



# **Higher Education: Contribution for the NPC's National Development Plan**

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## INTRODUCTION

The proposals which are offered in this development plan for a South African higher education system fit to meet the knowledge and high-level human resource needs for 2030 and beyond are premised on the following:

- Higher education is key to delivering the knowledge requirements for development. Research has pointed to a strong association between higher education participation rates and levels of development, and that high levels of education are essential to the design and production of new technologies for a country's innovative capacity and for the development of society more broadly. Further, the ability of developing countries to absorb, use and modify existing technology will drive more rapid transition to higher levels of development and standards of living. (Taylor, 2011 NPC report)
- Universities play three main functions in modern society. Firstly, they are responsible for the education and training of professionals and other high level human resources for the wide range of employment needs of the public and private sectors of the economy. The second function of higher education is to produce new knowledge and find new applications for existing knowledge. In addition to fundamental research, in a country such as South Africa, this knowledge task is about innovation and application, local and global, and about knowledge that equips people for a society in constant social change<sup>1</sup>. Thirdly, higher education provides opportunities for social mobility and simultaneously strengthens equity, social justice and democracy. In the globalizing knowledge society, higher education becomes increasingly important.
- Taken as a whole, the South African higher education system is relatively well functioning. It was placed by the Shanghai JiaoTong ARWU 2008 country rankings in the range between 27 – 33 along with the Czech Republic, Hong Kong, New Zealand and Ireland. For a developing country context, this is an exceptional rating. But, it can do better and is under-performing in a number of key areas, which are elaborated in this paper. In addition, there are a small number of institutions within the system that continue to show signs of instability and dysfunction.

## VISION 2030 FOR HIGHER EDUCATION

Higher Education will be valued by society for its demonstrated contributions to economic and social development and to the strengthening of democracy and social justice.

South Africa will have attained the participation (enrolment and success rate) rate agreed to between the government and higher education. This participation rate will be comparable with identified peer countries and will be achieved through planned growth, enhanced student retention and an increasingly diverse intake, including adult and part-time students. Every student in public

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<sup>1</sup> The Higher Education Research and Advocacy Network in Africa (Chet 2011) found that students at three African flagship universities show significantly higher levels of political participation, political knowledge and news media use, and extensive organizational involvement on and off campus, along with more critical attitudes towards politics in their country.

higher education will have access to an appropriate financial assistance package of bursaries, loans and service-linked scholarships depending on personal circumstances. Progressively, access to student financial assistance will be extended to financially disadvantaged students studying in registered private higher education institutions.

Students will be exposed to stimulating learning and living environments, with the optimal use of innovative and flexible teaching and learning approaches. Higher education graduates will have the knowledge, skills and experience to successfully enter the labour market or to create their own work opportunities and to contribute to the advancement of an equitable society as critically engaged citizens.

The system will be characterized by a diverse variety of institutions, serving different student, regional and national development needs. There will be a continuum of institutions, ranging from those that focus on career orientated diplomas and certificates to institutions that offer research masters and doctorates across a wide range of disciplinary areas. The main focus of some institutions will be on providing students with access to a wide range of high quality undergraduate and targeted postgraduate opportunities for employment and mobility. Other institutions will have departments and centres with the advanced capacity and capability to participate in the global knowledge and innovation system. A number of South African universities will feature in various institutional and disciplinary global rankings.

Social justice and equity agendas will be addressed throughout the diverse system. Moreover, all institutions will meet the standards set for the provision of minimal infrastructural and other requirements for quality teaching and learning. All university staff will have the relevant postgraduate qualifications and experience, with a substantially increase in the number with masters and doctoral degrees.

The system will incentivize and reward in different ways, the different roles of higher education, namely teaching, societal engagement and research.

The development of the higher education system will occur within a context of structured interactions and agreements between institutions and the government, with the acknowledgement and encouragement of a role for a private sector. The steering mechanisms (in particular, planning and funding) will support institutional diversity and, increasingly, will be performance and reward driven, with structured coordination between the different government departments involved in higher education, science, technology and research.

The government's steering role will be effectively and efficiently managed by high level planning and monitoring capacities in the departments involved in higher education, science, technology and research.

Quality in the system will be monitored and strengthened through a robust and accountable quality assurance system that will also develop national quality indicators and measure proxies of quality, such as labour market absorption.

South Africa will be an active player in African and global higher education networks and South African universities will attract international students and staff.

## THE CURRENT SYSTEM

From assessments of the South African system by the Harvard panel on ASGISA (Dube, et al 2008), the World Bank (Closing the Skills Gap, in press) and the Centre for Higher Education Transformation's (CHET) recent work on differentiation (CHET presentation to HESA, July 2011) the South African higher education system could be characterized as being **medium knowledge producing and differentiated (though not formally recognized for steering purposes), with low participation and high attrition rates, with insufficient capacity for adequate skills production and having a small 'number of institutions which are in 'chronic crisis' mode.**

### *A Medium Knowledge Producing and Differentiated System*

Globally, the South African higher education system was placed by the Shanghai JiaoTong ARWU 2008 country rankings in the range between 27 – 33 along with the Czech Republic, Hong Kong, New Zealand and Ireland and the top university (Cape Town) in the 200-300 range. In global terms, Africa's proportion of publication output is declining, although the top six African countries are retaining their proportion of around 1.7% (Web of Science, Thompson Reuters, 2010). South Africa is still the dominant producer (37%), followed by Egypt (27% and Nigeria (12%). However, as is the case with ICT connectivity South Africa's lead is being eroded, particularly from north Africa (Gillwald, 2010). Regarding the World Economic Forum (2010) global competitiveness rating, South Africa is ranked at 54, in the same league as Russia (63), Brazil (58) and India (51), but well behind China (27). In terms of efficiency enhancers, the higher education and training system is rated 75 out of 139 countries, but 49<sup>th</sup> in terms of local availability of specialized research and training. The most problematic business deterrent is inefficient government bureaucracy and the second, inadequately educated workforce. (WEF, 2010/11)

In terms of accredited research output within South Africa, the natural sciences are the most productive (36%), followed by the humanities (21%) and medical and health sciences (20%). It is important to note that from 1995 to 2007 the proportion of all scientific output produced by universities increased from 80% to 86%, meaning that the universities are increasing their dominance as knowledge institutions in South Africa. (CREST, 2011).

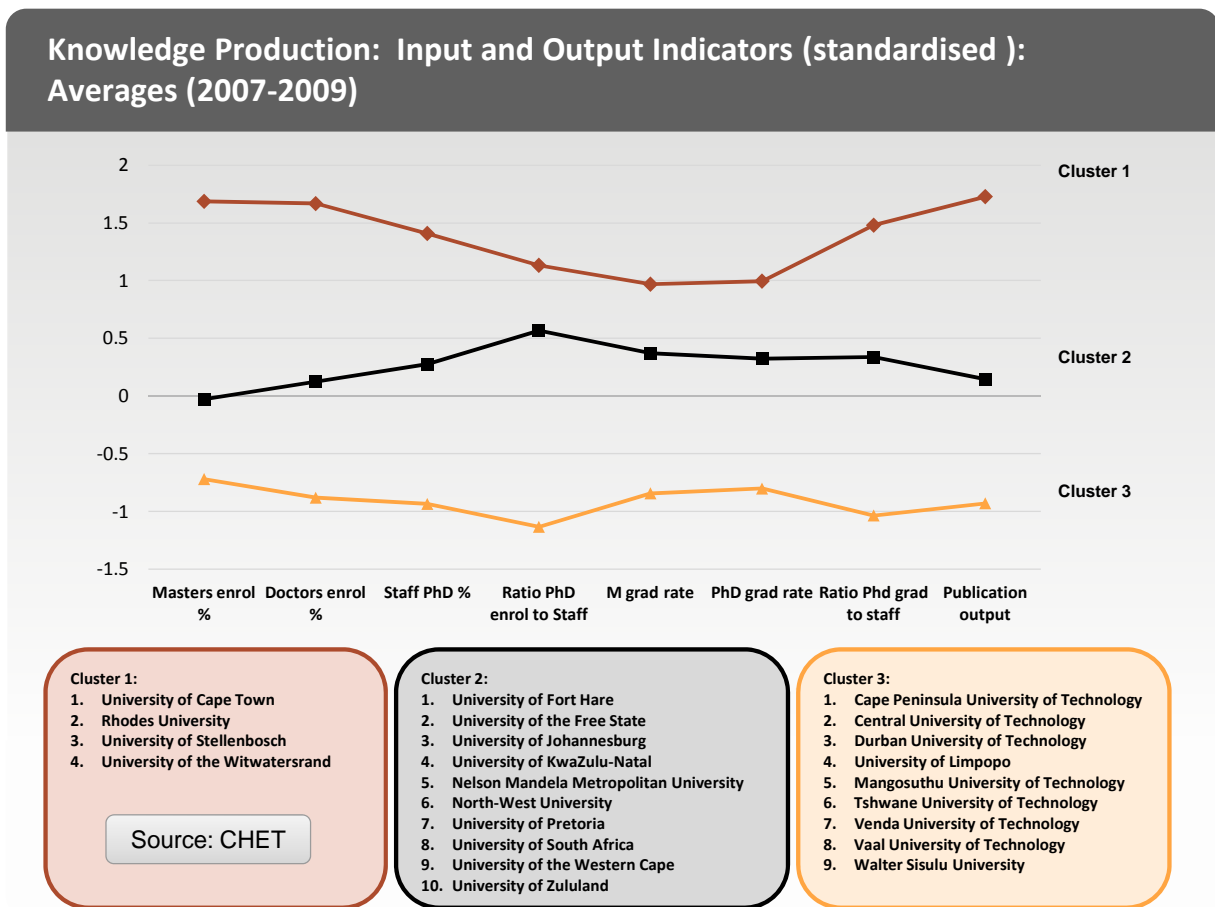
However, knowledge production capacity is not evenly distributed in South Africa. Using a K-means analysis based on standardized scores, CHET (2011) carried out an analysis that shows that the system is clearly differentiated into three groups when it comes to knowledge production. Knowledge production is measured by a combination of input and output variables, consisting of indicators such as masters and doctoral enrolments and graduates, proportion of staff with doctorates, proportion of PhD graduates to permanent staff and ISI accredited publication output.

Figure 1 below shows the universities of Cape Town, Rhodes, Stellenbosch and Witwatersrand are in the high knowledge producing category, all the other universities (with the exception of Walter Sisulu and Limpopo) are in the medium category, and all the universities of technology are in the low knowledge producing grouping. The medium knowledge producing group is not homogenous; it is very dynamic with institutions such as Western Cape, North West, Johannesburg and Fort Hare

increasing their proportion of the overall output during the last 5 years, while institutions such as Pretoria and Nelson Mandela Metropolitan have declined<sup>2</sup>.

Not only is there a discernable difference in ratio of publication output per full time staff member between the three groups, they also differ significantly in terms of success in producing doctorates. In a longitudinal study (2000-2009) tracking doctoral students, the institutions in the high producing category managed to get 64% of their doctoral enrolments to graduate, as opposed to 43% for the medium group and 30% for the low producing group.

Figure 1



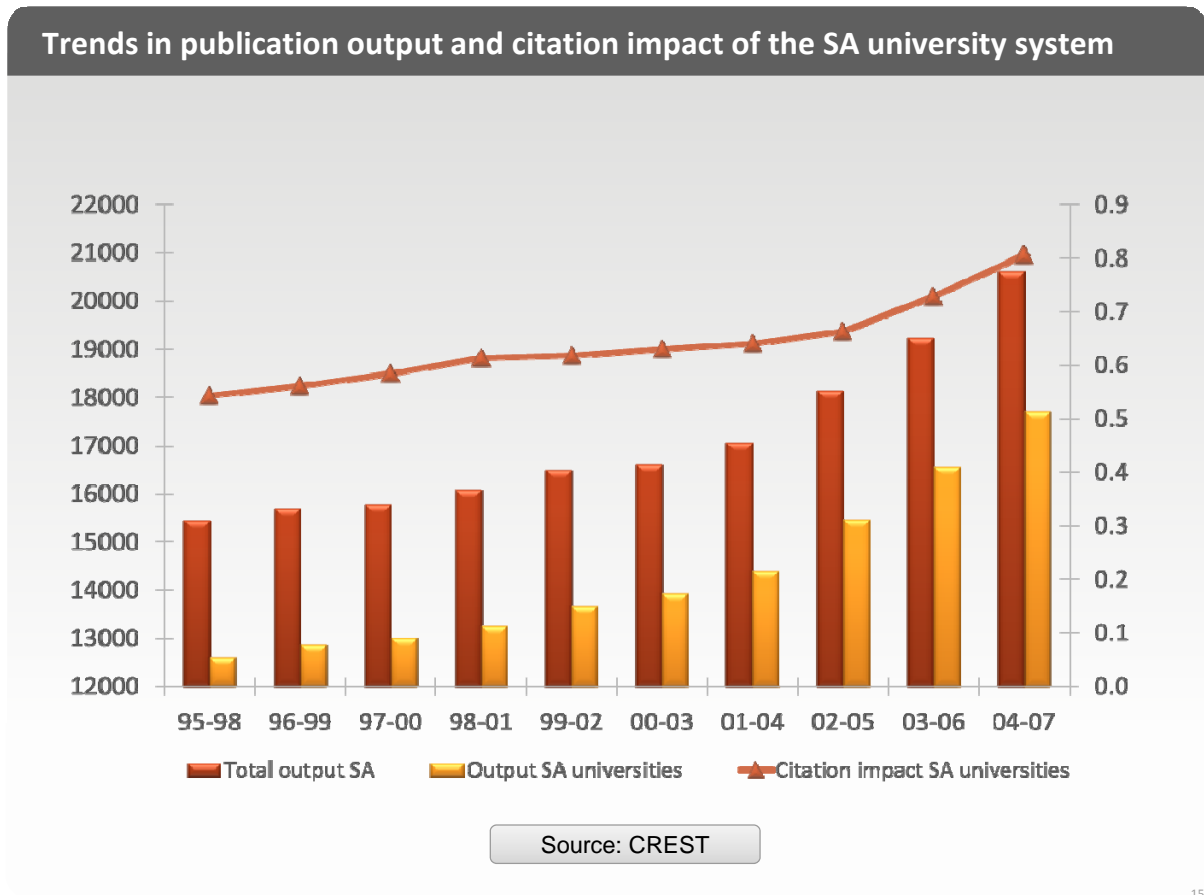
There has been a steady increase from 1998 to 2009 in research publication output and in international citation impact (Figure 2). However, the proportion of masters graduates remained constant at 19% and the proportion of doctoral graduates decreased from 15% to 13% (Table 5). PhD graduates increased from 961 in 2000 to 1420 in 2010, an average annual increase of 4%. (CHET, 2011)

However, in international comparative terms, South Africa is not doing that well. For example, the University of Sao Paulo in Brazil (almost 90 000 students) in 2010 produced 8200 ISI publications while the entire South African system (almost 900 000 students) produced just over 9000. More

<sup>2</sup> The data on which this analysis is based comes from the HEMIS of the Department of Higher Education and Training. For details of the methodology and data, contact [Charles.Sheppard@nmmu.ac.za](mailto:Charles.Sheppard@nmmu.ac.za). The University of KwaZulu-Natal is in the top 500 of the Shanghai ranking, but falls outside of the top four in this particular South African analysis.

concerning is that Sao Paulo produced 2400 doctorates and South Africa only 1420. Another big difference between Sao Paulo and, for example, South Africa's top ranked University, UCT, is that at the former 98% of academics have doctorates, while at UCT only 57% have doctorates, which is the highest in South Africa. Overall in South Africa, only 35% of academics have PhD's. A study by CHET showed a 0.82 correlation between having a PhD and producing ISI accredited publications, meaning that it is only in exceptional cases that people without a PhD publish internationally (CHET, 2011).

Figure 2



South Africa has drastically scaled up investment in knowledge generation since the fall of apartheid. In real terms, R&D expenditure in 2007–08 was approximately three times the level of expenditure in the mid-1990s. The role of the business sector in financing R&D activity has also strengthened substantially vis-à-vis that of the government and the higher education sector. (World Bank 2011)

This trend has not, however, been matched by an equally rapid increase in R&D personnel, as measured by the number of full-time equivalent (FTE) researchers. From 1992 to 2006, the total number of FTE researchers increased only by 33 percent. South Africa has approximately 1.5 FTE researchers per 1,000 employed, which is relatively fewer than countries that have a similar ratio of R&D spending to GDP, e.g. Portugal (4.8) and Italy (3.6). (Taylor, 2011 NPC report)

The Department of Science and Technology has acknowledged that, “To build a knowledge-based economy positioned between developed and developing countries, South Africa will need to increase its Ph.D. production rate by a factor of about five over the next 10–20 years” (DST,

2008:29). This is also the long term solution to the race and age imbalance in the country's academic staff, and to any future expansion of the system. If we are to improve the quality of academic teaching and research, expand enrolments and change the demographic profile of the country's research cadre, then we must dramatically scale up postgraduate qualifications among all students, but particularly among Africans. (Taylor, NPC report)

### Summary Implications

- The knowledge production system is clearly differentiated, both in terms of research output and the production of masters and doctoral degrees.
- There is a steady increase in publication, masters and doctoral outputs, but it is too slow to meet labour market demand, including the academic labour market.

### *A System with Low Participation and High Attrition and Insufficient Capacity for Skills Production*

The World Bank review (2011) states that one of the biggest contributors to the sub-optimal performance of the South African economy is a human capital trap. Massive investments in the education system have not produced better outcomes in terms of either level of academic performance or graduation rates. While enrolment and attainment gaps have narrowed somewhat across different race groups, the quality of education for the vast majority of the population has remained poor at all levels. Higher education, taken as a whole, is a low-participation, high-attrition system, with shortfalls in its capacity to produce medium and high level skills, especially in areas of identified shortages.

### Participation and attrition

Table 1 below shows the remarkable relationship between higher education participation and stage of economic development, GDP (in Purchase Power Parity), Human Development Index and Global Competitiveness. South Africa's participation rate<sup>3</sup> of 17% is significantly lower than that for comparable middle-income countries, although much higher than the average of 6% for sub-Saharan African countries. The World Economic Forum report (WEF, 2010) classifies eight African countries and three successful developed countries according to their 'stage of development'. In the 'first stage of development', the economy is 'factor-driven' and countries compete based on their factor endowments: primarily unskilled labour and natural resources. As wages rise with advancing development, countries move into the 'efficiency-driven' stage of development, when they must begin to develop more efficient production processes and increase product quality. At this point, competitiveness is increasingly driven by higher education and training, amongst other things. Finally, as countries move into the 'innovation-driven' stage, they compete through innovation, producing new and different goods by combining sophisticated production processes with a high-skill workforce, research and innovation.

Traditionally, systems with a 15 percent enrolment rate are designated as 'elite', those with 20-50 percent enrolment rates as 'mass' higher education systems and above 50 percent, as 'universal'.

<sup>3</sup> Enrolment as a proportion of the 20-24 year old cohort.

(Trow, 2005) However, with the dramatic increase in higher education participation during the last decade, the average participation rate for factor driven economies is under 10%, efficiency-driven between 30- 50%, and innovation-driven over 50%. The top 40 countries with high participation rates range from South Korea at 98% to Chile, the Slovak Republic and Lebanon at around 50%.

**Table 1: Comparison of HE participation rates and GDP per capita**

Stage of development (2009–2010)	Country	GDP per capita (PPP, USD) 2007	HDI Ranking (2007)	Gross tertiary education enrolment rate (2008)	Overall global competitiveness ranking (2010–2011)
<b>STAGE 1: Factor-driven</b>	Ghana	1 334	152	6.2	114
	Kenya	1 542	147	4.1	106
	Mozambique	802	172	1.5	131
	Tanzania	1 208	151	1.5	113
	Uganda	1 059	157	3.7	118
<b>TRANSITION from 1 to 2</b>	Botswana	13 604	125	26	76
<b>STAGE 2: Efficiency-driven</b>	Mauritius	11 296	81	25.9	55
	<b>SOUTH AFRICA</b>	<b>9 757</b>	<b>129</b>	<b>17<sup>4</sup></b>	<b>54</b>
<b>STAGE 3: Innovation-driven</b>	Finland	34 526	12	94.4	7
	South Korea	24 801	26	98.1	22
	United States	45 592	13	82.9	4

Source: CHET 2011

There are three central issues regarding participation – race, growth rates and success. African student numbers grew by an average of 6.2% per annum in the period between 2000 and 2009, while the comparable figure for white students was only 1.1%. Two-thirds of all students in higher education in 2009 were African, compared to only 32% in 1990.

**Table2: Head count enrolments by race, 2000-2009 ('000)**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Growth pa
<b>African</b>	318	353	377	403	454	447	451	477	515	548	6.2%
<b>Coloured</b>	30	33	38	42	46	46	49	49	52	55	6.9%
<b>Indian</b>	40	43	48	52	54	55	55	53	52	54	3.4%
<b>White</b>	163	173	179	185	189	186	185	180	178	179	1.1%
<b>TOTAL</b>	<b>551</b>	<b>603</b>	<b>641</b>	<b>682</b>	<b>743</b>	<b>734</b>	<b>739</b>	<b>759</b>	<b>797</b>	<b>836</b>	<b>4.7%</b>

Source: Charles Sheppard, CHET

<sup>4</sup> A new recalculation of the Tertiary Education enrolment ratio by Chet, which includes post secondary public and private education, shows a rate closer to 20%, which would put SA at 90th in the world. South Africa has a very strange 'inversion' in rankings between the school and university systems. The school system is ranked 41 in terms of enrolment rates, and 130 in terms of quality (just below Burkina Faso and Panama). In contrast, the university system is rated around 30 in terms of quality and 90th in terms of enrolment rates (along with Tajikistan and Albania). (WEF, 2011)



Notwithstanding this significant advancement, as shown in table 3 below, the participation rate for African (and coloured students) has not increased beyond 13%. Given the size of the 20-24 year old age cohort in the African population, increases in the African participation rates will only be seen if there is substantial growth in the higher education system.

**Table 3: Gross higher education participation rates by race for 2004 to 2008**

	2004	2005	2006	2007	2008
<b>African</b>	12%	13%	12%	12%	13%
<b>Coloured</b>	12%	12%	13%	13%	13%
<b>Indian</b>	50%	50%	50%	49%	45%
<b>White</b>	<b>64%</b>	<b>61%</b>	<b>59%</b>	<b>57%</b>	<b>56%</b>

Source: Stumpf, 2010: 31

Table 4 below shows that the projected participation rate increase is rather slow: The National Plan for Higher Education (DOE, 2001) set a goal of 20% participation by 2016. In order to reach this target, the school system would have to produce an additional 173 7000 matriculants qualified to enter higher education between 2010 and 2016, an increase of 19%. The bottleneck to reaching the 2016 target will undoubtedly be the ability of the school system to meet this challenge, rather than the ability of the universities to absorb these numbers, although that will be a challenge in itself, and would require considerable additional funding.

**Table 4: Participation rate, 2007-2016**

Year	Actual 2007	Actual 2008	Actual 2009	Prelim 2010	Projected 2011*	Projected 2012*	Projected 2013*	Projected 2016*
<b>HE headcount enrolment</b>	761 259	799 893	838 250	894 074	908 684	944 643	983 471	1 067 776
<b>20-24 year old mid-year population estimates</b>	4 726 110	4 820 527	4 920 962	5 025 328	5 079 280	5 131 668	5 181 863	5 338 879
<b>Gross participation rate as defined by UNESCO</b>	16.1%	16.6%	17.0%	17.8%	17.9%	18.4%	19.0%	20.0%

\* Assuming a cohort growth rate of 1% pa.

Source: Charles Sheppard presentation to NPC Seminar, 28 April 2011; 2016 projection calculated from Sheppard's data.

Graduation rates are defined as the percentage of students in a programme that graduate in a particular year as a percentage of the students enrolled in the programme in the same year. The following table indicates that rates are low for undergraduate qualifications, and appear also to be declining at postgraduate level; in both cases graduation rates remain unacceptably low and below the benchmarks set in the National Plan for Higher Education (2001).

**Table 5: Graduates as a percentage of headcount enrolments**

Qualification type	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Total undergraduate</b>	14%	13%	13%	14%	14%	15%	15%	15%	15%	16%
<b>Postgraduate to masters level</b>	34%	35%	35%	35%	35%	38%	38%	37%	36%	36%
<b>Masters</b>	19%	19%	18%	17%	17%	18%	18%	18%	18%	19%
<b>Doctors</b>	15%	13%	13%	13%	12%	13%	11%	13%	12%	13%
<b>TOTAL</b>	<b>16%</b>	<b>15%</b>	<b>15%</b>	<b>15%</b>	<b>16%</b>	<b>16%</b>	<b>17%</b>	<b>17%</b>	<b>17%</b>	<b>17%</b>

Source: Charles Sheppard, CHET

A significant contributor to the overall low graduation rate is the University of South Africa (UNISA), the country's largest institution by far, which had a graduation rate of 9% in 2008.

Between 2000 and 2008, graduation rates for the major fields of study changed as follows: science, engineering and technology increased from 15% to 18%; business and management sciences decreased from 15% to 14%; education increased from 23% to 24%; and, humanities and social sciences remained at 16%.

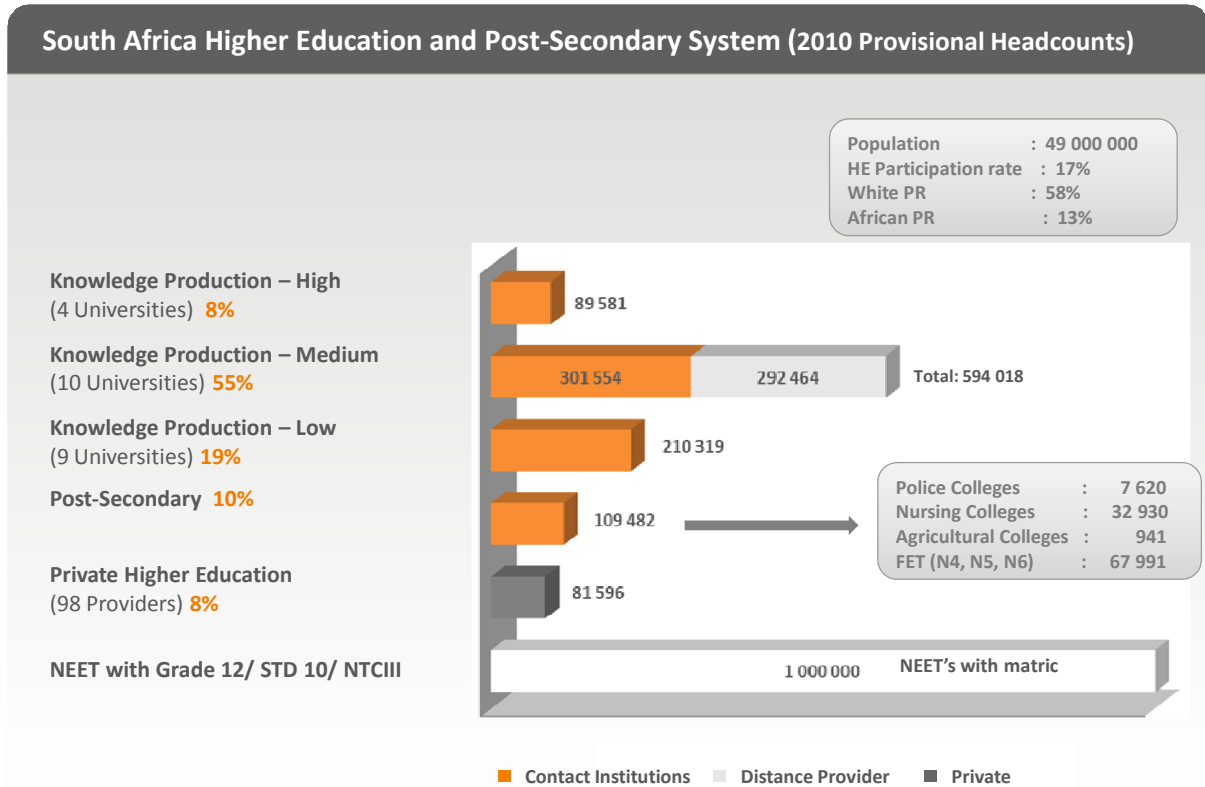
A Department of Education cohort study of the total first time entering intake of 2000 found that after 5 years only 30% of the students had graduated. 56% left their original institution without graduating. While it was not possible to accurately track students who might have transferred to other institutions, this was estimated at 10%. 14% were still in the system. Even if 70% of transferring students and those still registered after 5 years eventually graduated, the cohort completion rate would be about 44%. 65 000 students were lost from this cohort alone. For contact universities, in almost all areas, the black student completion rate was less than half that of the white student completion rate. Only 1 in 5 first time entering students graduated in regulation time. Even when UNISA was excluded from the figures, well under one-third of the intake completed in regulation time.

This picture of poor graduate outcomes, with major racial disparities, is further compounded by reports of increasing numbers of students with marginal passes of 50-55%, which has implications in particular for the pipeline into postgraduate studies.

### **The Shape of the South African System**

Figure 3 below shows the distribution of students across the higher education and post-secondary sectors. 8% of the total enrolment is in the four universities with high knowledge production. This compares well with, for example, the high knowledge producing end of the highly differentiated California system, also at 8% and the Brazilian public sector at 10%.

Figure 3



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However, there are three key differences between South African and the other two systems:

- First, combining the post secondary and private sub -systems in South Africa accounts for only 18% of the enrolments, compared to 60% for Brazil and 73% in the California community college systems.
- Secondly, in the Brazilian system 60% of the students are in private higher education, as opposed to 8% in SA. In 1994, Brazil had a similar participation rate to South Africa of around 12- 14%, but by 2010 the participation rate had increased to 35%, while South Africa only saw an increase to 17%. The dramatic expansion in participation in Brazil occurred by opening a few new federal universities, but mainly through financial (tax) incentives to the private higher education sector. The Brazilian system grew by 46% from 2002 to 2008, and 87% of this growth was in the private sector.
- The third anomaly in South Africa is the almost 1 million youth (between the ages of 18 and 25) who have a matric but who are not in education, employment or in training (NEETs). This group, which is part of the larger group of 3 million 18–25 year old NEETs (Cloete 2009) is probably South Africa’s greatest loss in human capital terms, not to mention the loss of government and private investment in students who have ‘successfully’ completed schooling. If a single priority has to be chosen in the post secondary system, it should be make education, training and employment provision for this group.

## Skills Production

In a comprehensive review of the demand for skills, Borhat and Jacobs (2010) suggest that South Africa has moved away from primary sector activities towards more secondary and tertiary sector production. South Africa's labour demand trajectory was characterised by a high and rising demand for skilled workers on the one hand, and sharp erosion in the employment of unskilled employees. Over the past 25 years South Africa's economic growth trajectory has been marked by a disproportionate dependence on skilled individuals.

However, Borhat and Jacobs' (2010) micro-econometric analysis also suggests that whilst graduates can and do find jobs more easily than the less educated, a higher education qualification does not guarantee employment, meaning that all higher education institutions must function effectively and with appropriate quality to ensure that they play a key part in human resource development and economic growth.

The World Bank (Closing the Skills Gap, In press) finds that South Africa is foregoing significant economic growth – together with employment growth and reductions in inequality and marginalization – due to the weaknesses of its education system and resulting skills shortages:

- Employers in South Africa consistently rate access to skilled workers as a major constraint to their businesses—more often than any other factor.
- Large skills gaps persist in both the artisanal professions as well as in science, engineering (e.g., mining, chemical, software) and management. Moreover, employers in a knowledge economy need both “soft” skills (e.g. teamwork, communication) and “hard” skills (cognitive achievement in various disciplines). Current TVET training (including at the secondary level) is, however, largely irrelevant to employers' needs and fails to provide vitally needed on-the-job experience.
- Firm-based empirical analysis shows that resolving the skills constraint faced by South African firms would boost job creation and raise output and productivity. Econometric analysis of a large number of South African firms documents that firms which reported skill shortages were 18% to 28% more productive than other surveyed firms (other things being equal). Had these firms been able to find workers with the right skills, they would have potentially increased their hiring, job creation, and output, thereby increasing economy-wide productivity.
- Poor-quality schooling combined with low secondary graduation rates have created a generation of disadvantaged young people with no jobs, nothing to do, and nowhere to go. The NEETs currently lack both the academic foundation and opportunity to pursue further training that would enable them to join the labour force and contribute to economic growth. This group represents an enormous waste of talent and productive economic resources.
- Overall, the estimates of the costs of South Africa's low human capital accumulation are staggering. Based on calculation of Patrinos and Psacharopoulos (World Bank, 2011) and using international experience as a guide, they estimate that a higher level of human capital would enable South Africa to double its per capita income in five years—a truly striking finding with wide-ranging implications.

### Summary Implications

- South African higher education has the double disadvantage of low participation and low throughput rates. In addition to a general undersupply of high level skills, a major problem is with post secondary (medium level) skills.
- Despite a dramatic increase in black student enrolments, their participation rates have hardly changed since 1994. Black participation can only increase in a massified and differentiated system.
- The combined effect of the slow supply of adequately qualified matriculants (particularly in maths, science and English) and limits to the existing university infrastructure and capacity, means that a significant increase in participation will require a consistent, but modest increase (see Table 4) in the university sector and a significant increase in the public and private post secondary FET/college sectors. The expansion of the college sector will, in particular, need to address the gaps in medium level skills.
- The government will not be able to afford adequate provision for a meaningful increase in participation levels, therefore private provision will have to be incentivised.
- Current levels of attrition (and low levels of student performance) in the system are unacceptably high and wasteful; a key priority must be to improve throughput and retention.
- In order to, for example, double South Africa's graduate output it would not be necessary to double participation rate, as a significant increase in through -put can achieve that, but to increase the medium level skills and for social justice purposes it is necessary to dramatically increase post secondary participation.<sup>5</sup>

### *Institutions in 'Chronic Crisis' Mode*

A small number of institutions in the system continue to experience problems and remain relatively unstable. As a result of the prominent press coverage that these institutions receive, an impression is created of a higher education system in crisis, which is clearly not the case. The reasons for the difficulties experienced by these institutions are complex and varied and include, amongst others, geographical location in areas with little or no infrastructure to support universities; historical backlogs in resourcing and capacity; and governance, management and administrative shortcomings.

Since 1994, there have been numerous interventions to address the difficulties experienced by mainly (but not exclusively) the historically disadvantaged universities, beginning with the performance audits of historically disadvantaged institutions, which were commissioned by Professor Bengu, at a time when many of the universities were experiencing serious declines in enrolments due to the movement of black students to urban and historically white institutions. These audits formed the basis for the investment of significant resources both from the fiscus as well as through international donor assistance programmes to support capacity building at the ailing institutions. Many of the universities were in serious debt and received additional subsidy payments in this period. The subsequent institutional restructuring exercise led to the re-

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<sup>5</sup> A separate document with projections of participation rates and success rates is being developed.

capitalisation of (qualifying) institutions and this was followed by the allocation of significant new funding for infrastructure development and renewal. The response to these interventions has been mixed. Some institutions, such as the University of Fort Hare and the University of Venda, have stabilized under the guidance of exceptional leadership. Others, such as the University of Zululand, experienced periods of stability, only to lapse back into crisis, while one or two appear to be in perpetual crisis. Currently, three institutions are under administration – the University of Zululand, Tshwane University of Technology and Walter Sisulu. Clearly lasting solutions need to be found to ensure the long term viability of all universities in the system.

## DIFFERENTIATION

The National Commission on Higher Education (NCHE-1996) correctly proposed that in order to deal with both equity and development, South Africa would require a massified higher education system. However, due the prevailing political climate, it was impossible to make firm proposals about differentiation. In 1996, except for the US, a “massified differentiated” system was a relatively new phenomenon (Scott 1994), but 15 years later it is generally accepted around the world that, with the exception of a few very rich, homogenous Northern European countries, massification cannot be achieved without differentiation. But, massification without steered differentiation leads to either an over-crowded low quality system, or to market driven inequality.

Almost 15 years after the NCHE, at the 2010 Higher Education Summit of the new Ministry of Higher, Further Education and Training, a broad spectrum of the South African higher education community accepted differentiation as a strategy to bring greater diversity and mission for purpose into the system. The Summit further agreed to a framework stating that there should be a continuum of institutions which are differentiated in relation to their strengths and purposes and linked to regional/local economic networks; and which facilitate portability of students, academics and knowledge across the sector. But of course, summit resolutions never resolve tough choices.

A traditional method of differentiation, and in many ways the easiest, is legislative. South Africa has had three major legislative differentiation moments in higher education: (1) a political separation informed by apartheid ideology (Extension of University Education Act in 1959), (2) the creation of technikons (Technikons Act, 1993) based on a binary notion of knowledge (theoretical and practical/vocational) and (3) mergers to reduce the number of universities from 36 to 23 and to create two new types of universities, comprehensives and universities of technology (Asmal, 2003). The last legislative differentiation was a combination of an attempt to reshape the apartheid landscape, soften the boundary between theoretical and vocational knowledge (universities of technology) and resolve some intransigent administrative/organisational problems.

From the three legislative differentiations, the first two were hierarchical (according to notions of racial and knowledge superiority), but the third was the first in order to promote diversity. While it is far too early to assess the outcomes of the mergers, what is beyond question is that it has introduced considerable diversity in the racial and programme profiles of universities such as North West, Johannesburg, Nelson Mandela and KwaZulu-Natal. The key question for further differentiation, without another legal reclassification, is how to make the system more responsive and efficient in terms of the three main goals of higher education outlined under the Introduction.

From a recent meeting between DHET, DST and HESA (27 July 2011), it was clear that there is little enthusiasm for another legislative differentiation exercise, or a grand California plan. Worldwide the most common strategy of differentiation is concentration, which can broadly speaking, take two forms; selected institutional strengthening, or performance based strengthening of relevant topics, departments, centers or networks. China, India, Germany, France, to mention but a few, have embarked on choosing a small number of institutions on which to concentrate resources and talent so that they can become 'world class' and feature in the global rankings.<sup>6</sup> At the mentioned HESA meeting the idea of two or three globally competitive institutions did not get much support.<sup>7</sup>

The other method is to establish national 'ring fenced' funds, in the case of Brain Korea's 2021, huge amounts, to strengthen academic/research networks across institutions and basic and applied fields. South Africa has made a start in this direction with the NRF's South African Research Chairs Initiative, but it needs better coordination between DHET and DST, much greater investment and a move to also strengthen departments/networks, not just individuals.

In the post-1994 period, differentiation from the pre 1994 period was to some extent reinforced by two differentiation mechanisms. Firstly, the "opening" of access to all institutions, coupled with the National Student Financial Aid scheme, allowed the most talented black students to go the most resourced, high status institutions – and the same for black academics. CHET produced empirical evidence to show that the group of institutions that benefitted most from this 'market differentiation', was the historically Afrikaans universities and technikons. (Cloete et al 2002)

The second mechanism was the Department of Education's steering according to institutional profile. This was done through a combination of knowledge output performance (publications, post-graduates) and approved enrolment plans, which was determined through the range of approved PQMs (programme and qualifications mix), based on a judgement of institutional capacity. In the absence of a national human development or skills plan, the Department could only be guided by institutional capacity and performance, not aspiration or national priorities. However, since the AGISA exercise, the Department started identifying, and incentivising scarce skills areas, which emphasises the need for a closer link between economic and education planning. It also raises the question as to what the scale of this 'skills steering budget' should be.

A widely used method of promoting diversity in European higher education systems are contracts between national education departments and individual institutions. These contracts, for 3–5 years, are informed by institutional profiles and negotiated according to a tradeoff between institutional development plans/aspirations and national government assessments of institutional capacity and national needs. Some of these agreements allow to a greater or lesser extent for market forces and institutional enterprise. The contracts can also be more performance orientated, with sanctions, like in Finland, or more development orientated, like the Netherlands and Denmark.

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<sup>6</sup> The so-called Shanghai rankings (<http://www.shanghairanking.com/>) was established by the Chinese government as part of a policy to identify universities that could become world class. Thus far, despite enormous resources, the ranking results have been disappointing, but it has invigorated the system.

<sup>7</sup> At a subsequent CHET book launch (August 2011) Manuel Castells argued that each country needs at least one or two institutions that sets the national benchmark, not only for research but also for student and academic aspirations, and in the popular imagination; otherwise the entire system 'wallows in similar mediocrity'.

In the South Africa the former Department of Education started a version of a 'contract/agreement' process for enrolment planning that is quite similar in intent to the European contracts, except that it only deals with enrolment and graduation targets and programme and qualification mix, and not with other broader aspects of the sector. Nor has agreement been reached on sanctions for those institutions which do not abide by the agreement.

HESA, in its 2020 strategic plan argues in favour of what the World Bank calls "progressive self-differentiation". However neither HESA, nor the World Bank, provide evidence of where this has led to system diversification; rather most evidence in higher education studies point to academic drift, which Swartzman describes as "the tendency of higher education institutions to raise their status by imitating the curricula and organizational models of their more prestigious counterparts, thereby reducing diversity within educational systems... but instead of becoming more egalitarian, the sector becomes increasingly more stratified, hierarchical, and inefficient, all in the name of equality." (Swartzman, 2011)

For South Africa, a more realistic strategy could be a inclusive and stronger version of the current enrolment planning, which could combine four important elements; institutional capacity and performance, institutional aspiration (development plans), government steering and monitoring and negotiation. Depending on the framework of consultation, this could be a compromise, or pact, between governments responsibility for system steering and institutional self steering.

It must be pointed out that contracts as a form of steering require considerable management and technical capacity at the national and the institutional levels. A low capacity national department cannot draw up the requisite institutional profiles, nor negotiate agreements across a range of key institutional issues such as research and teaching performance, enrolment planning and infrastructure maintenance and expansion. Nor can institutions with weak planning capacity, or unstable leadership. Also, such a system cannot work if DST, for example, focuses on research capacity development and performance while the DHET focuses mainly on enrolment planning – and the two departments must coordinate policies and strategies.

At a July 2011 meeting between DHET, DST and HESA, the following principles were discussed as a possible guide for future development and differentiation of the South African higher education system:

- The most important principle is that the country needs the entire spectrum of institutions for socio-economic development. The higher education sector should comprise a continuum of institutions with the purpose of providing a range of access routes to a varied student population and the social justice and equity agendas need to be addressed by the whole system.
- A variety of institutions are therefore required to ensure that the sector serves the varied needs of students, as well as the national interests. The mix and level of programmes of any institution should not be cast in stone – institutions must identify and enhance their strengths.
- All universities in South Africa must offer quality undergraduate education;



- The university system does not exist in isolation. It is an integral part of the post-school system and inter-institutional and inter-system mobility for students and staff must be an integral part of the system.
- There is a need to reward equally the different roles of higher education in South African society, namely teaching and learning, community involvement, as well as research. It is important to note that the aim is to continue to support the strengths of research intensive institutions, and to also recognize other important functions of higher education institutions.
- A national plan should be developed in tandem with differentiation – meaningful differentiation will need serious coordination, and differentiation needs to be accompanied by an appropriate funding regime, including funding for poorly resourced institutions. Differentiation must be linked to the Government's long-term Human Resources Development (HRD) plan and its associated 20 year time horizon. (Synthesised from HESA 2011 workshop report)

## PROPOSALS

### *Coordination and Steering in a Differentiated System*

The government and higher education institutions will need to reach formal and binding agreements (pact)<sup>8</sup> on the principles that will underpin the coordination and steering (including funding) of the differentiated system as this will be the basis of agreements and compacts at a system-wide and institutional level. Agreement should also be reached on the sanctions to be applied for institutions which do not adhere to agreements. Based on these agreements, a Ministerial Statement should be issued on the agreed scope of activities of each of the 23 universities for a 5-year period, in the first instance.

1. Like many countries around the world, South Africa has to set participation rate targets, at, say, 5-year intervals, that will take into consideration an expanded, and differentiated range of students and institutions, as well as strategies to enhance success.
2. Agreements should be reached on a planning model that builds and strengthens the current enrolment planning approach. Targets (enrolments and graduates) will have to cover the range of skills, from high level research training at the doctorate level, to shorter term career focussed diplomas and certificates, and decisions will have to be taken about which type of institution contribute most efficiently to which skill level. Specific plans for priority professional sectors (such as health, engineering & built environment, teaching) would need to be included, along with major infrastructure needs, including, for example, provision for new facilities to train medical and other health professionals.

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<sup>8</sup> A study by Chet (Pillay 2010) about three OECD higher education systems (South Korea, Finland and North Carolina in the US) that regard knowledge as a development driver and are very successful at linking education and economic development found that all three are 'glued' by a broad pact in the society that include government, institutions and civil society.

3. The model must also address South Africa's need to increase training in a number of scarce skills areas and to vastly expand medium level skills provision. For this there needs to be closer links between economic and education planning, stronger incentives for scarce skills and a massive expansion of the public and private post secondary sectors. In particular, plans and resources will have to be put into place to significantly increase the offering of career-focussed higher education certificates and diplomas in the expanded public and private college sectors– this will also require differentiation amongst the FET and other colleges.
4. The plan would need to reflect better coordination between particularly DHET and DST to support knowledge production (increase proportion of post graduate enrolment and output, and post docs) and improve and design new incentives, particularly for increasing doctoral output. This is necessary not only for research and development, but also to increase the proportion of academic staff with doctorates and the increasing demand for 'professional' PhD's in the financial and services sectors.

To give such a plan substance will require that specific 5 year targets be set for participation an success rates, graduate outputs, knowledge production, staff qualifications (institutional profile), both at the national and institutional levels. This will build on the existing enrolment planning process processes of the DHET.

### *Building Quality in a Differentiated System*

5. Strengthen departments/units and networks of research excellence through performance based grants. While individual excellence is still a key component of a globally competitive group, more weight should be given to building departments/centres or networks of excellence.
6. In view of the growing position of universities in knowledge production (in public institutions), the role of the science councils should be reviewed and in order to strengthen both training and research output, consideration should be given to the worldwide tendency to more closely and formally align or incorporate research councils with universities.
7. Differentiation will require that **all** public higher education institutions should provide education and skills training at an acceptable quality level, meaning that system wide standards have to be established in terms of student facilities, library, laboratories, computer access, staff qualifications etc. If there is adequate resourcing to enable institutions, over time, to attain the quality benchmarks, this will be an important mechanism to address remaining historical backlogs in the system.

8. A differentiated system can only fulfil its full promise if it provides students with flexible pathways for mobility across the system. While the National Qualifications Framework should provide for the recognition of qualifications, national transparent processes and regulations need to be developed to better facilitate student mobility.
9. The poor student throughputs which characterise the current system point to the need to focus on improving the quality of teaching and learning throughout the higher education system. A plan needs to be developed to increase the effectiveness of the educational process in higher education, including the availability of flexible curricula frameworks/pathways, incentives for teaching excellence, technology support for teaching and learning, continued support for academic development and the professionalisation of teaching in higher education.
10. The current quality assurance framework will need to be reviewed in the light of an expanded and diversified system. The Higher Education Quality Committee should develop and manage a core set of quality indicators for the higher education system. The development of a national graduate tracking system (a proxy for quality) should also be considered.
11. A differentiated system guided by evidence based planning and performance monitoring will require the maintenance, and strengthening of the current HEMIS information system, and the additional capacity to analyse national trends and changes between, and amongst institutions and institutional groups.

### *Funding in a Differentiated System*

12. Revisions to the funding framework for universities must be based on the needs of a differentiated system, with adequate provision for both teaching and research. Over time and especially as the quality assurance system matures, greater emphasis should be placed on incentivising graduate output. Such a shift would be in line with the international trend towards a greater emphasis on output based funding.
13. Student Financial Aid in Public Higher Education: An incremental plan needs to be developed for the provision of full funding assistance (in the form of loans and bursaries) to all students who qualify for NSFAS. Students who do not qualify for NSFAS loans should have access to bank loans, backed by state sureties. All loans (NSFAS and bank loans) should be recovered through arrangements with SARS. In addition, service-linked scholarships should be available in areas such as teaching, social work etc.
14. Student Financial Aid in Private Higher Education: As an incentive to expansion in the private sector, consideration should be given to extending the NSFAS, in the first instance, to qualifying students in the not-for-profit registered private colleges. As

resources allow, provision could be made to extend access to NSFAS and bank loans for qualifying students in other registered private colleges.

15. The proportion of government grants of GDP funding for higher education has declined marginally over the last few years from 0.76% in 2000 to 0.69% in 2009.<sup>9</sup> If the quality of higher education is not to suffer, additional funding will be needed to support an increase in participation and knowledge production both in terms of operating funds and funds for increased infrastructure (buildings, equipment etc.)

### *Supporting Institutions in Chronic Crisis*

16. The DHET should identify those institutions which are in ongoing crisis mode and have not been able to benefit from earlier recovery interventions. Dedicated support should be provided to such institutions to develop and implement comprehensive renewal plans over a 5 year period. The plans must give particular attention to identifying a viable and sustainable academic trajectory for the institution, with an appropriate programme and qualification mix. If measurable progress towards achieving the objectives of the renewal plan is not evident after five years, consideration should be given to reviewing the status of the institution.

## **RISKS**

The following five key risks have been identified as having the potential to impede progress toward the identified vision and goals for the system.

1. The college sector fails to significantly expand, resulting in undue pressure on the universities to admit students without the necessary resources and capacity.
2. The lack of adequate and sustained planning, implementation and monitoring capacity in government (in particular within the DHET and DST) and in the higher education institutions to lead and manage the proposed coordination and steering approach.
3. The lack of policy consistency and stability over the next 10 to 15 years. A stable policy environment is key to bedding down implementation.
4. The continued instability of some universities (and colleges), leading not only to their inability to contribute optimally to human resources development but also to draining resources that could be better utilized elsewhere in the system.
5. The lack of availability of new funding to support the development of a quality massified and diversified system.

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<sup>9</sup> The general perception that education is “well, if not over funded” in international comparative is true for schooling, but not for higher education. The average direct government subsidy for universities in Europe is over 75%, while in South Africa it is now 40% of budget, which is also much lower in percentage terms than the rest of Africa.

## POSTSCRIPT

This document is only intended to offer framework proposals. Considerably more work will need to be done to develop the details of each of the proposals. To give more specificity to some of the proposals, a modelling exercise is underway that will amongst others, do the following:

- Calculate tertiary enrolment and graduation rates till 2030, based on current DHET growth estimates and considering different growth rates in different subsectors of higher education
- Calculate the growth in graduate outputs till 2030, at current DHET growth scenarios, and then make projections based on different growth rates and efficiency estimates. In the South Africa scenario increasing graduates is not a matter of a linear enrolment increase; it will need to be a combination of enrolment growth and efficiency, and disaggregated in the different sub sectors of the system
- Emphasis will be put on what increases in graduate output could be achieved within 10 years, taking into consideration increased enrolments and improvements in efficiency.
- Scenarios for increases in masters and doctoral graduates, which would require increases in international student enrolments and high skill immigration plans under consideration by the Department of Home Affairs. Unlike the Harvard recommendation, which simply argued for high skill immigration (Dube and Hausman et al 2007), this scenario will look at immigration as supplementing national capacity building.

This document has focussed primarily on system-wide planning and coordination issues. We recognise that many important areas, such as those pertaining to, amongst others, social responsiveness, institutional culture and inclusion, are missing not addressed. These and other issues no doubt require attention (especially at institutional level) but fall outside the scope of this document.

Any final plan for higher education should also be informed by policy processes underway in the Department of Science and Technology, in particular the report of the Review commissioned by the Minister of Science and Technology.

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