

The Changing Size and Shape of the Higher Education System in South Africa, 2005–2017.

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ALI MAZRUI CENTRE FOR HIGHER EDUCATION STUDIES JULY 2020

> The Future Reimagined

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The Changing Size and Shape of the Higher Education System in South Africa, 2005-2017

1. Introduction

In 2001 the then Ministry of Education¹ released the National Plan for Higher Education (NPHE) (DoE, 2001), which provided an implementation framework to achieve the policy goals for the transformation of the higher education system outlined in Education White Paper 3: A Programme for the Transformation of the Higher Education System (WP3) (DoE, 1997). The NPHE was developed in response to the advice provided by the Council on Higher Education (CHE) on the size and shape of the public higher education system. The CHE's advice in its report, Towards a New Higher Education Landscape: Meeting the Equity, Quality and Social Development Imperatives of South Africa in the 21st Century (CHE, 2000), was developed at the request of the then Minister of Education, Professor Kader Asmal, who on assuming office in 1999, had indicated his intention to review the institutional landscape of higher education:

The shape and size of the higher education system cannot be left to chance if we are to realise the vision of a rational, seamless higher education system, responsive to the needs of students of all ages and the intellectual challenges of the 21st century. The institutional landscape of higher education will be reviewed as a matter of urgency in collaboration with the Council on Higher Education. This landscape was largely dictated by the geo-political imagination of apartheid planners. As our policy documents make clear, it is vital that the mission and location of higher education institutions be re-examined with reference to both the strategic plan for the sector, and the educational needs of local communities and the nation at large in the 21st century (DoE, 1999).

The CHE proposed restructuring the higher education system as a "differentiated and diverse" system through reconfiguring institutional mandates, that is, "principle orientations and core foci" through a regulatory framework and set of criteria linked to the knowledge generation (research) and transmission (teaching) role of higher education. This would enable the development of a functionally differentiated public higher education system with institutional mandates based on the distinction between teaching and research. Although all institutions would be required to offer high quality undergraduate programmes and to undertake research, their different mandates would result in four institutional types, namely, (i) bedrock institutions, which would offer a limited number of postgraduate programmes up to a taught masters level and whose research focus would be limited to the scholarship of teaching and learning; (ii) comprehensive research institutions offering a full-range postgraduate programmes - taught and research - up to the doctoral level, with an extensive research focus (basic, applied, strategic and developmental) across a broad range of areas; (iii) extensive institutions offering an extensive range of postgraduate programmes - taught and research - up to the masters level and selected programmes up to the doctoral level and research (basic, applied, strategic and developmental) in selected areas (CHE, 2000: 8-9).

The Ministry accepted the CHE's proposal for a differentiated and diverse system based on reconfigured institutional mandates in principle. However, it did not accept the form that this should take. It argued that differentiation based on a distinction between teaching and research institutions would introduce "an element of rigidity, which will preclude institutions from building on their strengths and responding to social and economic needs, including labour market needs, in a rapidly changing regional, national and global context" (DoE, 2001: 54). This was in large part influenced by the objections raised by the historically black universities (HBUs) and the erstwhile technikons (now Universities of Technology) that the CHE's proposals would consign them to the status of bedrock (teaching)

¹ In 2009, the Ministry of Education was split into the Ministry of Basic Education and the Ministry of Higher Education and Training, which incorporated adult education and skills training. Subsequently, in 2019, the Ministry of Higher Education and Training was merged with the Ministry of Science and Technology.

institutions, thus entrenching apartheid-based inequalities in the institutional landscape of the higher education system. The objections were based on the fact, as acknowledged in the CHE report, that the "technikons were initially [prior to 1993] not expected to conduct research and produce high-level graduates and the historically black universities were not designed as knowledge-producing institutions" (CHE, 2000: 20).

The alternative proposed by the Ministry in the NPHE was to ensure "institutional diversity through mission and programme differentiation based on the type and range of qualifications offered" and determined by the location, context and "demonstrated capacity and future potential" of institutions. The latter would enable all institutions "to build on their existing strengths, including research and postgraduate strengths" (DoE, 2001: 54). This would be effected through the development and implementation of three key policy instruments, namely, national and institutional planning, a new funding framework and quality assurance. However, although these instruments came on stream and were implemented since 2005, the development of a differentiated and diverse higher education system that responds to the social and economic development needs of South Africa remains unresolved and elusive. The need for a differentiated system is not in dispute. However, there is no agreement on what this would entail. This is in the main because the higher education system, like much else in the broader society, remains hostage to the inherited inequalities and legacy of the apartheid past. Differentiation is viewed through the race-tinged lenses of the past, which precludes transcending the divide between historically black (disadvantaged) and historically white (advantaged) institutions and re-imagining the higher education system in terms of its role in enhancing social justice and contributing to the social and economic development of a democratic society. And importantly, in the intervening period, the size (overall enrolments, participation rate, total academic staff and number of institutions) and shape (undergraduate vs postgraduate enrolments, enrolments in different fields of study and

institutional types) of the higher education system has changed and is in a state of flux in response to local and global imperatives and trends.

It is against this backdrop that this report assesses the changing size and shape of the higher education system in South Africa and its implications for the differentiation and diversity of the system. The purpose of the report is to identify the progress made, the challenges that remain and to assess the continued efficacy of the CHE and NPHE differentiation frameworks in the context of the changes in higher education locally and globally.

The NPHE provides the point of departure for assessing the progress made in achieving the policy goals for the transformation of the higher education system. The Minister of Higher Education and Training indicated that the White Paper for Post-School Education and Training (WPPSET), which was released in 2013, would be followed by a National Plan for the Post-School Education and Training System (NPPSET). A draft NPPSET has been developed, which according to a presentation to the Portfolio Committee on Higher Education in Parliament in August 2019, "operationalises the vision and principles of the WPPSET and provides a *blueprint* for growing an effective and integrated PSET system" through identified goals, objectives and outcomes, including overall sector and sub-sector specific strategies for achieving the objectives. (DHET, 2019c).

It is not clear, however, from the presentation whether the sub-sector strategies for higher education have been developed based on an assessment and evaluation of the progress made in achieving the policy goals and objectives outlined in the NPHE. This should be the starting point for the development of the higher education sub-sector strategy in the NPPSET. It requires assessing what, if anything, was achieved; what was not achieved and why; and identifying new outcomes to build on the achievements and address ongoing shortcomings and weaknesses, including adjusting policy goals and objectives and the associated outcomes, strategies, activities and time-frames in the light of changed circumstances. In the absence of the release of the NPPSET² and given that the

WPPSET did not indicate any substantive change in policy direction in relation to higher education, the NPHE remains the relevant implementation framework against which to assess the progress made in meeting the policy goals for the transformation of the higher education system.

The NPHE identified priorities and established "indicative targets for the size and shape of the higher education system, including overall growth and participation rates, institutional and programme mixes and equity and efficiency goals" (DoE, 2001: 1). The priorities and targets were linked to five key policy goals outlined in WP3, namely:

- To provide a full spectrum of advanced educational opportunities for an expanding range of the population irrespective of race, gender, age, creed or class or other forms of discrimination (WP3: 1.27).
- To promote equity of access and fair chances for success to all who are seeking to realise their potential through higher education, while eradicating all forms of unfair discrimination and advancing redress for past inequalities (WP3: 1.14).
- To diversify the system in terms of the mix of institutional missions and programmes that will be required to meet national and regional needs in social, cultural and economic development (WP3: 1.27).
- To secure and advance high-level research capacity which can ensure both the continuation of self-initiated, open-ended intellectual inquiry, and the sustained application of research activities to technological improvement and social development (WP3: 1.27).
- To build new institutional and organisational forms and new institutional identities and cultures as integral components of a single coordinated national higher education system (WP: 2.42-2.45).

The timeline of the report, 2005-2017, coincides with two key policy moments in 2005:

- The development and implementation of the three linked levers for steering the higher education system to meet national policy goals and objectives, namely, national and institutional planning, funding and quality assurance.
- The restructuring of the institutional landscape through mergers and incorporations, which reduced the number of higher education institutions from 36 to 23.³ (see Appendix One for a list of institutions).

The report is based on a combination of quantitative and qualitative analysis, including unstructured interviews with select institutional leaders (see Appendix Two for a list of the vice-chancellors interviewed). In line with this, the report is divided into two parts; the first focuses on the changing size and shape of higher education through a quantitative analysis of the key data, including assessing the achievement of the indicative targets and performance indicators set in the NPHE; the second focuses on the implications of the trends emerging from the data analysis for the differentiation and diversity of the higher education system.

1.1 Institutional Categories

The public higher education institutions have been categorised into five types for the purposes of the report, namely:

- (i) Research-intensive universities (RIUs) Universities of Cape Town (UCT), KwaZulu-Natal UKZN), Pretoria (UP), Stellenbosch (US) and the Witwatersrand (Wits).
- (ii) Other universities (OUs) Nelson Mandela University (NMU), North West University (NWU), Rhodes University (RU), Universities of the Free State (UFS), Johannesburg (UJ), Mpumalanga (UMP) and Sol Plaatje University (SPU).

² There was no indication in the presentation to the Portfolio Committee on the process and release date of the NPPSET.

³ There are currently 26 – 2 new institutions have been established, namely, Sol Plaatje University and the University of Mpumalanga; and the Medical University of South Africa, previously merged with the University of the North to form the University of Limpopo, was re-established as an autonomous institution – the Sefako Makgatho Health Sciences University. This report does not assess the outcomes of the institutional restructuring process, which requires a study in its own right.

- (iii) Historically Black Universities (HBUs) Universities of Fort Hare (UFH), Limpopo (UL), Venda (UV), Western Cape (UWC), Zululand (UZ), Walter Sisulu University (WSU) and Sefako Makgatho Health Sciences University (SMH).
- (iv) Universities of Technology (UoTs) Cape Peninsula (CPUT), Central (CUT), Durban (DUT), Mangosuthu (MUT), Tshwane (TUT) and the Vaal (VUT) Universities of Technology.
- (v) Distance University University of South Africa (Unisa).

The categorisation was informed by the categories previously used in the analysis of the higher education system and enables assessing changes in the system based on historical categories. Although the historical categories have, in some instances, been affected by the restructuring of the institutional landscape through mergers and incorporations and the establishment of two new universities, the categorisation in broad terms remains relevant for comparative purposes.⁴ The inclusion of institutions in the RIU category is based on two research-related criteria – publication outputs and masters and doctoral graduates. In the 1990s about two-thirds of all publication outputs and masters and doctoral graduates were produced by the RIUs, which were all historically white institutions. The latter, as would be expected, was the result of the apartheid legacy - as the National Commission on Higher Education pointed out, in 1993 83% of research outputs and 81% of masters and doctoral graduates were

produced by the historically white universities, while the comparable figures for the HBUs was 7% and 5% respectively, for the historically white Technikons it was 1% and 2%, and for Unisa (including Technikon South Africa⁵) it was 9% and 12% respectively (Simpson and Gevers, 2016: 195).

It is also necessary to highlight the new institutional type that was introduced as part of the institutional restructuring process, namely, comprehensive institutions. The introduction of comprehensive institutions as a new institutional type took two forms; (i) the merger of a university with a technikon, and (ii) the expansion of the mission of existing universities in rural areas where there were no technikons to include the provision of career-focussed programmes. In practice, there are only four comprehensive institutions out of the proposed seven. The four – UJ, NMU, WSU and Unisa - were established based on mergers between universities and technikons, while the remaining three institutions – UL, UV and UZ - have not not been able to give effect to their mission to introduce career-focussed programmes. However, for purposes of this report, the four institutions have been categorised along historical lines – the two institutions in which the erstwhile university is dominant have been included under the "other universities" category, the comprehensive institution resulting from the merger of a historically black university and technikon has been included under the HBU category and the two merged distance institutions under the distance university category.

5 Technikon South Africa (TSA) was a distance education technikon, which was merged in 2005 with Unisa.

⁴ For example, the (historically white) University of Natal was merged with the (historically black) University of Durban-Westville; similarly, except for Mangosuthu University of Technology and the Central University of Technology (which incorporated the the Bloemfontein campus of the (historically black) Vista University, all the historically black and white Technikons were merged. The two new institutions – University of Mpumalanga and Sol Plaatje University, which are outside the historical categories, have been included in the "other universities" category. They were established in 2012 and given the small numbers in terms of students and staff at this stage of their development, there is no material impact on the overall analysis

Part One: Size of the Higher Education System, 2005-2017

2. Data Sources

The primary source for student and staff data was the Higher Education Management Information System (HEMIS), which is the national database for the public higher education system (DHET, 2019).⁶ The primary source for research data was the annual research output reports prepared by the DHET (DHET, 2011, 2015 and 2019a). The timeline, 2005-2017, is divided into four periods – 2005, 2009, 2013 and 2017, to facilitate trend analysis and for ease of presentation of the data; and where appropriate, more detailed data tables are included in appendices. The 2017 cut-off date is based on the fact that there is a two-year timelag in the collection and verification of data in HEMIS.

3. Size of the Higher Education System, 2005-2017

to meet the human resource and skills needs of the country and to redress past inequalities in access to higher education. The target, which was recommended by the CHE, was accepted as "relatively modest" and "realistic" given fiscal constraints, in particular, the decrease in expenditure on higher education as a percentage of the Gross Domestic Product (GDP), inadequate resourcing of the National Student Financial Aid Scheme (NSFAS), which impacted on affordability, and poor throughput rates of students from the school system meeting the entry requirements for higher education (DoE, 2001: 21-22).

The target has been realised - in 2017 the participation rate was 21%⁸ - as a result of the rapid growth in headcount enrolments, which increased by 41.1% - from 735 072 to 1 036 984 - between 2005 and 2017, as shown in Tables 1a and 1b below.

3.1 Overall Growth

3.1.1 Headcount Enrolments and Participation Rate

The NPHE proposed increasing the participation rate⁷ from 15% in 2001 to 20% over 10-15 years

Table 1a: Participation Rate in Higher Education, 2005-2017

2005	2009	2013	2017
16%	17%	20%	21%

Table 1b: Headcount Enrolments by Institutional Type, 2005-2017

Institutional Type	2005	%Total	2009	%Total	2013	%Total	2017	%Total	% Growth (G)	Annual Average Growth (AAG)
RIUs	154 147	21%	173 312	20.7%	186 225	18.9%	198 009	19.1%	28.5%	2.1%
OUs	139 278	18.9%	159 654	19.1%	175 084	17.8%	189 639	18.3%	36.2%	2.6%
HBUs	86 377	11.8%	92 290	11%	108 143	11%	127 732	12.3%	47.9%	3.3%
UoTs	147 340	20%	148 964	17.8%	159 006	16.2%	177 589	17.1%	20.5%	1.6%
UNISA	207 931	28.3%	263 559	31.5%	355 240	36.1%	344 015	33.2%	65.4%	4.3%
Total	735 072	100%	837 779	100%	983 698	100%	1 036 984	100%	41.1%	2.9%

6 I would like to acknowledge the support of Dr Charles Sheppard who assisted in the collation of data from HEMIS and in the preparation of the data tables.

7 The participation rate is the percentage of 20-24 year olds enrolled in higher education. This is based on the standard definition used by UNESCO.

⁸ This excludes students enrolled in private higher education.

Going forward, in 2013 the WPPSET in line with the NDP set an increased participation rate - 25% by 2030, which translates into a total headcount enrolment of roughly 1,6m (DHET, 2013: 30; NDP, 2012: 31: 319).

However, it is unlikely that the 25% target will be reached in 2030. This will require total headcount enrolments increasing by 54.3% - a little more than half a million, which is higher than the 41.1% growth in total headcount enrolments – just under 302 000, between 2005 and 2017. The latter was largely driven by growth in total headcount enrolments between 2005 and 2013, when they grew by 33.8% - from 735 072 to 983 698, an annual average growth rate of 3.7%. Subsequently, between 2013 and 2017, headcount enrolments grew at a slower rate - 5.4% - from 983 698 to 1 036 984, or annual average growth rate of 1.3%.⁹ The 25% participation target requires total headcount enrolments between 2017 and 2030 increasing by an annual average of 4.2%. However, it is the slower rate - an annual average of 1.4% - that has informed the DHET's total headcount target of 1 155 482 by 2025, as indicated in the Ministerial Statement on Student Enrolment Planning 2020-2025 for Universities (MSSEPU) (DHET, 2019b, Table 1).

The more realistic target is clearly informed by a recognition that although some of the obstacles to increasing the participation rate have been addressed, in particular, matric pass rates have been improving year-by-year and affordability is no longer a constraint with the introduction of free higher education for poor and working class students in 2018, the preparedness of students to pursue higher education remains a challenge. This results in inefficiencies and impacts on access as on average only 30% of students complete undergraduate qualifications within regulation time, as discussed in 5.2 below. In addition, it suggests a recognition that in the context of fiscal constraints, a further large increase in headcount enrolments is likely to compromise quality.

The 20% participation rate target in the NPHE was based on the average participation rate

in "comparable middle income countries" to South Africa (DoE, 2001: 30). However, South Africa continues to lag behind. The 2030 25% participation rate target is not only well below the participation rate in similar upper middle income countries in Africa, but many of the latter have succeeded in increasing their participation rate at a faster rate than South Africa. Thus for example, between 2000 and 2016, Botswana increased its participation rate from 7% to 23%, Egypt from 29% to 36%, Morocco from 10% to 28%, Mauritius from 11% to 37%. The same applies to the BRICS countries: India increased from 10% to 27%, and even more impressively, Brazil increased from 17% to 51% and China from 8% to 44% (Teeroovengadum, nd). It should be highlighted that in Brazil and to a lesser extent in China, the increase has been driven by massive expansion resulting from the opening of the higher education sector to the private sector in 1996 and 2001 respectively. In Brazil this has resulted in private institutions comprising a "staggering" 88 percent of all Brazilian HEIs, or 2,238 institutions in total" in 2019 and accounting for 75.4% of total headcount enrolments as against 25% in public institutions (Monroy, et. al. 2019). Similarly, in China in 2016 private higher education institutions comprised of some 27% of all higher education institutions and accounted for 22% of total headcount enrolments (Gu, et. al. 2019; Kai, 2018).

In South Africa in comparison, private higher education remains relatively small – 5% or 53 974 of the total headcount enrolments in public higher education in 2017.¹⁰ This is due to a combination of stringent regulations and the associated costs for providers, higher tuition fee costs for students and a lack of policy clarity on the role of private provision. As the CHE review of higher education argues:

It is unclear whether there is intended to be a directed and coordinated approach to stimulating the growth of private higher education. The White Paper of 2013 reinforces the message that private provision is a valuable part of the higher education sector, yet there appears not be a clear strategy to stimulate it (Ballim, et.al., 2016: 86).

⁹ The slower rate of growth in headcount enrolments in this period is in part due to the decline in headcount enrolments at Unisa as discussed in 3.1.2. It may also have been due to the student protests that rocked the higher education sector in 2015/16.

¹⁰ Source: Higher Education Qualifications Committee Information System (HEQCIS) (CHE, 2019).

Furthermore, as the Review points out, there is a need for "better data and understanding" of private higher education (Ibid). This suggests the need to (i) assess the efficacy of the CHE's database for private higher education - the Higher Education Committee Information System (HEQCIS), for monitoring trends and enabling comparative analysis with the public higher education system; and (ii) undertake a detailed study to assess the role and potential of private higher education in contributing to increasing access to higher education.

3.1.2 Enrolment Growth and Institutional Type

The rapid growth in headcount enrolments between 2005 and 2017 was unevenly distributed across the different institutional types. It was largely driven, as shown in Table 1b above, by massive increases in headcount enrolments in the HBUs – 47.9%, and Unisa – 65.4%, an annual average growth rate of 3.3% and 4.3% respectively, which was higher than the national average of 2.9%. In contrast the annual average growth in the RIUs – 2.1%, OUs – 2.6%, and the UoTs – 1.6%, was below the national average. Moreover, the growth in headcount enrolments would have been even higher were it not for the fact that between 2013 and 2017, headcount enrolments in Unisa decreased by -3.2% - from 355 240 to 344 015.

The growth of HBUs has not impacted on the rest of the system, as indicated by the fact that the HBUs share of headcount enrolments has remained within a stable range – 11% to 12%. And although the HBUs annual average growth rate of 3.3% was higher than the national average, it was marginal – 0.4%. This suggests that the enrolment decline in the HBUs immediately after 1994 resulting from, amongst others, the opening up of access of black students to the historically white institutions, institutional instability and perceptions of poor quality (DoE, 2001: 37) has been reversed. The main reason for this, aside from greater stability, is increased access to funding for poor and working class students who constitute the student base of the HBUs. This is indicated by the fact that while the annual average growth rate of the HBUs was 1.7% between 2005 and 2009, it was 4% between 2009 and 2013 and 4.2% between 2013 and 2017, which coincided with increased funding allocations to the NSFAS beginning in 2009 and fee-free education in 2015/16.

The same does not hold for Unisa, which has increased its share of headcount enrolments from 28.3% in 2005 to 33.2% in 2017, with a peak of 36.1% in 2013. The massive growth in headcount enrolments is in large part due to the fact that Unisa is increasingly enrolling schoolleavers who meet the minimum requirements for entry but are unable to secure a place at one of the contact institutions. This increases the pressure on Unisa as, in principle, it is not dependent on physical infrastructure in terms of lecture theatres, seminar rooms and housing to accommodate and teach an ever-larger intake of students.

	20	05	20	17		
Age-Group	Headcount	% Total	Headcount	% Total	% G	AAG
18-22	43 442	20.9%	63 109	18.3%	45.3%	3.2%
20-24	50 327	24.2%	86 375	25.1%	71.6%	4.6%
18-24	64 158	30.9%	102 448	29.8%	59.7%	4.0%
25>	143 773	69.1%	241 567	70.2%	68%	4.4%
Total Headcount	207 931		344 015		65.4%	4.3%

Table 1c: Headcount Enrolments of School-Leavers at Unisa, 2005-2017

As Table 1c shows, headcount enrolments of school-leavers, that is, students in the 18-22 age-group increased by 45.3% - from 43 422 to 63 109 - between 2005 and 2017; and in the 18-24 age-group¹¹ it increased by 59.7% - from 64 158 to 102 448, an annual average growth of 4%, which is slightly below that for students in the 25 and above age-group. In fact, at the mid-point - the 20-24 age-group - the annual average growth rate is close to the 25 and above age-group, that is, 4.6% and 4.4% respectively. In total, school-leavers accounted for 29.8% of the total headcount enrolments at Unisa between 2005 and 2017.

The enrolling of school-leavers raises the question of the role of Unisa in the higher education landscape. Historically Unisa was established to provide access to higher education for working adults. It was not established to provide access to school-leavers. This is recognised by the DHET in its distance education policy, which states that "distance education is an appealing and flexible option particularly for mature and mid-career students" (DHET, 2014: 18). However, it goes on to point out that given the pressures on access for undergraduate places in contact institutions and given the lower individual costs, many firsttime entering students choose distance education as a preferred option. There is no evidence provided to support this assertion. It is more likely that given the pressure of places in contact institutions, first-time entering students choose studying by distance as a last resort. However, focussing on first-time entering students requires, as the DHET points out, that distance education providers must invest in "appropriate levels and kinds of student support" to ensure that access results in a "reasonable chance of success" (Ibid). More specifically, the policy identifies the following "key quality issues" for the successful provision of distance education:

the need for investment in programme design specifically for distance provision; ... appropriate learning resources to support more independent learning; development of staff to enable effective teaching and learning through distance provisioning; ongoing proactive decentralised communication and support for remote and widely distributed students; and decentralised assessment strategies with a strong emphasis on formative feedback to encourage active engagement and retention" (DHET, 2014: 11).

It is arguable whether Unisa meets any of these criteria. It is certainly not indicated by the low throughput rates, which is discussed in section 5.2 below. Although there has been improvement in the throughput rates for undergraduate degrees, it is low for undergraduate diplomas, which is significantly below the 25% target set by the DHET (DHET, 2014a:13). The target itself may be inappropriate as it is based on completion timelines¹² for working students studying parttime through distance education rather that firsttime entering school-leavers who study full-time.

The growth in Unisa raises questions about the efficacy of the national and institutional planning and funding processes, which were introduced to steer the higher education system to meet national goals and priorities and to ensure the quality and sustainability of the system through determining its size and shape in line with available resources. It begs the question: who sanctioned the growth in enrolments?; was it approved by the DHET as part of the national and institutional planning process that determines the overall growth parameters for the higher education system based on the available funding in the (three-year rolling) Medium-Term Expenditure Framework (MTEF)?; or was it based on an institutional strategy to maximise income based on generating additional teaching input subsidies and fee income? The evidence in this regard is instructive and indicates inconsistencies in the enrolment planning process. Thus, between 2009 and 2013 Unisa over-enrolled by 34.8% from 263 559 to 355 240 as against the approved ministerial target of 311 814 or 18.3% (DHET, 2016:7). The over-enrolment was apparently due in part to the fact that prior to 2012 Unisa did not have progression rules. Subsequently,

¹¹ The 18-24 age-group may be a better indication of the number of school-leavers enrolling as it takes into account the significant number of older students in the school system who are repeating, including that not all school-leavers apply to enrol in higher education institutions immediately after completing schooling.

 $^{^{12}}$ Three times the minimum time for completion of a qualification (DHET, 2014a: 13).

between 2013 and 2014, headcount enrolments declined by -7.5% - from 355 240 to 328 491, which was 10.1% below the approved ministerial target of 361 143 for 2014 and was due to an under-enrolment of first-time entering students by 45% from the set target (DHET, 2016: 7 & 9). This was of concern to the DHET as the "inability of UNISA to meet its target could problematise distance education as a means of enabling access to higher education" (Ibid: 9). This suggests that instead of supporting Unisa' efforts to rectify its over-enrolment, the DHET would have preferred Unisa to increase its headcount enrolments, which is suggested by the fact that Unisa's enrolment target for 2017, while reduced was set at 352 121, an increase of 7.2% between 2014 and 2017. This would have resulted in Unisa headcount enrolments increasing by 69.3% between 2005 and 2017 instead of it actual growth of 65.4%. The reason for the DHET's stance other than political pressure to increase access to higher education is difficult to explain, especially given Unisa's poor throughput rates, which are discussed in 5.2.

However, Unisa was not the only institution that did not meet the set target for first-time entering students in 2014. Of the 23 institutions,¹³ 8 under-enrolled – ranging from -5% to -23% (excluding Unisa), 11 over-enrolled – ranging from 4% to 26.2% and only 5 institutions were within the 2% deviation allowed on either side in terms of the planning and funding frameworks (DHET, 2016: 9). This suggests that the enrolment planning process needs to be tightened to preclude institutions from gaming the system to maximise income. In part the problem arose as prior to the 2015/16 financial year institutions were not held accountable and penalised for over and under-enrolment beyond the 2% deviation allowed.¹⁴

It is clear from this discussion that policy clarity is required on the role of Unisa in two respects. First, in terms of its size and its share of headcount enrolments as this has adversely impacted on the rest of the higher education institutions. Second, in terms of its role in facilitating the access of school-leavers to higher education given its low throughput rate, which suggests that distance education may not be appropriate to facilitate the access of first-time entering school-leavers who are under-prepared to successfully pursue and complete their higher education studies. And, more importantly, there is a need to review the current policy on the role of distance education in increasing access to higher education in general. This is necessary as contact institutions are being encouraged to introduce blended learning programmes to increase access, although with the caveat that appropriate support mechanisms should be put in place to ensure quality and success. In fact, the offering of blended learning programmes was one of the priorities recognised by the DHET in assessing institutional enrolments plans submitted for 2020-2025:

Increased access by more institutions offering blended learning in order to provide greater access to further education to reduce the infrastructure development burden required for contact education. Care should be taken by institutions to provide support to students in order to ensure that these qualifications are of the same quality as contact qualifications, i.e. access with success (DHET, 2019b).

In line with this, the MSSEPU targets total headcount enrolment in distance programmes in both Unisa and contact institutions to grow by 12.3% between 2017 and 2025 - from 377 014 to 423 503, an annual average growth rate of 1,5% (DHET, 2019b: Table 4). This despite the fact that between 2013 and 2017, mainly as a result of declining enrolments in Unisa but also in distance programmes offered in contact institutions, distance headcount enrolments decreased by -6.4% - from 402 650 to 377 014, an annual average decrease of -1.6%, as Table 1d below shows.

¹³ This excludes the two new universities which took in their first enrolments in 2014 and the Sefako Makgatho Health Sciences University (ex-Medunda), which was unbundled from the University of Limpopo in 2015.

¹⁴ The issue of institutions manipulating enrolments to maximise funding was of concern to Higher Education South Africa (HESA), now Universities South Africa (USAF), which is the representative body of higher education institutions and was raised by the HESA Funding Committee with the DHET; personal communication from the then Chair of the HESA Funding Committee, Prof Saleem Badat.

	2005		2009		2013		2017		2013/15		2015/17	
	Total	% Т	Total	% Т	Total	% Т	Total	% Т	% G	AAG	% G	AAG
Contact	45 624	18%	53 565	16.9%	47 410	11.8%	32 999	8.8%	-30.4%	-8.7%	-27.7%	-2.7%
Unisa	207 293	82%	262 784	83.1%	355 240	88.2%	344 015	91.2%	- 3.2%	-0.8%	65.9%	4.3%
Total	252 917	100%	316 349	100%	402 650	100%	377 014	100%	-6.4%	-1.6%	49.1%	3.4%

Table 1d: Headcount Enrolments in Distance Programmes in Contact Institutions and Unisa, 2005-2017

The decrease was larger in the contact institutions - from 47 410 to 32 999 or -30.4%, than at Unisa – from 355 240 to 344 015 or -3.2%. This is significant when compared with the growth in distance programmes in contact institutions between 1993 and 1999 – headcount enrolments grew by 492% - from 14 000 to 69 000 and, as the NPHE pointed out, there were "no signs that it is levelling off" (DoE, 2001:19). However, not only did enrolments in distance programmes in contact institutions level off but began declining as early as 2005 when they totalled 45 624. These changes resulted in the headcount share of contact institutions decreasing from 18% in 2005 to 8.8% in 2017, while Unisa's share increased concomitantly from 82% to 91.2%.

There is no distinction made in the MSSEPU between the share of the target assigned to Unisa and to contact institutions. The entire target could in principle be met by Unisa. However, it would be difficult to support further growth at Unisa in the absence of clarity regarding its role and, more importantly, the efficacy of its model of distance education, in particular, its capacity to improve student through-put and success rates.

The rapid growth in distance programmes in contact institutions was ostensibly influenced by the impact of the revolution in information and communications technology, which supposedly blurred the distinction between contact and distance modes of delivery, and the signals in WP3, which were similar to the current signals in policy, of the role of distance education in increasing access and enhancing quality given fiscal constraints and the limits of physical infrastructure. However, the primary reason as the CHE pointed out, was financial gain through increased subsidies, in particular, through offering teacher education (upgrading) programmes, which was a national priority and cheap to develop (CHE 2000: 44). The subsequent decrease in enrolments was due to a combination of a tightened quality assurance and programme approval processes and a realisation that developing good quality distance programmes was costly and an added burden on an already overworked staff. These challenges remain and, if the 2025 target is based on contact institutions indicating plans to introduce or to increase enrolments in existing distance programmes, it should be treated with caution given that the growth in overall enrolments has not been matched by a similar growth in academic staff, as discussed in section 3.2.5 below. The added pressure on already stretched staff workloads will adversely impact on quality.

The decrease in headcount enrolments in distance programmes in contact institutions suggests that the role and potential of technology and its impact on higher education, which led to predictions of the demise of the traditional bricks-and-mortar model of university in the 21st century, was overly optimistic. This despite the advent of Massive Open Online Courses (MOOCs), which were seen as the future of higher education. Aside from the fact that MOOC completion rates are low, it is not an appropriate for students from low income social groups. As Sebastian Thrun the founder of MOOC provider Udacity has pointed out based on a failed pilot integrating MOOCs into a mathematics programme at San Jose State University in California:

These were students from difficult neighborhoods, without good access to computers, and with all kinds of challenges in their lives. It's a group for which this medium is not a good fit (quoted in Warner, 2017).

This is a salutary lesson in the South African context given the continued inequalities in higher education and has been brought into sharp relief by the institutional response to introduce online learning to mitigate the impact of the COVID-19 crisis on learning and teaching and the completion of the academic year. This is not to suggest that technology does not have a role to play in higher education. On the contrary, technology can play an important role in complementing faceto-face teaching, in particular, in the context of ever-expanding headcount enrolments resulting in large classes, including providing additional support to students. However, education is fundamentally a social process and learning, "knowledge generation and intellectual development are themselves the product of social interaction and engagement" (DoE, 2001: 60). And as a social process learning takes place both in formal settings - the lecture theatre and seminar room – and in informal settings - the residences, student societies, cafes and bars, which together constitute the university as a social, physical and academic space. The importance of the latter is underlined by Ahmed Bawa, the Chief Executive Officer of Universities South Africa (USAf), in cautioning against the "embrace online or perish" syndrome in response to the COVID-19 crisis:

One can understand the need for more effective use of technology in teaching and learning, and the inevitability of emergency teaching via remote and technology-based platforms. [However] universities are, by their very nature, places of engagement, debates and the exchange of a plurality of ideas - an activity that best plays out face-to-face and on physical spaces. If higher education institutions switch completely to online delivery of the curriculum, how will they mediate their core other function of nation-building and the socialisation and acculturation of new generations of intellectuals? I doubt that this fundamental function would be facilitated through online learning and, therefore, doubt that it is a project for universities to go fully online (USAf, 2019: 3).

He could have added that fads come and go but universities are resilient and while not immune from change, they are "among the most durable institutions society ever invented" (Brink, 2018: xii-xiii).

The other important trend to emerge is the low rate of enrolment growth in the UoTs, which grew by 20.5% between 2005 and 2017, an annual average growth rate of 1.6%. This is half the overall growth rate of 41.1% (see Table 1b) and is below the overall growth rate for the traditional universities (excluding Unisa), which grew by 35.7%, an annual average growth rate of 2.6%, as shown in Table 1e. This has resulted in the UoTs share of headcount enrolments decreasing from 28% in 2005 to 25.6% in 2017.

The decline is worrying, especially as between 1993 and 2004 headcount enrolments in the erstwhile technikons were increasing at a much faster rate than in the traditional universities. Thus, between 1993 and 2004, headcount enrolments in the technikons (including Technikon South Africa¹⁵) increased by a massive 88.5% - from 133 000 to 250 651, compared to the universities (including Unisa), which grew by 42% - from 340 000 to 481 302. Similarly, between 2000 and 2004, excluding the distance institutions but including the diploma enrolments in the other three comprehensive institutions, headcount enrolments increased by 37.8% in the UoTs – from 141 940 to 195 571, as against 23% in the traditional universities – from 271 311 to 333 571.¹⁶

							-	•		
	2005	% Total	2009 %	Total	2013	% Total	2017	% Total	% Growth	AAG*
Universities	379 802	72%	425 256	74.1%	469 452	74.7%	515 380	74.4%	35.7%	2.6%
UoTs	147 340	28%	148 964	25.9%	159 006	25.3%	177 589	25.6%	20.5%	1.6%
Total	527 142	100%	574220	100%	628 458	100%	692 969	100%	31.5%	2.3%

Table 1e: Headcount Enrolments in Universities and UoTs (excluding Unisa), 2005-2017

*Annual Average Growth Rate

¹⁵ Technikon South Africa (TSA) was a distance education institution, which was merged with Unisa to form a comprehensive distance education institution.

¹⁶ The data on enrolments between 1993 and 2004 is based on the data for 1993-1999 in NPHE and HEMIS for 2000-2004.

This signalled that the policy commitment to reverse the "inverted pyramid" in enrolments between the traditional universities and the UoTs, which historically were skewed in favour of the universities, was beginning to take effect. The focus on reversing the "inverted pyramid" was informed by two factors; (i) the role of career-oriented diploma programmes in contributing to the development of mid-level technical skills required in the labour market, which was important from an equity point of view given the previous barriers to accessing technical skills and associated jobs by black people due to the job reservation system under apartheid; and (ii) the role of diploma programmes in facilitating access to higher education given lower entry requirements (DoE, 2001: 52).

The decline has in part been affected by the establishment of the four comprehensive universities through the merger of a traditional university with an erstwhile technikon, namely, the University of Johannesburg (UJ), Nelson Mandela University (NMU), Walter Sisulu University of Science and Technology (WSU) and Unisa. If the undergraduate diploma enrolments in the four comprehensive universities are included as part of the UoT enrolments, it results, as shown in Table 1f, in an increase in enrolments from 20.5% to 23% in 2017, an annual average growth rate of 1.7%, which is marginally higher than the 1.6% without the additional enrolments.

However, and interestingly, this marginal increase results in a higher decline in the UoTs share of total enrolments – from 34.2% to 29.8% or 4.4%, as against 2.9% - from 20% to 17.1% without the additional enrolments (see Table 1a). The reason for this, which emerges from a close analysis of the trends in undergraduate diploma enrolments in the comprehensive institutions is suggestive and raises important policy issues. In the comprehensive institutions, as indicated in Table 1g, undergraduate diploma headcount enrolments increased by 26.6% - from 103 904 to 131 491 - an annual average growth rate of 2.0% between 2005 and 2017. However, this increase was largely driven by a significant increase in undergraduate diploma enrolments at Unisa, which increased by 58.1% - from 57 673 to 91 206 - an annual average growth rate of 3.9%. In the other comprehensive institutions undergraduate diploma enrolments decreased by -14.8%, an annual average decrease of -1.1%. The largest decrease was at UJ - from 18 309 to 14 417 or 21.3%; followed by WSU - from 17 385 to 15 771 or -9.3% and NMU - from 10 537 to 10 097 or -4.2%.

	2005	% Total	2009	% Total	2013	% Total	2017	% Total	% Growth	AAG*
RUIs	154 147	21%	173 312	20.7%	186 225	18.9%	198 009	19.1%	28.5%	2.1%
OUs	110 432	15%	128 392	15.3%	148 525	15.1%	165 125	15.9%	36.2%	3.4%
HBUs	68 992	9.4%	77 015	9.2%	95 011	9.7%	111 961	10.8%	47.9%	4.1%
UoTs	251 244	34.2%	271 172	32.4%	284 866	29%	309 080	29.8%	23%	1.7%
UNISA	150 258	20.4%	187 888	22.4%	269 071	26.4%	252 809	24.4%	68.2%	4.4%
Total	735 072	100%	837 779	100%	983 698	100%	1 036 984	100%	41.1%	2.9%

Table 1f: Headcount Enrolments by Institutional Type (including diploma enrolments in the comprehensive universities as part of UoT enrolments), 2005-2017

Table 1g: Undergraduate Diploma Headcount Enrolments in the Comprehensive Universities, 2005-2017

Institution	2005	2009	2013	2017	% Growth	AAG
UJ	18 309	19 456	15 759	14 417	-21.3%	-2.0%
NMU	10 537	11 806	10 800	10 097 -4.2%		-0.4%
WSU	17 835	15 275	13 132	15 771 -9.3%		-1.0%
Unisa	57 673	75 671	86 169	91 206	58.1%	3.9%
Total	103 904	122 208	125 860	131 491	26.6%	2.0%
Total (excl. Unisa)	46 231	46 537	39 691	40 285	-14.8%	-1.1%

The decline in undergraduate diploma enrolments in the comprehensive institutions is the result of mission and academic drift. It is contrary to the purpose for establishing them, which was to address the traditional divide between vocational and academic skills and knowledge by facilitating increased access to, and articulation between "career-focused and general academic programmes, thus facilitating student mobility between different programmes". (DoE 2002: 24). The potential and threat of mission and academic drift was recognised in the NPHE. However, it argued that it would be addressed and averted through the linked planning and funding processes:

The appropriate balance between enrolments in technikon and university programmes within comprehensive institutions would be determined by the Ministry as part of its programme and qualification mix approval process and would thus be linked to the funding of student places (Ibid: 25).

The NPHE clearly underestimated the difficulties of integrating different knowledge types and the associated practical constraints. As the CHE Review argues:

.....the extent to which traditional universities and universities of technology should have different focus areas, develop different knowledge types through different forms of curricula, and use different pedagogical approaches, and how articulation pathways should be created between them, is made more complex for universities tasked with being both kinds of institutions at the same time (McKenna, 2016: 157).

In addition, aside from the four comprehensive institutions established through a merger between a technikon and a university, it was also proposed that the HBUs in rural areas should introduce career-focussed diploma programmes to address local and regional human resource needs. However, this has not happened because of a combination of capacity and resource constraints, including the lack of experience and expertise within the existing academic staff in developing career-focussed programmes.

The practical constraints are illustrated by the endorsement and introduction of careerfocussed degree programmes in engineering and the health sciences by the relevant Professional Council's. In the case of engineering, although the Engineering Council of South Africa (ECSA) endorsed the introduction of a Bachelor of Technology degree, leading to registration as a professional technologist, it did not withdraw recognition of diploma programmes in engineering, leading to registration as a professional technician.¹⁷ The decision as to which programme to offer – in practice both could be offered - was left to institutions.¹⁸ However, offering both programmes was not practical given resource constraints, including staff and space, as a former Executive Dean of Engineering pointed out. Furthermore, he argues that some of the institutions that pursued the degree route did so with limited consultation with industry on its needs. The consultations were mainly with institutional advisory boards, which included representatives from a small number of local companies with, in most cases, a limited perspective of national skills needs and the role of these qualifications in meeting them. And importantly, in his view, there was a paucity of guidance or oversight provided by the DHET in this regard.¹⁹.

The transformation of the technikons into UoTs has also contributed to mission and academic drift in two respects. First, industry experience and expertise, which was previously highly valued, is of "lesser importance" than academic qualifications in the hiring of academic staff. Second, there has been an incremental increase in the offering of undergraduate degree programmes and postgraduate qualifications (McKenna, 2016: 155). This is reflected in the fact that between 2005 and 2017 the proportion of headcount enrolments in diploma programmes in the UoTs declined from 80.5% to 70.1%. This

¹⁷ It should be noted that obtaining a diploma did not preclude a student from eventually registering as a professional technologist. However, it would require an additional year of study leading to an advanced dipoma to qualify.

¹⁸ Personal communication from Prof Herman Vermaak, Dean of Engineering, Central University of Technology.

¹⁹ Personal communication from Dr Oswald Franks, previously Executive Dean of Engineering, Built Environment and Information Technology, Nelson Mandela University.

shift, as indicated above, has implications both for access given the lower entry requirements for diploma programmes and, more importantly, for mid-level technical skills required in the labour market.

The DHET is concerned about mission and academic drift and the erosion of the "binary system" (DHET 2012: 5), especially its impact on access given that the "majority of NSC candidates (40%) can enter only diploma and certificate programmes" (DHET, 2016: 13). However, this concern is not reflected in the projected target for headcount undergraduate diploma enrolments in 2025 - 267 252 as against 276 459 in 2017 (excluding advanced diplomas), that is, a decrease of -3.3% or an annual average decrease of -0.3% (DHET: 2019b, Table 5). Moreover, the DHET seems to suggest that mission and academic drift is due to the Higher Education Qualifications Sub-Framework (HEQSF), which "provides an open mandate to universities" presumably to determine their programme and qualification mix (PQM). This is a fundamental misunderstanding of the role of the HEQSF, which "sets out the range of qualification types that may be awarded to mark the achievement of learning outcomes that have been appropriately assessed", including the relationship between different qualification types in higher education (CHE, 2013a: 12). The HEQSF does not determine the PQM of higher education institutions. This is determined by the DHET through the national and institutional planning process linked to funding. Thus, if there is mission and academic

drift, it raises questions about the efficacy of the national and institutional planning processes and the steering role of the DHET.

It has also been suggested that the decline in enrolments is the result of student perceptions regarding the status of UoTs. Furthermore, that it is compounded by poor marketing and branding by the UoTs regarding their apparent competitive edge in facilitating employment opportunities given the applied nature of their programmes and the close cooperation with industry in developing these in response to identified industry needs.²⁰ This view is difficult to sustain, especially as the decline in UoT enrolments coincided with the change in status of the erstwhile technikons to UoTs in 2005. Moreover, the growth in technikon enrolments between 1993 and 1999 was underpinned by the perception that technikon qualifications were more likely than university qualifications to increase employment opportunities (DoE, 2001: 37). It may well be, and more likely, that the decline is due to the changing structure of the labour market, in particular, in mid-level technical posts. This requires further research.

4. Enrolment Growth and Equity

There has been significant progress made in addressing equity of access and redressing past inequalities in terms of race and gender in relation to overall headcount enrolments and headcount enrolments in qualification levels.

	20	05	20	19	20	13	20	17		
	Total	%Total	Total	%Total	Total	%Total	Total	%Total	% Growth	AAG
African	446 946	60.8%	547 686	65.4%	689 503	70.1%	763 767	73.7%	70.9%	4.6%
Coloured	46 302	6.3%	55 101	6.6%	61 034	6.2%	64 772	6.2%	39.9%	2.8%
Indian	54 611	7.4%	53 629	6.4%	53 787	5.5%	50 131	4.8%	-8.2%	-0.7%
White	185 847	25.3%	179 232	21.4%	171 927	17.5%	148 802	14.3%	-19.9%	-1.8%
Black	547 859	74.5%	656 416	78.4%	804 324	81.8%	878 670	84.7%	60.4%	4.0%
Unknown	1 367	0.2%	2 131	0.2%	7 447	0.7%	9 512	0.9%	595.8%	17.5%
Total	735 073	100%	837 779	100%	983 698	100%	1 036 984	100%	41.1%	2.9%

Table 2a: Headcount Enrolments by Race, 2005-2017

²⁰ Interviews with UoT vice-chancellors and the CEO of the South African Technology Network (SATN), which represents the six UoTs.

4.1 Equity and Race

The rapid growth in headcount enrolments between 2005 and 2017, as Table 2a shows, was underpinned by substantial growth in black²¹ headcount enrolments which increased by 60.4% - from 547 859 to 878 670, an annual average growth rate of 4%, which was higher than the overall annual average growth rate of 2.9%. This was mirrored by a decline in white headcount enrolments which decreased by -19.9% - from 185 847 to 148 802, an annual average decrease of -1.8%. The differential growth rate in black and white enrolments is reflected in the steady shift in the demographic profile of the student body in higher education. In 2017 black students constituted 84.8% and white students 14.3% of the total headcount enrolments, as against 74.5% and 25.3% respectively in 2005.

There were also differences in the growth rate within the black group. African headcount enrolments increased by 73.7% - from 446 946 in 2005 to 763 767 in 2017, an annual average growth rate of 4.6%; Coloured headcount enrolments increased by 39.9% - from 46 302 to 50 131, an annual average growth rate of 2.8%; while Indian headcount enrolments decreased by -8.2% - from 54 611 to 50 131, an annual average decrease of -0.7%. These changes resulted in African students constituting 73.7%, coloureds 6.2% and Indians 4.8% of total headcount enrolments in 2017, as against 60.8%, 6.3% and 7.4% respectively in 2005.

4.1.1 Race and Institutional Type

The differential growth in black and white enrolments is similarly evident in enrolment growth in the different institutional types. There are four significant trends that emerge from the data worth highlighting. The first is the lower growth of black headcount enrolments – 32.1%, an annual average growth rate of 2.3%, and the substantial decline in white headcount enrolments - -63.6%, an annual average decrease of -8%, in the UoTs, as Table 2b shows. This is close to half of the overall growth rate of black students – 60.4% and four times the decline in the overall rate of white students. This suggests that greater attention and further research on the declining enrolments in the UoTs needs to focus, in addition, on the changing race dynamics in the labour market relating to mid-level technical posts.

The second is the massive growth in black headcount enrolments at Unisa - 96.1%, an annual average growth rate of 5.8%, which, as discussed above, is in part due to Unisa increasingly focusing on enrolling school-leavers.

The third is that black student enrolments have increased and black students predominate, albeit unevenly, in all the institutional types, as Table 2c below shows.

	Bl	ack	White			
	% Growth	AAG	% Growth	AAG		
RIUs	49.7%	3.4%	-12%	-1.1%		
OUs	62.5%	4.1%	-18%	-1.7%		
HBUs	49.1%	3.4%	-7.4%	-0.6%		
UoTs	32.1%	2.3%	-63.3%	-8.0%		
UNISA	96.1%	5.8%	-17%	-1.5%		
Total	60.4%	4.0%	-19.9%	-1.8%		

Table 2b: Growth in Headcount Enrolments by Race and Institutional Type, 2005-2017

			2005			2017				
	Total	Black	% Total	White	%Total	Total	Black	%Total	White	%Total
RIU's	154 147	89 380	58%	64 123	41.6%	198 009	133 775	67.6%	56 437	28.5%
OUs	139 278	94 141	67.6%	44 915	32.2%	189 639	152 936	80.6%	36 674	19.3%
HBUs	86 377	84 354	97.8%	1 861	2.2%	127 732	125 794	98.5%	1 724	1.4%
UoTs	147 340	129 498	87.9%	17 784	12.1%	177 589	171 052	96.3%	6 533	3.7%
UNISA	207 931	150 486	72.4%	57 164	27.5%	344 015	295 113	85.8%	47 434	13.8%
Total	735 073	547 859	74.5%	185 847	25.3%	1 036 984	878 670	84.8%	148 802	4.3%

Table 2c: Headcount Enrolments by Race and Institutional Type, 2005-2017

This is significant as in all the historically white institutions that were not merged with a HBU, except one, black students constitute the majority - ranging from just over 55% at the low end to 95% at the high end (see Appendix 3). The exception is the University of Stellenbosch, which is making slow but steady progress as indicated by the fact that its proportion of black headcount enrolments has increased from 28.1% in 2005 to 39.1% in 2017. The recent change in its language policy - English is now the medium of instruction, should contribute to increasing the pace of change in its student demographics going forward. However, it requires concerted focus and leadership if the growth trajectory in black headcount enrolments is to continue, including in those HWIs where black headcount enrolments were below 65% in 2017, namely UP and (possibly) UCT.²² The progress in deracialising the HWIs, albeit uneven, is not reflected in a similar trend in the HBUs, which remain predominantly African. And in the UoTs there has been a reversal with a substantial decline in white students, which may be linked to changing dynamics in the labour market, which

requires further research as suggested above.

The fourth is that despite the growth of black headcount enrolments in all the institutional types, significant inequalities continue to characterise their access to the different institutional types, as Table 2d shows.

As a proportion of total headcount enrolments, black students are more evenly spread across the different institutional types than white students who are mainly to be found in the RIUs, the OUs and Unisa. In the RIUs (including Unisa), the proportion of white students has increased from 34.5% to 37.9% and (excluding Unisa) from 49.8% to 58.7% between 2005 and 2017, while in the OUs and Unisa the increase has been marginal. In 2017, 94.4% of all white students were in three institutional types: RIUs – 37.9%, OUs – 31.9% and Unisa – 24.6%. Furthermore, there are also significant differences in access to the different institutional types by the different black groups, as Table 2e below shows.

	Black (incl	. Unisa)000	Black (ex	cl. Unisa)	White (in	cl. Unisa)	White (excl. Unisa)		
	2005	2017	2005	2017	2005	2017	2005	2017	
RIUs	16.3%	15.2%	22.5%	23%	34.5%	37.9%	49.8%	58.7%	
Other	17.2%	17.4%	23.7%	26.2%	24.2%	24.6%	34.9%	36.2%	
HBUs	15.4%	14.3%	21.2%	21.6%	0.10%	1.2%	1.4%	1.7%	
UoTs	23.6%	19.5%	32.6%	29.3%	9.6%	4.4%	13.8%	6.4%	
Unisa	27.5%	33.6%			30.6%	31.9%			
Total	100%	100%	100%	100%	100%	100%	100%	100%	

Table 2d: Headcount Enrolments by Race as Proportion of Total Headcount Enrolments by Institutional Type, 2005-2017

²² The exact breakdown by race is difficult to calculate for UCT as there are a large number of unknowns, that is, students who have not declared their race.

			200	5			2017					
	African	% Т	Coloured	% Т	Indian	% Т	African	% Т	Coloured	% T	Indian	% T
RIUs	59 531	13.3%	8 521	18.4%	21 238	38.9%	100 364	13.1%	13 405	20.7%	20 006	39.9%
OUs	83 033	18.6%	6 906	14.9%	4 202	7.7%	137 757	18%	10 897	16.8%	4 282	8.5%
HBUs	74 294	16.6%	7 581	16.4%	2 479	2.2%	114 048	14.9%	10 497	16.2%	1 249	2.5%
UoTs	113 225	25.3%	10 760	23.2%	5 513	10.1%	156 205	20.5%	10 341	16%	4 056	8.1%
Unisa	116 863	26.1%	12 534	27.1%	21 089	38.6%	255 393	33.4%	19 632	30.3%	20 088	40.1%
Total	446 946	100%	46 302	100%	54 611	100%	763 767	100%	64 772	100%	50 131	100%

Table 2e: Distribution of Black Students across	Institutional Types, 2005 and 2017
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Indian students are primarily to be found in the RIUs – 39.9% and Unisa – 40.1% in 2017. African and coloured students are more evenly spread across the different institutional types. However, around half of both groups are in the UoTs and Unisa and they are under-represented in the RIUs – African students constituted 13.1% and coloured students 20.7% of the total African and coloured headcount enrolments in the RIUs in 2017. And importantly, while the proportion of coloured students in the RIUs has increased marginally – from 18.4% in 2005, the proportion of African students has remained the same. The underlying reason for the proportionately larger number of white and Indian students in the RIUs is mainly due to differential access to good quality schooling, which impacts on access as the RIUs have higher minimum entry requirements.

4.1.2 Race and Participation Rate²³

The inequality in access to the different institutional types is reflective of and underpinned by a deeper inequality relating to the participation rate in higher education. The participation rate is the real measure of the extent to which past inequalities have been redressed rather than the absolute numbers enrolled. It is a relative measure, which assesses the proportion of the relevant age-group enrolled in higher education, thus enabling comparison of access to higher education by the relevant race and gender-based age-groups. There has been progress as Table 2f shows the participation rate of African and Coloured students has increased from 12% in 2005 to 18% and 15% respectively in 2017 (CHE, 2010 and 2017). However, it is below the overall participation rate of 21% and significantly below the participation rate of Indian and white students, which at 47% and 56% respectively is similar to the participation rate in developed countries. This is despite the fact that between 2005 and 2017 white headcount enrolments decreased by -19.9% - from 185 847 to 148 802 an annual average decrease of -1.8%, and Indian headcount enrolments decreased by -8.2% - from 54 611 to 50 131 – an annual average decrease of -0.7% (see Table 2a above). Thus, white and Indian students continue to be advantaged and benefit disproportionately from access to higher education. This fact, however, is lost in the public domain where the perception that white and Indian students have been disadvantaged by institutional affirmative action policies to promote equity is fuelled by the focus on absolute rather than relative numbers.

	2005	2009	2013	2017
African	12%	13%	16%	18%
Coloured	12%	14%	15%	15%
Indian	48%	45%	49%	47%
White	57%	58%	55%	56%
Overall	16%	17%	20%	21%

Table 2f: Participation Rates by Race, 2005-2017

²³ The participation rate by race refers to the percentage of 20-24 year olds in each race group enrolled in higher education.

The inequality in the participation rate brings into sharp relief the tension between equity and development in policy, which was first highlighted by Harold Wolpe in the education policy debates in the early 1990s (Badat, Wolpe and Barends, 1994). Pointing to the need for trade-offs in policy given competing claims, priorities and objectives, they argued that in the context of post-apartheid policy a key tension and trade-off would be between the imperative of equity to redress past inequalities and the imperative of development to address social and economic goals, in particular, economic growth. In higher education the imperative of equity requires increasing the participation rate of African and coloured students, while the imperative of development requires sustaining the participation rate of white and Indian students, on the grounds that their access to quality schooling and the RIUs contributes to the skills and knowledge needs required for social and economic development. In a perfect resource rich world in which all claims, priorities and objectives could be addressed simultaneously, there would be no need for trade-offs - the participation rate of African and coloured students could be increased without impacting on the participation rate of white and Indian students. However, in an imperfect world and, in particular, given the current economic climate and associated fiscal constraints in South Africa, trade-offs are essential. The key policy issue that confronts higher education in South Africa is how to reconcile the tension between equity and development without it being reduced to a zerosum game, that is, increasing the participation rate of African and coloured students at the expense of white and Indian students. In this regard, it is worth highlighting the commitment made in the NPHE:

The Ministry would like to state emphatically that the achievement of equity will not be at the expense of white students. The Ministry is committed to ensuring that all students, black and white, have access to higher education and contribute to social and economic development (DoE, 2001: 39). This commitment and the need to incrementally improve the participation rate given the challenge of improving schooling in the townships and rural areas in particular is recognised in the MSSEPU targets for 2025, which are modest. The headcount enrolment targets for race based on actual 2017 enrolments are:

- African increasing by 12.5% from 763 767 to 859 537, an annual average increase of 1.5%, which would increase the share of African students from 73.7% to 75%.
- Coloured increasing by 18.4% from 64 772 to 76 674, an annual average of 2.1%, which would increase the share of Coloured students from 6.2% to 7%.
- Indian increasing by 12.2% from 50 131 to 56 245, an annual average increase of 1.4%, which would keep the share of Indian students stable at 5%.
- White increasing by 2.6% from 148 802 to 152 812, an annual average increase of 0.3%, which would decrease the share of white students from 14% to 13% (DHET, 2019b, Table 12).

These targets based on the 20-24 age group in 2017 would increase the overall participation rate from 21% to 23% and increase the participation rate of all the race groups – African from 18% to 20%; Coloured from 15% to 18%; Indian from 47% to 53%; and white from 56% to 57%.²⁴ This suggests that in the medium-term a modest increase in headcount enrolments of 1.8% per annum between 2025 and 2030 and on the assumption that 20-24 age-group is stable and does not increase, should enable achieving the 25% participation rate target for 2030, albeit with lower headcount enrolment - 1 260 000 than the projected 1.6m in the NDP. In the longterm, however, increasing the participation rate to address the twin imperatives of equity and development and to bring it into line with similar upper-middle income countries would require as the NPHE argued, "improving the efficiency of the higher education through increasing graduate outputs" (DoE, 2001: 1). This remains relevant as the analysis of throughput rates in section 5.2 below indicates.

²⁴ I would like to acknowledge the support of Michael Gordon at the CHE for the calculations, including the calculations on gender below.

	2005					2017								
Institu- tional Type	Total	Female	% Total	Male	% Total	Total	Female	% Total	Male	% Total	% G Female	AAG	% G Male	AAG
RIUs	154 147	82 590	53.6%	71 557	46.4%	198 009	109 438	55.3%	88 551	44.7%	32.5%	2.4%	23.7%	1.8%
OUs	139 278	78 825	56.6%	60 453	43.4%	189 639	111 796	59%	77 843	41%	41.8%	3.0%	28.8%	2.1%
HBUs	86 377	50 262	58.2%	36 115	41.8%	127 732	72 210	56.5%	55 522	43.5%	43.7%	3.1%	53.7%	3.6%
UoTs	147 340	75 067	50.9%	72 273	49.1%	177 589	89 705	50.5%	87 884	49.5%	19.5%	1.5%	21.6%	1.6%
UNISA	207 931	114 299	55%	93 632	45%	344 015	223 749	65%	120 265	35%	95.8%	5.8%	28.4%	2.1%
Total	735 073	401 043	54.6%	334 030	45.4%	1 036 984	606 898	58.5%	430 065	41.5%	51.3%	3.5%	28.8%	2.1%

Table 3a: Headcount Enrolments by Gender and Institutional Type, 2005-2017

4.2 Equity and Gender

In the period since 1999 when gender parity was achieved (DoE, 2001: 40), there has been a steady increase in female headcount enrolments, which have grown at faster rate than male headcount enrolments, resulting in a new imbalance skewed in favour of women.

Female headcount enrolments between 2005 and 2017, as Table 3a shows, grew by 51.3% from 401 043 to 606 898 – an annual average growth rate of 3.5%, which is higher than the overall annual average growth rate of 2.9%. In comparison, male headcount enrolments increased by 28.8% - from 334 030 to 430 065, an annual average growth rate of 2.1%. The differential growth rate in female and male enrolments is reflected in the steady shift in the demographic profile of the student body in higher education. In 2017 female students constituted 58.5% and male students 41.5% of the total headcount enrolments, as against 54.6% and 45.4% respectively in 2005.

4.2.1 Gender and Institutional Type

In terms of enrolment growth in the different institutional types, as Table 3a shows, female headcount enrolments grew at a faster rate than male enrolments in the RIUs – 32.5%, OUs – 41.8% and Unisa – 95.8%, as against male enrolments - 23.7%, 28.8% and 28.4% respectively. In the HBUs and UoTs they grew at a lower rate – 43.7% and 19.5%, as against male enrolments – 53.7% and 21.6% respectively. Furthermore, female headcount enrolments are significantly higher in all institutional types, except the UoTs, where female and male headcount enrolments are close to parity – 50.5% and 49.5%.

Similarly, female and male headcount enrolments as a proportion of total headcount enrolments are close to parity in all the institutional types, except for the UoTs and Unisa, as shown in Table 3b below. In the UoTs, female headcounts enrolment as a proportion of total headcount enrolments are marginally lower than and declining in roughly the same proportion as male headcount enrolments – females decreased from 26.2% to 23.4% and males from 30% to 28.4% between 2005 and 2017. However, at Unisa female headcount enrolments as a proportion of total headcount enrolments are significantly higher than male headcount enrolments increasing from 28% in 2005 to 36.9% in 2017 - while male enrolments have remained the same at 28%. The preponderance of females at Unisa – they constitute 65% of total headcount enrolments - suggests that women may be studying, and not necessarily by choice, at a distance given their still greater domestic and child-bearing roles.

	Female (i	ncl. Unisa)	Male (in	cl. Unisa)	Female (e	xcl. Unisa)	Male (excl. Unisa)		
	2005	2017	2005	2017	2005	2017	2005	2017	
RIUs	20.6%	18%	28.8%	28.6%	21.4%	20.6%	30%	28.6%	
OUs	19.7%	18.4%	27.5%	29.2%	18.1%	18.1%	25.1%	25.1%	
HBUs	12.5%	11.9%	17.5%	18.8%	10.8%	12.9%	15%	17.9%	
UoTs	18.7%	14.8%	26.2%	23.4%	21.6%	20.4%	30%	28.4%	
Unisa	28.5%	36.9%			28%	28%			
Total	100%	100%	100%	100%	100%	100%	100%	100%	

Table 3b: Distribution of Female and Male Students across Institutional Types, 2005-2017

Table 3c Participation Rates by Gender, 2005-2017

	2005	2009	2013	2017
Female	18%	19%	23%	24%
Male	14%	15%	16%	17%
Overall	16%	17%	20%	21%

4.2.2 Gender and Participation Rate

The disparity in female and male headcount enrolments and the faster rate of growth of female enrolments between 2005 and 2017 is reflected in the participation rate. As

Table 3c shows, the female participation rate has increased from 18% to 24%, which is higher than the overall participation rate of 21%, while the male rate is lower than the overall rate, increasing from 14% to 17% (CHE, 2010 and 2017).

The MSSEPU target for 2025 would result in female headcount enrolments increasing by 10.4% - from 606 898 to 669 754, an annual average of 1.2%, while male enrolments would increase by 12.9% - from 430 065 to 485 728, an annual average of 1.5% (DHET, 2019b: Table 16). This would, however, not result in significantly changing the proportionate share of headcount enrolments – the female share would increase marginally from 58.5% to 60%, while the male share would remain the same at 42%. However, these targets based on the 20-24 age group in 2017 would increase the female participation rate from 24% to 27% and the male participation rate from 17% to 19%.

The rapid growth in female enrolments and the fact that there seems little room for increasing male enrolments in the foreseeable future reflects and is underpinned by the better performance of girls in the school system. It is ironic that in a society in which patriarchy and misogyny loom large, women are performing better than men. The social implications of this should be the subject of further research.

4.3 Enrolment Growth and Nationality

The NPHE indicated the need to increase the recruitment of students from the region to enable South Africa to meet its commitment in line with the Southern African Development Community (SADC) Protocol on Education and Training to target a maximum of 10% of student places for students from SADC. The NPHE argued that in addition to contributing to the human resource needs of the region, recruiting students from SADC would also contribute to enriching the "educational experience of South African students and broaden their understanding of the social, cultural, economic and political ties that underpin the peoples and countries" of SADC (DoE, 2001: 29). Furthermore, the WPPSET goes beyond SADC in recognising the benefits for the higher education system of the growing trend of the internationalisation of higher education:

The movement of academics and students across borders can improve international communication, cross cultural learning and global citizenship. All of these are important for improving peace and cooperation, and for finding solutions to global challenges such as sustainable development, security, renewable energy and HIV/AIDS (DHET, 2013: 40).

	2005											
	Total	SA	% Total	SADC	% Total	RoA	% Total	RoW	% Total	Intl	%Total	
RIUs	154 147	140 909	91.4%	7 192	4.7%	2 286	1.5%	3 760	2.4%	13 238	8.6%	
OUs	139 278	129 338	92.9%	7 754	5.6%	1 085	0.8%	1 101	0.8%	9 940	7.2%	
HBUs	86 377	83 343	96.5%	2 156	2.5%	635	0.7%	243	0.3%	3 034	3.5%	
UoTs	147 340	140 619	95.4%	5 173	3.5%	906	0.6%	642	0.4%	6 721	4.5%	
Unisa	207 931	190 755	91.7%	12 799	6.2%	2 284	0.1%	2 093	1%	17 176	7.3%	
Total	735 073	684 964	93.1%	35 074	4.8%	7 196	1%	7 839	1.1%	50 109	6.9%	

Table 4a: South African and International (Intl) – SADC, Rest of Africa (RoA) and Rest of the World (RoW)– Headcount Enrolments by Institutional Type, 2005-2017

	2017											
	Total	SA	% Total	SADC	% Total	RoA	% Total	RoW	% Total	Intl	%Total	
RIUs	198 009	178 344	90.1%	11 634	5.9%	4 282	2.2%	3 749	1.9%	19 665	10%	
OUs	189 639	178 089	94%	8 884	4.7%	1 663	0.9%	1 003	0.5%	11 550	6.1%	
HBUs	127 732	124 274	97.3%	2 317	1.8%	1 016	0.8%	125	0.1%	3 458	2.7%	
UoTs	177 589	170 341	96%	5 165	2.9%	1 854	1%	229	0.1%	7 248	4%	
Unisa	344 015	319 528	92.9%	20 641	6%	2 878	0.8%	968	0.3%	24 487	7.1%	
Total	1036 984	970 576	93.6%	48 641	4.7%	11 693	1.1%	6 074	0.6%	66 408	6.4%	

Table 4b: Growth in South African and International Headcount Enrolments by Institutional Type, 2005-2017

	SA % Growth	SA AAG	SADC % Growth	SADC AAG	RoA % Growth	RoA AAG	RoW % Growth	RoW AAG
RIUs	26.7%	2.0%	61.8%	4.1%	87.3%	5.4%	-0.3%	-0.02%
OUs	37.7%	2.7%	14.6%	1.1%	53.3%	3.6%	-9%	-0.8%
HBUs	49.1%	3.4%	7.5%	0.6%	60%	4.0%	-48.6%	-5.4%
UoTs	21.3%	1.6%	-0.2%	-0.01%	104.6%	6.1%	-64.3%	-8.2%
UNISA	67.5%	4.4%	61.3%	4.1%	26%	1.9%	-53.8%	-6.2%
Total	41.1%	2.9%	38.6%	2.8%	62.5%	4.1%	-22.5%	-2.1%

The recognition of the benefits of recruiting students from outside South Africa is reflected in the steady growth of international²⁵ students – headcount enrolments increased by 32.5%, from 50 109 to 66 408 between 2005 and 2017, as Table 4a shows.

There are four trends that emerge from the data in Tables 4a and 4b worth highlighting. First, students from the rest of Africa were the main beneficiaries, growing by 62.5% - from 7 196 to 11 693, as against the SADC student growth of 38.6% from 35 074 to 48 641. Second, headcount enrolments of students from the rest of the world declined by -22.5% - from 7 839 to 6 074. Third, SADC students as a proportion of total headcount enrolments has remained the same at just under 5%. Fourth, international students as a proportion of total headcount enrolments decreased marginally from 6.9% in 2005 to 6.4% in 2017. The steady growth in international headcount enrolments was reversed between 2013 and 2017, decreasing from 7.4% to 6.4%. This was mainly due to a decrease in SADC headcount enrolments from 5.5% to 4.7% resulting from the overall decrease in SADC headcount enrolments at Unisa by 19.5%, from 30 434 to 24 487.

²⁵ International (Intl) includes students from SADC, the rest of Africa (RoA, excluding SADC) and the rest of the world (RoW). Where SADC is not listed separately, RoA includes SADC.

	SA	ADC RoA			RoW		
	2005	2017	2005	2017	2005	2017	
RIUs	20.5%	23.9%	31.8%	36.6%	48%	61.7%	
OUs	22.1%	18.3%	15.1%	14.2%	14%	16.5%	
HBUs	6.1%	4.8%	8.8%	9.2%	3.1%	2.1%	
UoTs	14.7%	10.7%	12.6%	15.9%	8.2%	3.8%	
Unisa	36.5%	42.4%	31.7%	24.6%	26.7%	15.9%	
Total	100%	100%	100%	100%	100%	100%	

Table 4c: Distribution of International Headcount Enrolments across Institutional Types, 2005-2017

The steady but slow growth in SADC headcount enrolments is probably due to increased access opportunities for undergraduate studies within SADC countries with the establishment of new public and private higher education institutions across the region in the recent past. This is indicated by the fact that while total headcount enrolments from SADC increased by 38.7% between 2005 and 2017, total postgraduate headcounts increased by 127.9% (see Table 8d below). And the growing increase in students from the rest of Africa suggests that South Africa is a more attractive option in cost terms in comparison to studying in Europe or North America, in particular at the postgraduate level. This is similarly indicated by the fact that while total headcount enrolments form the rest of Africa (excluding SADC) increased by 61.5% between 2005 and 2017, total postgraduate headcounts increased by 159.3%.

4.3.1 Enrolment Growth, Nationality and Institutional Type

In terms of enrolment growth across the different institutional types, there are important differences between SADC and the rest of Africa. The growth in SADC headcount enrolments, as shown in Table 4b, has been uneven across the different institutional types, with the highest growth in the RIUs - 61.8%, an average annual growth rate of 4.1% - and Unisa – 61.3%, an annual average growth rate also of 4.1%, which is significantly higher than the overall SADC annual average growth rate of 2.8%. And it was well below 2.8% in the other institutional types. The growth in headcount enrolments from the rest of Africa is more evenly spread. It was higher than the overall annual growth rate of

4.1% in the RIUS – 5.4% and in the UoTs – 6.1% and lower, although not significantly so, except for Unisa, in the other institutional types – OUs – 3.6%; HBUS – 4.0%; and Unisa – 1.9%. The RIUs account for just under a quarter of all SADC and a just over a third of total headcount enrolments from the rest of Africa, as Table 4c shows. The larger than average growth in the RIUs is due to their predominant role in the provision of postgraduate qualifications, which has seen the largest increase in total headcount enrolments from SADC and the rest of Africa, as indicated above.

5. Graduation and Throughput Rates

The NPHE argued that as increasing the participation rate was a long-term goal, improving efficiencies in the production of graduates in the short-to-medium term was necessary to meet the demand for managerial and professional skills, which was in short-supply. It identified three factors as evidence of major inefficiencies in the production of graduates. First, the graduation rate, that is, the number of graduates as a percentage of headcount enrolments, "remained 15% between 1993 and 1998". Second, the growth in graduates was lower than enrolment growth - 24% as against 29% between 1993 and 1998. Third, the drop-out rate was high – about 20% of all enrolled students annually (DoE, 2001: 21). The implications of the inefficiencies were graphically captured in the NPHE:

These poor graduation and and retention rates and high drop-out rates are unacceptable and represent a huge waste of resources, both financial and human. For example, a student

Qualification	Contact	Distance
3-year undergraduate	25%	15%
4-year undergraduate	20%	10%
Postgraduate/Honours	60%	30%
Masters	33%	25%
Doctoral	20%	20%

Table 5a: NPHE Benchmark Graduation Rates for Different Qualifications

not only in financing the expansion of the higher education system, but also in providing muchneeded funds for redressing he inequities of the past. Moreover, the cost of those who drop-out, in terms of the moral and psychological damage associated with "failure" is incalculable (Ibid).

The NPHE established graduation rate benchmarks for contact and distance students, outlined in Table 5a, as guide to institutions to improve the efficiency of graduate outputs. The benchmarks were developed based on reviewing student retention, drop-out and graduates rates in South Africa over a five-year period, including the fact that the majority of students took longer than the stipulated minimum time to graduate across the different qualification levels (DoE 20011: 23).²⁶

It should be noted, however, that the graduation rate is not an accurate measure of the efficiency of the system as it is unable to track the throughput of students in the system. It "calculates the number of graduates in a given year expressed as a percentage of that year's total enrolment" and is "skewed by fluctuations" in total enrolments annually (CHE, 2013: 40). It was used as a proxy for measuring student throughputs prior to the implementation of HEMIS in 2000, which is a student record system that enables the tracking of individual students and cohorts from the point of entry to the point of graduation.²⁷ Although there has been progress in the rate of growth of graduates and in increasing the graduation rate, this is limited and gross inefficiencies continue to characterise the higher education system, as indicated by the analysis of the data below.

5.1 Graduation Rate

There has been a steady increase in the number of graduates produced annually – from 120 385 in 2005 to 210 931 in 2017, that is, by 75.2%, an annual average growth rate of 4.8% as Table 5b below shows. This is higher than the growth rate in headcount enrolments, which increased by 41.1%, an annual average growth rate of 2.9%. It suggests that there has been some improvement in efficiency, which is indicated by the fact that the graduation rate increased from 16.4% in 2005 to 20.3% in 2017. This increase was largely due to significant increases in the graduation rate and number of graduates produced by the HBUs - from 14 185 to 27 608 or 94.6%; UoTs - from 24 951 to 42 012 or 68.4%; and Unisa – from 14 185 to 44 842 or a massive 216.1%. However, despite this, as Table 5c below hows, in 2017 except for (professional) four-year undergraduate degrees (contact and distance) and postgraduate degrees to honours (contact), none of the NPHE graduation rate benchmarks were met.

²⁶ The benchmarks set were aspirational and stretch targets based on the graduation rates of the best performing institutions, all of whose performance was below the set benchmark.

²⁷ The CHE has since 2010 undertaken annual cohort studies, which are reported in its annual publication of key data in public higher education, VitalStats.

		Graduates	Graduation Rate			
	2005	2017	% Growth	2005	2017	
RIUs	36 484	49 704	36.2%	23.7%	25.1%	
OUs	30 580	46 765	52.9%	22%	24.7%	
HBUs	14 185	27 608	94.6%	16.4%	21.6%	
UoTs	24 951	42 012	68.4%	16.9%	23.7%	
Unisa	14 185	44 842	216.1%	6.8%	12.9%	
Total	120 385	210 931	75.2%	16.4%	20.3%	

Table 5b: Total Number of Graduates Produced and Graduation Rate by Institutional Type, 2005-2017

Table 5c: 2017 Graduation Rate by Qualification Level (NPHE Benchmarks)

	Diploma (3yr)	Degree (3yr)	Degree (4yr)	PGDip/ Hons	Masters	Doctorate
Universities/	22.4%	18.8%	23.7%	59.1%	22.3%	13.6%
UoTs	(25%)	(25%)	(20%)	(60%)	(33%)	(20%)
Unisa	9.5%	9.2%	10%	25.7%	17.7%	12.6%
	(15%)	(15%)	(10%)	(30%)	(25%)	(20%)

5.2 Throughput Rates

5.2.1 Overall

The increase in the graduation rate, albeit limited, is confirmed by the analysis of throughput rates in Tables 6a and 6b below. The analysis is based on comparing the performance of two first-time entering cohorts, namely, the class of 2008 and the class of 2012 in different qualification levels and in regulation time²⁸ and regulation time plus three years for undergraduate degrees and regulation time plus three years for postgraduate degrees. In the case of Unisa, the undergraduate qualifications is based on comparing the performance of two first-time entering cohorts, namely, the class of 2006 and the class of 2010. This is due to the fact that as the part-time nature of distance education requires longer completion times – maximum 8 years, it would not have been possible to compare the 2008 and 2012 entering cohorts.

Table 6a: Throughput Rates: First-Time Entering Cohorts (excluding Unisa) – Undergraduate and Postgraduate Qualifications, 2008 and 2012 (N=Minimum Time)

		2008	Cohort		2012 Cohort			
Qualification	N	N+1	N+2	N+3	N	N+1	N+2	N+3
UG Diploma (N=3)	19%	36%	45%	50%	23%	40%	50%	55%
UG Degree (N=3))	30%	48%	56%	59%	29%	47%	55%	58%
UG Degree (N=4)	42%	57%	63%	67%	46%	60%	65%	68%
Honours (N=1)	29%	46%	57%	62%	64%	65%	36%	53%
Masters(C) (N=1)	7%	22%	34%	42%	47%	50%	9%	25%
Masters (R) (N=3)	36%	45%	51%	54%	39%	49%	55%	59%
Doctorate (N=3)	16%	28%	39%	46%	18%	32%	43%	51%

²⁸ Regulation time refers to the stipulated minimum duration of a qualification.

	2006 Cohort					2010 Cohort						
Qualification	N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
UG Diploma (N=3)	0.3%	0.9%	1.9%	3.1%	4.0%	4.9%	1%	3%	7%	11%	13%	14%
UG Degree (N=3))	1.9%	5.4%	8.6%	10.9%	12.6%	14.5%	2%	7%	13%	17%	20%	22%
UG Degree (N=4)	3.5%	6.8%	10%	12.8%	15.4%	n/a	3%	12%	21%	27%	30%	n/a
Honours (N=1)	10%	27%	36%	41%	43%	45%	8%	27%	38%	44%	46%	48%
Masters(C) (N=1)	3%	5%	16%	21%	25%	28%	5%	8%	24%	32%	37%	40%
Masters (R) (N=3)	3%	5%	16%	21%	25%	28%	5%	8%	24%	32%	37%	40%
Doctorate (N=3)	14%	18%	24%	29%	23%	32%	38%	43%	14%	18%	24%	29%

Table 6b: Throughput Rates: First-Time Entering Cohorts (Unisa) – Undergraduate and Postgraduate Qualifications, 2006 and 2010 (N=Minimum Time)

The trends, which emerge from Tables 6a and 6b are summarised below.

- 3 year undergraduate diploma (excluding Unisa)²⁹ – graduated in regulation time increased from 19% to 23%; total number of graduates after 6 years increased from 50% to 55%.
- 3 year undergraduate diploma (Unisa) graduated in regulation time increased from 0.3% to 1%; total number of graduates after 8 years increased from 4.9% to 14%.
- 3 year undergraduate degree (excluding Unisa) - graduated in regulation time decreased from 30% to 29%; total number graduated after 6 years decreased from 59% to 58%.
- 3 year undergraduate degree (Unisa) graduated in regulation time stayed the same – 1.9% to 2%; total number graduated after 8 years increased from 14.5% to 22%.
- 4 year undergraduate professional degrees (excluding Unisa) – graduated in regulation time increased from 42% to 46%; total number graduated after 7 years increased from 63% to 68%.
- 4 year undergraduate professional degrees (Unisa) – graduated in regulation time decreased from 3.5% to 3%; total number graduated after 8 years increased from 15.4% to 30%.

- Honours (including Unisa) graduated in regulation time increased from 29% to 36%; total number graduated after 6 years increased from 65% to 69%.
- Masters by coursework (including Unisa) graduated in regulation time increased from 7% to 9%; total number graduated after 6 years increased from 50% to 58%.
- Masters by research (including Unisa) graduated in regulation time increased from 36% to 39%; total number graduated after 6 years increased from 54% to 59%.
- Doctorates graduated in regulation time increased from 16% to 18%; total number graduated after 6 years increased from 46% to 51%.

The trends highlight the two key indicators of inefficiencies in the higher education system. The first is the low number of students graduating in regulation time. This varies from between a fifth to just under half of first-time entering students depending on the qualification level. At the undergraduate level (excluding Unisa), it is especially low in diploma and degree programmes where less than a third of the students graduated in regulation time. It is significantly better in professional degrees where just under half of the students graduated in regulation time, which is largely due to the fact that these programmes are highly selective

²⁹ This excludes undergraduate diploma students in the RIUs.

with more stringent entry requirements. At the postgraduate level, except at the doctoral level, on average a third of the students graduated in regulation, which is also due to the fact that these programmes are more selective and with limited numbers. In addition, the large majority of postgraduate students study part-time, which also explains the low doctoral graduations – just under a fifth in regulation time, as discussed in section 7.2 below. The second, is the high drop-out rate - on average between 40% and 55% of students drop-out without obtaining a qualification, except for the four-year professional undergraduate and honours degrees, where the drop-out rate is just over 30%. The overall drop-out rate in both contact institutions and Unisa may be slightly lower assuming that some students from an entering cohort may have transferred to other programmes or institutions and are therefore not included in the cohort analysis.

The inefficiencies impact both on the participation rate - for each student who stays in the system beyond regulation time, another student is denied access – and the cost of higher education – students dropping out without a qualification represent a huge waste in financial and human resources.

5.2.2 Throughput Rates: Race

The race-based inequalities in the participation rate is also reflected in the impact of the inefficiencies in throughput rates, as Table 6c shows:

- White students performed significantly better than African, Coloured and Indian first-time entering students across all undergraduate qualifications both in terms of completing in minimum time and in minimum time plus three. Although narrowing, there was a gap of 5%-12% between the performance of white students and African and coloured first-time entering students in 2012 across all undergraduate qualifications. It was lower in the case of Indian students – 3%-4%, except in diploma programmes where they performed better than white students.
- Indian students performed better than African and Coloured first-time entering students in 2012 across all qualification types. However, the gap was in a narrower range – 6%-8% and 3% between African and Indian students in 4-year undergraduate degrees.
- The drop-out rate for African and Coloured first-time entering students is higher – between 36%-48% across all undergraduate qualifications for the 2012 cohort than for Indian – 33%-40% and white – 29%-43% students.
- Overall the 2012 cohort performed better than the 2008 cohort, both in minimum time and minimum time plus three. However, the improvement of Coloured and white students was marginal except in four-year professional degrees.

		20	08		2012			
	Minimum Time				Minimum Time			
Qualification	African	Coloured	Indian	White	African	Coloured	Indian	White
3-yr diploma	17%	27%	22%	34%	21%	26%	31%	35%
3-yr degree	23%	25%	27%	43%	23%	24%	29%	45%
4-yr degree	38%	37%	38%	51%	44%	38%	42%	54%
		Minimum	Time + 3		Minimum Time + 3			
Qualification	African	Coloured	Indian	White	African	Coloured	Indian	White
3-yr diploma	48%	51%	52%	57%	54%	52%	60%	57%
3-yr degree	55%	51%	61%	65%	54%	55%	61%	66%
4-yr degree	61%	39%	62%	68%	64%	60%	67%	71%

Table 6c: Throughput Rates: First-Time Entering Undergraduate Cohorts by Race (excluding Unisa), 2008-2012

		20	08			20	12	
	I	N	N+3		N		N+3	
Qualification	Female	Male	Female	Male	Female	Male	Female	Male
3-yr diploma	23%	16%	54%	45%	27%	18%	61%	49%
3-yr degree	34%	26%	62%	54%	33%	24%	61%	53%
4-yr degree	49%	33%	69%	55%	52%	37%	71%	58%

Table 6d: Throughput Rates: First-Time Entering Undergraduate Cohorts by Gender (excluding Unisa), 2008-

5.2.3 Throughput Rates: Gender

The gender-based inequalities in the participation rate is also reflected in the impact of the inefficiencies in throughput rates, as Table 6d shows:

- Female students performed significantly better than male first-time entering students across all undergraduate qualifications both in terms of completing in minimum time and in minimum time plus three. The gap between the performance of female and male students in 2012 was between 8%-13%.
- Overall the 2012 cohort performed better than the 2008 cohort, both in minimum time and minimum time plus three, except in threeyear degrees where there was a marginal decrease of 1% in the performance of both female and male students.

5.2.3 Throughput Rates: Institutional Type

There are significant variations in the performance of cohorts in the different qualification levels across institutional types. These are summarised below based on the Tables in Appendix 4.

- The performance of the RIUs and the OUs in 3-year undergraduate degrees decreased between the 2008 and 2012 cohorts by 5% and 8% respectively in relation to completing in minimum time plus 3. This is probably due to the instability resulting from the student fees protests, the epicentre of which was in the RIUs and the OUs.
- The HBUs and the UoTs perform better than the RIUs and the OUs in 4-year undergraduate degrees. This is probably due to the fact that

the 4-year undergraduate degrees offered by the HBUs are primarily in education and law rather than in the "hard" sciences such as engineering, health and actuarial sciences, offered in the RIUs and the OUs, while the 4-year degree offered in the UoTs is actually the Bachelor of Technology (B.Tech) degree, which is a one-year qualification following the completion of the diploma.³⁰

- The OUs perform marginally better than the RIUs in research masters and doctoral degrees. The reasons for this are not clear.
- The inefficiencies are starker in Unisa even allowing for the fact that distance education caters for part-time and/or employed students who require more time than full-time students to complete their studies. The drop-out rate is on average a massive 78% for undergraduate students and 56% for postgraduate students.

The overall inefficiencies notwithstanding there has been some improvement - on average throughout rates have improved by 5% across all qualifications, except in three-year degrees. This is also reflected in the improved performance of African and, more marginally, Coloured students. The improvement, albeit small, suggests that the various interventions to improve throughput rates, in particular, at the undergraduate level, such as earmarked funding for foundation and extended degree programmes and teaching development grants are having effect. This does not, however, necessarily imply that quality is improving. There is anecdotal evidence to suggest that the pressure to improve throughput rates,

³⁰ The B.Tech, which is a one year qualification offered in the UoTs on completion of a three-year diploma, and which was previously recorded as a separate qualification was reclassified incorrectly as a 4-year undergraduate degree in HEMIS. This has been rectified since 2018. It should be noted that the B.Tech is being phased out and replaced by an Advanced Diploma in terms of the HEQSF.

which is linked to individual and institutional performance targets, is resulting in marginal students being passed at the expense of quality. Moreover, the fact that the improvement is within a small range – 5%, although funding for supporting these interventions was first introduced in the 2000/2001 financial year and has been expanded since, suggests that more fundamental changes are required to improve the internal efficiency and effectiveness of the higher education system. In the absence of the latter, access to higher education will remain a revolving door for the large majority of students, in particular, poor and working class students, closing the only avenue for social mobility to improve their life chances and socioeconomic status. The introduction of free higher education has removed the burden of funding as a contributory factor to the high drop-out and failure rates, at least for poor and working class students. However, the real barrier is the underpreparedness of students for higher education. This disproportionately impacts on African and coloured students because of the poor quality schooling in rural and urban black township schools. However, under-preparedness also impacts on Indian and white students, whose performance while better than that of African and coloured students, is not at the level that should be expected given their access to better quality schooling.

The under-preparedness of students for higher education is the result of the discontinuity or "articulation gap" in knowledge and skills between the outcomes of schooling and the requirements of higher education, as the report of the CHE Task Team on the undergraduate curriculum structure, A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure, argues (CHE, 2013). The challenge arises as the articulation gap is not taken into account by the inherited curriculum and qualification structure in higher education, which is not suited to the contemporary context and reality of the socio-economic, cultural and educational background of the students entering higher education. The report argues that addressing the "articulation gap" requires the restructuring of the curriculum and qualification structure in

higher education through adding an extra year to the traditional three-and four-year qualifications. There was widespread, if qualified support, for the introduction of an additional year from the universities. And all the indications were that it would also be supported by the DHET, as indicated in the WPPSET, which was released soon after the release of the CHE's report:

Curriculum development initiatives that will contribute to improved success and graduation rates must be explored and supported. This may include new programme structures, such as the possible introduction of a four-year undergraduate degree, something that the CHE is currently investigating (DHET 2013: 33).

The CHE advised the Minister in December 2014 to adopt the Task Team's proposal "as the guiding vision for reform of the structural parameters of the undergraduate curriculum in higher education" to be implemented cautiously and in a "carefully-planned manner" in the medium-to-long term to "avoid extensive disruptions" to the sector. As a first step it recommended implementing a "national pilot process, wherein only one or two carefully selected qualifications are redesigned" based on of the curriculum and qualification structure proposed in the CHE's report, to test its feasibility and to "gauge the extent of implementation barriers that will need to be overcome in taking the reform to scale"(CHE, 2014).

However, the CHE's advice was not accepted by the Minister. The reasons for this are not clear, especially as the response has been contradictory. Apparently, the vice-chancellors were told that this was due to a lack of funding, while the CHE was informed that further cohort studies were necessary as the CHE report had focussed on the 2005 first-time entering cohort, which precluded an assessment of the various interventions subsequently introduced by the DHET to improve throughput rates:

I note and appreciate the recommendations from the Council and am in agreement with the analysis in relation to the magnitude of the challenges facing the higher education sector. However, the DHET has in recent years introduced several important interventions impacting on teaching and learning at our universities. These include, interalia, earmarked grants to serve specific purposes. These grants are now firmly embedded in the system, having matured into effective instruments for developing capacity and bringing about change and improvement in performance. I believe that the Flexible/Extended Curriculum proposal, based on the 2005 cohort data, has underestimated the improvements brought about by these and other interventions, and thus has perhaps underestimated the possibilities of curriculum reform within the current structural dispensation (DHET, 2015).

The suggestion that the proposal underestimated the improvements in performance is not borne out by the evidence. As indicated above, although there has been some improvement in the throughput rates of the 2012 cohort, who would have been the main beneficiaries of the interventions introduced, this has been limited and the challenge of improving throughput remains. And, importantly, it is a challenge facing all institutional types as the data indicates. As for funding, the modelling undertaken for the CHE report indicated that although the subsidy would have to increase, the cost per graduate would be lower as more graduates would be produced. Moreover, in the short-term, the report pointed out, there would be no need for additional funding as the then existing funding for foundation programmes and the teaching development grant would be adequate for start-up purposes (CHE, 2013: 21-22).

In addition, the Minister suggested that the consideration should be given to expanding foundation/extended curricula programmes to "at least 30%" of first-time entering students and to introduce a Higher Certificate (Foundational) to address the articulation gap. However, this has not happened. The expansion of foundation and extended curricula programmes has been limited – in 2012 foundation students comprised 9.7% of the total first-time entering students (DHET, 2016: 9 & 31), increasing to 11% in 2017 and projected to grow to 11.5% in 2025 (DHET, 2019b, tables A and D). Furthermore, as a proportion of total undergraduate headcount enrolments in 2017, foundation enrolments were a paltry 2.5% and are planned to increase to 2.6% in 2025. There is also no indication to date of the process for the development and implementation of the proposed Higher

Certificate (Foundational).

The CHE's advice was the outcome of a substantive report and consultative process. The fact that the Minister did not consult the higher education sector on the CHE's advice suggests that it was based on political rather than on policy or pedagogical considerations. The policy commitment to ensure that equity of access is complemented by equity of outcomes and does not lead to a revolving door through high failure and drop-out rates, including the need to restructure the undergraduate curriculum structure, was first mooted in WP3 and has been a common thread in the policy discourse since. This commitment, if it has to have any meaning, requires revisiting the CHE's proposals for restructuring the undergraduate curriculum and qualification structure.

6. Staffing: Academic

A key factor in maintaining and enhancing quality in higher education are the academic staff. It goes without saying that guality will be compromised if the expansion in student enrolments is not matched by a proportionate increase in academic staff. However, despite the recognition in the NPHE of the need to "guard against rapid enrolment growth unless it is matched by additional resources" (DoE, 2001: 22), the focus on staffing was narrowly limited to improving staff equity. The NPHE recognised that achieving employment equity was a longterm goal given the low numbers of black and women postgraduate students, which together with competition from the public and private sectors and alienating institutional cultures limited the pool from which to recruit academic staff. It therefore proposed as a short-term solution, the recruitment of academic staff from the rest of Africa (DoE, 2001: 45-46).

The narrow focus on staff equity in the NPHE was addressed in the WPPSET which highlighted the role of academic staff in maintaining quality and, more importantly, acknowledged that the expansion in enrolments has not been matched by "an equivalent expansion in the number of academics" resulting in "increased teaching loads and high student-to-staff ratios" (DHET, 2013: 35). Similarly, the National Development Plan (NDP) argues that the "shortage of academics" needs to be addressed if "South African Universities are to expand, compete and drive the knowledge society and economy" (NPC, 2012: 317).

6.1 Academic Staff Growth

The growth in academic staff (permanent plus temporary) has not matched the growth in headcount enrolments. As Table 7a shows, academic staff grew by 31.3% - from 40 517 to 53 216, an annual average growth rate of 2.6% between 2005 and 2017, as against headcount enrolments which grew by 41.1%, an annual average growth rate of 2.9% (see Table 1a).

At first sight this seems more than reasonable on the assumption that the growth in academic staff does not have to match the growth in enrolments on 1:1 ratio. This is especially so in the case of distance education, which contributes to costefficiency as it enables "institutions to increase enrolments without increasing staff levels" (DoE, 2001: 60). However, the growth was driven by a massive growth in academic staff at Unisa, which grew by 408.5% - from 2 373 to 12 066, an annual average growth rate of 14.5%. This was just over three times more than its headcount enrolments, which grew by 65.4%, an annual average growth rate of 4.3%. However, and importantly, the growth at Unisa was apparently not due to an increase in substantive academic posts but rather in teaching support staff on temporary contracts such as tutors and markers to assist with the rapid growth in headcount enrolments. The mismatch between enrolment and academic staff growth is brought into stark relief if Unisa is

excluded. Academic staff, excluding Unisa, grew by 7.9% - from 38 143 to 41 149, an an annual average growth rate of 0.6% between 2005 and 2017, as against headcount enrolments which grew by 31.5%, an annual average growth rate of 2.3% (see table 1e).

The growth in staff in the different institutional types other than Unisa has been uneven with the largest growth in the RIUs, which grew by 15.1% and the lowest in the HBUs, which grew by 1.6%, while the growth in OUs and the UoTs was 3.5% and 2% respectively. These differences reflect disparities in the resource base of the different institutional types, in particular, their ability to attract third-stream income in the form of research and donor grants, which enables greater flexibility in employing additional staff.

There are also significant differences in the employment status - permanent or temporary - of academic staff in the different institutional types. As Table 7a shows, temporary academic staff grew at a faster rate than permanent academic staff – by 33.2% - from 25 215 to 33 585, an annual average growth rate of 2.4%, as against 28.3% - from 15 302 to 19 631, an annual average growth rate of 2.1%. However, the growth in temporary staff was confined to the RIUs, in which the growth in temporary academic staff was double the growth in permanent academic staff – 18.1% as against 9.3%, and Unisa in which it was slightly more than double – 81.5% as against 37.3%. In all the other institutional types, there was growth in permanent academic staff and a decrease

		2005			2017				
	Р	т	Total	Р	т	Total	%G P	% G T	% G Total
RIUs	5 609	10 600	16 209	6 132	12 519	18 651	9.3%	18.1%	15.1%
OUs	3 169	6 623	9 792	4 849	5 285	10 134	53%	-20.2%	3.5%
HBUs	2 517	2 655	5 172	3 549	1 704	5 253	41%	-35.8%	1.6%
UoTs	2 699	4 181	6 880	3 305	3 806	7 111	22.5%	-9%	3.4%
Unisa	1 308	1 065	2 373	1 796	10 270	12 066	37.3%	864.3%	408.5%
Total	15 302	25 214	40 516	19 631	33 584	53 215	28.3%	33.2%	31.3%
Total (Ex-Unisa)	13 994	24 149	38 143	17 835	23 314	41 149	27.4%	-34.5%	7.9%

Table 7a: Permanent (P) and Temporary (T) Academic Staff by Institutional Type, 2005-2017
in temporary staff, as Table 7b shows. However, despite these changes, as Table 7c shows, the RIUs employ the largest proportion of permanent and temporary academics within the system – 31.2% and 36.5% respectively, which results in them having a better staff-to-student ratio, as discussed below.

The growth in temporary academic staff reflects the increased "casualisation" and "precariousness" of academic work, which as the CHE review argues, acts as a disincentive to pursue an academic career:

The negative effects of casualisation on the attractiveness of the academic profession are clear; career tracks are undermined; commitment to academia suffers; job satisfaction and personal employment security become increasingly important factors influencing career decisions; institutional memory and disciplinary expertise are harder to build up; and these together have a negative effect on the reproducibility of the academic profession overall (Webbstock and Seehole, 2016: 299).

The casualisation of academic work is in part a response to the inadequate funding of higher education. This needs to be addressed if the academic profession is to be revitalised to enable universities, as the NDP requires, "to expand, compete and drive the knowledge society and economy" (NDP, 2012: 317).

6.2 Staff-to-Student Ratios

The lower rate of growth in academic staff has resulted, as WPPSET indicates, in increased teaching loads and staff-to-student ratio's (SSRs), which impacts on quality (DHET, 2013: 35). As the DHET's framework for transforming and building staff capacity states:

It can be argued that improved student: staff ratios lead to an increase in quality, throughput and success in the system, and that the current average staff: student ratio is inadequate for the kinds of measures that are necessary to meet the needs of the majority of students currently being admitted to higher education studies (DHET, 2015a: 8).

	20	05	2017			
	% P	% Т	% P	% Т		
RIUs	34.6%	65.4%	32.9%	67.1%		
OUs	32.4%	67.6%	47.8%	52.2%		
HBUs	48.7%	51.3%	67.6%	32.4%		
UoTs	38.7%	61.3%	46.5%	53.5%		
Unisa	40.7%	59.3%	14.9%	85.1%		
Total	37.8%	62.2%	36.9%	63.1%		

Table 7b: Permanent and Temporary Academic Staff as a Proportion of Total Academic Staffby Institutional Type, 2005-2017

 Table 7c: Permanent and Temporary Academic Staff as Proportion of Total Permanent and Total Temporary

 Academic Staff by Institutional Type, 2005-2017

	2005	2017	2005	2017
	% P	% P	% Т	% Т
RIUs	36.7%	31.2%	42%	36.5%
OUs	20.7%	24.7%	26.3%	15.2%
HBUs	16.4%	18.1%	10.2%	5.1%
UoTs	17.6%	16.8%	16.9%	11.3%
Unisa	8.5%	9.1%	4.2%	30.6%
Total	100%	100%	100%	100%

		2005		2017				
	Student FTEs	Staff FTEs	SSR	Student FTEs	Staff FTEs	SSR		
RIUs	118 784	7 788	15	151 363	8 268	18		
OUs	102 007	5 005	20	143 768	5 645	25		
HBUs	70 680	3 121	23	106 869	4 091	26		
UoTs	108 584	3 579	30	129 055	4 493	29		
Unisa	100 875	1 643	61	200 546	5 441	37		
Total	500 931	21 137	24	731 602	27 939	26		
Total (Ex-Unisa)	400 056	19 494	20.5	531 056	24 498	24		

Table 7d: Staff-to-Student Ratio's by Institutional Type

The SSR increased from 24 to 26 (including Unisa) and from 21 to 24 (excluding Unisa) between 2005 and 2017, as Table 7d shows. And in terms of the MSSEPU 2025 target, it is set to increase to 27 (including Unisa)(DHET, 2019b, Table 45). It should be noted that the SSR as calculated is an average across different disciplines and fields of study. In practice it varies considerably between different disciplines and fields of study. It tends to be lower in the more resource intensive undergraduate programmes such as in engineering, medicine, architecture and so on, and in postgraduate and research programmes. The only institutional type in which the SSR improved was Unisa – from 61 to 37, which is not surprising given its massive increase in staff. In the other institutional types the SSR declined from 15 to 18 in the RIUs; 20 to 25 in the OUs; 23 to 26 in the HBUs; while it improved marginally in the UoTs from 30 to 29. The differences between the different institutional types is the result of a combination of historical inequalities in funding and type of programmes offered – the more resource intensive undergraduate programmes, including postgraduate and research programmes, were in the past in the main restricted to the historically white universities.

The value of the SSR as an indicator of quality is, however, open to question. As Stephen Court (2012) argues, there is no correlation between the SSR and quality or the contact time spent by an academic in teaching. In fact, it a misleading indicator of the time spent by an academic in teaching, as a report on the financial sustainability of teaching and learning in English higher education point out: They assume that all the time of a typical academic – who is normally engaged in teaching, research and other activities – is spent on teaching. However, they will naturally vary between disciplines, between institutions, and also between subjects in different stages of their life cycle (quoted in Court, 2012: 7).

In addition, in South Africa the SSR is calculated based on staff full-time equivalents (FTEs), which includes both full-time and part-time instructional (teaching) and research staff. This is misleading as it does not distinguish between academic staff who are employed to do both teaching and research, irrespective of how much teaching they actually do, and those employed as researchers with no teaching responsibilities. As the Guardian newspaper, which publishes an annual guide to universities in the United Kingdom, argues the SSR is a "simple ratio" and "does not adequately reflect teaching intensity and also does not reveal who is performing the teaching. Is it the world-renowned professor or a graduate teaching assistant? (quoted in Sagenmuller n.d.: 3) This is especially pertinent in South African higher education currently in the context of the fixation on international rankings by the RIUs and some of the OUs. The fact that research strength measured by publication outputs and income generated is a key criterion in the rankings has resulted in some institutions in "senior professors, who tend to be more research productive, being absolved of undergraduate teaching, particularly at first and second-year levels. And even more perversely, in some institutions distinguished

academics from other countries are appointed as visiting professors not because they add value and contribute to the intellectual life of the institution but because there research outputs generates income and enables improvement in the rankings!" (Essop, 2018). It is not clear how widespread these practices are or how they impact on the quality of teaching and learning, which suggests the need for further research.

This is not to downplay the role of research or the need for additional academic staff given the mismatch between the growth in student enrolments and staff. However, it is to caution that the SSR is at best a rough proxy for quality and improving it will not necessarily contribute to better teaching outcomes unless teaching is prioritised within institutions. The impact of the lower rate of growth in academic staff and the increase in staff-to-student ratio's on quality is cause for concern. Indeed, it could be argued that although there has been limited improvement in throughout rates, as discussed above, and while there are factors external to higher education which in part contribute to low throughput rates, the mismatch between enrolment growth and staff growth is a significant factor. It raises a key policy dilemma that remains unresolved – the appropriateness of the continued push for increasing access against the background of resource constraints, both financial and human – and the implications of this for quality and the ability of the higher education system to address the skills and knowledge needs of the country. This suggests, at least implicitly, in the context of the earlier discussion on the equity-development tension, that equity increasing access - is being prioritised over development and quality despite the recognition in the WPPSET and the NDP that the "expansion of the academic profession is vital for the longterm sustainability of high-quality public higher education in South Africa.

6.3 Academic Staff Qualifications

As indicated, a key factor in maintaining and enhancing quality in higher education is an appropriate balance between student enrolment growth and academic staff growth. However, academic staff growth is a necessary but not sufficient factor to ensure quality. It has to be complemented by academic staff having the requisite qualifications to discharge their teaching and research roles. In line with this and as part of the renewal and expansion of the academic labour force, the WPPSET prioritises improving the qualifications of current academic staff (DHET, 2013: 36) and the NDP proposes a target of over 75% of permanent academic staff with a doctorate by 2030 (NPC, 2012: 318).

There has been significant progress in improving staff qualifications at the doctoral level. The number of permanent academic staff with a doctorate has increased by 95.1% - from 4 631 to 9 033, an annual average increase of 5.7%, as Table 7e below shows. Thus, as a proportion, the total number of permanent academic staff with a doctorate has increased from 30.3% to 46%, which is still substantially below the NDP target of 75%, as Table 7f below shows. It has increased in all the institutional types, with the largest increase in the institutional types with a low base, namely, the OUs – 127.7%, HBUs – 130.5% and the UoTs – 220%. In the two institutional types with a stronger base – the RIUs and Unisa, it grew at a slower rate – 59.4% and 85.9% respectively.

The improvement in staff qualifications is also reflected in changes in the overall proportion of academic staff with a doctorate within the higher education system between the different institutional types. The RIUs proportionate share of permanent academic staff with a doctorate has decreased from 50% of the total number of permanent academic staff in higher education to 40.8%, while the proportionate share of the the rest of the institutions has increased from 50% to 59.2%, as Table 7f shows. However, the RIUs continue to have the largest proportion of staff with doctorates within each institutional type – 60%, as against the OUs – 48%, HBUs – 35.5%, UoTs – 26.1% and Unisa – 50%.

The progress made indicates that the systemwide and institutional interventions to support staff in improving their qualifications are beginning to bear fruit. However, this may be impeded by institutional hiring and promotion policies, which require greater interrogation, as there is anecdotal evidence suggesting that some institutions do not require a doctorate as a

		2005			2017				
	Р	т	Total	Р	т	Total	% G	% G T	% G Total
RIUs	2 313	580	2 893	3 686	1 740	5 426	59.4%	200%	87.5%
OUs	1 020	277	1 297	2 328	1 163	3 491	128.2%	319.9%	169.2%
HBUs	547	281	828	1 261	367	1 628	131%	30.6%	96.6%
UoTs	270	188	458	864	735	1 599	220%	291%	249.1%
Unisa	481	18	499	894	546	1 440	85.9%	96.7%	188.6%
Total	4 631	1 344	5 975	9 033	4 551	13 584	95.1%	238.6%	127.3%

Table 7e: Permanent and Temporary Academic Staff with Doctorates by Institutional Type, 2005-2017

Table 7f: Permanent Academic Staff with Doctorates (P/D) as a Proportion of the Total Permanent Academic Staff in the Higher Education System (PD/HE) and within each Institutional Type (PD/IT), 2005-2017

		20	05			20				
	Total P	P/D	P/D as % HE	P/D as % IT	Total P	P/D	P/D as % HE	P/D as %IT	%G	AAG
RIUs	5 609	2 313	50%	41.2%	6 132	3 686	40.8%	60.1%	59.4%	4.0%
OUs	3 169	1 020	22%	32.2%	4 849	2 328	25.8%	48%	127.7%	7.1%
HBUs	2 517	547	11.8%	21.7%	3 549	1 261	13.9%	35.5%	130.5%	7.2%
UoTs	2 699	270	5.8%	10%	3 305	864	9.6%	26.1%	220%	10.2%
Unisa	1 308	481	10.4%	36.8%	1 796	894	9.9%	49.8%	85.9%	5.3%
Total	15 302	4 631	100%	30.3%	19 631	9 033	100%	46%	95.1%	5.7%

to senior academic posts. Furthermore, the MSSEPU 2025 target of 51% of academic staff with doctorates suggests that there is a recognition that based on current trends the NDP target is ambitious and unrealistic (DHET, 2019b, Table 42). Indeed, it begs the question of the appropriateness of the NDP target and how it was arrived at. It is based on the assumption that the "most important factor that determines quality is the qualifications of staff" (NDP, 2012: 318). As Cloete points out, this assumes that staff with doctorates will not only lead to an improvement in student performance and outcomes but would also improve supervisory capacity and research productivity (Cloete, 2015: 1). However, there is no evidence to support this assumption. Similarly, as Badat argues with regard to supervisory capacity:

It cannot be assumed that academics with doctorates will be accomplished supervisors of doctoral students. Attention has to be given to equipping academics to supervise effectively through formal development programmes, mentoring, and experience in co-supervising alongside experienced supervisors. More effective supervision could contribute to improving current poor postgraduate throughput and graduation rates (Badat, 2019:).

Moreover, although a doctorate is essential for research and doctoral and masters supervision it is not essential for teaching at the honours and undergraduate level. Indeed, it is arguable whether possession of a doctorate makes for a better teacher at the undergraduate level, in particular, in the South African context where the large majority of students are under-prepared for higher education. At the undergraduate level it is the scholarship of teaching that is critical, that is, the mastery of the discipline and the ability to teach/transmit disciplinary knowledge in an accessible manner, taking into account the social and educational background of students. And the same holds for practice-based disciplines such as fine arts, journalism, law, accounting in which as the CHE Review points out "industrial

or professional expertise is more apposite than deep academic disciplinary knowledge" (Webbstock and Seehole, 2016: 311). However, this tends to be ignored in institutions where the pressure is on academic staff to obtain doctorates to contribute to the production of research masters and doctoral graduates and publication outputs, which generates additional funding. This results in the undervaluing of role of teaching in the development of academic careers. And the scholarship of teaching and learning, which involves engaging with and applying the theory and practice of teaching and learning to the disciplinary context, tends to be perceived as of lower status than disciplinary research.

In the absence of any evidence to the contrary, and even on the generous interpretation that the NDP target was aspirational, it can be assumed that it was a thumb-suck and not based on an assessment of comparable higher education systems in developing countries, let alone in developed countries. In fact, higher education systems in developed countries would fall short in meeting the NDP target. Thus, for example, in the 2018-2019 academic year, 66% of fulltime academic staff in the United Kingdom had doctorates (HESA 2020), while in Australia 68.4% of full-time and part-time academic staff had doctorates (DESE, 2020).³¹

6.4 Academic Staff and Equity

As indicated the main focus in the NPHE was on addressing staff equity. In this regard, there has been steady, if slow, progress in general. However, although it is not possible within HEMIS to disaggregate academic staff data based on different employment categories, there is consensus that the progress has been limited to lower grades – assistant lecturers, lecturers and senior lecturers, while the higher grades – Associate Professor and Full Professors, continue to be characterised by inequalities.

6.4.1 Academic Staff and Race

The overall growth in academic staff (permanent and temporary) has been underpinned by an increase in black academic staff and a decrease in white academic staff between 2005 and 2017, as Tables 7g and 7h below show.

		Black			White			Black			White		
	Р	т	Total	Р	т	Total	Р	т	Total	Р	т	Total	
RIUs	1 479	3 877	5 356	4 079	5 866	9 945	2 413	5 669	8 082	3 456	6 564	10 020	
OUs	732	1 760	2 492	2 437	4 806	7 243	1 926	2 400	4 326	2 923	2 883	5 806	
HBUs	1 840	1 746	3 586	677	866	1 543	2 897	1 405	4 302	536	241	777	
UoTs	1 226	1 580	2 806	1 468	2 425	3 893	2 211	2 478	4 689	1 064	1 1 1 6	2 180	
Unisa	345	410	755	963	655	1 618	1 030	7 141	8 171	766	3 129	3 895	
Total	5 622	9 373	14 995	9 624	14 618	24 242	10 477	19 093	29 570	8 745	13 933	22 678	

Table 7g: Black and White Permanent and Temporary Academic Staff by Institutional Type, 2005-2017

		Black		White				
	% Growth P	% Growth T	% Growth Total	% Growth P	% Growth T	% Growth Total		
RIUs	63.2%	46.2%	50.9%	-15.3%	11.9%	0.8%		
OUs	163.1%	36.4%	73.6%	19.9%	-40%	-19.8%		
HBUs	57.4%	-19.5%	20%	-20.8%	-72.7%	-49.6%		
UoTs	80.3%	56.8%	67.1%	-27.5%	-54%	-44%		
Unisa	198.5%	1 641.7%	982.3%	-20.5%	377.7%	140%		
Total	86.4%	103.7%	97.2%	-9.1%	-4.9%	-6.5%		

Table 7h: Percentage Growth in Black and White Permanent and Temporary Academic Staff by Institutional Type, 2005-2017

Black academic staff grew by 97.2% - from 14 995 to 29 570, an annual average growth rate of 5.8%, while white academic staff decreased by -6.5% - 24 242 to 22 678, an annual average decrease of -0.6%. These changes were also mirrored in growth rates in permanent and temporary staff. In the case of permanent staff, black academic staff increased by 86.4% - from 5 622 to 10 477, an annual average increase of 5.3%, while white academic staff decreased by -9.1% - from 9 624 to 8 745, an annual average decrease of -0.8%. Furthermore, the changes in permanent staff are also mirrored in the different institutional types, except for the OUs where white academic staff increased. Black academic staff increased by 63.2% in the RIUs, 163.1% in the OUs, 57.4% in the HBUs, 80.3% in the UoTs and 198.5% in Unisa, while white academic staff increased by 19.9% in the OUs and decreased by -15.3% in the RIUs, -20.8%

in the HBUs, -27.5% in the UoTs and -25.7% in Unisa.

The changes have resulted in black academic staff as a proportion of permanent academic staff increasing from 36.9% to 54.5%, as Table 7i shows. However, although the proportion of permanent black academic staff has increased in all institutional types, except for the HBUs and the UoTs, they under-represented in the RIUs – 41.1%; OUS – 39.7% and Unisa – 57.3%.

6.4.2 Academic Staff and Gender

In terms of gender, although overall both female and male academic staff have increased, female academic staff have increased at a faster rate, 50.4% - from 17 856 to 26 857, an annual average growth rate of 3.5%, while male academic staff increased by 16.3% - from 13 704 to 16 049, an annual average growth rate of 1.3%, as Tables 7j and 7k below show.

Table 7i: Black Permanent Academic Staff as Proportion of Total Permanent AcademicStaff by Institutional Type, 2005-2017

	2005	2017
	% P	% P
RIUs	26.6%	41.1%
OUs	23.1%	39.7%
HBUs	73.1%	84.4%
UoTs	45.5%	67.5%
Unisa	26.4%	57.3%
Total	36.9%	54.5%

			20	05			2017						
	Female			Male			Female				Male		
	Р	т	Total	Р	т	Total	Р	т	Total	Р	т	Total	
RIUs	2 315	5 096	7 411	3 294	5 504	8 798	2 985	6 550	9 535	3 147	5 969	9 116	
OUs	1 279	3 016	4 295	1 890	3 607	5 497	2 368	2 520	4 888	2 481	2 765	5 246	
HBUs	988	1 181	2 169	1 529	1 474	3 003	1 583	828	2 411	1 966	876	2 842	
UoTs	1 082	1 789	2 871	1 617	2 482	4 099	1 469	1 625	3 094	1 836	2 181	4 017	
Unisa	682	428	1 110	626	637	1 263	917	6 012	6 929	879	4 258	5 137	
Total	6 346	11 510	17 856	8 956	13 704	22 660	9 322	17 535	26 857	10 309	16 049	26 358	

Table 7j: Female and Male Permanent and Temporary Academic Staff by Institutional Type, 2005-2017

Table 7k: Percentage Growth in Female and Male Permanent and Temporary Academic Staff by InstitutionalType, 2005-2017

		Female		Male				
	% Growth P	% Growth T	% Growth Total	% Growth P	% Growth T	% Growth Total		
RIUs	28.9%	28.5%	28.7%	-4.5%	8.4%	3.6%		
OUs	85.1%	-16.4%	13.8%	31.3%	-23.4%	-4.6%		
HBUs	60.2%	-29.9%	11.2%	28.6%	-40.6%	-5.4%		
UoTs	35.8%	-9.2%	7.8%	13.5%	-12.1%	-2%		
Unisa	34.5%	1 034.7%	524.2%	38%	568.4%	306.7%		
Total	46.9%	52.3%	50.4%	15.1%	17.1%	16.3%		

These changes were mirrored in growth rates in permanent and temporary staff. In the case of permanent staff, female academic staff increased by 46.9% - from 6 346 to 9 322, an annual average increase of 3.3%, while male academic staff increased by 15.1% - from 8 956 to 10 309, an annual average increase of 1.2%. Furthermore, the changes in permanent staff are also mirrored in the different institutional types, except for the RIUs where male academic staff decreased. Female academic staff increased by 28.9% in the RIUs, 85.1% in the OUs, 60.2% in the HBUs, 35.8% in the UoTs and 34.5% in Unisa,

while male academic staff decreased by -4.5% in the RIUs and increased by 31.3% in the OUs, 28.6% in the HBUs, 35.8% in the UoTs and 34.5% in Unisa. The changes have resulted in female academic staff as a proportion of permanent academic staff increasing from 41.5% to 47.5%, as Table 7l shows. Similarly, the proportion of permanent female academic staff has increased in all institutional types and it is close to equity in all the institutional types except for the HBUS and the UoTs, where females are 44.6% and 44.4% respectively.

Table 7l: Female Permanent Academic Staff as Proportion of Total Permanent Academic Staff by Institutional Type, 2005-2017

	2005	2017
	% P	% P
RIUs	41.3%	48.7%
OUs	40.4%	48.8%
HBUs	39.3%	44.6%
UoTs	40.1%	44.4%
Unisa	52.1%	51.1%
Total	41.5%	47.5%

	2005				2017		% Growth			
	Р	т	Total	Р	т	Total	Р	т	Total	
RoA	325	515	840	1 418	3 079	4 497	336.3%	497.9%	435.4%	
RoW	327	453	780	765	1 465	2 230	133.9%	223.4%	185.9%	
Total	652	968	1 620	2 183	4 544	6 727	234.8%	369.4%	315.2%	

Table 7m: International (RoA and RoW) Permanent and Temporary Academic Staff, 2005-2017

6.4.3 Academic Staff and Nationality

Higher education institutions responded positively to the NPHE's proposal encouraging institutions to recruit academic staff from the rest of Africa as a short-term solution to addressing race-based disparities in the profile of academic staff, as Table 7m shows.

There was an increase of 315.2% in the total number of international (permanent and temporary) academic staff – from 1 620 in 2005 to 6 727 in 2017, an annual average increase of 12.6%, which is significantly higher than the growth in South African academic staff, which grew by 19.7%, an annual average growth rate of 1.5%. Academic staff from the RoA accounted for 435.4% and academic staff from the RoW accounted for 185.9% of the total increase.

These changes were mirrored in growth rates in permanent and temporary academic staff, which increased by 336.3% and 497.9% from the RoA between 2005 and 2017 and by 133.9% and 223.4% from the the RoW.

Furthermore, the changes in permanent academic staff were also mirrored in the different institutional types - academic staff from the RoA grew at a faster rate than academic staff from the RoW, except in the OUs (see Tables in Appendix Five). As a result of these changes, as Table 7n shows, the proportion of international academic staff has increased from 4.3% to 11.1% of the total permanent academic staff in South Africa. Academic staff from the RoA constitute 7.2% of the total and constitute the majority of permanent international academic staff in all institutional types except for the RIUs where they account for 8.1% of the total international academic staff, as against 9.4% of permanent academic staff from the RoW. The overall growth in international academic staff although small in comparison to developed countries - for example, in the United Kingdom, 35.4% of the full-time academic staff in the 2018/'19 academic year were international (HESA, 2020a) - suggests that their recruitment is more than a short-term solution as proposed in the NPHE. This is to be welcomed as staff and student diversity is a measure of the strength and vitality of higher education systems globally. This is recognised in the DHET's Draft Policy for the Internationalisation of Higher Education in South Africa, which recognises that internationalisation bolsters quality higher education and boosts guality productivity of higher education institutions (DHET, 2017:19). It goes on to argue that while the employment of South Africans who are equally qualified must be prioritised:

Table 7n: International (RoA and RoW) Perma	anent Academic Staf	f as Proportion of Tot	al Permanent Staff by
Instil	tutional Type, 2005-2	2017	

		2005			2017	RoW 9.4% 2.3% 1.6% 1.3% 0.2%	
	Overall	RoA	RoW	Overall	RoA	RoW	
RIUs	6.2%	2.6%	3.6%	17.5%	8.1%	9.4%	
OUs	4.1%	2.1%	2%	7.3%	5%	2.3%	
HBUs	3.2%	1.7%	1.2%	11.1%	9.5%	1.6%	
UoTs	2.2%	1.7%	0.5%	9.2%	7.9%	1.3%	
Unisa	2.8%	1.8%	1%	6.5%	6.2%	0.2%	
Total	4.3%	2.1%	2.1%	11.1%	7.2%	3.9%	

It is in South Africa's interest to appoint the best possible people in academic positions in it higher education institutions, including talented and qualified scientists and scholars from elsewhere in the world (Ibid: 29).

However, this seems to be lost on some members of the Portfolio Committee on Higher Education and Training in parliament who want to introduce legislation to regulate the number of academic staff and students from other countries on the grounds of protecting brand South Africa (Govender 2019). The implicit xenophobia notwithstanding, it is of concern that the members of the committee tasked with holding the executive accountable are not only not familiar with government policy on internationalisation but also do not understand the role of universities in engaging with a diversity of views and ideas that are not bounded by a narrow parochialism and nationalism. As Yunus Ballim, the former-vice-chancellor of Sol Plaatje University argued in response: "for a university to represent the universal in the world of ideas, the presence of academics who bring a lived experience from across the world is essential (quoted in Govender, Ibid). In this regard it is critical that the DHET clarifies and publicises its internationalisation policy to avoid the political pressures on universities and other knowledge institutions such as the NRF not to recruit academic and research staff from other countries.

7. Shape of the Higher Education System, 2005-2017

7.1 Headcount Enrolments by Field of Study

The NPHE proposed that the shape of enrolments between the three broad fields of study, namely, the humanities,³² business and commerce (B&C) and science, engineering and technology (SET) should be more evenly balanced than the ratio at the time - 49%: 26%: 25%. It proposed that the ratio should be shifted over a five-to-ten period to 40%: 30%: 30% (DoE, 2001: 30). The imbalance in the ratio, which was starker in 1993 - 57%: 19%: 25% - was a legacy of the apartheid past, in particular, inequalities in the access of black students to SET programmes given the role assigned to the HBUs to focus in the main on programmes in public administration to service the human resource needs of the bantustan bureaucracies (DoE, Ibid). However, the NPHE questioned the desirability of shifting the balance below the proposed 40% for the humanities given the importance of the humanities for social and economic development, as argued in WP3:

The focus on science, engineering and technology programmes is necessary to correct present imbalances, in particular, the shortage of trained personnel in these fields. However, this will not diminish the importance of programmes in the social sciences and humanities which contribute to knowledge production, in particular, to the understanding of social and human development, including social transformation. They also play an important role in career-oriented training in a range of fields such as education, law, private and public sector management, social development and the arts. In addition, in the context of the communications and information revolution, the social sciences and humanities, as well as the sciences and technologies, must contribute to the development of the analytic, intellectual, cultural and ethical skills and competencies necessary for participation in the knowledge society (DoE 1997:#2.25).

The importance of the humanities is similarly underscored in the NDP and the WPPSET.

The NPHE's ratio has, with minor fluctuations, been more or less realised – from 42%: 29%: 29% in 2005 to 43%: 27%: 30% in 2017, as shown in Table 8a below.

³² In HEMIS, education is included as a separate category from the humanities because of the priority accorded to teacher training in policy.

	20	05	20	09	20	13	20	17		
	Total	% Total	Total	% Total	Total	% Total	Total	% Total	% Growth	% AAG
SET	210 707	28.7%	237 058	28.3%	283 622	28.8%	310 115	29.9%	47.2%	3.3%
B&C	214 485	29.2%	236 256	28.2%	279 954	28.5%	278 930	26.9%	30%	2.2%
Hum	204 055	27.7%	226 998	27.1%	247 141	25.1%	252 826	24.4%	23.9%	1.8%
Educ	105 826	14.4%	137 467	16.4%	172 991	17.6%	195 113	18.8%	84.5%	5.2%
Total	735 073	100%	837 779	100%	983 698	100%	1 036 984	100%	41.1%	2.9%

Table 8a: Headcount Enrolments by Field of Study, 2005-2017

The marginally higher ratio in the humanities is in large part due to enrolments in education, which remains a national priority. The increase in education enrolments - from 14.4% in 2005 to 18.8% in 2017, is positive given the drop in enrolments in education in the mid-to-late1990s, which negatively impacted on the supply of teachers. However, the increase in education enrolments is in the main limited to Unisa, which increased by 313%, as Table 8b shows.

In the other institutional types total headcount enrolments in education increased by 18.6%. However, this hides the fact that as a proportion of total headcount enrolments, education enrolments have decreased in all the other institutional types, except for the OUs, where it increased marginally – from 22% to 23.7%. It decreased from 14% to 10.1% in the RIUs; 20.4% to 15.5% in the HBUs; and 8.7% to 7.5% in the UoTs (see Tables in Appendix Six). This is cause for concern given the WPPSET commitment to expand access to Technical and Vocational Education and Training (TVET) colleges, which is critical to reverse the "inverted pyramid" in enrolments and in the achievement of which the "universities have an important role to play in

training college lecturers, both to expand their numbers and to improve the quality of their teaching skills" (DHET, 2013: 16).

There are two other significant trends, which emerge from the data (see Tables in Appendix Six. The first is the growth in headcount enrolments in SET in the RIUs and the HBUs, which grew by 62.1% and 82.1% respectively between 2005 and 2017. This has resulted in the RIUs proportion of headcount enrolments in SET increasing from 38.2% in 2005 to 48.2% in 2017; while the HBUs proportion increased from 28.7% to 35.3%. The second is the growth in headcount enrolments in business and commerce in the OUs and the HBUs, which grew by 68.8% and 39.3% respectively between 2005 and 2017. This has resulted in the OUs proportion of headcount enrolments in B&C increasing from 22.7%% in 2005 to 28.2% in 2017; while the HBUs proportion increased from 20.4% to 39.3%. The changes in the HBUs proportion of headcount enrolments in SET and B&C is important as it signals that the HBUs are beginning to transcend their apartheid legacy, which largely restricted their programme offerings to the humanities.

The move to a balanced enrolment profile

	% G SET	AAG	% G B&C	AAG	%G HUM	AAG	% G EDUC	AAG
RIUs	62.1%	3.7%	31.2%	2.3%	7.8%	0.6%	-4.2%	-0.6%
OUs	42.9%	3.0%	68.8%	4.5%	-4%	-0.3%	45.8%	3.2%
HBUs	82.1%	5.1%	39.3%	2.8%	45.3%	3.2%	12.3%	1.0%
UoTs	27.4%	2.0%	15.5%	1.2%	22.1%	1.7%	3.2%	0.3%
Unisa	50.1%	3.4%	21.9%	1.7%	41.7%	2.9%	313%	12.5%
Total	47.2%	3.3%	30%	2.2%	23.9%	1.8%	84.5%	5.2%

Table 8b: Growth in Headcount Enrolments by Field of Study and Institutional Type, 2005-2017

between the broad fields of study based on the NPHE target needs to be carefully monitored, and where necessary, adjusted to ensure that imbalances do not creep in through stealth as a result of institutional decisions, which more often than not are informed by income maximising motives. The danger of this is evident in the growth trends in the broad fields of study, in which enrolments in SET, which have a higher funding value, have grown at a faster rate than enrolments in B&C and in the humanities, including education. This is not to downplay the importance of SET but to express the need for caution and to highlight the need for a vibrant and growing humanities in the context of the onset of the fourth industrial revolution (4IR) and associated technological developments, which more than ever requires teasing out its social, cultural, economic and political implications.

Although it is beyond the scope of this report, a more detailed and nuanced analysis of enrolments in the different fields of study and qualification levels is necessary to ensure an appropriate balance. Thus, for instance, although enrolments in SET have grown, an NRF study (NRF, 2017) raises concerns about the lack of capacity to offer a diverse range of undergraduate and postgraduate programmes in mathematics and statistics, which impacts not only on the need for mathematics and statistics graduates in the private and public sectors, but also on the academic staff needs of institutions.³³

7.2 Headcount Enrolments by Qualification Level

The NPHE raised two concerns with regard to enrolments in the different qualification levels and types. The first related to the erosion of the horizontal differentiation based on a binary division between the erstwhile technikons, which prior to 1993 were limited to offering undergraduate diploma programmes in careerfocussed fields, and the universities which were allowed to offer both diploma and degree programmes across the different qualification levels. Subsequently, the proposal in WP3 to loosen the boundaries between universities and technikons while still recognising them as distinct institutional types, resulted as the NPHE argues, in greater uniformity as technikons began introducing undergraduate and postgraduate degree programmes. In order to ensure institutional diversity and, in particular, given the importance of diploma programmes for facilitating access and addressing human resource needs at the technician level, the NPHE proposed that in the short-to-medium term, technikons should continue to focus on providing "career-oriented programmes at the diploma level" (DoE, 2001: 56-57). This remains a concern for the DHET as discussed above.

The second concern, which was also raised in WPPSET and the NDP, is related to the low enrolments in postgraduate programmes at the masters and doctoral levels. This threatens, as the NPHE stated, the "future sustainability of the national research system and of the higher education system" both of which are "dependent on the production of postgraduates for the replenishment of academic and research ranks" (DoE, 2001: 73-74). The NDP proposed two targets for 2030; (i) 25% of enrolments should be in postgraduate programmes; and (ii) 100 doctoral graduates per million should be produced, which translates into "more than 5 000 doctoral graduates per year" (NDP, 2002: 319). In this regard, progress has been mixed.

The higher education system remains an undergraduate system and stubbornly so. As indicated in Table 9a below, there has been a negligible shift between 2005 and 2017 in the proportion of undergraduate enrolments, which decreased from 81.7% to 81.2% and postgraduate enrolments, which increased from 15.7% to 16.7%. And this is set to continue as the 2025 target in the MSSEPU is 82% undergraduate and 16% postgraduate enrolments (DHET, 2019b, Table 2). Thus, on this trend, it is highly unlikely that the NDP target of 25% of postgraduate enrolments by 2030 will be achieved.

³³ An example is the detailed study of the size and shape of the Arts, Humanities and Social Sciences (AHSS), which was commissioned by the Andrew W. Mellon Foundation, which found that contrary to the perception that AHSS was in crisis, AHSS was flourishing (Essop, 2015).

		-	-		-			
	2005	% Total	2009	% Total	2013	% Total	2017	% Total
Undergraduate	600 620	81.7%	684 419	81.2%	800 753	81.4%	842 085	81.2%
Postgraduate	115 189	15.7%	128 747	15.4%	159 750	16.2%	173 441	16.7%
Total	735 073		837 779		983 698		1 036 084	

Table 9a: Headcount Enrolments by Qualification Level: Undergraduate and Postgraduate, 2005-2017

Table 9b: Change in Headcount Enrolments by Qualification Level and Institutional Type, Undergraduate andPostgraduate, 2005-2017

	UG Dip/ Cert	AAG	UG D (3yr)	AAG	UG Deg (4yr)	AAG	PG/H	AAG	Masters	AAG	Doctoral	AAG
RIUs	-85.6%	-14.9%	37.8%	2.7%	47.8%	2.4%	19.3%	1.5%	37%	2.7%	123.6%	6.9%
OUs	13.7%	1.1%	77.5%	4.9%	81.1%	3.3%	2%	0.2%	23.4%	1.8%	113.9%	6.5%
HBUs	-19.6%	-1.8%	81.9%	5.1%	94.9%	5.1%	13%	1.1%	77.8%	4.9%	32.4%	11.5%
UoTs	6.5%	0.5%	159.9%	8.3%	101.2%	5.7%	-4.2%	-4.4%	60.1%	4.0%	281.1%	11.8%
Unisa	58.1%	3.9%	29%	2.1%	70.8%	6.0%	172%	8.7%	-10.3%	-0.9%	130.1%	7.2%
Total	12.1%	1.1%	49.9%	3.4%	47.8%	4.6%	49.3%	3.4%	33.5%	2.4%	139.3%	7.5%

Table 9c: Headcount Postgraduate Enrolments as Proportion of Total Postgraduate Enrolments by Qualification Level, 2005-2017

	2005	%	2009	%	2013	%	2017	%
PG Dip/Hons	61 434	53.3%	74 495	57.9%	91 494	57.3%	91 716	52.9%
Masters	44 231	38.4%	43 723	34%	52 217	32.7%	59 153	34.1%
Doctorates	9 434	8.2%	10 529	8.2%	17 547	11%	22 572	13.0%
Total	115 099	100%	128 747	100%	161 258	100%	173 441	100%

The marginal increase in the proportion of postgraduate enrolments was underpinned, as shown in Table 9b, by a significant increase in doctoral headcount enrolments, which increased by 139.3% - from 9 434 to 22 570, an annual average increase of 7.5%, as against masters enrolments, which increased by 33.5% - from 44 321 to 59 153, an annual average growth rate of 2.4% and postgraduate diploma/honours enrolments, which increased by 49.3% - from 61 434 to 91 716, an annual average growth rate of 3.4%. As a result of these changes of doctoral enrolments as a proportion of total postgraduate enrolments has increased from 8.2% to 13.8%, while masters enrolments have decreased from 38.4% to 34.1% and postgraduate diploma/ honours enrolments have remained the same at 53%, as Table 9c shows.

The increase in doctoral enrolments is the result of a combination of factors, in particular, substantially increased funding for research masters and doctoral enrolments in the new funding framework, increased NRF scholarships for postgraduate study, the introduction of new postgraduate programmes and the growing attractiveness of South Africa as a destination for postgraduate for students from the rest of Africa (Cloete et.al., 2015: 55; Mouton, et.al.,2019: 2). However, as discussed below, a large proportion of the increase in postgraduate enrolments, in particular, in doctoral programmes, was due to increased enrolments from the rest of Africa, which grew at a faster rate than enrolments from South Africa.

The increase in doctoral enrolments was matched by an increase in doctoral graduates which grew by 157.1% - from 1 189 to 3 057, an annual average increase of 8.2%. According to Cloete, et.al, the fact that enrolment growth and graduation growth is similar "can be interpreted as a proxy measure of efficiency in the system", as the increase in enrolments "has not come at the cost of a commensurable decline in the growth of doctoral graduations". This suggests institutions have managed the increased "burden of supervision" through mobilising additional resources and capacity (Cloete et.al., 2015: 51). The additional capacity is in all likelihood the result of the employment of temporary academic staff, including retired academics, in the RIUs. In 2017, 56.5% of the total headcount enrolments in doctoral programmes were enrolled in the RIUs (see table 9e below) and the growth in temporary academic staff in the RIUs between 2005 and 2017 was double the growth in permanent academic staff – 18.1% as against 9.3%, as indicated above(see table 7a).

This suggests that while the "burden of supervision" may have been lightened in the short-term, it remains a challenge given the disparity between the overall growth rate in academic staff and the overall growth rate in head count enrolments, including the increasing use of temporary staff. This may explain the more modest 2025 target for doctoral enrolments and graduates in the MSSEPU compared to previous trends – doctoral enrolments are projected to grow by 20.7% between 2017 and 2025 - from 22 572 to 27 240, an annual average growth rate of 2.4%, while doctoral graduates are projected to grow by 26.1% - from 3 057 to 3 846, an annual average growth rate of 2.9% (DHET, 2019b, Tables 5 and 35). On this trajectory the NDP target of 5 000 doctoral graduates annually by 2030 should be achieved.

7.2.1 Headcount Enrolments by Qualification Level and Institutional Type

The fact that the higher education system is predominantly an undergraduate system is also reflected in the different institutional types, except for the RIUs, as Table 9d shows.

In the RIUs, undergraduate enrolments constitute two-thirds of total enrolments. This changed marginally between 2005 and 2017, with undergraduate enrolments as a proportion of total enrolments decreasing from 68.4% to 65.9%, while postgraduate enrolments increased from 29.7% to 32.2%. The other institutional types are all predominantly undergraduate institutions with undergraduate enrolments as a proportion of total enrolments in 2017 ranging from 81.7% in the OUs, except for Rhodes University³⁴; 86.3% in the HBUs; 95.5% in the UoTs; and 84.8% in Unisa.

		20	05	20	09	20	13	20	17	% Growth
RIUs	UG	105 360	68.4%	115 577	66.7%	121 325	65.1%	130 582	65.9%	23.9%
	PG	45 733	29.7%	52 570	30.3%	60 100	32.3%	63 735	32.2%	39.4%
	Total	154 147	21%	173 312	20.7%	186 225	19.8%	198 009	19.1%	28.5%
OUs	UG	106 027	78.3%	124 456	79.7%	139 374	80.7%	154 052	81.7%	45.3%
	PG	29 304	21.7%	31 709	20.3%	33 294	19.3%	34 393	18.3%	17.4%
	Total	135 331	18.4%	156 165	18.6%	172 668	17.6%	188 445	18.2%	39.2%
HBUs	UG	73 767	86.7%	79 736	87.7%	93 486	86.3%	110 085	86.3%	49.2%
	PG	11 327	13.3%	11 221	12.3%	14 826	13.2%	17 506	13.7%	54.6%
	Total	85 094	11.6%	90 957	10.9%	108 312	11%	127 591	12.3%	49.9%
UoTs	UG	140 036	95.6%	144 240	97.2%	152 664	96.3%	168 680	95.5%	20.5%
	PG	6 448	4.4%	4 220	2.8%	5 946	3.7%	8 037	4.5%	24.6%
	Total	143 484	19.9%	148 460	17.7%	158 610	16.1%	176 717	17%	23.2%
Unisa	UG	175 430	88.7%	220 347	88.4%	293 904	86.6%	278 226	84.8%	58.6%
	PG	22 377	11.3%	29 027	11.6%	45 494	13.4%	49 770	15.2%	122.4%
	Total	197 807	26.9%	249 374	29.8%	339 398	34.5%	327 996	31.6%	65.8%

Table 9d: Undergraduate and Postgraduate Headcount Enrolments by Institutional Type, 2005-2017

³⁴ Rhodes University's proportion of undergraduate and postgraduate enrolments changed between 2005 and 2017 undergraduate enrolments decreased from 78.1% to 69.3% and postgraduate enrolments increased from 21% to 30%.

		20	005			20	17		% Gr	owth
	Е	% Total	G	% Total	E	% Total	G	% Total	E	G
RIUs	26 888	50%	5 182	56.3%	41 253	50.5%	9 052	56.5%	53.4%	74.7%
OUs	11 493	21.6%	2 477	26.6%	16 226	19.9%	3 329	20.8%	41.2%	34.4%
HBUs	5 014	9.3%	653	7.1%	10 367	12.7%	1 643	10.3%	106.8%	151.6%
UoTs	3 489	6.5%	264	2.9%	6 321	7.7%	764	4.8%	81.2%	189.4%
Unisa	6 871	12.8%	665	7.1%	7 558	9.2%	1 220	7.6%	10%	83.5%
Total	53 755	100%	9 211	100%	81 725	100%	16 008	100%	52%	73.8%

Table 9e: Masters and Doctoral Enrolments (E) and Graduates (G) by Institutional Type, 2005-2017

However, there have been important shifts in enrolments at the masters and doctoral level across the different institutional types. Although the RIUs account for the majority, their share has come down significantly from the high of twothirds of all masters and doctoral enrolments and graduates in the 1990s, as table 9e shows.

The RIUs share of masters and doctoral enrolments and graduates remained the same, i.e. 50% and 50.5% and 56.3% and 56.5% respectively between 2005 and 2017. However, significant changes occurred in the HBUs and the UoTs, albeit from a low base. The HBUs share of masters and doctoral enrolments increased from 9.3% to 12.7% and their share of masters and doctoral graduates increased from 7.1% to 10.3%. Similarly, the UoTs share of enrolments increased from 6.5% to 7.7% and their share of graduates increased from 2.9% to 4.8%. The OUs share of masters and doctoral enrolments decreased slightly from 21.6% to 19.9%, while the decrease in their share of graduates was significant - 26.5% to 20.8%. The reasons for

this are unclear. Unisa similarly saw a decrease in masters and doctoral enrolments from 12.8% to 9.2%, while it share of graduates increased marginally from 7.1% to 7.6%.

There is a similar trend if doctoral enrolments and graduates between 2005 and 2017 are disaggregated, as Tables 9b and 9f show. Doctoral enrolments grew by an annual average of 7.5%, while in the HBUs and the UoTs it grew by 11.5% and 11.8% respectively, as against 6.9% in the RIUs, 6.5% in the OUs and 7.2% in Unisa. As a result, the HBUs share of doctoral enrolments increased from 8% to 12.4% and the UoTs share from 3.5% to 5.1%, while the share of the other institutional types decreased - the RIUs from 54.% to 50.5%; the OUs from 23.9% to 21.4%; and Unisa from 10.5% to 10.1%. Similarly, the HBUs share of doctoral graduates increased from 6.1% to 11.9% and the UoTs from 2.5% to 4.3%, while the share of the RIUs decreased from 58.8% to 52.6%; the OUs from 24.9% to 21.8%; and Unisa increased from 7.7% to 9.5%.

		20	05			20	17		% Growth	
	E	% Total	G	% Total	Е	% Total	G	% Total	E	G
RIUs	5 098	54%	699	58.8%	11 401	50.5%	1 607	52.6%	123.6%	129.9%
OUs	2 253	23.9%	296	24.9%	4 820	21.4%	667	21.8%	114%	125.3%
HBUs	756	8%	72	6.1%	2 795	12.4%	364	11.9%	269.7%	405.6%
UoTs	333	3.5%	30	2.5%	1 269	5.1%	130	4.3%	281.1%	333.3%
Unisa	994	10.5%	92	7.7%	2 287	10.1%	289	9.5%	130.1%	214.1%
Total	9 434	100%	1 189	100%	22 572	139.3%	3 057	100%	139.3%	157.1%

Table 9f: Doctoral Enrolments and Graduates by Institutional Type, 2005-2017

7.2.2 Headcount Enrolments by Race and Qualification Level

The differential growth rate in black and white enrolments in overall enrolments is also reflected at the postgraduate level as Table 10a shows. Black postgraduate headcount enrolments (including from the rest of Africa) grew by 78.4% between 2005 and 2017 – from 75 560 to 134 783, an annual average growth rate of 4.9%. This was underpinned by a massive growth in doctoral enrolments, which grew by 246.9% - from 4 601 to 15 960, an annual average growth rate of 10.9%, as against 4.3% for masters enrolments and 4.6% for postgraduate diploma/honours enrolments. White postgraduate headcount enrolments (including from the RoW) decreased by -12.4% - from 39 371 to 34 499, an annual average decrease of -1.1%, which was lower than the

overall decrease as white doctoral enrolments increased by 18.2% - from 4 811 to 5 688. As a result of these changes, black postgraduate enrolments as a proportion of total postgraduate headcount enrolments increased from 65.6% in 2005 to 77.7% in 2017, while white enrolments decreased from 34.2% to 19.9%. These changes are similar if only South African black and white headcount enrolments are included, as Table 10b below shows. However, there is a significant difference between South African black and white headcount enrolments at the doctoral level. Although black doctoral enrolments as a proportion of total black postgraduate headcount enrolments increased from 4.7% to 7.3% between 2005 and 2017, it is half that of white doctoral enrolments as a proportion of total white postgraduate headcount enrolments, which increased from 11.9% to 14.4%.

Table 10a: Headcount Enrolments by Race (South Africa and International)) and
Qualification Level (PG), 2005-2017	

	2005	2009	2013	2017	% Growth
Black					
PG/Honours	44 238	55 930	72 638	75 509	70.7%
Masters	26 271	28 103	34 974	43 314	61.7%
Doctoral	4 601	5 825	10 102	15 960	246.9%
Total: Black	75 560	89 858	117 714	134 783	78.4%
White					
PG/Honours	17 056	18 384	17 863	15 044	-11.8%
Masters	15 383	15 383	16 011	13 767	-10.5%
Doctoral	4 811	4 637	5 500	5 688	18.2%
Total: White	39 371	38 404	39 374	34 499	-12.4%
Unknown	258	485	2 662	4 199	1 527.5%
Total	115 189	128 747	159 750	173 441	50.6%
Black as % of Total PG	65.6%	69.8%	73.7%	77.7%	
White as % of Total PG	34.2%	29.8%	24.6%	19.9%	
Unknown as % of Total PG	0.2%	0.4%	1.7%	2.4%	

	2005	2009	2013	2017	% Growth
Black					
PG/Honours	40 631	50 512	65 195	69 300	70.5%
Masters	21 486	21 354	23 836	33 714	56.9%
Doctoral	3 105	3 361	5 185	8 081	160.3%
Total: Black	65 222	75 227	94 216	111 095	70.3%
White					
PG/Honours	16 459	17 880	17 364	14 611	-11.2%
Masters	14 011	14 169	13 329	12 806	-8.6%
Doctoral	4 130	3 898	4 614	4 623	11.9%
Total: White	34 600	35 947	35 307	32 040	-7.4%
Unknown	258	485	2 662	4 199	1527.5%
Total	100 080	111 659	132 185	147 334	47.2%
Black as % of Total PG/ Hons	71.1%	73.9%	79%	82.6%	
White as % of Total PG/ Hons	28.8%	26.1%	21%	17.4%	
Black as % of Total Masters	60.5%	60.1%	64.1%	72.5%	
White as % of Total Masters	39.5%	39.9%	35.9%	27.5%	
Black as % of Total Doctoral	42.9%	46.3%	52.9%	63.6%	
White as % of Total Doctoral	57.1%	53.7%	47.1%	36.4%	
Black as % of Total PG	65.2%	67.4%	71.3%	75.4%	
White as % of Total PG	34.6%	32.2%	26.7%	21.7%	

Table 10b: Headcount Enrolments by Race (South Africa) and Qualification Level (PG), 2005-2017

7.2.3 Headcount Enrolments by Gender and Qualification Level

The differential growth rate in female and male enrolments in overall enrolments is also reflected at the postgraduate level as shown in Table 10c below. Female postgraduate headcount enrolments grew by 61.7% between 2005 and 2017 – from 61 468 to 99 424, an annual average growth rate of 4.1%. Male postgraduate headcount enrolments increased by 37.8% - from 53 721 to 74 009, an annual average increase of 2.7%. As a result of these changes, female postgraduate enrolments as a proportion of total postgraduate headcount enrolments increased from 53.4% in 2005 to 57.3% in 2017, while male enrolments decreased from 46.6% to 42.7%. The increase is female postgraduate headcount enrolments was underpinned by a massive growth in doctoral enrolments, which grew by 160.2% - from 3 905 to 10 159, an annual average growth rate of 8.3%, as against 3.7% for postgraduate diplomas/honours enrolments and masters enrolments. However, despite this female doctoral enrolments as a proportion of total doctoral headcount enrolments is below that of male doctoral enrolments - 45% as against 55% in 2017.

	2005	2009	2013	2017	% Growth
Female					
PG/Honours	37 436	47 002	57 875	58 138	55.3%
Masters	20 127	20 537	25 738	31 127	54.7%
Doctoral	3 905	4 486	7 011	10 159	160.2%
Total Female	61 468	72 025	90 624	99 424	61.7%
Male					
PG/Honours	23 298	27 492	33 619	33 574	39.9%
Masters	24 194	23 182	26 479	28 023	15.8%
Doctoral	5 529	6 041	9 025	12 412	124.5%
Total Male	53 721	56 715	69 123	74 009	37.8%
Unknown	0	24	12	21	
Total	115 189	128 764	159 759	173 454	50.6%
Female as % of Total PG/Hons	61.6%	63.1%	63.3%	63.4%	
Male as as % of Total PG/Hons	38.4%	36.9%	36.7%	36.6%	
Female as % of Masters	45.4%	47%	49.3%	52.6%	
Male as as % of Masters	55.6%	53%	50.7%	47.4%	
Female as % of Total Doctoral	41.4%	42.6%	43.7%	45%	
Male as as % of Total Doctoral	58.6%	57.4%	56.3%	55%	
Female as % of Total PG	53.4%	55.9%	56.7%	57.3%	
Male as % of Total PG	46.6%	44%	43.3%	42.75	
Unknown as % of Total PG	0%	0.1%	0%	0%	

Table 10c: Headcount Enrolments by Gender and Qualification Level (PG), 2005-2017

7.2.4 Headcount Enrolments by Nationality and Qualification Level

There has been a the steady growth of international students – headcount enrolments increased by 32.5%, from 50 109 to 66 408 between 2005 and 2017, as indicated in section 4.3 above, (see Table 4a). However, as indicated in Table 10d below, just under half this growth is accounted for by growth in postgraduate headcount enrolments, in particular, from the rest of Africa.

Country	2005	2009	2013	2017	% Growth
SADC					
PG/Honours	3 133	4 419	6 389	5 364	71.2%
Masters	3 170	4 247	5 366	6 639	109.4%
Doctoral	769	1 260	2 449	4 112	434.7%
Total: SADC	7 072	9 926	14 124	16 115	127.9
RoA					
PG/Honours	474	999	1 054	845	78.3%
Masters	1 615	2 502	2 772	2 691	66.6%
Doctoral	727	1 204	2 468	3 767	418.2%
Total: RoA	2 816	4 705	6 294	7 303	159.3%
RoA & SADC					
PG/Honours	3 607	5 418	7 443	6 209	72.1%
Masters	4 785	6 749	8 138	9 330	95%
Doctoral	1 496	2 464	4 917	7 879	426.7%
Total: RoA & SADC	9 888	14 631	20 498	23 418	136.8%
PG/Honours	597	504	499	433	-27.5%
Masters	1 372	1 214	1 009	961	-30%
Doctoral	681	739	886	1 065	56.4%
Total: RoW	2 650	2 457	2 394	2 459	-7.2%
Total: International	12 538	17 088	22 812	25 877	106.4%
South Africa		-		-	
PG/Honours	57 230	68 573	83 632	85 074	48.7%
Masters	38 164	35 760	43 070	48 862	28%
Doctoral	7 257	7 326	10 236	13 628	87.8%
Total: South Africa	102 651	111 659	136 938	147 564	43.8%
Total: All Nationalities	115 189	128 747	159 750	173 441	50.5%
SADC % of Total Postgraduate	6.1%	7.7%	8.8%	9.3%	
RoA % of Total Postgraduate	2.4%	3.7%	3.9%	4.2%	
RoW % of Total Postgraduate	2.6%	1.9%	1.5%	1.4%	
International % of Total Postgraduate	10.9%	13.3%	14.3%	14.9%	
South Africa % of Total Postgraduate	89.1%	86.7%	85.7%	85.1%	
RoA & SADC as % of Total PG/ Hons	5.9%	7.3%	8.1%	6.8%	
RoW as % of Total PG/Hons	1%	0.7%	0.5%	0.5%	
South Africa as % of Total PG/ Hons	93.1%	92.1%	91.3%	92.7%	
RoA & SADC % of Total Masters	10.8%	15.4%	15.6%	15.8%	
RoW as % of Total Masters	3.1%	2.8%	1.9%	1.6%	
South Africa as % of Total	86.1%	81.8%	82.5%	82.6%	
Masters					
RoA & SADC as % of Total Doctoral	15.9%	23.4%	30.7%	32.9%	
RoW as % of Total Doctoral	7.2%	7%	5.5%	10.3%	

Table 10d: Headcount Enrolments by Nationality and Qualification Level (PG), 2005-2017

As Table 10d shows, international postgraduate headcount enrolments increased by 106.4% between 2005 and 2017 – from 12 538 to 25 877, an annual average growth rate of 6.2%. This growth was driven by increased enrolments from the rest of Africa, which grew by 136.8% from 9 888 to 23 418, an annual average growth rate of 7.4%. In comparison, enrolments from the rest of the world decreased by -7.2% - from 2 650 to 2 459, an annual average decrease of -0.6%, which would have been higher were it not for the fact that doctoral enrolments from the rest of the world increased by 56.4% - from 681 to 1 085, an annual average increase of 4.0%. However, the increase from the rest of Africa was across all postgraduate qualifications, in particular, doctoral enrolments which increased by 426.7% - from 1 496 to 7 879, an annual average growth rate of 14.8%. There are also important differences in terms of the countries of origin of the postgraduate students from the rest of Africa and their distribution across postgraduate gualifications. The large majority of postgraduate students come from SADC – 68.8% in 2017, as against 31.2% from non-SADC countries. However, 75.4% of the total SADC postgraduate headcount enrolments are in postgraduate diploma/honours and masters programmes and 25.5% in doctoral programmes, while 51.6% of the total postgraduate headcount enrolments from the non-SADC countries are in doctoral programmes. Furthermore, the SADC non-doctoral postgraduate headcount enrolments are fairly evenly split between postgraduate diploma/honours and masters programmes – 44.7% and 55.3% respectively, while the majority of non-SADC non-doctoral headcount enrolments are in masters programmes – 76.1% and 23.9% in postgraduate/ honours programmes.

As a result of these changes South African postgraduate enrolments as a proportion of total postgraduate headcount enrolments decreased from 89.1% to 85.1% between 2005 and 2017. The decrease is especially large at the doctoral level. South African doctoral enrolments as a proportion of total doctoral enrolments decreased from 76.9% to 56.9%, while international enrolments increased from 23.1% to 39.6%. The decrease may in part be due to the fact that between 2005 and 2017 while white doctoral enrolments increased by 11.9%, white postgraduate diploma/honours and masters enrolments decreased by -11.8% and -10.5% respectively.

The increase in international postgraduate headcount enrolments, in particular, at the doctoral level, is to be welcomed. This not only benefits and contributes to the development of the region and continent but also benefits South Africa's social and economic development. It is likely that many of the graduates will remain in South Africa, thus contributing to the renewal and transformation of the academic profession, including the research and innovation system. However, it remains imperative in the context of the transformation agenda to increase the number of South African enrolments in postgraduate programmes, especially at the doctoral level. The blockages in addressing this includes low postgraduate enrolment and progression rates and long completion rates. According to the NRF, the average progression (the percentage of graduates moving from one qualification level to the next) and completion rates for postgraduate qualifications are as follows:

- Bachelors to Honours 28%; completion 3 years as against regulation time of 1 year.
- Honours to Masters 26%; completion 5 years as against regulation time of 2 years.
- Masters to Doctorates 16%; completion 7 years as against regulation time of 3 years (NRF, 2019: 5).

The fact that the progression rate up to the masters level is higher than that from masters to the doctoral level is most likely due to the role of postgraduate qualifications at this level for employment and salary purposes in professional careers. However, the main constraint in attracting South African students into postgraduate programmes and for the low progression and long completion rates is financial, resulting in the majority of students studying part-time. As Cloete et.al. found, between 60%-70% of South African students study part-time, including interrupting their studies to work, which impacts on the pipeline from undergraduate to postgraduate study. The result is that the "typical study trajectory from

a completed bachelors to a completed doctoral degree can be anywhere between 12 (minimum period) and 25 years (average maximum)" (Cloete et.al, 2015: 75). This increases the average age of doctoral graduates – it was was 41 in 2013 (Ibid: 108) and adversely impacts on academic and research careers, including research productivity. As the NRF argues, the average age of completion "needs to be reduced since it takes a further ten years for an individual to become an established researcher, leaving only ten years for active participation in research before mandatory retirement" (NRF, 2019: 23).

The financial constraint is both in terms of the quantum of funds available for, and the value of, postgraduate bursaries. The NRF is the central agency for funding research and postgraduate study. However, in 2019 it only funded 9.2% of all enrolled postgraduate students nationally (NRF, 2019: 7). Moreover, it was only able to fund 42% of masters and doctoral applicants who met the criteria and were recommended for funding (Ibid: 8). The value of the bursaries is equally problematic. It does not cover the total cost of study (TCS) and the increases awarded have "been sporadic" and not "adjusted for inflation". This is compounded, furthermore, by inconsistencies in bursary values depending on the conditions attached by different funders. Thus, for example, in the 2017/18 financial year doctoral bursaries ranged from a minimum of R70 000 to a maximum of R120 000! (NRF, 2019: 12).

These issues, at least those within its control, are being addressed by the NRF through measures, which include inter-alia, funding students at TCS for full-time study and without interruption through the pipeline within regulation time; an age-limit at graduation of 35; funding "exceptionally talented postgraduates" at TCS irrespective of financial need; and supporting postgraduates in the middle, that is, neither financially needy nor high achievers by funding the partial cost of study covering tuition and accommodation costs (NRF, 2019: 25-33).

There are two issues, however, which cannot be addressed directly by the NRF and requires national engagement. The first is the quantum of funds available, which is a national budget issue. The second is the allocation across race, gender and nationality. The NRF's allocation framework is based on the following proportions – 80% black and 20% white; 55% female and 45% male; and 90% South Africa (including permanent residents) and 10% rest of the world (NRF, 2019: 34). It is not clear whether the targets are overall targets for postgraduate enrolments across all postgraduate gualifications or whether they apply to individual qualifications as well. If the latter, it brings to the fore once again the tension between equity and development. In terms of overall postgraduate enrolments the targets are either close to being achieved – 77.7% black and 19.9% white (see tables 10a & 10b); or have been achieved and exceeded – 57% female and 42.7% male (see table 10c). However, this is not the case with doctoral enrolments. Although between 2005 and 2017 black doctoral enrolments as a proportion of total headcount enrolments increased from 48.9% to 73.7%, it is lower – from 42.9% to 63.6%, if doctoral enrolments from the rest of Africa are excluded (see Tables 10a & 10b). Furthermore, it is the only qualification level in which white enrolments have increased – by 11.9% between 2005 and 2017. There are also more male than female doctoral enrolments with a marginal increase in the proportion of female doctoral enrolments - from 41.4% to 45% (see Table 10c). However, the most significant difference is in relation to nationality. South African doctoral enrolments as proportion of total doctoral headcount enrolments decreased from 76.9% to 56.9%. And the increase in international enrolments from 23.1% to 39.3% was largely the result of the doubling of doctoral enrolments from the rest of Africa, which increased from 15.9% to 34.9%. This suggests that although the NDP target of 5000 doctoral graduates can be met, as indicated above, it is largely dependent on continuing to recruit doctoral students from the rest of Africa. This reinforces the need for policy clarity on internationalisation given the call for quota's both on the recruitment of doctoral students and academic staff, as discussed above. And with regard to doctoral students it may also require a review of the NRF's race, gender and nationality funding targets, as unless these are interpreted flexibly, the NDP's target may not be achieved.

8. Research

The NPHE focused its attention on addressing the building of research capacity and outputs given the importance of research for social and economic development. In the context of the emergence of a knowledge society and economy, as WP3 argued, this was "dependent on continuous technological improvement and innovation, driven by a well-organised, vibrant research and development system which integrates the research and training capacity of higher education with the needs of industry and social reconstruction" (WP: #1.2). The role of research for growth and innovation is similarly recognised in the WPPSET and the NDP.

The NPHE's proposals to build research capacity included changing the funding framework

to fund outputs – publications and research masters and doctoral graduates³⁵, providing earmarked funding to build research capacity based on institutional capacity and potential and facilitating research collaboration between institutions regionally and nationally, with the emphasis on collaboration that contributed to building research capacity in the HBUs and the technikons. In addition, it emphasised the importance of greater coordination in determining priorities and funding allocation between different state departments, including research councils (DoE, 2001: 74-77). These proposals are similarly supported in the WPPSET (DHET, 2013: 34-35). There has been significant progress made in this regard, as Tables 11a and 11b below show.

	2005	2009	2013	2017	% Growth	AAG
RIUs	4 528.88	5 457.09	7 568.97	9 715.47	115%	6.6%
OUs	1 525.22	2 003.83	3 532.03	5 036.98	235%	10.5%
HBUs	429.39	646.69	1 163.58	1 794.74	366%	12.7%
UoTs	226.66	376.03	723.05	1 095.58	406%	14.0%
Unisa	519.85	625.70	1 030.04	1 283.50	160%	7.8%
Total	7 228.16	9 109.34	14 017.67	18 926.27	169%	8.4%
% of Total						
RIUs	62.7%	59.9%	54.0%	51.3%	-11.3%	
OUs	21.1%	22.0%	25.2%	26.6%	5.5%	
HBUs	5.9%	7.1%	8.3%	9.5%	3.5%	
UoTs	3.1%	4.1%	5.2%	5.8%	2.7%	
Unisa	7.2%	6.9%	7.3%	6.8%	-0.4%	

Table 11a: Research Outputs: Publication Units, 2005-2017

³⁵ Previously the funding formula included a "blind" component – 15% of the total grant– which was allocated for research irrespective of performance and outputs (DoE, 2001: 74). Output based research funding was included in the new funding framework, which was implemented in 2005.

	2005	2009	2013	2017	% Growth	AAG
RIUs	8 787.62	10 104.13	14 311.97	18 688.48	112.7%	6.5%
OUs	3 402.47	4 148.15	6 582.03	8 858.96	160.4%	8.3%
HBUs	942.18	885.82	2 417.58	3 555.36	277.4%	11.7%
UoTs	488.83	822.03	1 374.08	2 020.58	313.4%	12.6%
Unisa	925.47	938.57	1 947.04	2 673.50	188.9%	9.2%
Total	14 546.57	16 898.70	26 632.70	35 796.88	146.1%	7.8%
% of Total						
RIUs	60.4%	59.8%	53.7%	52.2%	-8.2%	
OUs	23.4%	24.5%	24.7%	24.7%	1.4%	
HBUs	6.5%	5.2%	9.1%	9.9%	3.5%	
UoTs	3.4%	4.9%	5.2%	5.6%	2.3%	
Unisa	6.4%	5.6%	7.3%	7.5%	1.1%	

Table 11b: Research Outputs: Weighted Outputs (Publications + Research Masters and Doctoral Graduates),2005-2017

Research outputs, specifically publication units grew by 169% between 2005 and 2017 - from 7 230 to 18 881.27, an annual average growth rate of 13.4%. Similarly weighted research outputs, that is, publication units plus research masters and doctoral graduates grew by 146.1% - from 14 546.57 to 35 796.88, an annual average growth rate of 7.8%. The improvement is reflected in the performance of all the different institutional types, in particular, the HBUs and the UoTs, albeit from a low base. However, and significantly, it has resulted in a change in the research output shares of the different institutional types. The erstwhile dominance of the RIUs has been steadily eroded – their share of research publications decreased from 62.7% to 51.3% and their share of weighted research outputs decreased from 60.4% to 52.2%. The HBUs share of research publications increased from 5.9% to 9.5% and their share of weighted research outputs increased from 6.5% to 9.9%, while that of the UoTs increased from 3.1%

to 5.8% and 3.4% to 5.6% respectively. The performance of the OUs and Unisa was more uneven. The OUs share of research publications increased from 21.1% to 26.6% and their share of weighted research outputs increased marginally from 23.4% to 24.7%; while the change in Unisa's shares were marginal - its share of research publications decreased from 7.2% to 6.8% and its share of weighted research outputs increased from 6.4% to 7.5%.

The decrease in the RIUs share of research outputs does not, however, detract from the continued strength of their of research capacity. Aside from the fact that the RIUs account for half of all research outputs, their share of NRF ratedresearchers and the South African Research Chairs Initiative (SARChI) was 61.3% and 60.5% respectively, as shown in Tables 11c and 11d below. And importantly, they account for more than two-thirds of the NRF A-rated – 82.7%, and B-rated – 76% researchers.

	NRF Rating									
	А	В	С	Р	Y	Total				
RIUs	91	522	1 192	10	350	2 165				
OUs	11	98	476	4	178	767				
HBUs	5	38	154	0	30	227				
UoTs	0	11	107	0	27	145				
Unisa	3	18	166	0	42	229				
Total	110	687	2 095	14	627	3 533				
% of Total										
RIUs	82.7%	76%	56.9%	71.4%	55.8%	61.3%				
OUs	10%	14.3%	22.7%	28.6%	28.4%	21.7%				
HBUs	4.5%	5.5%	7.4%	0%	4.8%	6.4%				
UoTs	0%	1.6%	5.1%	0%	4.3%	4.1%				
Unisa	2.7%	2.6%	7.9%	0%	6.7%	6.5%				

Table 11c: NRF Rated Researchers by Institutional Type - 2019 (NRF, 2020a)

Table 11d: Research Chairs (SARChI) by Institutional Type - 2018 (NRF, 2020b)

	Total	% of Total
RIUs	118	60.5%
OUs	44	22.6%
HBUs	19	9.7%
UoTs	11	5.6%
Unisa	3	1.5%
Total	195	100%

The equity profile of actively publishing academics is also changing, if more slowly. According to Mouton et. al., between 2005 and 2016, the proportion of actively publishing black academics increased from 16% to 29%, while the proportion of actively publishing female academics increased marginally from 31% to 33%, which is consistent with the proportion of black and female academics with doctorates in 2015 – 28% and 37% respectively (Mouton, et. al. 2019: 9-10).

However, as far as research collaboration is concerned, this is largely limited to international collaboration – mainly outside of Africa, which has increased from 34% in 2000 to 52% in 2016. And a large part of this collaboration is in largescale multi-country projects such as in global health, rather than "active cooperation and partnerships" between researchers and research units (Ibid: 41).

The increase in research and weighted research outputs is in large measure due to the introduction of the new funding framework in

2005, which provides substantive incentives in terms of the subsidy income for research masters and doctoral enrolments and graduates and publication outputs. In addition, the increase in publication outputs, has been influenced, at least in the RIUs and some of the OUs, by the global rankings systems, in which research strength is a key criterion (Essop: 2018). This has raised questions of quality and ethics, in particular, the increasing use of predatory journals, "questionable editorial practices" and other "forms of gaming-behaviour", which apparently is more prevalent in the HBUs and the OUs. In fact, the "publish or perish" syndrome may be adversely affecting early career researchers who, more often than not, have a heavy undergraduate teaching load – as senior professors who are more research productive ensure that faculty research targets are met - and have to complete their doctorates and publish to meet appointment and promotion criteria (Mouton, et. al., 2019: 69; Essop, 2018).

The progress made has resulted in South Africa punching "above its weight" in research performance globally among similar countries. This is indicated by the fact that between 2000 and 2016 South Africa's publications output in the Web of Science (WoS) has increased by an annual average growth rate of 2.9% between 2000 and 2015 - from 3 668 to 15 550; its share of world output has increased from 0.4% to 0.91%; and its ranking has gone up from 34 to 28 (Mouton, et.al., 20-19: 3).

However, the progress made should not detract from the challenges that require addressing to strengthen research. There are two key challenges. The first is funding – research expenditure as a percentage of GDP has remained at 0.8% for the past decade or more, while the target is 1.5%. This has resulted in lower grant values and fewer individuals being funded, which adversely impacts on the non-RIUs. The impact on the RIUs is minimised because of their greater access to third-stream income, in particular, from international donor agencies, which is not necessarily tied to national needs or priorities. The second is staffing – between 2014/15 and 2015/16, fulltime equivalent (FTE) researchers in higher education institutions decreased by -7.8% - from 5 098 to 4 702. Although the decrease in this period may have been the result of funding challenges faced by institutions in the aftermath of #Fees Must Fall, it is part of long-term trend linked to the slower rate of growth in academic staff, as discussed above. This suggests that building academic staff capacity, both in terms of the total number of staff and staff with the appropriate qualifications – doctorates in this case, should be prioritised.

9. Size and Shape: Summary of Findings

The main findings in the changes to the size and shape of the higher education system between 2005 and 2017 that emerge from the data analysis can be summarised as follows:

9.1 Enrolment Growth and the Participation Rate

• Headcount enrolments increased by 41.1%; AAG - 2.9%.

• The participation rate increased from 16% to 21%.

9.1.1 Enrolment Growth: Race

- Black headcount enrolments increased by 60.4%, AAG - 4%; and white headcount enrolments decreased by -19.95, AAG -1.8%.
- The black share of total headcount enrolments increased from 75.4% to 84.8% and the white share decreased from 25.3% to 14.3%.
- African headcount enrolments increased by 73.7%, AAG - 4.6%; Coloured headcount enrolments increased by 39.9%, AAG - 2.8%; and Indian headcount enrolments decreased by -8.2%, AAG - 0.7%.
- The African share of total headcount enrolments increased from 60.8% to 73.7%; the Coloured share decreased from 6.3% to 6.2%; and the Indian share decreased from 7.4% to 4.7%.
- The African participation rate increased from 12% to 18%; the Coloured rate increased from 12% to 15%; the Indian rate decreased from 48% to 47%; and the white rate decreased from 57% to 56%.

9.1.2 Enrolment Growth: Gender

- Female headcount enrolments increased by 51.3%, AAG - 3.5%; male headcount enrolments increased by 28.8%, AAG - 2.1%.
- The female share of total headcount enrolments increased from 54.6% to 58.5% and the male share decreased from 45.4% to 41.5%.
- The female participation rate increased from 18% to 24% and the male participation rate increased from 14% to 17%.

9.1.3 Enrolment Growth and Nationality

- International headcount enrolments increased by 32.5%.
- Headcount enrolments from the rest of Africa (excluding SADC) increased by 62.5%.
- Headcount enrolments from SADC increased by 38.6% and accounted for just under 5% of total headcount enrolments.
- Headcount enrolments from the rest of the World decreased by -22.5%.

9.1.4 Enrolment Growth and Institutional Type

- Headcount enrolments in the institutional types increased by:
 - RIUs 28.5%, AAG 2.1%.
 - OUs 36.2%, AAG 2.6%.
 - HBUs 47.9%, AAG 3.3%.
 - UoTs 20.5%, AAG 1.6%.
 - Unisa 65.4%, AAG 4.3%.
- Unisa's share of total headcount enrolments increased from 28.3% to 33.2% with a peak of 36.1% in 2013.

9.2 Graduation and Throughput Rates

- The number of graduates produced increased by 75.2%.
- The graduation rate increased from 16.4% to 20.3%.
- The number of first-time entering students (excluding Unisa) graduating in regulation time at the undergraduate level ranged from just under 25% in diplomas, 30% in (3yr) degrees and just under 50% in (4yr) degrees.
- The number of first-time entering students at Unisa graduating in regulation time at the undergraduate level ranged from 1% in diplomas, 2% in (3yr) degrees and 3% in (4yr) degrees.
- The number of first-time entering students graduating in regulation time at the postgraduate level ranged from just over 20% in coursework masters, just under 40% in honours and research masters and just under 20% in doctorates.
- The drop-out rate is on average between 40%-55%, except in four-year undergraduate and honours degrees where it is 30%.

9.3 Academic Staff

- Academic staff (permanent and temporary) increased by 31.3% (including Unisa), AAG – 2.6% and by 7.9% (excluding Unisa), AAG – 0.6%.
- Permanent academic staff (including Unisa) increased by 28.3% and by 27.4% (excluding Unisa); and temporary academic staff (including Unisa) increased by 33.2% and decreased by -34.5% (excluding Unisa).
- Black academic staff (permanent and temporary) increased by 97.2%, AAG 5.8%

and white academic staff decreased by -6.5%, AAG - -0.6%.

- Black academic staff as a proportion of total permanent academic staff increased from 36.9% to 54.5%.
- Female academic staff (permanent and temporary) increased by 50.4%, AAG – 3.5% and male academic staff increased by 16.3%, AAG – 1.3%.
- Female academic staff as a proportion of total permanent academic staff increased from 41.5% to 47.5%.
- International academic staff (permanent and temporary) increased by 315.2%, AAG – 12.6%; academic staff from the rest of Africa and the rest of the World accounted for 435.4% and 185.9% of the total increase respectively.
- International academic staff as proportion of the total permanent academic staff increased from 4.3% to 11.1%; and 7.4% of the total is constituted by academic staff from the rest of Africa.
- The staff-to student ratio increased from 24 to 26 (including Unisa) and from 21 to 24 (excluding Unisa).
- The number of permanent academic staff with a doctorate has increased by 95.1%, AAG – 5.7%.
- The proportion of total permanent academic staff with a doctorate has increased from 30.3% to 46%.

9.4 Headcount Enrolments by Field of Study and Qualification Level

- The ratio of enrolments between the three broad fields of study – Humanities, B&C and SET, has changed from 49%: 26%: 25% to 43%: 27%: 30%.
- The ratio between total undergraduate and postgraduate headcount enrolments changed from 81.7%: 15.7% to 81.2%: 16.7%. In the RIUs it changed from 68.4%: 29.7% to 65.9%: 32.2%.
- The proportion of doctoral enrolments as a proportion of total postgraduate headcount enrolments increased from 8.2% to 13.8%; masters enrolments decreased from 38.4% to 34.1% and postgraduate diploma/honours enrolments have remained stable at 53%.

- Black postgraduate headcount enrolment increased by 78.4%, AAG – 4.9%; and white enrolments decreased by -12.4%, AAG - -1.1%.
- Black postgraduate enrolments as a proportion of total postgraduate headcount enrolments increased from 65.6% to 77.7%; and white enrolments decreased from 34.2% to 19.9%.
- Female postgraduate headcount enrolments increased by 61.7%, AAG 4.1%; and male enrolments increased by 37.8%, AAG 2.7%.
- Female postgraduate enrolments as a proportion of total postgraduate headcount enrolments increased from 53.4% to 57.3% and male enrolments decreased from 46.6% to 42.7%.
- International postgraduate headcount enrolments increased by 106.4%, AAG 6.2%.
- Postgraduate headcount enrolments from the rest of Africa increased by 13.8%, AAG – 7.4%; and from the rest of the world decreased by -7.2%, AAG - 0.6%.
- Doctoral headcount enrolments from the rest of Africa increased by 426.7%; AAG -14.8%.

- South African postgraduate headcount enrolments as a proportion of total postgraduate headcount enrolments decreased from 89.1% to 85.1%.
- South African doctoral enrolments as a proportion of total doctoral headcount enrolments decreased from 76.9% to 56.9%; and international enrolments increased from 23.1% to 39.6%.

9.5 Research

- Publication units increased by 169%, AAG 13.4%; and and weighted research outputs (publication units plus research masters and doctoral graduates) increased by 146%, AAG – 7.8%.
- The share of publication units and weighted research outputs of the different institutional types changed from:
 - RIUs 62.7% to 51.3% and 60.4% to 52.2%.
 - OUs 21.1% to 26.6% and 23.4% to 24.7%.
 - HBUs 5.9% to 9.5% and 6.5% to 9.9%.
 - UoTs 3.1% to 5.8% and 3.4% to 5.6%.
 - Unisa 7.2% to 6.8% and 6.4% to 7.5%.

Part 2: Size and Shape: Institutional Differentiation and Diversity

The size and shape of the higher education system, as the preceding analysis indicates, has changed significantly since the CHE's report in 2000. The key change in the context of the CHE's proposal for the functional differentiation of the higher education system is the development, albeit uneven, of research capacity, including the offering of postgraduate programmes at the research masters and doctoral level across the institutional landscape of the higher education system. This has eroded the erstwhile dominance of the RIUs, as indicated above. At first sight this suggests that the NPHE's programme and qualification mix (PQM) differentiation framework based on institutional location, context and capacity has been successful. However, the diffusion of research capacity is the outcome of, and driven by, institutional self-interest in maximising income offered by the research incentive in the funding framework rather than the steering of the higher education system through national planning. This is supported by the views of the vice-chancellor's interviewed and by the DHET, which argues:

The current funding framework is fundamentally a one size fits all system of funding, with all universities, irrespective of their mandate and mission encouraged to pursue research funding and the offering of postgraduate programmes (DHET, 2012: 5).

There is no gainsaying that the funding framework has given rise to homogenisation. However, funding is one of the levers, together with planning and quality assurance, to enable the steering of the system to address national goals and objectives. This suggests, the funding framework notwithstanding, that the NPHE's PQM-based differentiation framework has not succeeded in precluding mission and academic drift through steering.

The reason for this, Ian Bunting argues, is the NPHE's "acceptance of the White Paper's

[WP3] 'axiom' that the primary units in higher education are academic programmes and not individual institutions" (Bunting, 2013), which has apparently acted as a barrier to resolving the differentiation debate (Muller, 2013). However, although the White Paper proposed a programme based approach to higher education, which would loosen the boundaries between universities and technikons, it argued, as did the NPHE, that the pressures for homogenisation and mission drift could be avoided by recognising "for planning purposes.....the broad function of universities and technikons as two types of institutions offering different kinds of higher education programmes" (DoE, 1997: #2.39; DoE, 2001: 57). This would require, as the NPHE pointed out, the "development of clear parameters and criteria for determining an institution's programme mix and linking it to the funding of student places" based on an assessment of the "fit" between its PQM and its mission and capacity (DoE, 2001: 54).

In line with this, the DoE developed evidencebased criteria³⁶ to determine institutional PQMs, which served as the basis, after consultation with institutions, for determining the initial PQM profiles for each institution that was approved by the then Minister of Education in 2005. It seems, however, that subsequently, the DoE/DHET was not able to hold the line in applying the criteria. This is in large part due to the nature of the PQM approval process. It involves engagement and consultation with institutions, which is subjective and open to political pressure and gaming of the process by institutions. This is evident in the decline of diploma programmes in the UoTs. It is also illustrated by the reversal of the previous decision agreed to by the universities in the Western Cape to establish a regional platform for nursing in which undergraduate programmes would be offered by CPUT and UWC and postgraduate programmes by UCT and US. This

³⁶ The criteria included, among others, assessing through-put and graduation rates in the field of study, including in the different qualification levels, the value-add of the new programme in the context of the institution's PQM, location and capacity and so on

was reversed with effect from 2019 as a result of pressure from US to allow it to reintroduce undergraduate programmes in nursing, it seems because white students were reluctant to go to CPUT and UWC. And a cursory analysis of approved doctoral programmes in the CHE's Higher Education Quality Committee (HEQC) database confirms that institutions, irrespective of their capacity, have been able to expand their PQMs. ³⁷

Furthermore, the criteria have apparently not been used in the recent past as the DHET is in the process of developing new criteria to replace them. In their absence, programme approval is neither evidence-based nor informed by an institutional differentiation framework. This has resulted, as one vice-chancellor pointed, in traditional universities in the same region as a UoT being allowed to offer diploma's that are offered by the UoT, contrary to the 2005 PQM programme approval criteria, which restricted the offering of diploma's by traditional universities to programmes not offered by the UoTs and/or which were in fields of study that were a national priority such as education. As the CHE Review points out:

Where institutions have remained largely within their existing areas of establishment, this has been more by context and circumstance than by formal regulation. In effect all institutions are able to offer all levels of qualification, although this is subject to PQM approval. It has also not been clear that, in considering PQM restrictions for an individual institution, the DHET has been using institutional differentiation in a structured and transparent manner (Ballim, et.al, 2016: 91).

The challenges and failure of the PQM-based differentiation framework is also in part a consequence of the lack of the requisite capacity, in particular, experience and understanding of the modus operandi of higher education institutions at middle management level within the DHET. This is exacerbated by a combination of staff turnover and the difficulty in recruiting appropriately qualified and experienced senior staff. The reasons for academic drift notwithstanding, the changes in the size and shape of the higher education system suggest that there is a need to revisit the differentiation debate to give effect to the vision in WP3, accepted by all stakeholders, of a single national coordinated higher education system that is "planned, governed and funded" as a single system and is diverse "in terms of the mix of institutional missions and programmes" "in order to overcome the fragmentation, inequality and inefficiency which are the legacy of the past, and successfully address the present and future challenges of reconstruction and development" (WP3: 2.1). This was endorsed by the Higher Education Summit in 2010, which resolved:

To recognise institutional differentiation and develop a framework for defining this and instituting differentiation based on respect for all institutions and functions (DHET, 2012: 1).

In line with this, the WPPSET proposed a differentiation framework based on a "clearly defined mandate" for each institution on a continuum ranging from "largely undergraduate institutions to specialised, research-intensive universities which offer teaching programmes from undergraduate to doctoral level". The PQM of each institution should be "should not be fixed, but should be capable of development over time, depending on its capacity and identified needs it its area (DHET, 2013: 29-30). Although there is much in common with the NPHE, the key difference is the WPPSET's proposal for differentiation based on "clearly defined" institutional mandates. This recognises the challenges involved in steering the higher education system through planning and funding and, although not spelt out, implicitly acknowledges the merits of the CHE's proposal for functional differentiation based on clearly defined missions and mandates.

To date, however, despite various discussion documents released by the DHET, a policy framework for differentiation remains to be finalised. Similarly, although Universities South Africa (USAf) developed a differentiation

³⁷ The HEQC is responsible for quality assurance and the accreditation of programmes offered by public and private higher education institutions. The accreditation of programmes offered by public institutions involves a two-step process; (i) the programme is submitted to the DHET for funding approval; (ii) if approved for funding, the programme is submitted for accreditation to the HEQC.

framework as a contribution to the debate,³⁸ a formal USAf policy position on differentiation has not been finalised. In the past, in particular, in 2000 when the CHE's proposals were released, the main stumbling block to developing a consensus amongst stakeholders on differentiation was not surprisingly the historical legacy and divides of the higher education system under apartheid. Although the principle of differentiation was accepted, the CHE's proposals were perceived as entrenching the historical inequalities between the HWIs and the HBIs. As Kader Asmal, the then Minister of Education put it, the "merits or otherwise of the CHE's proposals were lost in the fog of racial essentialism" (Asmal and Hadland, 2011: 276). And while Asmal was not sympathetic to the latter, he was opposed to the CHE's proposals on the grounds that "research is an integral component of higher education and a university that did not offer research programmes was not worthy of the name" (Ibid). However, twenty years later the changes in the size and shape of the higher education system, while not wholly eradicating the inherited legacies of the past, suggest that there has been progress made in addressing them. In the light of this it may be opportune to revisit and settle the debate on differentiation.

It may be argued as some vice-chancellors have, that the higher education system is "already and sufficiently differentiated", which is a legacy of the past and while it "may not be the kind of differentiation we want, what is there to differentiate?". The historical legacy notwithstanding, the *de facto* differentiation of the higher education system is, with minor variations, close to the CHE's differentiation proposals, as is the WPPSET's proposal for differentiation based on a continuum of institutions. However, the WPPSET proposals remain to be implemented. This may well be due to political and bureaucratic inertia and capacity – it is seven years since the release of the WPPSET but the implementation framework, the NPPSET has not been finalised.

able to finalise its position on differentiation suggests that it remains contested terrain within the sector. It is precisely to answer the question, "what kind of differentiation do we want?" that it is necessary to revisit and to settle the debate on differentiation. This is critical for charting the future development of the higher education system in terms of its effectiveness and efficiency and its responsiveness to the social and economic development needs of the country. In the absence of an agreed differentiation framework, the de facto differentiation of the system will continue with adverse consequences for the development of the higher education system and it role in contributing to the social and economic development of the country.

The views expressed by the vice-chancellor's also suggest that there may be a more conducive environment for revisiting the differentiation debate. There are six key points that have a bearing on the differentiation debate, which can be distilled from the interviews with the vicechancellors:

- Differentiation should be based on creating a higher education ecosystem in which each institution defines its vision, mission and purpose based on its location, context and strengths to accommodate the diversity of students in terms of their background and needs and to address the social, economic and development needs of the country.
- Institutions in a differentiated system should be appropriately and adequately funded to discharge their agreed mission and mandate. This requires rectifying the historical disadvantage of the HBUs in relation to learning and teaching resources, facilities, infrastructure.
- All institutions irrespective of their vision, mission, and purpose should focus on both on undergraduate teaching and research and should strive for excellence in discharging their mandate. Excellence in teaching to produce high quality and well-grounded graduates is especially important for institutions that recruit rural and working

Furthermore, the fact that USAf has not been

³⁸ The framework, Differentiation in Higher Education, released in 2012 was prepared by a Task Team established by Higher Education South Africa (HESA), which was subsequently renamed USAF. class students to enable them to pursue postgraduate study opportunities at other institutions through appropriate articulation arrangements.

- Develop effective articulation mechanisms to enable student mobility between undergraduate-focused institutions and institutions offering post-graduate programmes, which is critical to ensure that students enrolled in the former are not disadvantaged in terms of pursuing postgraduate study
- Foster inter-institutional collaboration between institutions in general and between the RIUs and the other institutions in particular. This is critical to address societal grand challenges given the lack of a critical mass of academics and researchers in any one institution, including the RIUs. It is equally important to enable the building of capacity and to support researchers and postgraduate students in the non-RIUs through common platforms – workshops, seminars, joint research projects, co-supervision and so on. This is beneficial as it enables their active participation in a scholarly community and environment, which academics in the RIUs take for granted. An example of beneficial and capacity-building collaboration linked to the niche research focus of an HBU is the SARChI chair in Biodiversity which was initially jointly held between the universities of Stellenbosch and Venda through the appointment of principal investigators in both institutions and eventually, as institutional capacity developed, it was transferred to Venda.
- Research in the non-RIUs should be nichebased linked to institutional strength, context and location.
- Recognise the role of the RIUs "the RIUs must be maintained and celebrated; we cannot destroy them"
- Tighten the PQM process to avoid mission drift.
- Strengthen the regulatory framework supported by strong political and institutional leadership.
- Prioritise building the quality of the TVET) colleges, including encouraging linkages and partnerships between TVET colleges and

universities to facilitate the inverting of the enrolment pyramid.

This backdrop confirms that, as before, the starting point for revisiting the debate on differentiation is two-fold; (i) identifying the human resource, skills and knowledge needs required for the social and economic development of the country; and (ii) mapping the mission and mandate of higher education institutions, including the programmes and qualifications offered, based on location, context and capacity to meet the identified needs. In this sense differentiation is not an end in itself but a strategy for achieving particular goals and objectives with "greater impact and better outcomes" through utilising existing resources - both financial and human – effectively and efficiently (Hicks and Jonker, 2016: 7). This is especially so in the context of South Africa given fiscal constraints, the paucity of appropriately qualified academic staff, the under-preparedness of the majority of students and the tension between equity and development.

There are two key goals and objectives, which are critical for social and economic development, as highlighted in all the higher education policy documents since 1994. The first, which speaks to human resource development, is to produce, through offering high quality undergraduate diplomas and degrees, an ever increasing number of graduates with the skills and competencies required across the full range of labour market needs – technical, managerial and professional. This will contribute to equity of access, facilitate social mobility and, more importantly, address skills shortages, thus contributing to reducing income inequality resulting from the premium on high skills qualifications. As Neva Makgetla argues:

Apartheid laws created a skills shortage to maintain "European" pay for people with qualifications. As a result, South Africa still has one of the most unequal systems of pay in the world. If we're serious about tackling this legacy, we should be trying to flood the labour market with skilled people. That is the only way to reduce the extraordinary premiums for qualifications that restrictive laws entrenched before 1994 (2019).

The second, which speaks to knowledge, is to produce postgraduates and high-level and

quality research, which is necessary both for the renewal of the academic profession and the production and application of new knowledge and technologies to address societal grand challenges – local, regional and national. This becomes all the more important given the challenges posed by the rise of global health epidemics such of Covid-19, climate change and the emergence of 4IR.

This brings to the fore once again the tension between equity and development. At the risk of over-simplifying, the imperative of equity speaks to human resource and skills needs, while the imperative of development speaks to knowledge needs. The tension can be addressed through the establishment of a differentiated higher education system with a continuum of institutions, as proposed in WPPSET, ranging from "largely undergraduate institutions to specialised, research intensive universities which offer teaching programmes from undergraduate to doctoral level" (DHET 2013: 29). Equity of access to address the legacy of the past and the under-preparedness of students because of poor quality schooling requires differential entry requirements but with linked pathways to access the RIUs at the postgraduate level. If the institutions that are currently not researchintensive were to focus on prioritising becoming research-intensive, it would divert their "energy and investment" from the equity of access priority (Hicks and Jonker 2016). Similarly, the RIUs have to ensure the focus on research should not detract from the need to provide high-quality undergraduate education. Indeed, as Maassen argues, "differentiation need not be principally on the basis of research performance, but that the debate should rather start with students, who are the core business of higher education; that is, with throughput and dropout rates, and the link between teaching and learning that is to say, with efficiencies" (quoted in Muller, 2013). Similarly, Altbach argues that "massification requires differentiation":

It is simply impossible for all universities worldwide to have a significant research mission. Students would not be well served and the pressure on academics would be overwhelming. Yet, because everyone wants to score well in the rankings and have the prestige of research productivity, pressure to produce research is widespread – and both unproductive and unnecessary (Altbach 2018: 2).

These insights are salutary. In South Africa teaching and learning has on the whole been overshadowed by the focus on research and postgraduate programmes across all institutions, which is in large part driven by the funding framework and the lack of effective steering on the part of the DHET. However, in the case of the RIUs and institutions aspiring to or on the margins of qualifying as RIUs, the focus on research is in addition driven by the rankings game.³⁹ This is financially unsustainable and results in a zero-sum game with the potential of weakening research productivity, which is costly in terms of the need and maintenance of library resources and laboratory and other equipment. This is all too clear in South Africa, where in the absence of additional funding, it has resulted in decreasing per capita funding of research. The rand value of research outputs decreased from R127 638 in 2011 to R107 223 in 2017, which coincided with an increase in publication units of 107.8% and between 2009 and 2017, and an increase in weighted research units of 111.8%. And although the rand value has increased since then – it is R130 294 in 2020 (DHET, 2020), this is due to substantial increase in funding resulting from the student protests in 2015/16. However, it is unlikely that this will be sustained going forward given the current fiscal and economic crisis.

Moreover, as Altbach points out, RIUs comprise a small proportion of the total number of universities in higher education systems globally:

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 (quoted in Cloete, 2015: 1).

In comparison South Africa is well-endowed – the RIUs comprise 19% of the total number

³⁹ It is worth highlighting that of the four universities that did not support the CHE's curriculum proposals, two were RIUs and one an aspiring RIU.

of universities (5 out of 26) and 7% of the total number of post-secondary institutions, including TVET colleges (5 out of 76). The role of the RIUs in the higher education ecosystem and the need to support them is recognised in the NDP, which proposes 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 turn, they should support postgraduate students, not only in their own institutions but also in those which focus on teaching and learning as well as in other sectors of the post-school system (NPC, 2012: 319).

It is against this context that it is suggested that settling the differentiation debate is critical if the higher education system is to rise to the "varied social and economic imperatives, priorities, challenges and the needs" of the country (HESA 2012: 1). There are six key issues that require addressing in developing a differentiation framework based on a continuum of institutions from undergraduate to postgraduate and research institutions.

First, the development of criteria and performance indicators to determine the location of institutions in the institutional continuum ranging from undergraduate teaching to research institutions. This is necessary to clarify and avoid any contestation in assessing institutional mission's and mandates in the context of the differentiation framework. Second, with regard to RIUs it is necessary to determine the number required that can be supported and adequately funded to address the postgraduate and research needs of the country. This would have to be based on the principle that as RIUs are resourceintensive in terms of their staffing, library, equipment, infrastructure and maintenance needs, only a limited number could be sustainably supported given the impact of fiscal constraints on the overall resource envelope for higher education. It would require difficult trade-offs, as aside from the historically-determined RIUs included in this report, there are a number of other universities, in particular, in the OU category who depending on the criteria and performance indicators developed could qualify as RIUs. The

trade-off in the number of RIUs is unavoidable if the resource-base of the RIUs is not be be too thinly spread, which would adversely impact on their role in meeting the postgraduate and research needs of the country. Third, the role of institutions that do not qualify as RIUs in offering postgraduate programmes and developing research profiles should be determined based on a combination of location, context and capacity linked to national policy goals and objectives. This is necessary to avoid the ad-hoc and unplanned development of postgraduate programmes and research agenda's based on the proclivities of individual academics and/ or institutional management and Councils. The responsiveness to national policy goals and objectives equally applies to the RIUs. This should be facilitated by the development of a national research agenda, which addresses both national, including socio-economic, regional and global challenges (Paterson, et.al, 2019: 5-6). Fourth, the development of a collaboration framework linked to funding that clarifies and spells out the role and links between the RIUs and non-RIUs. As the CHE report argued:

These institutions [RIUs] must not be permitted to exist as islands with no connection to institutions with other mandates. Articulation mechanisms must enable students with the requisite qualifications from institutions with alternative mandates to enter these institutions. There should be funding incentives to promote research collaboration with academics from institutions with other mandates. Finally, academics based at institutions with different mandates that have recognised specialist expertise in particular disciplines and fields should have the opportunity for collaboration through research funds awarded on merit to them as individuals (CHE 2000: 42).

Fifth, the current funding framework, which drives homogenisation through postgraduate and research funding should be reviewed and adjusted to provide for differential funding for institutions based on their mission and mandates. Alternately, if differential funding based on a common funding framework is not feasible, consideration should be given to developing different funding frameworks for the RIUs and the non-RIUs. However, irrespective of the option chosen, it should be underpinned by the principle of fairness to enable institutions to discharge their differentiated mandates. Sixth, it goes without saying that the differentiation framework should be developed through a rigorous process of meaningful consultation and engagement involving all stakeholders.

Finally, and critically, the DHET has to build and develop its capacity to lead and steer the higher education system utilising the planning, funding and quality assurance levers that were developed for this purpose.

10. Conclusion

It is twenty-five years since the release of the National Commission on Higher Education's report, A Framework for Transformation (NCHE, 1996), which informed and shaped the policy framework for higher education in WP3. In the years since then transformation journey, although rocky and uneven, has made significant strides. The most striking change is in the demographic profile of the higher education system. In 1993 black students constituted 53% of the total headcount enrolments (DoE, 2001: 36), whereas in 2017 this increased to 84.8%. Similarly, black academic staff as a proportion of total permanent academic staff has increased from 20% to 54.5%. The change in gender equity in relation to students is even more dramatic – in 1993 female students constituted 43% of total headcount enrolments, whereas in 2017 this increased to 58.5%. There have also been important, if more limited changes, at the institutional level. The restructuring of the institutional landscape notwithstanding, the main change is the development of research and postgraduate capacity, albeit from a low base, in the non-RIUs in general and in the HBUs and UoTs in particular. However, despite these changes the higher education system remains a low participation, high attrition system with pervasive inequalities, both individual and institutional. This is not surprising or unexpected. The higher education system does not exist in splendid isolation – the notion of the universities as "ivory towers" notwithstanding. It is a mirror of the broader society and reflects the deepseated social and economic inequalities inherited from apartheid, which endure and continue to act as a blight on the democratic foundations

based on social justice established in 1994.

The vision for the transformation of the higher education system in WP3, that is, the development of a single, national coordinated system that is diverse in terms of institutional missions and responsive to national goals and objectives remains unfulfilled. Although the levers to steer the system to realise this vision - national and institutional planning, funding and quality assurance - have been in place since 2005, they have been less than effective in implementation. This is in large measure due to a combination of a lack of political and institutional leadership and will, which is the result of an inability to transcend the divides of the past. In the absence of a shared commitment to move beyond narrow political and institutional interests, the levers are nothing more than operational tools to manage rather than to steer the system to address national goals and objectives. This is evident both from the fact that mission and academic drift is on the rise but also from the enrolment planning framework and targets, which gives the impression that it is nothing more than an aggregation of student enrolment plans and targets submitted by institutions. Similarly, the fact that there is no link between quality assurance and planning and funding, weakens its role and impact.

The shortcomings in the implementation of the steering levers cannot be addressed outside of a shared commitment by all stakeholders to giving effect to the vision in WP3, which remains compelling. It provides the starting point for re-imagining the future trajectory of the higher education system taking into account the impact of the changes in its size and shape and the wider social, economic and technological changes linked to the notion of a knowledge society and economy. The vision in WP3 was the outcome of the deliberations of the National Commission on Higher Education. It may be opportune given the changing national, regional and global context to consider establishing a similar national commission with a broader mandate to re-imagine and conceptualise the development of a differentiated and integrated post-school education and training system with multiple pathways to access higher education.

11. Appendices

Appendix One

Institutional Categories

(i) Research-Intensive Universities

Stellenbosch University (SU) University of Cape Town (UCT) University of KwaZulu-Natal (UKZN) University of Pretoria (UP) University of the Witwatersrand (Wits)

(ii) Other Universities

Nelson Mandela University (NMU) North West University (NWU) Rhodes University (RU) University of the Free State (UFS) University of Johannesburg (UJ) University of Mpumalanga (UMP) Sol Plaatje University

(iii) Historically Black Universities (HBUs)

University of Fort Hare (UFH) University of Limpopo (UL) University of Venda (UV) University of the Western Cape UWC) University of Zululand (Unizul) Walter Sisulu University (WSU) Sefako Makgatho Health Sciences University

(iv) Distance Education

University of South Africa (Unisa)

(v) Universities of Technology

Cape Peninsula University of Technology (CPUT) Central University of Technology (CUT) Durban University of Technology (DUT) Mangosuthu University of Technology (MUT) Tshwane University of Technology (TUT) Vaal University of Technology (TUT)

Appendix Two

Interviews

Vice-Chancellors

Professor Adam Habib, University of the Witwatersrand, 22 August 2019. Professor Wim de Villiers, University of Stellenbosch, 22 August 2019. Professor Tshilidzi Marwala, University of Johannesburg, 26 August 2019. Dr Sizwe Mabizela, Rhodes University, 17 September 2019. Professor Tawana Kupe, University of Pretoria, 15 October 2019. Professor Mahlo Mokgalong, University of Limpopo, 22 October 2019. Dr Bernard Nthambeleni, University of Venda, 31 October 2019. Professor Henk de Jager, Central University of Technology, 4 November 2019. Professor Lourens van Staden, Tshwane University of Technology, 20 November 2019.

Note:

A total of fourteen vice-chancellors were selected and contacted. Of the fourteen, three did not respond and two preferred not to participate.

Higher Education Officials

Dr Diane Parker, Deputy Director-General, Higher Education, Department of Higher Education and Training, 21 October 2019.

Dr Molapo Qhobela, CEO, National Research Foundation, 22 October, 2019.

Dr Ansu Padayachee, CEO, South African Technology Network, 15 January 2020.

Professor Ahmed Bawa, CEO, USAf, 2 March 2020.

Appendix Three

Institu- tion		2005						2017						
	Total	Black	% Total	White	% Total	Un- known	% Total	Total	Black	% Total	White	% Total	Un- known	% Total
UCT	21 764	10 661	50%	10 486	48.2%	617	2.8%	28 724	13 859	48.2%	7 330	25.5%	7 535	26.6%
UP*	46 351	23 338	50%	23 011	49.6%	2	0%	50 695	29 227	57.6%	21 444	42.3%	24	0.1%
US	21 702	6 099	28.1%	15 603	71.9%	0	0%	31 1 1 4	12 183	39.2%	18 895	60.7%	36	0.1%
UW	23 626	15 078	63.8%	8 548	36.2%	5	0%	38 380	31 196	81.3%	7 176	18.2%	8	0%
UFS*	24 659	15 233	61.8%	9 426	38.2%	2	0%	38 102	30 388	79.8%	7 714	20.2%	0	0%
UJ*	45 544	32 619	71.6%	12 925	28.4%	0	0%	50 447	46 608	92.4%	3 838	7.6%	1	0 %
NMU*	24 157	17 901	74.1%	6 256	25.9%	0	0%	27 621	22 247	80.5%	5 374	19.5%	0	0%
RU	6 3 2 2	3 403	53.8%	2 9 1 9	46.2%	0	0%	8 0 7 7	6.076	75.2%	2 001	24.8%	0	0%

0

Headcount Enrolments by Race: Historically White Universities, 2005-2017

Note

CUT*

VUT*

10 320

8 429

81.7%

1 891

18.3%

*These institutions incorporated the local campuses of Vista University in 2005. Vista University, an HBU, was a national (decentralised) university, with a total headcount enrolment of 20 746 in 2003. In addition, UFS incorporated the Qwa-Qwa branch of the then University of the North (now University of Limpopo). The incorporations would not have materially affected the total black headcount enrolments at the incorporating universities.

0%

18 185

17 362

95.5%

823

4.5%

0

0%
Appendix Four

Throughputs of First-Time Entering Cohorts by Qualification Level and Institutional Type

		2008 (Cohort		2012 Cohort					
	N	N+1	N +2	N+3	N	N+1	N +2	N+3		
UoTs	19%	36%	45%	51%	21%	39%	41%	54%		
UJ/NMU/ WSU/UZ	19%	37%	46%	50%	27%	45%	53%	57%		
Overall	19%	36%	45%	50%	23%	40%	50%	55%		
Unisa		2006 (Cohort			2010 (Cohort			
	N	N+1	N+3	N+5	N	N+1	N+3	N+5		
	0.3%	0.9%	3.1%	4.9%	1%	3%	11%	14%		

Throughput Rates: First-Time Entering Cohorts: 3 year Diplomas (N=3),2008-2012/Unisa: 2006-2010

Throughput Rates: First-Time Entering Cohorts: 3 year Bachelor Degree (N=3), 2008-2012/Unisa: 2006-2010

		2008 (Cohort		2012 Cohort					
	N	N+1	N +2	N+3	N	N+1	N +2	N+3		
RIUs	35%	55%	64%	67%	32%	49%	56%	59%		
OUs	32%	50%	59%	62%	31%	47%	55%	57%		
HBUs	24%	43%	53%	57%	23%	44%	53%	56%		
Overall	30%	48%	56%	59%	29%	47%	55%	58%		
Unisa		2006 (Cohort			2010 (Cohort			
	N	N+1	N+3	N+5	N	N+1	N+3	N+5		
	1.9%	5.4%	10.9%	14.5%	2%	7%	17%	22%		

Throughput Rates: First-Time Entering Cohorts: 4 year Bachelor Degree (N=4), 2008-2012/Unisa: 2006-2010

		2008 (Cohort		2012 Cohort					
	N	N+1	N+2	N+3	N	N+1	N+2	N+3		
RIUs	40%	57%	62%	65%	42%	57%	62%	65%		
OUs	40%	54%	59%	63%	45%	57%	62%	64%		
HBUs	45%	62%	69%	72%	48%	65%	70%	72%		
UoTs*	49%	60%	66%	69%	55%	68%	72%	74%		
Overall	42%	57%	63%	67%	46%	60%	65%	68%		
Unisa		2006 Cohort				2010 (Cohort			
	N		N+2	N+4	N		N+2	N+4		
	3.5%		10%	15.4%	3%		21%	30%		

			2008 (Cohort			2012 Cohort					
	N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
RIUs	41%	57%	71%	75%	77%	79%	52%	66%	74%	78%	79%	80%
OUs	34%	52%	62%	68%	70%	71%	45%	61%	68%	72%	74%	75%
HBUs	46%	65%	70%	72%	72%	73%	48%	66%	70%	72%	72%	73%
UoTs **	30%	62%	68%	70%	72%	73%	14%	50%	64%	73%	76%	79%
Unisa	10%	27%	36%	41%	43%	45%	8%	27%	38%	44%	46%	48%
Overall	29%	46%	57%	62%	64%	65%	36%	53%	61%	66%	68%	69%

Throughput Rates: First-Time Entering Cohorts: Honours Degree (N=1), 2008-2012

Throughput Rates: First-Time Entering Cohorts: Master's Degree (Coursework) (N=1), 2008-2012

			2008 (Cohort			2012 Cohort					
	N	N+1	N+2	N+3	N+4	N+5	N	N+1	N+2	N+3	N+4	N+5
RIUs	9%	28%	39%	49%	54%	57%	10%	32%	45%	55%	61%	64%
OUs	9%	26%	41%	50%	55%	58%	8%	27%	46%	54%	59%	61%
HBUs	4%	13%	26%	34%	41%	44%	5%	19%	34%	42%	48%	51%
UoTs	3%	12%	20%	31%	36%	40%	6%	11%	24%	34%	44%	48%
Unisa	3%	5%	16%	21%	25%	28%	5%	8%	24%	32%	37%	40%
Overall	7%	22%	34%	42%	47%	50%	9%	25%	40%	49%	55%	58%

Throughput Rates: First-Time Entering Cohorts: Master's Degree (Research) (N=3), 2008-2012

		2008 (Cohort		2012 Cohort					
	N	N+1	N+2	N+3	N	N+1	N+2	N+3		
RIUs	42%	51%	56%	59%	44%	54%	60%	62%		
OUs	45%	53%	59%	62%	46%	56%	62%	65%		
HBUs	27%	32%	36%	37%	34%	41%	45%	47%		
UoTs	27%	37%	46%	49%	26%	37%	45%	49%		
Unisa	15%	23%	31%	35%	31%	38%	43%	45%		
Overall	36%	45%	51%	54%	39%	49%	55%	59%		

Throughput Rates: First-Time Entering Cohorts: Doctoral Degree (N=3), 2008-2012

		2008 (Cohort		2012 Cohort					
	N	N+1	N+2	N+3	N	N+1	N+2	N+3		
RIUs	16%	29%	41%	49%	17%	32%	45%	53%		
OUs	19%	32%	45%	51%	22%	38%	47%	54%		
HBUs	19%	31%	37%	40%	22%	33%	41%	49%		
UoTs	15%	24%	33%	41%	12%	25%	36%	41%		
Unisa	14%	18%	24%	29%	23%	32%	38%	43%		
Overall	16%	28%	39%	46%	18%	32%	43%	51%		

Appendix Five International Academic Staff

	2005				2017		% Growth			
	Р	т	Total	Р	т	Total	Р	т	Total	
RIUs	345	633	978	1 030	2 141	3 171	198.5%	238.2%	224.2%	
OUs	131	135	266	354	849	1 203	170.2%	528.9%	352.3%	
HBUs	80	87	167	382	158	540	377.5%	81.6%	223.4%	
UoTs	59	95	154	301	511	812	410.2%	437.9%	427.3%	
Unisa	37	18	55	116	885	1 001	213.5%	4 816.7%	1 720%	
Total	652	968	1 620	2 183	4 544	6 727	234.8%	369.4%	315.2%	

International Permanent and Temporary Academic Staff, 2005-2017

ROA Permanent and Temporary Academic Staff, 2005-2017

		2005			2017		% Growth			
	Р	т	Total	Р	т	Total	Р	Т	Total	
RIUs	145	309	454	476	1 173	1 649	228.3%	279.6%	263.2%	
OUs	67	94	161	244	471	715	264.1%	4 01.1%	344.1%	
HBUs	43	38	81	327	127	454	660.5%	2 34.2%	460.5%	
UoTs	46	70	116	259	456	715	463%	551.4%	576.45%	
Unisa	24	4	28	112	852	964	366.7%	21 200%	3 342.9%	
Total	325	515	840	1 418	3 079	4 497	336.3%	497.9%	435.4%	

RoW Permanent and Temporary Academic Staff, 2005-2017

		2005			2017		% Growth			
	Р	Т	Total	Р	т	Total	Р	Т	Total	
RIUs	200	324	524	554	968	1 522	177%	198.8%	190.5%	
OUs	64	41	105	110	378	488	71.9%	822%	364.8%	
HBUs	37	49	86	55	31	86	48.6%	-16.2%	0%	
UoTs	13	25	38	42	55	97	223.1%	120%	155.3%	
Unisa	13	14	27	4	33	37	-69.2%	135.7%	37%	
Total	327	453	780	765	1 465	2 230	133.9%	223.4%	185.9%	

Appendix Six

Headcount Enrolments by Field of Study and Institutional Type

	2005											
	Total	SET	% Total	B & C	% Total	Hum	% Total	Educ	% Total			
RIUs	154 147	58 929	38.2%	29 248	19.1%	44 980	29.2%	20 810	14%			
OUs	139 278	37 253	26.8%	31 671	22.7%	39 490	28.4%	30 684	22%			
HBUs	86 377	24 768	28.7%	17 647	20.4%	26 306	30.5%	17 657	20.4%			
UoTs	147 340	63 866	43.4%	50 101	34%	20 500	14%	12 854	8.7%			
Unisa	207 931	25 871	12.4%	85 639	41.2%	72 780	35%	23 641	11.4%			
Total	735 073	210 707	28%	214 485	28.5%	204 055	27.1%	105 826	14.1%			

Headcount Enrolments by Field of Study and Institutional Type, 2005

Headcount Enrolments by Field of Study and Institutional Type, 2017

	2017											
	Total	SET	% Total	B & C	% Total	Hum	% Total	Educ	% Total			
RIUs	198 009	91 515	48.2%	38 613	19.5%	48 490	24.5%	19 931	10.1%			
OUs	189 639	53 520	28.1%	53 473	28.2%	37 929	20%	44 987	23.7%			
HBUs	127 732	45 095	35.3%	24 583	19%	38 221	29.9%	19 834	15.5%			
UoTs	177 589	81 419	45.8%	57 877	32.6%	25 028	14.1%	13 265	7.5%			
Unisa	344 015	38 387	11.3%	104 384	30.3%	103 158	30%	97 636	28.4%			
Total	1 036 984	310 115	29.9%	278 930	26.9%	252 826	24.4%	195 113	18.8%			

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