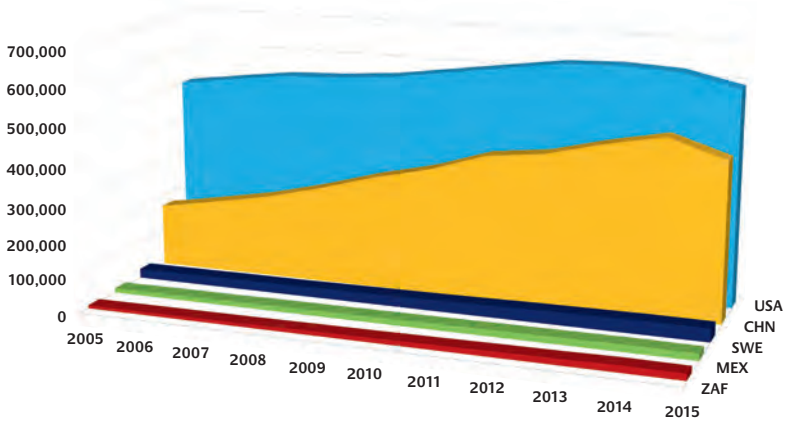


Rank	Country of origin	Mobility volume	% of total student population
1	United States	1,738	0.17%
2	United Kingdom	1,225	0.12%
3	Australia	780	0.08%
4	Cuba	426	0.041%
5	Mauritius	271	0.026%
6	India	208	0.020%
7	Germany	207	0.020%
8	Canada	204	0.020%
9	Saudi Arabia	199	0.019%
10	Brazil	138	0.013%
26	Sweden	32	0.0031%
	Total student pop:	1,035,594	100%

⁹United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics, accessed on 22/12/2015

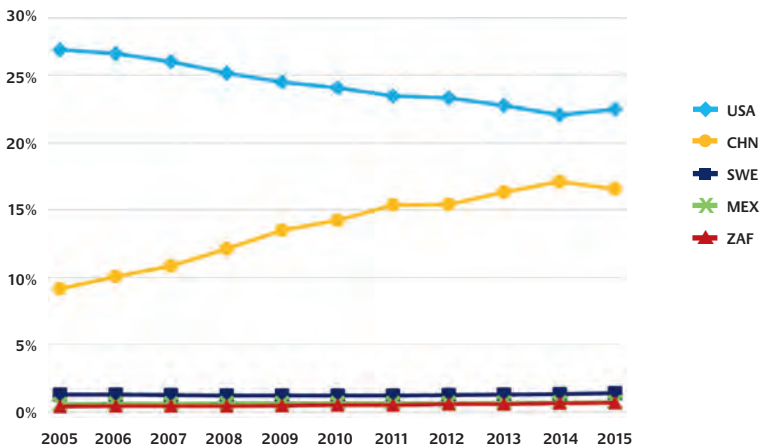
With 143,304 total publications between 2005-15 South Africa is placed just below Singapore and Hong Kong in terms of overall output. And just above New Zealand, Saudi Arabia and Thailand.

Figure 9. Annual volume of scholarly publications¹⁰



Though South Africa retains a seemingly low global share of all scholarly publications (0.69%, 2015) it remains one of the most prolific countries in its region and has seen an almost three-fold increase in its publication volume since 2005.

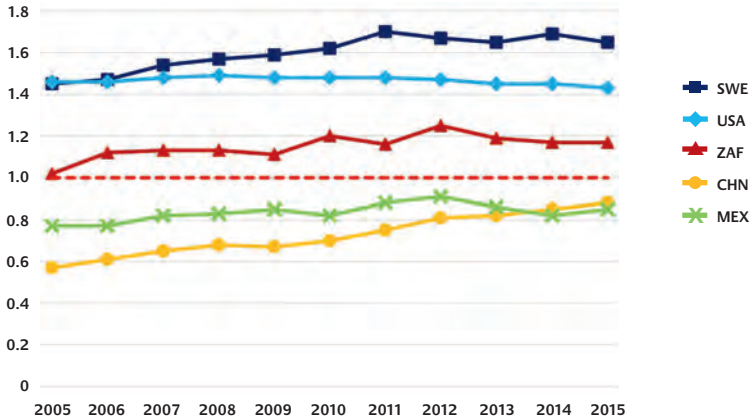
Figure 10. Global share of scholarly publications (%)



¹⁰ All the data included below has been collected from SciVal® database, Elsevier B.V., <http://www.scival.com>, accessed on 19/5/2016

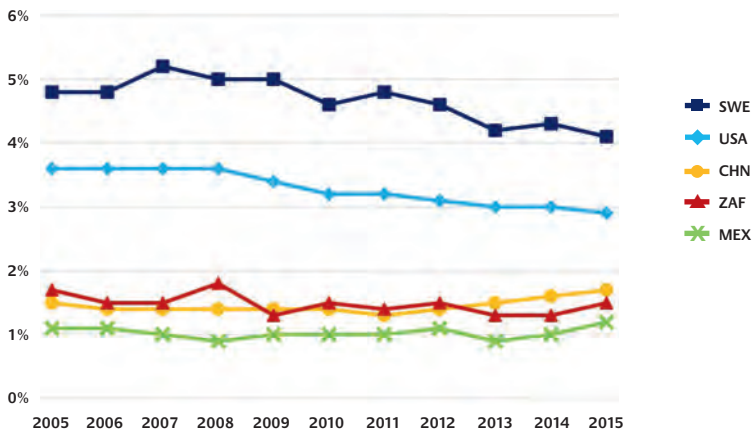
Nevertheless whilst looking at the quality of said publications a different image emerges, one where South Africa is placed in the upper half of the reference countries. Through using an index measuring the field-weighted citation impact we can see in Figure 11 that the quality of South African publications is above the world average and has been progressing over the last decade.

Figure 11. Quality of scholarly publications, FWCI¹¹



With regards to the share of corporate affiliations for these publications, a particular strong suit of the Nordic countries, we see South Africa positioning itself just below the world average (1,7 %) in the last ten years.

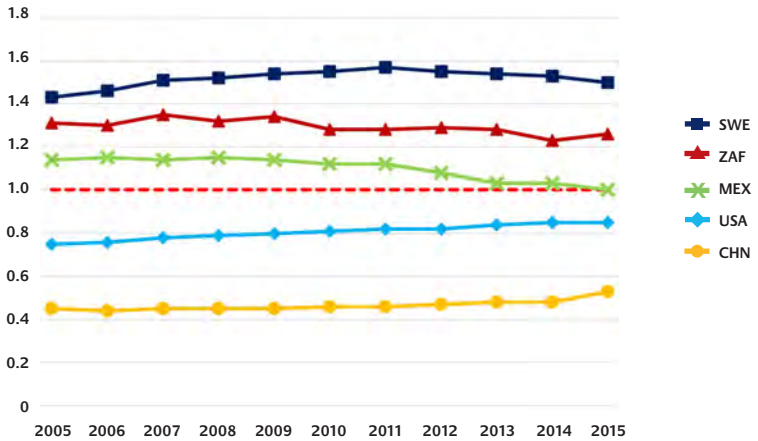
Figure 12. Academic-Corporate Collaboration, publications with both academic and corporate affiliations (%)



¹¹ Field-Weighted Citation Impact (FWCI) is the ratio of citations received and citations expected from the average in its field of study.

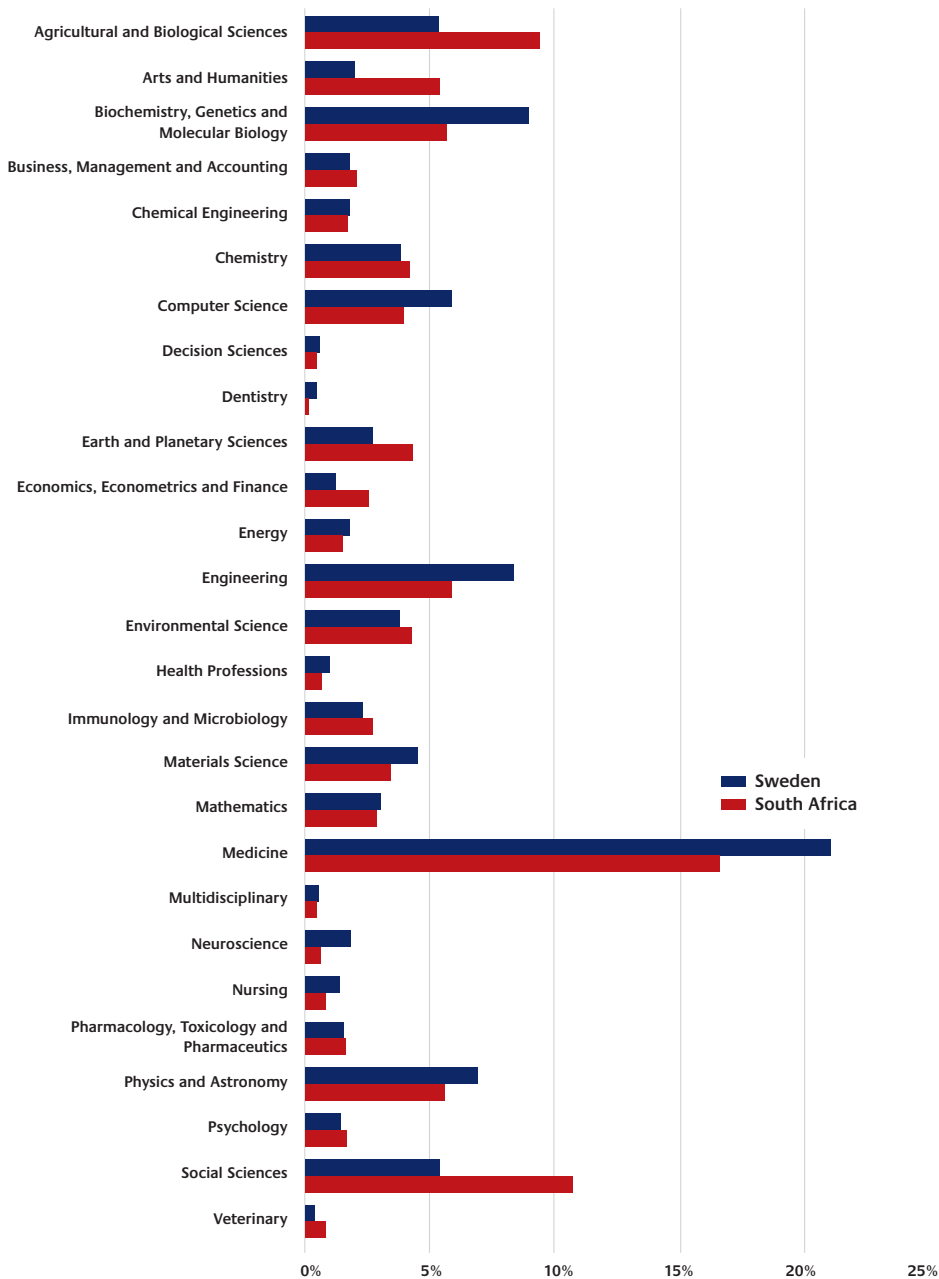
In terms of the degree of international collaboration, we can see that both Sweden and South Africa place themselves in the top of the referenced countries and well above the world average.

Figure 13. International collaboration, in Field-weighted internationalisation score (FWIS)



Looking at the composition of the Swedish and South African publications by their corresponding fields of study in Figure 14, we notice similarities in many of the natural and technical sciences and a shared focus on the medical sciences. Further we find the humanities, agricultural-, biological- and social sciences to be more prominent in South Africa. Whereas medicine, biochemistry, computer science and neuroscience to be more pronounced in the Swedish case.

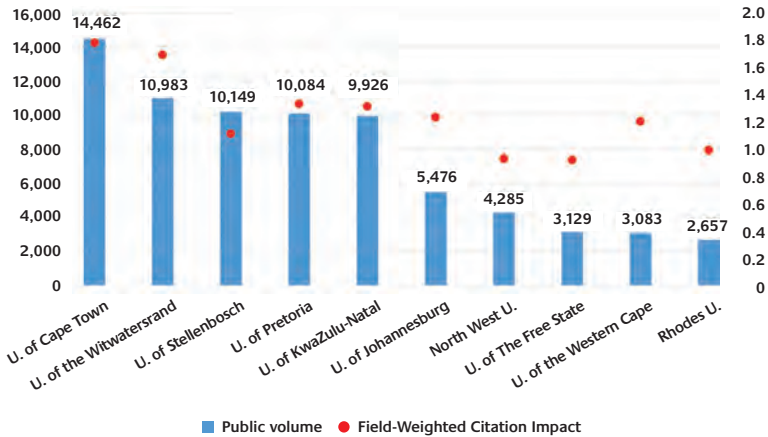
Figure 14. Publications by journal category – 2011-15 (%)



Academic profile: Institutional level

Looking closer at the ten most published institutions in South Africa we quickly find the University of Cape Town as the prominent institution in all indicators. In the second strata we find four universities from the Gauteng, KwaZulu-Natal and Western Cape provinces all closely linked in terms of both publication volume and quality. In the lower half we find five universities with around half the publication output, a publication quality and international collaboration index around the national average.

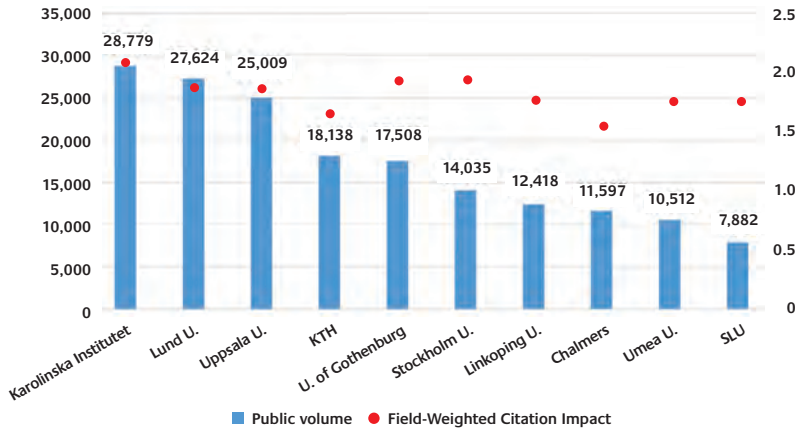
Figure 15. South Africa – Ten most published institutions, by volume and quality (FWCI) 2011-15



Institution	Number of publications	% of all ZAF publications	FWCI	FWIS
University of Cape Town	14,462	16.84%	1.78	1.46
University of the Witwatersrand	10,983	12.79%	1.69	1.42
University of Pretoria	10,149	11.81%	1.11	1.29
University of Stellenbosch	10,084	11.74%	1.33	1.27
University of KwaZulu-Natal	9,926	11.55%	1.31	1.24
University of Johannesburg	5,476	6.37%	1.23	1.15
North West University	4,285	4.99%	0.93	1.06
University of The Free State	3,129	3.64%	0.92	1.10
University of the Western Cape	3,083	3.59%	1.20	1.25
Rhodes University	2,657	3.09%	0.99	1.03
South Africa	85,904	100%	1.19	1.26

Comparing the same cross-sectional perspective with the Swedish case, we can see that the top ten Swedish universities have at least double the publication volume compared to their South African counterparts. We also find a closer tie between the top three institutions and a more equitable relation between the remaining institutions in terms of output, publication quality and international collaboration. Which in turn is further reflected in the higher national index averages in Sweden.

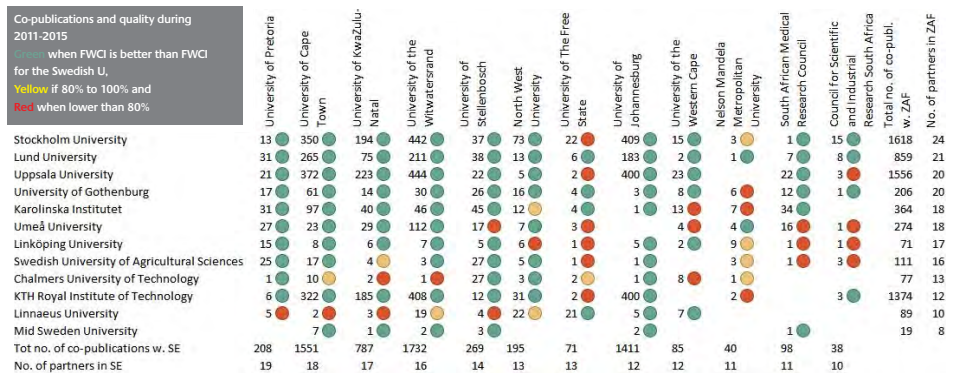
Figure 16. Sweden – Ten most published institutions, by volume and quality (FWCI) 2011-15



Institution	Number of publications	% of all SWE publications	FWCI	FWIS
Karolinska Institutet	28,779	16.03%	2.10	1.62
Lund University	27,264	15.19%	1.88	1.51
Uppsala University	25,009	13.93%	1.88	1.49
KTH Royal Institute of Technology	18,138	10.10%	1.67	1.59
University of Gothenburg	17,508	9.75%	1.91	1.43
Stockholm University	14,035	7.82%	1.93	1.42
Linköping University	12,418	6.92%	1.76	1.34
Chalmers University of Technology	11,597	6.46%	1.54	1.41
Umea University	10,512	5.86%	1.75	1.42
Swedish University of Agricultural Sciences	7,882	4.39%	1.75	1.45
Sweden	176,494	100%	1.68	1.54

When looking at the co-publication pattern between South Africa and Sweden, there are already several existing collaborations in research. In Figure 17, the broadest collaborations in terms of the number of partners in each country respectively, are described. University of Pretoria has co-publications with 19 Swedish institutions and Stockholm University has the broadest collaboration from the Swedish side with 24 South African institutions. The dominance of green-coloured spheres indicates that the quality of the co-publications is better than the average publications from a Swedish perspective.

Figure 17. Sweden-South Africa co-publication matrix



The Swedish Foundation for International Cooperation in Research and Higher Education, STINT, was set up by the Swedish Government in 1994 with the mission to internationalise Swedish higher education and research.

STINT promotes knowledge and competence development within internationalisation and invests in internationalisation projects proposed by researchers, educators and leaderships at Swedish universities.

STINT promotes internationalisation as an instrument to:

- Enhance the quality of research and higher education
- Increase the competitiveness of universities
- Strengthen the attractiveness of Swedish universities

STINT's mission is to encourage renewal within internationalisation through new collaboration forms and new partners. For example, STINT invests in young researchers' and teachers' international collaborations. Moreover, STINT's ambition is to be a pioneer in establishing strategic cooperation with emerging countries in research and higher education.



STINT

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