

# Nurturing doctoral growth: Towards the NDP's 5000?

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Although the matter still is contested, there is growing agreement amongst national policymakers and other socio-economic actors that the university is a driver for economic growth and development. This belief has to do with the role of the university in producing a highly-skilled and competent labour force, and in producing new knowledge. Both contributions are essential to the building of innovation and development for a national economy that aspires to be globally competitive. Both come together in the doctorate. There is also increasing recognition that research-intensive universities in low- and middle-income countries have an indispensable role to play in a differentiated academic system that can respond to the diverse requirements of contemporary development.<sup>1</sup>

According to Altbach<sup>2</sup>, a differentiated academic system is needed for research-intensive universities to flourish:

*The fact is that few if any developing countries have a differentiated academic system in place; and this central organisational requirement remains a key task...These institutions must be clearly identified and supported. There must be arrangements so that the number of research universities will be sufficiently limited so that funding is available for them and that other resources, such as well-qualified academics, are not spread too thinly.*

But as Altbach points out, research universities with strong doctoral programmes usually constitute a relatively small percentage of the higher education sector. In the USA, it is about 5% (220 research universities in a system of more than 4000 post-secondary institutions); in the UK, 15% (15 research universities amongst 100 universities); and in China, 3% (100 research universities out of more than 3000 institutions countrywide). In many developing countries there is often only one research university, and too many countries have none.<sup>2</sup>

A key component of a research-intensive university is a strong doctoral programme. Within the developed countries, with high doctoral production integral to their knowledge economy, there is a debate about whether an increase in doctoral graduates is required, and about what kind of contribution (research skills, innovation capacity, or something else) a doctorate makes to their knowledge economies. In sharp contrast, there are a range of developing countries, like Brazil and Mexico in Latin America, and China, Malaysia and Singapore in East Asia, where higher education, and specifically the doctorate, is seen as a development driver towards becoming a knowledge economy. These countries have invested massively in the expansion of doctoral programmes.<sup>3</sup>

In South Africa, the state, through its various bodies like the Department of Higher Education and Training (DHET), the Department of Science and Technology (DST) and the National Research Foundation (NRF), has responded to a knowledge economy discourse, even if the real economy is still mired in a low-skill, mineral extraction, export-dominated model. In a surprise move, in 2012, the National Planning Commission (NPC) made the target, of increasing the percentage of academic staff with a doctorate from the 2010 level of 34% to 75% by 2030, their number one priority in the section on higher education in their final report. This target replaces student enrolments and throughput rates as number one priority.

The rationale for this change between the draft and final report centres on the poor quality at the heart of poor performance in the higher education sector: 'The most important factor that determines quality is the qualifications of staff'<sup>4</sup>. The basic argument runs as follows: raise the qualifications of staff – in other words, increase the number of academics with doctorates – and the quality of the student outcomes will improve. This will also significantly improve throughput, the capacity to supervise higher degrees and, ultimately, the research productivity of the sector. In short, 'quality defined as having a doctorate is seen by the National Development Plan (NDP) as being the key that will unlock a virtuous cycle of effects'<sup>5</sup>.

The NDP went further and set a target for the sector of producing more than 100 doctoral graduates per one million of the population by 2030. Broadly speaking, these numbers mean that the annual production of doctoral graduates will have to increase from 1420 per annum (in 2010) to 5000 per annum in 2030. This target was confidently repeated by Vice President, and Vice Chair of the NPC, Mr Cyril Ramaphosa, at the Transformation Summit in October 2015.

The DST, DHET and the NPC have all supported the notion of strengthening well-performing research-intensive universities in their policy documents. For example, the DHET White Paper<sup>6</sup> declared that 'in the university sector this continuum will range from largely undergraduate institutions to specialised, research-intensive universities which offer teaching programmes from undergraduate to doctoral level'.

In its rhetoric, the DHET is quite in line with the sentiments of the NDP<sup>4</sup> which urged government to:

*... strengthen universities that have an embedded culture of research and development. They should be assisted to access private sector research grants (third stream funding) in addition to state subsidies and student fees, attract researchers, form partnerships with industry and be equipped with the latest technologies.*

In terms of financial policy, DHET has rewarded research output and doctoral enrolments and graduations through its subsidy formula. The DST and NRF have awarded scholarships, research chairs (through the South African Research Chairs Initiative) and Centres of Excellence based on merit and equity, and the research-intensive institutions have benefitted accordingly, as could be expected if merit is an important, if not the only, criterion. Whether these initiatives are enough to grow this sub-sector in line with the target set by the NDP is the question.

The question is not whether the higher education landscape should be differentiated; it is already differentiated in terms of a range of indicators, and has been so for some time.<sup>7,8</sup> The question is whether the government will support targeted differentiation in policy and fiscal terms. Left as it is, the system will grow modestly, or just drift. Policy inaction is also a choice.

A comprehensive study on doctoral education in South Africa offers an interesting lens on the differentiation debate, and on the categorisation of the university system.<sup>7</sup>

### Differential doctoral production in South Africa

Table 1 shows that in 2012, seven universities produced 68% of all doctoral graduates and six universities produced only 1%. Table 1 also shows:

- Regarding graduation growth, during the 2008–2012 period, five universities grew their doctoral graduates by more than 20% annually while three posted 0% growth.
- Regarding efficiency, in 2006, four universities had a completion rate above 55% after 7 years, and seven universities had a completion rate lower than 35%. Another indicator of efficiency is the ratio of doctoral graduates as a percentage of academic staff with doctorates. In 2012, five institutions had a ratio higher than 0.3 and four universities had a ratio lower than 0.1.

- Regarding transformation, in 2012, five universities produced more than 90 black doctoral graduates each, while six between them produced only 15 in total. Five universities produced more than 75 female doctoral graduates each, and six universities just 13 in total.
- Regarding percentage of academic staff with a doctorate, in 2012, six universities had more than 50% of their staff with doctorates, five had fewer than 20%.

Of course, it is not the same institutions that perform well for all of the doctoral indicators. In 2012, Stellenbosch University and University of Pretoria both produced 200 or more doctoral graduates, while University of Fort Hare and Tshwane University of Technology grew at more than 35% annually during the 2008–2012 period. Stellenbosch University and the University of the Western Cape had a 60% completion rate for the 2006 cohort. Stellenbosch and Rhodes Universities had a ratio of above 0.39 doctoral graduates to academic staff with doctorates. Regarding transformation, the University of KwaZulu-Natal and Stellenbosch University produced more than 100 black doctoral graduates each and both of these two institutions each graduated more than 90 women. Finally, the Universities of Cape Town and the Witwatersrand had more than 55% of staff with a doctorate.

Looking at doctoral performance across the seven indicators, there is a grouping of at least seven traditional universities which consistently

**Table 1:** Indicators for performance in doctoral production

University	GROWTH		EFFICIENCY		TRANSFORMATION		QUALITY
	Doctoral graduates in 2012	Average annual growth rate: 2008–2012	Percentage of 2006 cohort graduating after 7 years	Ratio of doctoral graduates to academic staff with doctorates in 2012	Number of black doctoral graduates	Number of female doctoral graduates	Percentage of academic staff with doctorates
Cape Peninsula	24	16.6%	34.0%	0.19	19	5	16%
Cape Town	199	7.1%	55.8%	0.28	98	78	65%
Central	5	0.0%	30.8%	0.07	3	1	26%
Durban	6	18.9%	46.2%	0.07	4	5	15%
Fort Hare	43	40.6%	34.1%	0.36	41	9	38%
Free State	94	14.3%	50.7%	0.25	42	44	40%
Johannesburg	109	10.5%	55.0%	0.37	52	53	29%
KwaZulu-Natal	177	6.8%	50.3%	0.27	138	91	47%
Limpopo	17	5.0%	32.0%	0.13	16	7	16%
Mangosuthu	0	0.0%	0.0%	0.00	0	0	9%
Nelson Mandela	86	16.3%	51.4%	0.36	51	26	41%
North West	154	11.4%	52.1%	0.25	42	82	50%
Pretoria	200	2.7%	51.5%	0.32	83	99	49%
Rhodes	67	25.5%	50.6%	0.39	34	32	51%
South Africa	152	22.7%	24.5%	0.25	94	60	39%
Stellenbosch	240	18.9%	65.1%	0.46	107	96	53%
Tshwane	44	35.6%	51.1%	0.25	33	14	21%
Vaal	2	0.0%	0.0%	0.05	2	0	13%
Venda	4	18.9%	29.4%	0.04	4	1	31%
Walter Sisulu	3	10.7%	25.0%	0.04	2	1	12%
Western Cape	75	15.6%	59.8%	0.26	62	23	52%
Witwatersrand	150	9.1%	44.5%	0.25	92	56	55%
Zululand	28	21.1%	51.6%	0.35	26	11	27%

perform well: Stellenbosch, KwaZulu-Natal, Cape Town, Pretoria, Rhodes, Western Cape and Witwatersrand. There is a second grouping of nine institutions which are consistently in the top 10 in terms of at least five of the indicators: four traditional universities (Fort Hare, Free State, North West and Limpopo), four comprehensive universities (Johannesburg, Nelson Mandela Metropolitan, South Africa and Zululand), and one university of technology (Tshwane). The third grouping of seven universities performs indifferently across the indicators. This group consists of five universities of technology and two comprehensive universities.

It is worth noting that in terms of the official government classification of the system into traditional universities, comprehensive universities and universities of technology, four of the comprehensive universities (Johannesburg, Nelson Mandela Metropolitan, South Africa and Zululand) perform comparably with the second grouping of traditional universities as far as doctorate production is concerned. Regarding the universities of technology, Tshwane is the only one that could be classified as being in the doctorate-producing grouping.

High performance relative to indicators and goals has often been attributed to historical advantage (some universities are more than a 100 years old) and particularly to the apartheid practice of discriminatory allocation of resources and human capital.<sup>6</sup> Table 1 shows that in post-apartheid South Africa, some of these differences in performance – particularly in terms of the doctorate and research output – have persisted. More interestingly, the Table also shows that there is a differentiation occurring amongst the historically disadvantaged institutions. For instance, the Universities of the Western Cape and Fort Hare and the Mafikeng campus of North West University have become much more productive, and the Tshwane University of Technology is comparable to the traditional university grouping.

Also interesting to note, the 'transformationally challenged' universities Stellenbosch and Cape Town are, along with KwaZulu-Natal and Pretoria, the biggest producers of black and women doctoral graduates.

### Tough questions

How will South Africa try to gear up the system to meet the target of 5000 new doctorates a year by 2030 set by Mr Ramaphosa and the NDP? These findings pose anew at least six policy questions that South Africa has struggled with since 1994 and continues to struggle with. Firstly, should the seven institutions that make up 30% of the system and produce 70% of the doctorates be regarded and recognised as having an 'embedded research culture', as research-intensive universities with strong doctoral programmes? If so, what are the policy levers for further strengthening such universities? Secondly, should nine institutions in the next cluster be encouraged and incentivised to develop and expand their research and doctoral education capacities? While this would broaden the base of the system, it would run counter

to the international trend of singling out a smaller group of institutions worthy of high-level support. Thirdly, should the six institutions that produce 1% of the doctoral graduates be allowed to continue to offer doctoral programmes? In the USA and Norway for example, doctorate-awarding status is attained only after meeting fairly stringent conditions. Fourthly, if a decision is taken to increase full-time doctoral programmes (the main recommendation from Cloete et al.'s study), with the attendant considerable costs involved, should these programmes be distributed across all institutions or be concentrated in the most efficient universities with demonstrated supervisory capacity? Fifthly, are we likely to meet the target without actively welcoming candidates and supervisors from the rest of Africa? Can this approach be encouraged in the face of the prevailing national mood? Last but certainly not least, can we afford not to incentivise (highly productive) universities to produce more black women doctoral graduates?

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### References

1. Olsson Å, Cooke N. The evolving path for strengthening research and innovation policy for development. Draft report. Paris: Organisation for Economic Cooperation and Development; 2013. Available from: [http://www.oecd.org/sti/Session%204\\_The%20evolving%20path.pdf](http://www.oecd.org/sti/Session%204_The%20evolving%20path.pdf)
2. Altbach PG. Advancing the national and global knowledge economy: The role of research universities in developing countries. *Stud High Education*. 2013;38(3):316–330. <http://dx.doi.org/10.1080/03075079.2013.773222>
3. Cyranoski D, Gilbert N, Ledford H, Nayar A, Yahia M. Education: The PhD factory. The world is producing more PhDs than ever before. Is it time to stop? *Nature*. 2011;472:276–279. <http://dx.doi.org/10.1038/472276a>
4. National Planning Commission. National development plan 2030: Our future, make it work [document on the Internet]. c2012 [cited 2015 Oct 23]. Available from: <http://www.poa.gov.za/news/Documents/NPC%20National%20Development%20Plan%20Vision%202030%20-lo-res.pdf>
5. Muller J. Discussion paper on the higher education and the NDP. Pretoria: Higher Education South Africa; 2013 [unpublished paper].
6. Department of Higher Education and Training (DHET). White paper for post-school education and training: Building an expanded, effective and integrated post-school system. Pretoria: DHET; 2013.
7. Cloete N, Mouton J, Sheppard C. Doctoral education in South Africa. Cape Town: African Minds; 2015.
8. Cloete N. Institutional clusters in higher education in South Africa. Presented at the Higher Education Summit of the Minister of Higher Education and Training; 2010 Apr 22–23; city, country. Available from: [http://chet.org.za/files/DifferentiationChet\\_Web10May10.pdf](http://chet.org.za/files/DifferentiationChet_Web10May10.pdf)

