



**DNA Economics**  
Making economic sense of common problems

Volume 5: Financing options for the  
implementation of the White Paper  
on Post School Education and  
Training

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## LIST OF ACRONYMS

|        |                                                    |
|--------|----------------------------------------------------|
| AFS    | Annual Financial Statement                         |
| DBE    | Department of Basic Education                      |
| DHET   | Department of Higher Education and Training        |
| FCS    | Full cost of study                                 |
| FET    | Further Education and Training                     |
| FTE    | Full Time Equivalent                               |
| GETC   | General Education Training Certificate             |
| HEQC   | Higher Education Quality Committee                 |
| HESA   | Higher Education South Africa                      |
| HRD    | Human Resource Development                         |
| HRDCSA | Human Resource Development Council of South Africa |
| NAMB   | National Artisan and Moderation Body               |
| NC(V)  | National Certificate (Vocational)                  |
| NLRD   | National Learners' Records Database                |
| NQF    | National Qualification Framework                   |
| NSA    | National Skills Authority                          |
| NSDS   | National Skills Development Strategy               |
| NSF    | National Skills Fund                               |
| NSFAS  | National Student Financial Aid Scheme              |
| NSDS   | National Skills Development Strategy               |
| PER    | Performance and Expenditure Review                 |
| PSDF   | Provincial Skills Development Forums               |
| PSET   | Post-School Education and Training                 |
| SANCO  | South African National Civic Organisation          |
| SAQA   | South African Qualification Authority              |
| SDA    | Skill Development Act 97 (1998)                    |
| SETA   | Skills Education Training Authority                |
| SDL    | Skills Development Levy                            |
| TVET   | Technical and Vocational Education and Training    |
| PED    | Provincial Education Department                    |
| GER    | Gross Enrolment Ratio                              |

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## MAIN POINTS

- The Post School Education and Training (PSET) system makes a major contribution to South Africa's social and economic development. In 2014, there were about 1.9 million enrolments in public universities, TVET and community colleges. Government spent R41.1 billion, which represents about 55.6% of total expenditure on PSET.
- The White Paper for PSET seeks to increase enrolments to 5.1 million by 2030, effectively doubling the size of the system while improving the quality of training programmes. In order to fully achieve the objectives of the White Paper, this report estimates that about R652 billion will be needed for PSET in 2030 (or R249 billion in real 2014 prices). This compares to total expenditure of R74 billion spent on PSET in 2014.
- Whereas enrolments are expected to double between 2014 and 2030, expenditure needed to achieve the aims of the White Paper increases by three-fold over the period. Consequently, expenditure on PSET as a percentage of GDP is expected to increase from 1.7% in 2014 to 4.9% by 2030, if the policy targets are met.
- The rapid growth in expenditure means that it will exceed the funding available, particularly if tax revenues grow in line with the National Treasury's long term projections. This will lead to a shortfall of R333.2 billion in 2030. Given the scale of this shortfall, there is an urgent need to determine whether the enrolment and policy targets set out in the White Paper can be reasonably accomplished.
- Fundamentally, the White Paper's targets change the structure of the PSET system; growing the share of enrolments in mid-level qualifications compared to university-level qualifications. Therefore, the share of enrolments in TVET colleges will account for about half of all enrolments in PSET by 2030 whereas the proportion of university enrolments will decline from 50% in 2014 to 31% in 2030.
- In the TVET sector, expenditure will rise from R 8.5 billion to R244 billion (or R77.5 billion in real 2014 prices) between 2014 and 2030. This increase is fuelled by the rapid expansion of enrolments, improvements to the quality of current programmes and substantial changes to the mix (and duration) of training programmes offered.
- In contrast, the expenditure on the university sector does not grow as quickly as the TVET sector. Expenditure will increase from R52.9 billion in 2014 to R 343.9 billion in 2030 (or R131.3 billion in real terms). The less-pronounced change reflects the fact that per-student increase in costs due to quality improvements in the university system is smaller; as universities throughput rates are much higher and more stable than those in TVET colleges. The factors that drive expenditure in university system are mostly policy-related, and include the increase in the number of enrolments, higher number of lecturers with a PhD (as articulated in the NDP), increases in the number of students with a PhD and a higher percentage of students housed in university residences.
- The White Paper creates a new type of institution – the community college – to deliver a range of adult, vocational and skills training programmes. Estimating the cost of training in the community college sector is difficult as there is much uncertainty around the types of programmes that will be delivered through these colleges. Nonetheless, we estimate that R21.2 billion will be needed by this sector to achieve the target of 1 million enrolments.
- It is important to note that the rapid expansion envisaged by the White Paper cannot happen without additional investment in infrastructure. Under the full policy scenario,

another R754 billion will be needed for infrastructure investment in the PSET system between 2014 and 2030.

- Funding the PSET system in light of the significant amount of resources needed to meet the policy targets will pose a major challenge for government, and requires some hard decisions from policy makers. The options available to policy makers are to:
  - Reduce expenditure: by improving inefficiencies, reducing enrolment targets, changing the mode of delivery and decreasing spending per capita.
  - Increase funding to PSET: by increasing the amount of state funding available through higher taxes, increasing non-state sources or accessing funding from alternative sources.
- It is likely that a combination of the above-mentioned options will be needed by government. *There is however a strong case to be made* for revisiting the policy targets, particularly as the modelling work shows that there are trade-offs between access and quality. If the levels of quality and throughput remain low, particularly in the college sector, the benefits of rapidly increased enrolments to either students or the economy will be minimal.
- Funding options will become clearer when decisions around the scale and quality of the PSET system have been made. The approach to funding the university and college sectors depends on three factors, including the:
  - state's continued ability to fund the PSET through subsidies
  - ability of students to pay for their education upfront or later (once they are employed)
  - extent to which students accrue private benefits from receiving PSET
- The private benefits received by university graduates (in the form of higher earnings over their lifetime) are much larger than those received by beneficiaries of technical and vocational training. When Cabinet took the decision to make additional funding for fees through the NSFAS, the policy intent was for university students to bear part of the cost of their education. However, the NSFAS' low repayments rates undermines the sustainability of the funding model for universities, and need to be addressed urgently.

## EXECUTIVE SUMMARY

The White Paper on Post-School Education and Training (PSET), published in 2013 sets enrolment targets and quality objectives for the three sectors within the system: universities, TVET and community colleges. These targets and objectives are ambitious, particularly in relation the TVET and Community Colleges where enrolments are expected to increase by more than 250% over 15 years, while simultaneously the nature and quality of their educational offerings are expected to be transformed and improved, in order to produce young people who are skilled in occupations needed in the economy.

The White Paper was published without any formal estimate of its likely costs and resource implications. However, the proposals set out in the White Paper have far reaching implications for the country's public finance system. As a result, Cabinet established an Interdepartmental Task Team (IDTT) to:

- estimate the costs of implementing the White Paper, and
- review the options for funding and financing the implementation of the White Paper.

This report summarises the results of their work, and is the final volume in a five-volume series of reports.

### Consolidated expenditure and funding estimates

In 2014, there were about 1.9 million enrolments in public universities, TVET and community colleges. Government spent R41.1 billion, which represents about 55.6% of total expenditure on PSET. The White Paper for PSET seeks to increase enrolments to 5.1 million by 2030, effectively doubling the size of the system while improving the quality of training programmes. It also changes the structure and sector composition of the PSET system. Consequently, the proportion of enrolments in TVET colleges is expected to increase from 37% in 2014 to 49% of total enrolments in 2030; community colleges rise from 13% to 20%, and university enrolments decline from 50% to 31%. Effectively, the PSET system will be geared towards producing occupational and vocational skills required by the labour market.

In order to achieve the policy imperatives set out in the White Paper, it is estimated that the total cost of the PSET system will be R652 billion in 2030 (R249 billion in real 2014 prices). Expenditure on PSET as a percentage of GDP, therefore rises from 1.7% in 2014 to 4.9% by 2030. Using growth projections supplied by National Treasury, this results in an estimated deficit of approximately R333 billion in 2030 (R127 billion in real prices), or about 2.8% of estimated GDP in 2030. Whereas enrolments are expected to double between 2014 and 2030, expenditure needed to achieve the aims of the White Paper increases by three-fold over the period.

### Sector expenditure and funding estimates

#### TVET sector

Following a period of rapid growth in the TVET system between 2010/11 and 2014/15 and despite the availability of additional funding through the National Student Financial Aid Scheme (NSFAS) and the National Skills Fund (NSF), real funding per student has declined; likely to the detriment of quality within an already underperforming system. The White Paper proposes to further expand the sector to accommodate 2.5 million enrolments in 2030. To achieve this enrolment target, expenditure is expected to increase from R 8.5 billion to R244 billion (or R77.5 billion in real 2014 prices) between 2014 and 2030.

This increase is fuelled by the rapid expansion in enrolments, improvements to the quality of current training programmes and changes to the mix (and duration) of training programmes offered. These policy proposals have emerged in response to the commonly held view that the quality of programme offerings in the TVET sector is weak, and does not meet the needs of employers or industry. The expenditure analysis confirms this finding, and suggests that expenditure on certain aspects of training, particularly the practical components, is minimal. Throughput rates in TVET colleges are also low because students in the system do not receive sufficient academic and financial support, given that TVET students come from highly disadvantaged backgrounds. This suggests that substantial additional funding per student might be required to improve throughput rates and efficiency in the system, and drives up total expenditure in the sector.

Another key driver of expenditure in the TVET sector is the changes to the mix of training programmes offered by TVET colleges. Currently, a high proportion of training programmes are trimester or part-time programmes and qualifications. Therefore, although, TVET colleges had about 702 000 enrolments in 2014, the number of Full Time Equivalents (FTEs) enrolments was 349 580. Proposals under the full policy scenario seek to change the ratio of part to full time programmes delivered by TVET colleges. By our estimates, this proposal results in five-fold increase in the number of Full Time Equivalents to approximately 1.9 million in 2030.

It is likely that the funding model for the TVET sector will not change substantially. State funding in the form of a subsidy will remain one of the major sources of funding for the sector. That said, there are opportunities for a stronger articulation between the allocation of funding from the fiscus and the use of the Skills Development Levy, particularly in positioning the PSET system to supply needed skills for the economy.

One way of achieving this objective is to steer the discretionary funding component of SETA funding (currently around R6 billion) towards occupational qualifications, with an increasing proportion of these being achieved through programmes delivered by public colleges and universities. The main focus of this funding should be on the practical and workplace component of occupational qualifications. The funding mechanism could be designed to allow for private sector involvement and should act as an incentive to public colleges and universities to produce quality programmes aligned to industry needs.

Throughout the TVET sector there is a need for funding systems to be designed to incentivise performance and achieve partnerships with industry. Introducing performance-linked funding

norms for TVET colleges is likely to counterbalance the effects of enrolment targets and increase throughput rates, making colleges accountable for performance.

### *Universities*

Expenditure per FTE student varies considerably across and within the three categories of universities<sup>1</sup>. In 2013, on average, Traditional Universities spent R118 980 per FTE student, while Comprehensive Universities spend, on average, R69 550 per FTE student, just slightly more than Universities of Technology, which spends R65 160. The three most important drivers of expenditure in the university sector are the student to academic ratio, the number of non-academic professional and non-professional staff relative to the student count, and the mix of undergraduate to postgraduate enrolments in a university. These and other expenditure drivers are taken into account in our cost estimates for the university sector. Under a full policy scenario, expenditure on the university sector will increase from R52.9 billion in 2014 to R 343.9 billion in 2030 (or R131.3 billion in real terms).

The change reflects the fact that per-student increase in costs due to quality improvements in the university sector is smaller than those required by the TVET sector; as universities' throughput rates are much higher and more stable than those in TVET colleges. The factors that drive expenditure in the costing model are mostly policy-related, and include the increase in the number of enrolments, higher number of lecturers with a PhD (as articulated in the NDP), increases in the number of students with a PhD and a higher percentage of students housed in university residences.

Achieving these laudable goals does however require significant funding. Recent protest action by students demonstrate how contested issues relating to the funding and financing of universities are. In general, universities receive income from four distinct sources: government subsidies, student fees, the NSFAS and third stream income. The "third stream" refers to all income generated through research contracts, donations, investments and facilities rental. In effect, this is a catch-all category for income that cannot be considered government grants or fees.

There has been a significant shift in Government's approach to the funding of the university sector, with much more funding allocated through NSFAS support to students. NSFAS has grown at 13.8% per annum in real terms, relative to the 2.7% growth in enrolments and the 2.6% real growth in state subsidies over the period.

In the university sector, there has been a particular focus on increasing access to education and training for the poor through rapid expansion of funding to the NSFAS. Therefore while greater access has been created for the poor, this has put pressure on universities to increase fees in response to rapid enrolment growth. Between 2010 and 2014, the average annual increase in fee income per student FTE was 9.2%; substantively higher than inflation. Therefore, although the policy decision to direct funding through the NSFAS has substantially increased access for the poor, the decrease in the state subsidy has likely resulted in higher fees for students. As a

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<sup>1</sup> Universities are categorised into three groups: Traditional, Comprehensive and Universities of Technology.

consequence, university education has become more expensive for students who are not eligible for the NSFAS award, and increased the gap between the full cost of study and the value of NSFAS awards; creating the payment gap.

This rising payment gap, which has likely contributed to the high dropout and failure rates amongst NSFAS beneficiaries. The long term sustainability of the university system is further compromised by the NSFAS' poor debt management and recovery capacity. Designed as an income contingent scheme to recover part of the cost of higher education from students, the NSFAS' repayment rates are very low, standing at about 3.7% in 2014. Additionally, the bursary conversion programme removes the students who graduate, and are hence likely to pay back their fees, from the pool of re-payers.

### *Community colleges*

Community colleges are funded through voted funds, with expenditure increasing from R 1.22 billion in 2010/11 to R 1.73 billion in 2014/15. Despite the 45.5% increase in overall funding, the simultaneous increase in enrolments means that revenue (from direct government transfers) per learner decreased from R 6 714 in 2014/15 to R6 071 in 2015/16. The year-on-year budget increases for AET have been on a relative decline and reflects the fact that provinces have consistently not prioritised AET and utilised available education budgets for other programmes. This decline in the AET budget allocations affect the state of AET provision and the perceived decline in quality of provision over the years. This is confirmed through an analysis of expenditure which shows that 93% is spent on compensation of employees, leaving very little for the management or equipping of the colleges or learner materials.

Community colleges are a new type of institution established to deliver a range of adult, vocational and skills training programmes. Estimating the cost of training in the community college sector is difficult as there is much uncertainty around the types of programmes that will be delivered through these colleges. Nonetheless, using information from the DHET, we estimate that R21.2 billion will be needed by this sector to achieve the target of 1 million enrolments. Most of the funding required for community colleges will be sourced from the state. It is possible that a proportion of the SDL could be allocated to address the NEETs challenge by funding courses delivered through community colleges.

### **Workplace training**

In principle, the SDL was designed to fund the skills system. Over the past few years, SDL income allocated to SETAs and NSF has been used to augment state funding within PSET. This was done in two ways. First, funds from the National Skills Fund, and in particular reserves that had built up, were used to fund the NSFAS deficit. Secondly the Department has sought to press SETAs during annual planning processes to identify sector projects that involve universities and public colleges and to fund these, either directly or via NSFAS.

At this stage, there is some uncertainty over the future use of the SDL. The current plans (SETA Landscape proposals) are attempting to steer the available levy in a manner that supports

implementation of the White Paper. But, additional stakeholder engagement (particularly in Nedlac) is needed to achieve consensus on the role of the skills levy in improving the supply of skills to the economy. It appears that a reassertion of the role of the SDL of producing skills for the economy is needed as a starting point for the reforms.

The role and mandate of the NSF needs to be clearly demarcated. Currently, the NSF funding is allocated on the basis of broadly defined criteria, such that it can be used to fund a wide range of activities. Going forward, the NSF can be used to achieve a number of specific goals, some of which have been discussed previously. Firstly, a proportion could be allocated on a long term basis to support poor people to study at university in scarce skills occupational programmes. Secondly, a sum could be set aside for infrastructure development within in PSET with a specific emphasis on develop capacity to deliver occupational qualifications. Such money should be allocated in a manner that leverages private sector funding and PPPs.

Whilst it is not possible to state with certainty that the current SETA proposals will be implemented, there is a clear intention to ensure that available income from the levy is used more effectively to support workplace learning conducted via public colleges and universities. However, not all workplace training can or should be conducted via public colleges and universities and so the challenge is to broker agreement with NEDLAC stakeholders on the proportion of the levy to be spent in this way and the accountability mechanisms that will ensure that the focus of the levy remains the delivery of quality workplace training.

### **Funding and financing options**

Funding the PSET system in light of the significant amount of resources needed to meet the policy targets will pose a major challenge for government. The options available to policy makers are to reduce expenditure or increase funding for PSET. It is likely that a combination of the above-mentioned options will be needed by government. As the range of scenarios developed for this project reveal, changing the enrolments targets have a considerable impact on the expenditure. The system is also sensitive to certain cost drivers, wherein any changes in these will have fairly large impacts on the expenditure estimates.

There are some levers that could result in a decrease in overall expenditure, including improving efficiency, changing the mode of delivery (contact versus distance education) and decreasing expenditure per capita. Each of these options will have an impact on the quantity and quality of training programmes and needs to be considered carefully. The models built for this project can help determine the influence of these decisions on expenditure.

In relation to funding, there are various options for structuring the funding approach. Given the complexity of the current system, it is important that the benefits and shortcomings of each source of funding are weighed before a decision is made. The funding of university education remains the subject of heated debate because of the private benefits that accrue to university graduates in the form of higher earnings over their lifetime. Nonetheless, the South African debate is complicated by the fact that there has not been enough public funding in recent years to cover all poor and eligible students, let alone the “missing middle”.

The majority of university funding will inevitably come from a combination of state grants (“tax funding”) and fees. University fees can further be divided between those that are paid up-front (“upfront charges”) and those that are paid for through “deferred charge schemes” such as loan schemes or a graduate tax. Upfront charges create barriers to access for poor households and the “missing middle.” “Deferred charge schemes” such as NSFAS promote access at the point of entry, and allow students to “study now, and pay later.” There are benefits to having a combination of state grants and fees because it ensures that the private benefits that accrue to students are recovered by the state, and is used to fund future education expenditure. However, this approach can only work if income contingent schemes (such as the NSFAS) operate efficiently. In our context, this means that major reforms are required to make NSFAS work better.

Increasing the share of state funding is not an easy task. There are two ways in which this can be done. First, additional taxes can be levied, but these instruments have pervasive impacts on the economy. In order to fund the shortfall under the full policy scenario, VAT would need rise to 27% in 2030. Second, it may be possible to reprioritise the national budget in favour of PSET, but these decisions can only be made through the budget process. After all options have been exhausted, if the expenditure requirement continues to exceed the funding available, then hard choices need to be made the attainability of the White Paper targets.

# 1 INTRODUCTION

## 1.1 Background

Since South Africa's first democratic elections in 1994, the public Post-School Education and Training (PSET) system has undergone many changes. National policies have been transformed, legislation and regulations have been revised, new institutions have emerged and old ones have been restructured, and alternative funding arrangements have been developed. From all of these changes, two distinct sectors have emerged - the university sector and college sector.

The university sector consists of 26 public universities, providing a range of theoretical and technical programmes. Traditional universities offer high level and specialised programmes, whereas universities of technology have a narrower academic mandate, and focus on science, engineering, and technology programmes as well as business and management. Comprehensive universities have attributes of both types of universities. The college sector is a somewhat new construct, combining Technical Vocational Education and Training (TVET), previously known as Further Education Training colleges, with community (adult learning) colleges. Interacting with and overarching these formal public institutions is workplace training, which plays a crucial role in ensuring that knowledge and skills acquired are translated and developed to the benefit of the individual and the wider economy.

The White Paper for PSET, released by the Department of Higher Education and Training in 2013, outlines the core challenges confronted by the system, and sets out a number of policies for expanding the university and college sectors. Specifically, this paper proposes three specific targets to be achieved over the NDP period, by 2030.

**Table 1: Summary of targets in the White Paper on Post School Education and Training**

| Sector             | Actual   | Target (2030) | % change |
|--------------------|----------|---------------|----------|
| TVET               | 702 000* | 2 500 000     | 256%     |
| Community colleges | 265 000^ | 1 000 000     | 277%     |
| University         | 937 000* | 1 600 000     | 71%      |

Source: (DHET, White Paper for Post-School Education and Training, 2013) Baseline years differ: ^2011 and \*2014

While the targeted enrolment increase within universities is significant in its own right, the most ambitious aspect of the White Paper is the expected increases within the college sector, particularly within TVET colleges. The White Paper states that the *"DHET's highest priority is to strengthen and expand the public TVET colleges and turn them into attractive institutions of choice for school leavers"*.<sup>2</sup> This is in line with the high priority that the National Development Plan places on TVET colleges.<sup>3</sup>

Increasing the size of the PSET system by this scale, in less than two decades, will be complex and costly. This at a time when Government resources in general, and funding to the PSET system

<sup>2</sup> (DHET, 2013, p. xii)

<sup>3</sup> (National Planning Commission, 2012, p. 40)

in particular, are severely constrained. Whereas the White Paper sets out the needs of the system and how these should be addressed; it does not try to cost these various interventions. Moreover, the White Paper does not consider the different funding options available to the system in any detail, and how these can be made more efficient or sustainable.

This project seeks to estimate the cost of implementing the White Paper. In doing so, this paper intends to provide policy-makers with the information and evidence they need to make informed choices about implementation of the White Paper, and to understand the resourcing requirements and trade-offs associated with these choices. In parallel to this project, the DHET has begun work to develop an implementation plan for the White Paper; and it is critical that these processes continue to inform each other.

## 1.2 Methodology

The project was composed of four phases:

1. A desktop analysis of international practices in the funding of PSET.
2. An analysis of the level and composition of expenditure and revenue in the South African PSET system over the recent past.
3. The development of a detailed costing model of the implications of the White Paper on PSET.
4. The development of a funding model of the PSET system and an investigation of the different funding and financing options for the implementation of the White Paper.

Each of these phases culminated in individual reports that are available as annexures to this report.

The models provide detailed projection of enrolments, costs and revenues for every year until 2030 within each of the PSET sectors (universities, colleges and the workplace). The model methodologies and assumptions were developed on the basis of:

- **The findings of the expenditure and revenue analysis:** In particular, key cost drivers, expenditure and funding trends, enrolments by institution and qualification / programme, performance (e.g. throughput rate) data.
- **The targets and objectives articulated in the White Paper and National Development Plan (NDP):** In addition to the explicit enrolment targets for each of the sectors, the White Paper and NDP provide discussions on what the PSET system should look like by 2030 and how its target and objectives might be achieved.
- **Consultations with DHET representatives and other PSET stakeholders:** As the White Paper implementation plan is still being developed, extensive consultations were required to determine ongoing developments, plans and strategies within the PSET system, the challenges to achieving the full White Paper vision and the viability of different funding and financing options.

Model assumptions were agreed with the relevant branches of the DHET to ensure that it is in line with current thinking in the department. It is expected that the created models will be used by the

DHET in the creation of their implementation plan for the White Paper and that these models will be refined over time as new information and data becomes available.

### **1.3 Outline**

Section 2 provides an overview of recent expenditure, revenue and performance trends within the PSET system. Section 0 outlines the key results of the costing and funding model scenarios developed and the assumptions made in arriving at these results. In particular, it discusses the funding deficits that to result under different cost and funding scenarios. Section 4 concludes by discussing the different mechanisms and options available for funding these deficits and the trade-offs that need to be considered to ensure that an impactful, equitable and sustainable PSET system can be created.

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## 2 CURRENT FUNDING AND EXPENDITURE OF PSET

This section gives a breakdown of total funding and expenditure within the PSET system, before providing a detailed analysis of trends within each of sector.

### 2.1 PSET funding and expenditure

#### 2.1.1 Expenditure within PSET

As shown in Table 2 below, a total of R73.55 billion was spent on the PSET system in 2014/15, which represents 1.7% of the country's GDP. This includes final expenditure by TVET colleges, universities, SETAs, Community Colleges and other supporting institutions such as the DHET itself. There are no reliable estimates of expenditure for community colleges, and transfers to these institutions are therefore used as a conservative proxy<sup>4</sup>. The table shows that the bulk of expenditure on the PSET system is in the university sector, which accounts for 71% of the total, followed by workplace training (14%) and TVETs (11%). Very little data is available on the expenditure of private education and training providers and hence (non-SETA funded) private expenditure is not included here.

**Table 2: Expenditure on the PSET system (2014/15)**

| Sector                          | Amount (R'000)     | Percentage  |
|---------------------------------|--------------------|-------------|
| TVET Colleges                   | R8 501 243         | 11%         |
| SETAs                           | R10 456 134        | 14%         |
| Universities                    | R52 860 091        | 71%         |
| Community Colleges              | R1 731 890         | 2%          |
| Other institutions (incl. DHET) | R426 536           | 1%          |
| <b>Total</b>                    | <b>R73 975 894</b> | <b>100%</b> |
| <b>Total as % of GDP</b>        | <b>1.7%</b>        |             |

Source: DNA Economics calculations<sup>5</sup> based on data provided by the DHET

#### 2.1.2 Funding and financing of PSET

Funding arrangements for the university and college sectors differ substantially from that of the skills and workplace training system. The university and college sectors are funded from subsidies, student fees and 'other third stream sources' of income. The state provides subsidies to universities, and provides funding to the NSFAS for loan and bursary disbursements. In contrast, the Skills Development Levy, introduced in 1999, primarily funds the skills and workplace training system.

<sup>4</sup> This approach may underestimate expenditure in the community college sector, as donors, foundations, and private companies do fund programmes within these PALCs.

<sup>5</sup> It should be noted that some SETA funds are eventually spent within the other sectors (TVET, Universities and Community Colleges), the exact amount of which is not available. As a result the above table does include some degree of double counting; but the impact of this is likely to be very minor.

State funding accounted for 55.6% of total expenditure on the PSET, or about R41.1 billion in 2014/15. Of this amount, direct subsidies to the college and university sectors accounted for 77% of total government expenditure, with transfers to NSFAS (student fees) accounting for the next largest amount (22%). This figure may underestimate the total spending by Government, as some of the expenditure by departments and public entities on the PSET system cannot be easily identified.

**Table 3: Government contribution to PSET by source (2014/15)**

| Government Source                                               | Amount (R'000)    | Percentage |
|-----------------------------------------------------------------|-------------------|------------|
| NSFAS                                                           | 8 961 429         | 22%        |
| DHET Transfers to TVET colleges                                 | 5 827 173         | 14%        |
| DHET Transfers to Universities <sup>6</sup>                     | 24 155 093        | 59%        |
| Community Colleges                                              | 1 731 890         | 4%         |
| PSET Institutions (incl. DHET)                                  | 426 536           | 1%         |
| <b>Total</b>                                                    | <b>41 102 121</b> |            |
| <b>Government PSET expenditure % of total PSET expenditures</b> | <b>55.56%</b>     |            |
| <b>% of total of tax revenue</b>                                | <b>4.17%</b>      |            |

Source: DNA Economics based on various sources of information

A key funding source is the Skills Development Levy (SDL); which was established through the Skills Development Act of 1998 and Skills Development Levies Act of 1999. These acts also established the (currently 21) Sector Education and Training Authorities (SETAs) and the National Skills Fund (NSF). The amount of money collected through the levy is currently approximately R15 billion. Of this amount 10% (R1.5b) is spent on administration, 20% (R3b) on grants to employers for submission of training plans and reports to SETAs, 20% (R3b) goes to the National Skills Fund and 50%<sup>7</sup> (R7.5b) is available for grants to be allocated to support skills development and projects in support of sector skills plan implementation.

SETA's key responsibilities include the development and implementation of sector skills plans as well as the establishment, promotion, quality assurance and funding of relevant training programmes. Legislation also allows NSF funds to be allocated to "government priorities", as determined by the DHET Director General and the NSF is also expected to fund training for those that will not be able to access SETA-funded programmes. Three National Skills Development Strategies (NSDS) since 1998 have provided the strategic framework for SETA and the NSF to promote, fund and deliver on workplace training; with the emphasis of funding changing in response.

<sup>6</sup> Department of Higher Education. 2015. University State Budgets Public Report. Directorate: University Financial Planning

<sup>7</sup> These are rounded figures. Spending in 2015/16 may be more than R15 billion (possibly as much as R15.6m), but the figure of R15b is a reasonable estimate and is an easy figure to work with and present percentages. There is 0.5% being paid to the QCTO and a small percentage is paid to SARS to collect the levy. These amounts have been ignored for the purpose of the overall analysis.

Note that the spending that results from the SDL is excluded from Table 3 because it was not originally intended as a mechanism to finance the college and university system. However in recent years, the government has in some cases tapped into the Skills Development Levy to plug deficits in funding for the college and university sectors. This involved using the National Skills Fund's (NSF) accumulated reserves to fund the NSFAS<sup>8</sup> and over-enrolments in TVET colleges. However, as the accumulated reserves of the NSF dwindled - as a result of improvements to financial management and grant application and adjudication processes - the department has more recently opted to use the uncommitted surpluses accumulated by the SETAs to meet these funding gaps.

Although the use of uncommitted accumulated reserves (initially from the NSF and now from SETAs) is a 'quick fix' for the funding constraints currently experienced, it is not a sustainable long-term solution to funding the sector. Eventually, as accumulated reserves erode, government will again face the challenge of maintain these higher funding levels.

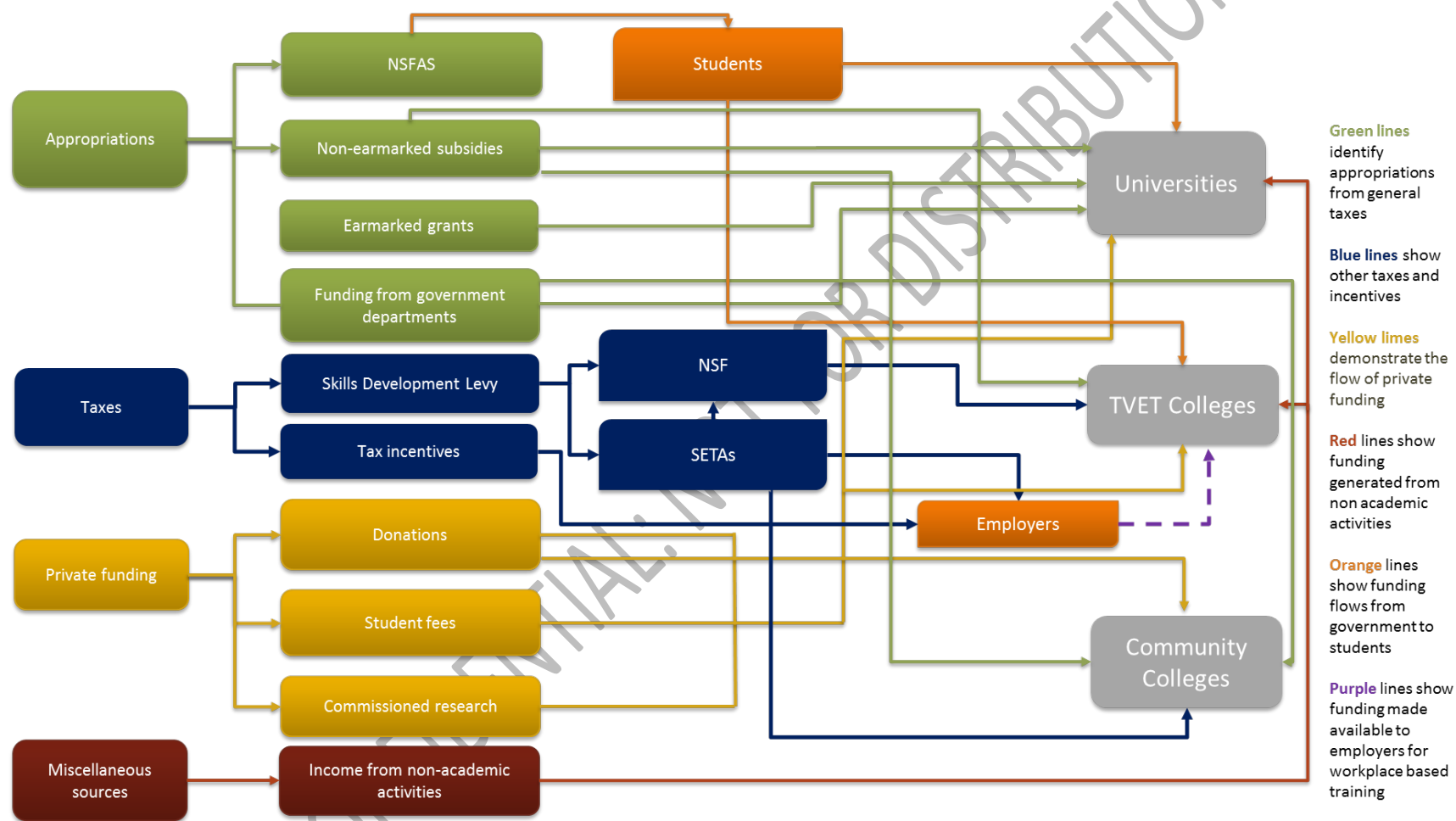
There are a wide variety of other funding sources within the PSET system; often with complex mechanisms and formulae being used to allocate this funding. Figure 1 provides a diagrammatic representation of the main funding flows within the public PSET system. Even though this diagram excludes some of the small funding flows in the system, it already highlights the high level of complexity and interdependencies within the funding system. In some cases this complexity can help contribute to positive outcomes in the system; for example earmarked grants can help direct and incentivise spending towards the right goals. However, this complexity can also undermine the sustainability of the system; for example where state appropriations and the SDL are both used to fund the same aspects of training and this is not done in a coordinated, strategic way.

To help clarify some of these complexities and explain recent trends and developments, the expenditure and funding of each PSET sector (universities, TVET, Community Colleges and workplace training) will now be discussed in turn.

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<sup>8</sup> In 2013/14, the NSF spent a total of R 3.2 billion on the PSET system, of which R1.8 billion was given to NSFAS, at the behest of the Director-General to fund the deficit in fees. *Source: NSF Annual Report 2013/14*

Figure 1: Diagram of key funding flows within the public PSET system



Source: DNA Economics

## 2.2 Universities funding and expenditure

### 2.2.1 Funding and enrolment growth

In general, universities receive income from four distinct sources: government subsidies, student fees, the NSFAS and third stream income. Government subsidies include the block and earmarked grants. Block grants fund general and operational expenditure, whereas earmarked grants fund specific programmes or policy priorities. Fees include all tuition and residence fees paid by students to the universities. NSFAS transfers cover tuition, accommodation, meals and a stipend for students that have received NSFAS awards. The “third stream” refers to all income generated through research contracts, donations, investments and facilities rental. In effect, this is a catch-all category for income that cannot be considered government grants or fees.

State support to the university sector has outpaced enrolments, with total government funding per full-time equivalent student increasing in real terms over the last four years, as shown by the last row of Table 4 below. The table also shows a significant shift in Government’s approach to the funding of the PSET sector, with much more funding allocated through NSFAS support to students. NSFAS have grown at 13.8% per annum in real terms, relative to the 2.7% growth in enrolments and the 2.6% real growth in state subsidies directly to universities over the period.

**Table 4: The university sector - enrolments and funding**

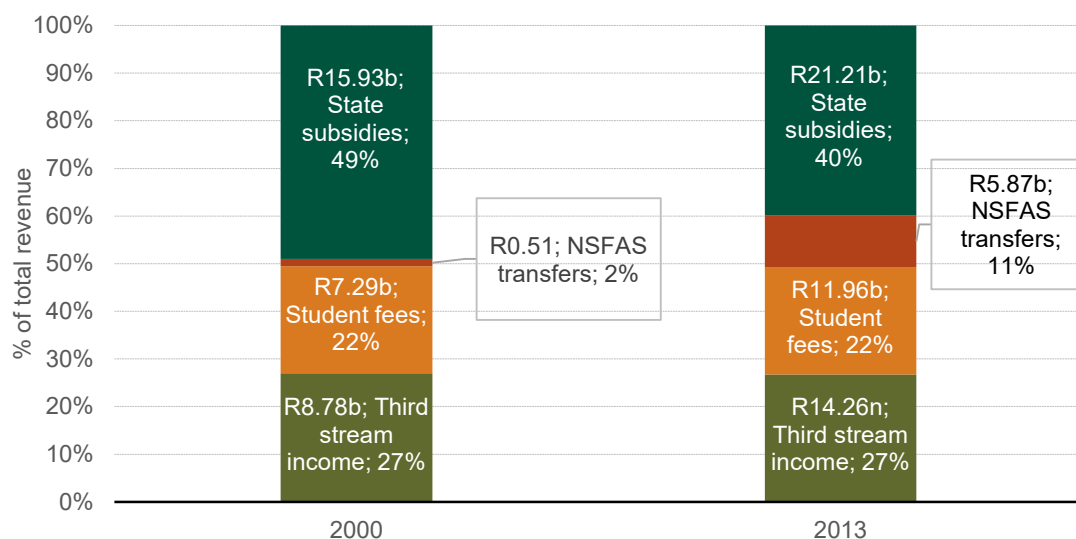
|                                            | 2010        | 2014        |             | Growth rate |       |
|--------------------------------------------|-------------|-------------|-------------|-------------|-------|
|                                            | Nominal     | Nominal     | Real        | Nominal     | Real  |
| Enrolments                                 | 600 002     | 668 705     | 668 705     | 2.7%        | 2.7%  |
| State subsidies to universities (R'000s)   | R17 516 740 | R24 155 093 | R19 420 959 | 8.4%        | 2.6%  |
| State subsidies per enrolment (R'000s)     | R29.19      | R36.12      | R29.04      | 5.5%        | -0.1% |
| NSFAS awards (R'000s)                      | R3 343 531  | R6 969 941  | R5 603 909  | 20.2%       | 13.8% |
| Total government funding (R'000s)          | R20 860 271 | R31 125 034 | R25 024 868 | 10.5%       | 4.7%  |
| Total govt. funding per enrolment (R'000s) | R34.77      | R46.55      | R37.42      | 7.6%        | 1.9%  |

Source: Department of Higher Education. 2014. Ministerial Statement on University Funding: 2015/16 and 2016/17

The growth in NSFAS awards reflects a policy decision to direct a larger proportion of financial assistance at poor students and thereby promote access to higher education, particularly for the previously disadvantaged. The impact of this policy is particularly clear when looking at the breakdown of university income from 2000; as shown in Figure 2. Between 2000 and 2013, government subsidies declined as a proportion of total income from 49% to 40%. In nominal terms, the government subsidy grew by about 33% from R15.9 billion in 2000 to R21.2 billion. This represents an average annual growth rate of 2.2%, well below the average inflation rate of 5.8% over the period.<sup>9</sup> This real decline in the subsidy was offset by a corresponding increase in NSFAS transfers, which increased more than tenfold over this period. The contribution of student fees (excluding contributions through NSFAS) and third-stream income has remained relatively constant from 2000 to 2013 as a proportion of total university revenue, growing on average by 3.9% and 3.8% per annum respectively.

<sup>9</sup> StatsSA, 2016

**Figure 2: Changes in the sources of university income over the period 2000 to 2013.**



Source: Department of Higher Education, 2015a and de Villiers (2012)

Total fees, including those funded from NSFAS, has however increased significantly as a proportion of universities' income. While university and programme specific average fee data is not available, it is possible to provide an indication of fee increases by analysing the growth in university fee income per FTE student in the sector. Between 2010 and 2014, the average annual increase in fee income per student FTE was 9.2%; significantly above general inflation. Therefore, although the policy decision to focus on NSFAS has substantially increased access for the poor, the decrease in the state subsidy has likely resulted in higher fees for students. As a result, university studies has become more expensive for students who are not eligible for the NSFAS award, and increased the gap between the full cost of study and the value of NSFAS awards; creating the payment gap.

There are therefore several concerns regarding the effectiveness of the NSFAS scheme. As discussed, awards have failed to keep pace with the growth in the full cost of study at many universities. Rapidly rising fees combined with the so-called "some for all" approach to NSFAS funding has led to a rising payment gap, which has likely contributed to the high dropout and failure rates amongst NFSAS beneficiaries. NSFAS loan recoveries have also declined sharply, from a peak of 35.3% in 2006 to 3.7% in 2014; further putting strain on the fiscus. Increases to the NSFAS allocation was also intended to curb the problem of 'top slicing' i.e. spreading funding across a larger number of students in pursuit of higher enrolments and subsidies. This practice, which was adopted widely by universities, led to higher drop-out rates as students from low income households struggled to cover the full cost of study (OECD, 2010, p. vii).

### 2.2.2 Expenditure

Expenditure per full-time equivalent (FTE) student varies considerably across and within the three categories of universities<sup>10</sup>, and in general, reflects historical inequities. In 2013, on average, Traditional Universities spent R118 980 per FTE student ranging from R71 510 at the North West University to R194 330 at the University of Cape Town. The variation in expenditure is more subdued amongst Universities of Technology ranging from R58 250 to R68 850 per FTE student with an average of R65 160. Lastly, Comprehensive Universities spend, on average, R69 550 per FTE student, just slightly more than Universities of Technology. However, the variation is much greater. The University of Zululand spends 42% less per FTE student than the University of Johannesburg (R48 180 per student as compared to R82 990).

A number of factors influence expenditure per student FTE. Amongst the more important are the student to academic ratio, the number of non-academic professional and non-professional staff relative to the student count, and the mix of undergraduate to postgraduate enrolments in a university.

The cost of academic staff is also a major driver of overall university expenditure; and the unit costs of academic staff vary significantly by the type of institution. Whereas some of these costs can be explained by the qualification and skills of these academics, other institutional factors seem to be at play. This suggests that a more comprehensive review of academic salaries across South African universities may be needed.

Finally, there is a strong correlation between expenditure per student FTE and the ability of the university to source third stream income. Whereas this enables more established universities to diversify and supplement their funding, it may also serve to reinforce the unequal pattern of university spending and performance in the sector.

### 2.2.3 Performance

According to 2006, 2007 and 2008 cohort studies conducted by the Council of Higher Education, university throughput rates have improved over time. Over half of the cohort completed their 3 and 4 year degrees within six years. Based on these numbers, the total cost of producing a graduate for a three year degree averages R317 763. Between 2008 to 2014, the average annual growth rate for university graduates, at 5.6%, was much higher than the growth rate for enrolments over this period. This suggests ongoing improvements in efficiency in this sector.

A particular area of concern, however, is the performance of UNISA. In 2013, UNISA was responsible for 36.1% of all students enrolled at universities in South Africa, but only responsible for 19.3% of graduations. Table 5 shows that the differences in throughput rates<sup>11</sup> between primarily contact-learning universities and UNISA is stark. This suggests that even though the costs of providing distance education are far lower, a different approach to distance learning might need to

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<sup>10</sup> Universities are categorised into three groups: Traditional, Comprehensive and Universities of Technology.

<sup>11</sup> Where throughput rate here is defined as the proportion of those students starting a qualification at the same time (i.e. a cohort) who complete that qualification within the time specified in the heading of Table 5

be developed by other (traditionally contact) universities in order to improve throughput rates if distance learning is to contribute to increased enrolment targets in an efficient way.

**Table 5: Throughput rate comparison**

| Qualification                          | All besides UNISA - 6 year cohort | UNISA - 8 year cohort |
|----------------------------------------|-----------------------------------|-----------------------|
| 360 degree credit undergraduate course | 49%                               | 5%                    |
| 3-year undergraduate degree            | 59%                               | 14%                   |
| 4-year undergraduate degree            | 63%                               | 16%                   |

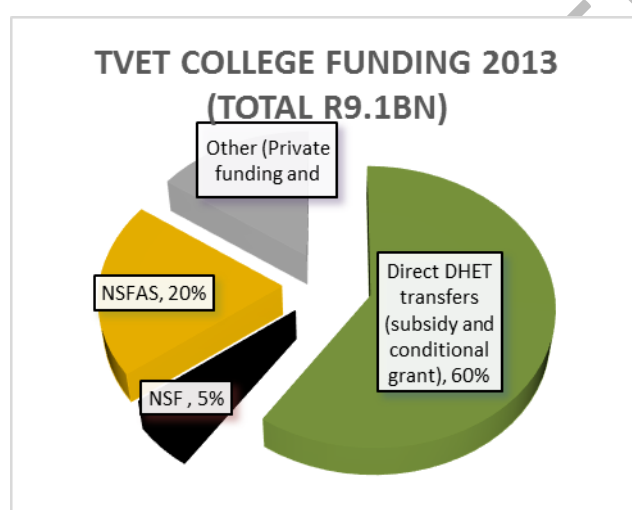
Source: Council for Higher Education (2015)

## 2.3 TVET funding and expenditure

### 2.3.1 Funding and enrolment growth

Figure 3 provides a breakdown of the sources of funding received by public TVET colleges in 2013, which totalled R9.1billion<sup>12&13</sup>. Colleges receive the majority of their funding through direct transfers from the DHET. In addition, government supports TVET colleges through student bursaries provided by the NSFAS and specific funding provided by the NSF and the SETAs. Private revenue through (non-bursary) course fees, donations and private company funding comprise only a small share of income.

**Figure 3: Overall TVET funding by source**



Source: Source: National Treasury, 2015 & TVET Performance and Expenditure Review draft report

Direct (non-NSFAS) college funding is determined through a formula that allocates funding based on the number of enrolments in each programme and an assumed normed cost for each

<sup>12</sup> The "Other" funding category in Figure includes SETA funding – i.e. not exclusively non-government funds – as it was not possible to isolate funding from SETAs from other project funding received by colleges from private entities.

<sup>13</sup> A detailed breakdown of funding for other (non-2013) recent years could not be provided from the data available to the project team.

programme. This formula creates an incentive for a college to increase its enrolments and takes no account of the throughput rates achieved by that college.

Total government funding to the TVET sector has risen at an even faster rate than in the university sector, but has still not kept up with enrolments which virtually doubled between 2010 and 2014. This has led to a significant and real decline in funding per full-time student over this same period. Moreover, the average cost of a TVET student (R11 130) is significantly lower than that of a university student (R46 500).<sup>14</sup> While the rapid growth in NSFAS funding has enabled many more learners to access TVET colleges, the resultant enrolment growth has caused a reduction in total per learner funding and has likely had negative impacts on the quality of technical and vocational training.

**Table 6: The TVET sector - enrolments and funding**

|                                            | 2010       | 2014       |            | Growth rate |        |
|--------------------------------------------|------------|------------|------------|-------------|--------|
|                                            | Nominal    | Nominal    | Real       | Nominal     | Real   |
| Enrolments                                 | 358 393    | 702 383    | 702 383    | 18.3%       | 18.3%  |
| State subsidies (R'000s)                   | R3 951 741 | R5 827 173 | R4 685 111 | 10.2%       | 4.3%   |
| State subsidies per enrolment (R'000s)     | R11.03     | R8.30      | R6.67      | -6.9%       | -11.8% |
| NSFAS awards (R'000s)                      | R317 998   | R1 991 488 | R1 601 178 | 58.2%       | 49.8%  |
| Total government funding (R'000s)          | R4 269 739 | R7 818 661 | R6 286 289 | 16.3%       | 10.2%  |
| Total govt. funding per enrolment (R'000s) | R11.91     | R11.13     | R8.95      | -1.7%       | -6.9%  |

Source: DHET Statistics on Post-School Education and Training in South Africa 2013 and 2014 (published in 2015 and 2016)

Similar to what was observed in the universities sector, a key change to college funding in recent times, is the substantial increase in the amount of student bursaries provided by NSFAS; increasing from R0.3 billion in 2009 to R1.83 billion in 2013 in an attempt to increase access to the TVET sector. While this has allowed significant increases in access and enrolments in the sector, this has made TVET colleges even more reliant on public funding.

### 2.3.2 Expenditure

Rigorous auditing processes and financial systems are not in place in many TVET colleges to ensure that college data is recorded and reported accurately; particularly historically. These limitations not only limit our ability to analyse detailed expenditure trends within TVET colleges, but also DHET's ability to oversee and advise colleges and create evidence driven policy.

A recently concluded Performance and Expenditure Analysis of the TVET sector<sup>15</sup> found that colleges spend only a relatively small proportion of their funds on the practical components of learning and that training is mostly theoretical in nature. As a result, it appears that the higher funding given for more practical NC(V) programmes, subsidise, to some extent, the spending on lower funded, less practical programmes (in particular NATED). The limited practical training provided also results in learners gaining mostly theoretical knowledge, with insufficient workplace-

<sup>14</sup> Note however that at least some of the difference is due many TVET students being enrolled in trimester or semester programmes. The average government funding per Full-Time Equivalent student is approximately R23 000.

<sup>15</sup> (National Treasury, 2015)

relevant and practical skills. The study also found significant differences in average unit cost between different colleges; which appear to largely be the result of historical inequities in provincial funding levels which continue to exist today.

The inability of many colleges to produce high-quality practical training also inhibits their ability to attract employer-directed SETA grant funds and hence grow enrolments in high priority occupational and artisan programmes.

### 2.3.3 Performance

Low performance and quality is a key concern within the TVET sector. In 2013, the average throughput rate for the National Certificate Vocational (NCV) programmes was just 10.8%; for every ten students that enrol in an NCV course, only one will complete the course after 6 years<sup>16</sup>. This undermines the efficiency of the system and greatly increases the cost of producing graduates. It consequently costs, on average, R454 260 to produce an NCV graduate.

The White Paper highlights the key role that the college sector (TVET and Community Colleges) has to play in the development of mid-level skills; of which there are currently serious shortages in the country. However, a number of challenges inhibit the ability of the TVET sector to address these shortages; all of which have significant current and future cost implications:

- The government funding available to TVET colleges has historically differed significantly by province; with some provinces providing particularly low funding (per learner) relative to the existing funding norms
- Despite recent increases in funding, many colleges still are not able to employ or retain skilled lecturers and deliver high quality training.

The White Paper calls for the re-design and streamlining of TVET programme curricula and delivery methods due to the recognition of several weaknesses in existing programmes; for example:

- NC(V) programmes are not as practically and vocational relevant as they were intended to be; with colleges spending substantially less on the practical aspects of training than was expected during the design of the funding norms.
- While NC(V) programmes were originally intended to be targeted to learners who have completed Grade 9 (NQF1), colleges increasingly accept and encourage enrolments from students who have completed higher qualifications; often in response to the difficulties experienced by learners with only Grade 9 in coping with the NC(V) syllabi (particularly in Engineering and IT programmes<sup>17</sup>). This creates inefficient and expensive learning pathways for the education system as a whole since many learners are being funded first to complete their schooling to grade 11 or 12 and then funded again to complete the NCV

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<sup>16</sup> (DHET, Statistics on Post-School Education and Training in South Africa 2013, 2015)

<sup>17</sup> This point was widely raised by interviewed officials during the National Treasury's Performance and Expenditure Review performed by DNA Economics (National Treasury, 2015)

from level 2 through to level 4. Some then go on to enter learnerships funded by SETAs and so end up being funded three times to achieve (or in many cases not achieve) the equivalent of a Matric.

- NATED curricula have in many cases become outdated and out of touch with the demands of the workplace; a problem worsened by the fact that most NATED students no longer receive concurrent workplace training.<sup>18</sup>

## 2.4 Community Colleges funding and expenditure

Community Colleges are primarily responsible for the provision of Adult Education and Training (AET) which was previously provided by the 3246 Public Adult Learning Centres (PALCs) under management of Provincial Departments of Education (PED). The AET sector is currently in a period of significant transition, with administration and oversight recently being shifted to the DHET nationally. A single community college has now been created within each province, with pre-existing PALCs now re-branded as community learning centres that report into these provincial colleges. The White Paper on PSET articulates many weaknesses with regard to the current provisioning of AET due to, among other things, insufficient resources, inadequate staffing, weak infrastructure and poor articulation.

The number of students enrolled in these AET centres increased marginally from 249,507 to 293,248 between 2013 and 2015 (see Table 7 below). In 2013, 68.7% of PALC enrolments were in ABET Levels 1 to 4, which provides adult learners equivalent qualifications to Grades 1 to 9 (i.e. NQF 1), with 28.7% enrolled in Grade 10 to 12 programmes and 2.5% in vocational learning programmes.

**Table 7: Enrolments in Public AET centres from 2013 to 2015**

| Year                                 | 2013    | 2014    | 2015    |
|--------------------------------------|---------|---------|---------|
| No of Students in Public AET Centres | 249,507 | 257,927 | 293,248 |

Source: (DHET, 2015) *Statistics on Post-School Education and Training for 2013 and DHET VCET Stats for 2014 and 2015*

Community colleges are funded through voted funds. As can be observed from the table below, the provincial budgets increased from R 1.22 billion in 2010/11 to R 1.73 billion in 2014/15. For the 2015/16 financial year, an amount of R 1.78 billion from provincial departments of education (PEDs) will form part of DHET budget to cover community colleges. Despite the 45.5% increase in overall funding, the simultaneous increase in enrolments means that revenue (from direct government transfers) per learner decreased from R 6 714 in 2014/15 to R6 071 in 2015/16.

**Table 8: CET funding allocation per province for 2010/11 to 2015/16 (R'000s)**

| Province     | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 |
|--------------|---------|---------|---------|---------|---------|---------|
| Eastern Cape | 290,757 | 321,958 | 346,397 | 377,356 | 392,282 | 387,431 |
| Free State   | 107,299 | 127,756 | 137,476 | 164,026 | 193,265 | 206,757 |

<sup>18</sup> White Paper on Post School Education and Training (2013), p. 14

| Province      | 2010/11          | 2011/12          | 2012/13          | 2013/14          | 2014/15          | 2015/16          |
|---------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Gauteng       | 261,225          | 347,706          | 379,481          | 416,983          | 423,471          | 421,962          |
| Kwazulu Natal | 132,824          | 155,366          | 161,144          | 178,617          | 177,353          | 187,232          |
| Limpopo       | 132,337          | 151,895          | 170,920          | 143,202          | 145,264          | 161,822          |
| Mpumalanga    | 99,963           | 111,900          | 137,431          | 138,591          | 154,611          | 156,563          |
| Northern Cape | 38,339           | 38,773           | 29,152           | 29,340           | 31,482           | 32,418           |
| North West    | 127,959          | 124,742          | 137,011          | 162,241          | 174,369          | 184,322          |
| Western Cape  | 32,152           | 33,098           | 36,920           | 37,912           | 39,793           | 41,846           |
| Total         | <b>1,222,855</b> | <b>1,413,194</b> | <b>1,535,932</b> | <b>1,648,268</b> | <b>1,731,890</b> | <b>1,780,353</b> |

Source: DHET VCET Budget Allocations

The year-on-year budget increases for AET have been on a relative decline. This means provinces have consistently not prioritised AET and utilised available education budgets for other programmes. This decline in the AET budget allocations affect the state of AET provision and the perceived decline in quality of provision over the years.

Of the amount transferred, 93% is spent on compensation of employees, leaving very little for the management or equipping of the colleges. However, community colleges were a neglected sector under PEDs with very little data available at national level, which severely limits understanding on the true expenditure trends and distribution within the sector.

## 2.5 Workplace training: SETAs and the NSF

### 2.5.1 Skills Development Levy Funding

Sector Education and Training Authorities (SETAs) and the National Skills Fund (NSF) are mandated through the Skills Development Act to fund and facilitate workplace training in South Africa. The Skills Development Levy (SDL) requires all employers to contribute 1% of their wage bill to fund learning and development. The levy is divided between the 21 SETAs (80%) and the NSF (20%). The amount of money collected through the levy is currently approximately R15 billion. Of this amount 10% is spent on administration, 20% goes to the National Skills Fund, 50%<sup>19</sup> is available for grants to be allocated to support skills development and projects in support of sector skills plan implementation whilst 20% goes to grants to employers for submission of training plans and reports to SETAs. The intention is that employers are incentivised to train their workers and to take part in the training of new entrants to the labour market, through participation in learnerships, apprenticeships or internships.

The SDL has consistently outstripped inflation and income tax revenue growth rates. Increases in the SDL is fuelled by wage increases and averaged 12.07% over a seven year period in nominal terms.

<sup>19</sup> These are rounded figures. Spending in 2015/16 may be more than R15 billion (possibly as much as R15.6m), but the figure of R15 billion is a reasonable estimate and is an easy figure to work with and present percentages. There is 0.5% being paid to the QCTO and a small percentage is paid to SARS to collect the levy. These amounts have been ignored for the purpose of the overall analysis.

**Table 9: Skills Development Levy growth**

|                           | 2011/12         | 2012/13        | 2013/14         | 2014/15         |
|---------------------------|-----------------|----------------|-----------------|-----------------|
| NSF Income                | R 2,004         | R 2,339        | R 2,416         | R 2,768         |
| SETA Administration       | 1052.65         | 1227.92        | 1269.47         | R 1,453         |
| SETA Mandatory Grants     | 2005.04         | 2338.90        | 2418.04         | R 2,768         |
| SETA Discretionary Grants | 4962.47         | 5788.78        | 5984.65         | R 6,850         |
| <b>Total SDL</b>          | <b>R 10,025</b> | <b>11694.5</b> | <b>R 12,090</b> | <b>R 13,839</b> |

Source:

SETAs and the NSF are not training institutions. They do not provide training, rather they facilitate and fund training through various PSET institutions and learning sites. Specifically the SETAs and the NSF fund training for workers – both employed workers and new entrants into the labour market. Most of the SETA grants have traditionally gone to employers who either train in-house or contract private training providers to train for them. In recent years, the DHET has been encouraging SETAs to form partnerships with public universities and TVET colleges to deliver skills training.

Currently some funds are being used (either directly from SETAs or via the NSF) for some learners in the public PSET system. The total number of learners funded by SETAs across various PSET learning programmes increased from about 197,000 to 312,000 in 2014. Given that grants do not necessarily have to match the exact cost of training and are based on individual funding ceilings more learners can be funded if the SETAs limit the grant values and vice versa. Grants can cover the full cost of training but in many cases additional funds are allocated by employers. Used effectively, grants can help mobilise additional funds that expand workplace training.

### 2.5.2 Performance

Over time, some SETAs have accumulated large surpluses as a result of underspending. Therefore, while SETAs were established to coordinate skills development efforts in a sector and disburse the SDL quickly and efficiently to employers to encourage workplace based training, this has frequently not happened in practice. Inefficient administrative processes within many of the SETAs have hamstrung efforts to encourage workplace based training. There have also been problems in engaging small businesses to participate in training.

In the past much of the available money went to private providers who delivered short courses, though this has changed as a result of the 2012 Grant Regulations requiring 80% of grant funding to go to PIVOTAL programmes. Proposals made by the SETA landscape paper to consolidate and integrate these institutions into the DHET will change how the SDL levy is used.<sup>20</sup> However it is not possible at this stage to state with certainty the nature of the final changes to be made. Whilst the policy intention is to align the work of SETAs and the NSF more closely to the public PSET system, the mechanisms for achieving this are not yet in place and discussions are ongoing amongst the NEDLAC stakeholders on how this can best be achieved.

<sup>20</sup> (Department of Higher Education and Training, 2015)

Nonetheless SDL income allocated to SETAs and NSF has in the past few years been used to augment state funding within PSET. This was done in two ways. First, funds from the National Skills Fund, and in particular reserves that had built up, were used to fund the NSFAS deficit. Secondly the Department has sought to press SETAs during annual planning processes to identify sector projects that involve universities and public colleges and to fund these, either directly or via NSFAS. So, for example, SETAs are now funding bursaries for students in scarce skills subjects to the tune of over R300m a year, via NSFAS who administers and monitors these bursaries on behalf of the SETAs. However DHET efforts to formalise the transfer of funds from SETAs to the NSF in order to enable more consistent allocations to fund aspects of PSET have been challenged. The SETA Grant Regulations that shifted reserves from SETAs to the NSF, have attracted some criticism from organised business about the use of a payroll tax, designed originally to fund workplace training being used (in their understanding) to fund PSET. Business Unity South Africa (BUSA) have taken the issue to court and the Regulations were found to be going beyond the scope allowed for in the legislation. The Department is now consulting on policy that will result in the legislation being changed to enable funds to be directed in line with policy.

Whilst it is not possible to state with certainty that the current DHET proposals will be implemented, there is a clear intention to ensure that available income from the levy is used more effectively to support workplace learning conducted via public colleges and universities. However not all workplace training can or should be conducted via public colleges and universities and so the challenge is to broker agreement with NEDLAC stakeholders on the proportion of the levy to be spent in this way and the accountability mechanisms that will ensure that the focus of the levy remains the delivery of quality workplace training.

### 3 FUNDING AND COSTING THE WHITE PAPER

#### 3.1 Methodology, assumptions and scope

One of the key outputs of this project was the creation of a model that estimates costs and revenue within the public PSET system from 2014 to 2030. Separate modules were developed for each of the sectors that allow the user to investigate the impact of changing key cost and revenue drivers within that sector. Together these modules create a consolidated view of the likely costs, revenues and deficits within the PSET system over the next 15 years under different assumptions.

A detailed discussion of the methodologies used, the functionality available and the assumptions made in these modules is beyond the scope of this report, but can be found in the accompanying documents.<sup>21</sup> This section does however provide a short summary of the costing and funding model scenarios that were used to contextualise the forecasts.

##### 3.1.1 Costing model scenarios

The results of the costing modules are presented here in the context of three scenarios:

- The **status quo** scenario illustrates the expenditure implications of meeting the White Paper total enrolment targets, while assuming that all the key cost drivers (e.g. student to lecturer ratios, the mix of enrolments by programme and, throughput rates) remain as they currently are. Effectively this scenario looks at the costs of increasing access, while keeping the key input factors that might affect quality the same.
- The **full policy** scenario is calibrated to meet the White Paper enrolment targets while improving quality at the same time. This scenario models changes to the cost drivers and input factors that are likely to improve quality. The changes in these factors are informed both by the White Paper and NDP, as well as the results of interviews carried out by the project team with policymakers.
- The **mixed scenario** represents a more gradual approach to improving access and quality, with attention being given to both and targets being achieved in an incremental manner. Given funding limitations, it might not be possible to meet the full White Paper enrolment targets or implement all the interventions to improve quality that were considered under the White Paper scenario. This scenario therefore shows the possible implications of less ambitious increases in enrolments and input factors; effectively representing a mix between attempts to increase access and improve quality.

Note that underlying each of these cost scenarios a large number of assumptions are made within each of the sector modules; which can be found in the appendices.

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<sup>21</sup> For a detailed discussion of model methodologies and assumptions, please see the project document entitled “Volume 3 Cost Implications of the White Paper proposals: Cost Model Manual.”

### 3.1.2 Funding model scenario

The funding of PSET is influenced heavily by two factors: government policy priorities and economic (and in particular tax revenue) growth. While the models allow the user to increase the proportion of government spending allocated towards PSET, the standard scenario assumption used is that this proportion stays the same; thereby showing the likely funding deficit if the PSET system is not re-prioritised within the national budget. However, total government funding available is dependent on the fiscal position and growth rates of the country. To estimate the funding available for the PSET system, the tax revenue available to fund public services must therefore be projected. Two approaches were taken to forecast tax revenue growth; which are used as the main funding scenarios:

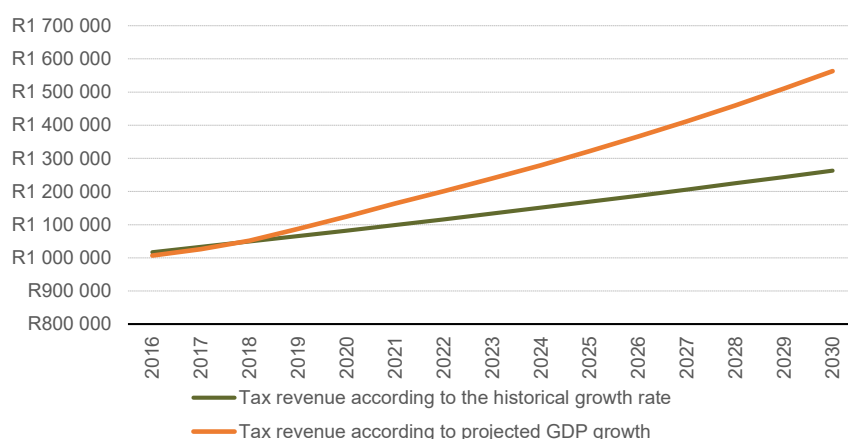
- **Historical growth** scenario: Here it is assumed that the growth rate in tax revenue over recent years will continue to 2030. Over the last decade annual tax revenue grew at a relatively consistent rate; aside from a decrease between 2008 and 2009 due to the contractionary effects of the 2008 financial crisis. From 2007 and 2014, tax revenue grew at an average annual rate of 8.1%. When adjusted for inflation, this nominal growth rate equates to a **real growth rate of 1.6% per year** which under this scenario is assumed will continue.
- **Projected growth** scenario: Here tax revenue is forecasted on the assumption that there is a positive relationship between economic activity and tax revenue. In particular, it is assumed that tax revenue will grow at approximately the same rate as GDP<sup>22</sup>. The Fiscal Sustainability Model maintained by the National Treasury forecasts GDP to grow at an average annual **real growth rate of 2.9% per year**, which is then the assumed rate used under this scenario.

These growth rates are used to estimate the amounts of state subsidies available to the university and college sectors. Note that in both cases, a CPI inflation assumption of 6.2% is made based on the estimates used in the Fiscal Sustainability Model. Figure 4 illustrates the projections of tax revenue under the two scenarios.

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<sup>22</sup> An analysis of tax collection data reveals that tax revenue as a percentage of GDP has remained relatively consistent, within a range of 21.9% and 26.4% over the last 20 years. This small range of 4.5 % makes it reasonable to assume that tax revenue will grow at approximately the same rate as GDP between 2016 and 2030.

**Figure 4: Projected tax revenue growth (R millions)**



Source: DNA Economics calculations

The second key funding source to be modelled is the Skills Development Levy (SDL). The integrated PSET model therefore includes an SDL module that estimates (i) the likely size of the SDL, (ii) its allocation between SETAs and the NSF, and (iii) how these institutions will spend their allocated funds in future. At a high level, these issues are approached as follows:

- (i) Similar to the approach used to estimate general tax revenue growth, two methods of forecasting SDL revenue growth are used as scenarios. The first ("historical") method uses historical growth rates to project revenue growth up to 2030. The second method uses GDP growth rates up to 2030, forecasted by the Fiscal Sustainability Model and assumes that the SDL remains a constant proportion of total tax revenue. In both cases, the MTEF projections for the SDL have been used up to 2018, with the levy growing by historical or projected SDL growth rates between 2019 and 2030.
- (ii) Recent proposals for changes to the SETA Landscape could fundamentally transform the allocation of the SDL between the NSF and SETAs (see Table 10). The model assumes that the current allocation remains under the status quo cost scenario, but that the proposed allocation is put in place under the full policy and mixed scenarios.

**Table 10: SDL Revenue Allocations: Current and Proposed**

| SDL funding area     | Current allocation | Proposed allocation of SDL                           |
|----------------------|--------------------|------------------------------------------------------|
| <b>NSF</b>           | 18%                | 58% (40% PIVOTAL training & 18% National Priorities) |
| <b>SARS (Admin)</b>  | 2%                 | 2%                                                   |
| <b>QCTO</b>          | 0.5%               | (Funded through NSF)                                 |
| <b>SETAS</b>         |                    |                                                      |
| Mandatory Grants     | 20%                | 20%                                                  |
| Discretionary Grants | 49.5%              | 10%                                                  |
| Administration       | 10%                | 10%                                                  |

Source: DHET SETA Landscape Paper

- (iii) The detailed assumptions on how the NSF and SETAs spend their money under the different cost scenarios is available in 0.

### 3.2 Costing and funding scenario results

Table 11 provides the final estimated costs, revenue and deficit within each of the PSET sectors under the projected growth scenario in nominal terms. The key overall findings for the PSET system as a whole by scenario are:

- Under the **status quo** scenario, the total costs in the system increase to R381.5 billion in 2030 from R71.2 billion in 2014; an increase from 1.7% of GDP to 2.7%. The status quo scenario results in a deficit for the system as a whole of R65 billion, which represents 0.5% of GDP or 2% total tax revenue in 2030.

**Table 11: Estimated costs, revenue and deficit under the projected funding growth scenario**

| Sector                                 | Projected (R'm)                  | 2014           | 2030 (Nominal)      |                      |                  |
|----------------------------------------|----------------------------------|----------------|---------------------|----------------------|------------------|
|                                        | Item                             | Current Value  | Status Quo Scenario | Full Policy Scenario | Mixed Scenario   |
| <b>TVET</b>                            | Current Costs                    | R8 501         | R73 255             | R244 402             | R98 151          |
|                                        | Funding and financing            | R9 667         | R55 093             | R41 439              | R33 953          |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R1 166</b>  | <b>-R18 162</b>     | <b>-R202 964</b>     | <b>-R64 199</b>  |
| <b>Universities</b>                    | Current Costs                    | R52 920        | R243 722            | R343 905             | R254 002         |
|                                        | Funding and financing            | R58 854        | R218 523            | R234 193             | R206 814         |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R5 934</b>  | <b>-R25 199</b>     | <b>-R109 712</b>     | <b>-R47 188</b>  |
| <b>Community Colleges</b>              | Current Costs                    | R1 884         | R14 451             | R21 228              | R15 169          |
|                                        | Funding and financing            | R1 884         | R7 343              | R7 343               | R7 343           |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R0</b>      | <b>-R7 108</b>      | <b>-R13 886</b>      | <b>-R7 826</b>   |
| <b>NSFAS</b>                           | Current Costs                    | R7 453         | R48 370             | R40 373              | R29 314          |
|                                        | Funding and financing            | R6 429         | R33 699             | R33 699              | R33 121          |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>-R1 024</b> | <b>-R14 671</b>     | <b>-R6 674</b>       | <b>R3 807</b>    |
| <b>Other institutions (incl. DHET)</b> | Current Costs                    | R427           | R1 719              | R1 719               | R1 719           |
|                                        | Funding and financing            | R427           | R1 719              | R1 719               | R1 719           |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R0</b>      | <b>R0</b>           | <b>R0</b>            | <b>R0</b>        |
| <b>Total</b>                           | Current Costs                    | R71 185        | R381 517            | R651 627             | R398 355         |
|                                        | Funding and financing            | R77 261        | R331 047            | R325 066             | R279 142         |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R7 100</b>  | <b>-R65 141</b>     | <b>-R333 235</b>     | <b>-R115 406</b> |
|                                        | Costs as % of GDP                | 1.7%           | 2.7%                | 4.9%                 | 2.9%             |
|                                        | Shortfall as % of 2030 GDP       |                | 0.5%                | 2.7%                 | 0.9%             |
|                                        | Shortfall as % of tax revenue    |                | 2.0%                | 10.1%                | 3.5%             |

Source: Costing and revenue model estimations

- Under the **full policy** scenario, total costs almost double relative to the status quo policy scenario to R651.6 billion. The deficit grows tremendously to R333.2 billion from R65.1 billion. This reflects the tremendous increase in costs that result when all the assumed quality improvements that are incorporated into the costs estimate; particularly within the TVET sector where the costs per enrolment increase and the programme mix change substantially.

- Under the **mixed** scenario, total costs are similar to that under the status quo scenario; as the far lower enrolment assumptions are balanced out by the assumed costly quality improvements. Note however that the total deficit is significantly higher under the mixed scenario (R115.4 billion) than the status quo scenario (R65.1 billion). This is because lower enrolment figures result in far lower levels of fee income within the TVET and university sectors.
- The high level findings and range of estimates don't change significantly under the **historical funding growth scenario**, as the impact of the reduction in funding growth rate from 2.9% to 1.6% in real terms is fairly insignificant relative to the large increases in costs. The full results tables for the historical scenario, as well as the results in real terms, can be found in Appendix 2

To shed more light on the above estimates, the following sub-sections elaborate on the above results at a sectoral level.

### 3.2.1 TVET results

The TVET sector provides the most divergent range of cost estimates between the different scenarios in Table 11, for two primary reasons. Firstly, there is a substantial difference in enrolment assumptions between the status quo and white paper scenarios (2.5 million) on the one hand and the mixed scenario (1 million) on the other. Secondly, the full white paper and mixed scenarios assume that the TVET sector should be fundamentally transformed to improve the quality of programmes offered<sup>23</sup>. These proposed quality improvement affect cost estimates in two key ways that explain the vision articulated by the DHET for the TVET sector:

- a. **Increases in the cost per student for current programmes:** Low throughput rates is one of the biggest challenges facing the TVET sector. The commonly held view is that TVET colleges do not generally have sufficient funds available to deliver high quality training programmes; which results in poor performance low throughput rates. Based on the expenditure analysis performed it appears that certain aspects of training - particularly the practical components of training and student financial and academic support – are not receiving sufficient priority within the system. This suggests that substantial additional funding per student might be required to improve throughput rates and efficiency in the system; which is the assumption made under the full policy and mixed scenario
- b. **Substantial changes to the mix of training programmes presented:** The current programmes presented by colleges do not appear to meet the needs of either students or employers. Changes are proposed to address some of these key issues. Firstly, it is expected that formal foundational or bridging programmes<sup>24</sup> will be created to address primarily the

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<sup>23</sup> The need for improvements to quality of tuition and programme mix is strongly affirmed by both the White Paper and the NDP. Such changes are deemed necessary for the sector to contribute effectively to the country's economy

<sup>24</sup> Note that these programmes are still being developed and articulated; but they are likely to be one year full time programmes where the student receives a formal qualification at the end of the year

language, science and mathematics knowledge deficiencies of many students who enter the system. Secondly, the current NATED programmes are undermined by the lack of practical and workplace learning. The DHET therefore intends to introduce occupational programmes whereby practical and workplace learning are integral parts of programme delivery. Lastly, a far greater number of higher certificate programmes - likely to be presented in cooperation with universities - are to be developed to allow students progression to higher skills and NQF levels.

These programme changes are also intended to result in a more efficient system where the pathways to obtaining higher qualifications or employment are more straightforward and less time consuming

The proposed changes to programmes presented also increases total cost because a greater proportion of the expected programmes will be full year programmes, whereas currently the majority of students are enrolled in trimester and semester NATED programmes. In other words if a student is currently enrolled in three consecutive trimester programmes, that student is recorded as 3 enrolments. However if these three trimester programmes were to be combined into a single full year foundational programme, the student would be counted as a single enrolment. The use of an enrolment target, rather than a full time equivalent (FTE) target can therefore be misleading; as enrolments do not give a good indication of the actual number of students enrolled in a college. Table 12 shows how as a result of this programme mix assumptions, the number of FTEs under the full policy and mixed scenarios increase by substantially higher proportion than the number of enrolments. It is strongly advised that a FTE target should be adopted rather than an enrolment target, as is currently the case.

**Table 12: Change in Enrolments relative to change in Full-Time Equivalents**

| Enrolment measure     | 2014    | Status Quo Scenario |            | Full Policy Scenario |            | Mixed Scenario |            |
|-----------------------|---------|---------------------|------------|----------------------|------------|----------------|------------|
|                       |         | Target              | Increase % | Target               | Increase % | Target         | Increase % |
| Headcount Enrolments  | 706 403 | 2 500 000           | 254%       | 2 500 000            | 254%       | 1 000 000      | 42%        |
| Full time equivalents | 349 580 | 1 221 366           | 259%       | 1 914 928            | 555%       | 765 545        | 162%       |

Source: TVET costing model estimations

### 3.2.2 Universities results

The difference between the costs and funding estimates under the status quo and full policy scenarios are not as pronounced for universities as it is for TVET. This reflects the fact that per student increase in costs due to quality improvements in the university system is smaller; as universities throughput rates are much higher and more stable than those in TVET colleges. The main quality improvements underlying the university results in Table 11 are (a) an increase in the number of lecturers with PhD qualifications (a target articulated in the National Development Plan) (b) an increase in the number of students in PhD programmes (c) an increase in the number of students to be housed in university residences.

Recent protest actions have called for the introduction of fee-free education. As private fees represented 22% of total university income in 2013, such a move would create a substantial deficit

within university funding. In 2030, under the mixed scenario, it is estimated that the deficit that would result from fee-free education is R98.68 billion; or an additional R51.5 billion.

A number of factors should be considered in removing fees or capping / regulating the rate of fee increases:

- Free education will substantially increase the demand for higher education, which means that the above estimates are likely understatements of the true costs. The increase in the required sector capacity due to this increased demand will necessitate large scale infrastructure investment putting further pressure on the fiscus.
- Providing fee-free higher education to all students represents a regressive form of taxation; as the majority of university students are relatively middle or upper class. It could therefore be argued that fee-free education should only be provided to the poorer students within the system. Under the mixed scenario, if fee free education is provided to 25% of students the cost would be approximately R12.9 billion. Under these circumstances, the role of NSFAS would have to be reconsidered. It would effectively become a bursary disbursement entity as it currently is in the TVET sector.
- Any decisions or policy statements about regulating fee growth or removing fees completely creates a contingent liability for the fiscus; and the cost of such a liability must be estimated rigorously before any policy decision is made.

### 3.2.3 Community college results

The CET sector is in transition to create a new institution type envisaged in the White Paper and this is reflected in the differences between the cost estimates for the status quo and the full policy scenarios. Apart from meeting the enrolment target of 1 million by 2030, the full policy scenario assumes increased spending to improve the identified weaknesses of poor quality of provision and lack of resources. The programme mix under the full policy and mixed scenarios also include increased proportion of vocationally-oriented skills and knowledge programmes leading to sustainable livelihoods outside of the formal sector. Under the mixed scenario, the enrolment target is reduced and this reduces the total cost estimate.

The Community Colleges are envisaged to play a pivotal role in the expansion of access to good quality formal and non-formal education and training programmes to unemployed youth and adults, especially those who have limited other opportunities for structured learning. The sector has traditionally produced very low throughput rates and focus will be on improving the quality of provision. Under provinces AET was neglected and to bring the sector to a basic level of quality provision will require increased spending in learner and teacher support materials (LTSM) which are currently undersupplied. Increased funding will also have to be directed towards the operational costs of the learning centres to ensure functionality. These envisaged improvements in the system as estimated in full policy and mixed scenarios significantly increase the average FTE cost per learner.

The introduction of norms and standards for post provisioning as well as the normalisation of condition of service in the CET sector will result in increased employment cost, however this will be counterbalanced by the increase in minimum class sizes and lecturer to student ratios which

reduce the total cost. Compared to the status quo scenario which will see the continuation of more full-year general education and training programmes, under the full policy and mixed scenarios it is assumed that higher proportions of skills programmes will be provided. These shorter term programmes which are intended to prepare learners for participation in both the formal and informal economy will increase the number of enrolments at lower cost towards reaching the White Paper targets; the provision will still require substantial investment in equipment and materials. The founding principles of Community Colleges encourage close partnerships with local communities, including local government, civic organisations, employers' and workers' organisations and alignment of programmes with their needs as well as partnerships with government's community development projects. This could help leverage funding and support to expand provision, especially of these skills programmes.

### 3.2.4 Overall PSET results observations

The White Paper on PSET aims to create a more integrated and impactful PSET system. In order to do so, it has set enrolment targets for universities, TVET and community colleges. The targets are highly ambitious, particular within the TVET and Community Colleges sectors where enrolments are expected to increase by more than 250% over the next 15 years.

Costing a long term policy after it has been published is a complex exercise. This is made harder by the uncertainty that exists about key aspects of the White Paper; such as the future use of the SDL, the proposals around the consolidation of SETAs, community college delivery models and the programme mix within the TVET and community colleges.

Nonetheless, the costing and funding models developed provide useful insights into the practical implications of implementing the White Paper. These models show the impact of key cost drivers and performance variables, as well as the likely growth of different funding streams. Most importantly, they provides estimates of the total costs under different scenarios, the likely funding available under different scenario and hence the total deficit that is likely to result.

The deficits estimates show that achieving the full policy scenario simultaneously across the university and college sectors is likely to be unaffordable. Quality and access can only be expanded rapidly at great cost to the fiscus. These high deficits therefore reflect the trade-offs and difficult choices that will need to be considered in developing a funding and implementation plan for the White Paper. The next section will discuss the options for addressing the deficit and the trade-offs inherent in these options.

## 4 FUNDING OPTIONS AND CONCLUSIONS

There are two high level options to address this large deficit:

- (1) Reducing costs: Which can be done through a combination of increasing efficiencies, reducing growth targets, changing the mode of delivery and reducing spending per student (i.e. actually delivering less to the student)
- (2) Increasing funding to the PSET system; which can be done mainly through a combination of
  - a. Increasing government expenditure and/or
  - b. Increasing existing non-government sources (primarily fees) and/or
  - c. Accessing funding from alternative sources

The trade-offs to be considered when reducing costs is discussed first in section 4.1 below. Since the issues and trade-offs discussed here are relatively cross-cutting, the discussion relates to both the college and university sectors.

The funding mechanisms for the different PSET sub-sectors, however, differ substantially and hence funding should likely be increased in a balanced way to try to achieve the best mix. The primary funding mechanism to address the deficit will therefore also differ by sector. Consequently the appropriate mechanism is discussed separately for universities (section 4.2.1) and for colleges (section 4.2.2). Section 4.3 then discusses more holistically the tax and spending implications of increasing subsidies to the PSET system. Finally section 4.4 discusses ways that the current funding could be made more effective.

### 4.1 Reducing costs: Trade-offs between quality and access

Reducing enrolment targets or cost drivers to levels below what is assumed in the full white paper scenario is a clear option for reducing the size of the deficit. Any significant reduction to either of these is likely to jeopardise one or more of the objectives of the White Paper. However if both the key objectives - quality provision and increased enrolment targets - cannot be achieved within available funds, the trade-off between them must be considered.

The trade-off between quality and enrolments is perhaps most stark within the college sector. Significant improvements to quality could likely only be achieved through a variety of costly mechanisms, including changing the programme mix within colleges to more closely align to the needs of industry - through an increased focus on occupational programmes - increasing student financial and academic support, the development of foundational programmes for learners prior to enrolment in the NCV and occupational programme, and increasing the proportion of students accommodated in residences. If the low levels of quality and throughput in the sector remain, the benefits of rapidly increased enrolments to either students or the economy will be minimal and the objective of making such programmes ones of choice will not be achieved. Hence it is recommended that improving quality and throughput rates should take precedence over enrolment targets, at least in the short to medium term.

While low quality and throughput rates are generally less of a pressing concern in the university sector, it is still advisable to moderate enrolment increases here as well. Rapid enrolment whilst reducing grant funding per student puts pressure on universities to increase fees, as has already happened to some extent. Increased fees can make a quality university education unaffordable for many students and also reduces the NSFAS's ability to fully fund all eligible students; both results that would only serve to further entrench historical inequities. It is therefore important that university enrolment plans are set at a level where grant funding per student can be maintained.

Rapid enrolment growth not only brings with it the direct costs of operationally funding these enrolments, but also the requirement that necessary supporting structures are in place: including for example physical infrastructure (both for training and residences), competent lecturers and (for some qualifications) workplaces. If these structures cannot be put in place sufficient quickly, rapid expansion risks reducing the quality of the system; thereby undermining the intended educational outcomes of the White Paper. Table 13 below gives an estimate of the required cumulative infrastructure costs<sup>25</sup> within each of the sub-sectors under the different cost scenarios.

**Table 13: Infrastructure costs required for increased enrolments (Nominal prices)**

| Sector             | Status Quo      | Full Policy Scenario | Balanced scenario |
|--------------------|-----------------|----------------------|-------------------|
| Community Colleges | R0              | R33 404              | R9 000            |
| TVET               | R199 985        | R574 110             | R117 326          |
| Universities       | R52 925         | R146 447             | R68 781           |
| <b>Total</b>       | <b>R252 910</b> | <b>R753 961</b>      | <b>R195 107</b>   |

Source: DNA Economics and Mzabalazo Advisory Services calculations

Not only would such expansion carry high costs, but the rate of expansion might not be practically achievable. In the context of TVET for example, the enormous increase in full time equivalent students required would mean that approximately 800 additional campuses would need to be built over 14 years if the average current campus size is maintained; almost 60 per year.<sup>26</sup> It appears that, the necessary capacity and funding is unlikely to be available within government to deliver on even a substantial portion of these targets.

A second practical example for caution in growing enrolments within the TVET sector is that the planned growth in occupational and skills programmes will require involvement from industry for these programmes to be successful. If enrolment increases exceed the rate at which partnerships with industry, and some cases workplaces, can be secured, then the value of these programmes and, importantly, industry's perception of TVET colleges will be severely undermined.

It is therefore proposed that the implementation plan for the White Paper should be aimed towards enrolment targets significantly below that given in the White Paper. Not only would such targets

<sup>25</sup> In other words the total nominal

<sup>26</sup> In addition, existing campuses would need to be expanded to not only deal with additional enrolments but to improve deficient infrastructure for current students

reduce the cost of implementation, but it will increase the likelihood that the critically required quality improvements within the system can be achieved.

Rapid expansion of PSET is articulated in the National Development plan as a key policy mechanism to help resolve the needs of the many young people not in employment or education and training (NEETs). Given the urgency and size of this challenge moderating the targets will require a rethink of how the NEETs problem is solved. This is a government-wide challenge involving a number of departments including Social Development, CoGTA and Public Works. It is suggested that a coordinated approach is adopted that seeks to target the various pockets of funding in a more effective manner. In relation to PSET it is suggested that whilst programmes leading to full-time qualifications aligned to occupations in demand are a priority in relation to economic growth, shorter courses providing modules of employable skills could be expanded to enable much larger numbers of unemployed young people to access training.

## 4.2 Determining the appropriate funding mix

### 4.2.1 *Appropriate funding mix: University sector*

While universities do obtain third stream income from various private sources, a key problem is that it is the already better funded institutions that are able to attract such additional income. For example research funding tends to go to the “top six” universities. Universities in general do manage to generate a significant proportion of their income from sources other than grants and fees and this should continue. However expanding the proportion of funding coming from such efforts substantially is not realistic and hence it does not represent a viable option for meeting the bulk of the estimated deficit.

Therefore the majority of university funding will inevitably come from a combination of state grants (“tax funding”) and fees. Theoretically, the category of fees can further be divided between those that are paid up-front (“upfront charges”) and those that are paid for through “deferred charge schemes” such as loan schemes or a graduate tax.<sup>27</sup> Tax funding, upfront charges and graduate taxes all come with their own benefits and disadvantages, and completely relying on any single type of funding is not likely to be optimal.

The main advantages of tax funding are fairly apparent: given the public benefits that accrue from an educated population and our desire to create a society of equal opportunity, it stands to reason that the state should fund public universities at least to a substantial extent. Such funding creates an incentive to pursue higher education and makes education more accessible and affordable to the poor and the middle class.

However, there are several disadvantages of a system that is entirely funded through tax funding:<sup>28</sup>

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<sup>27</sup> Note that the terminology used here is aligned to that used in Barr (2003) *Financing higher education: Comparing the options*

<sup>28</sup> (Barr, 2003)

- *Tax funding is regressive:* As most university students tend to be from more affluent backgrounds, and graduates are likely to earn more throughout their lifetimes than the average citizen, providing completely free education to students is highly regressive compared to the other spending alternatives within the social sector. Put another way there is a substantial “private good” that is generated and so it is legitimate for those benefiting to contribute in line with their ability to pay.
- *Tax funding can lead to a lack of resources:* In a constrained budget environment, if tax funding is the only source of funding; universities will have to reduce spending per student – and likely quality – if enrolments are to increase rapidly. Linked to this is the need to avoid universities being totally dependent on government – some level of financial independence from government is desirable, even if it is difficult for historically less well-resourced institutions.
- *An over reliance on tax funding can harm access:* This might appear counter-intuitive, but in practice does often appear to be the case. If all university enrolments must be fully funded by the state, there will be an upper limit on the number of places available in a constrained budget environment. The middle class and rich will be more likely to take up these places given their greater ability to invest in their children’s education at younger ages and compete for these limited places.
- *Tax funding can also lead to inefficient decision making and spending:* If a student does not have to contribute any funds to their own education, they will have little incentive to use resources efficiently or complete their courses quickly. If the system also includes free accommodation or living allowances, students might enter universities for these reasons and not for educational benefits.
- *Tax funding can crowd out private incentives to invest:* If a country moves towards a system of fee-free education this will crowd out all private investment in the system. While raising taxes could be seen as counteracting this crowding out, it is likely that taxation will be far less equitable and efficient; as the taxes would be collected from everyone and not (primarily) from those who benefit from higher education

A system entirely reliant on tax funding should therefore not be seen as the most efficient or effective option, even in the long term. A system of upfront charges addresses some of these issues in that it frees up greater funds for other potentially equally important spending priorities and it incentivises greater personal responsibility in the making of educational choices. However, a system fully reliant on upfront charges would face potentially even greater problems: it would result in high fees which would discourage people from entering the system and make the system highly inaccessible to the poor. Many countries see access to higher education as a right, and an upfront charges a system in relation to all regardless of socio-economic environment would violate this right.

As a result of these issues, most countries have some type of deferred charges scheme in place.<sup>29</sup> Generally this takes the form of loan schemes either open to all or based on some form of means

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<sup>29</sup> See Volume 1: A review of international practices in the funding of PSET for a detailed discussion of the different deferred charge (loan) schemes found throughout the world

test. Loans are repaid over a period of time after a graduate obtains work. There have been attempts to formalise repayments through taxes, with some proposals being developed for a graduate tax, though no true graduate tax (i.e. a tax on graduates not tied to a loan or repayment) has been identified. The key argument in favour of deferred charge schemes is that while higher education should perhaps not be free, it should perhaps be *free at the point of access*, except for those who clearly can afford the fees and living expenses.<sup>30</sup> In this way anyone could have access to the higher education system, but they would still be incentivised to make cost effective decisions based on the value they place on higher education. In addition such a loan system can substantially expand enrolment numbers (if loan repayment rates are sufficiently high) since the government would not be required to cover all costs up front.

The key difference between a graduate tax and a (typical) loan scheme is that under a graduate tax all graduates have to pay this (likely income contingent) tax regardless of the direct fee cost of their own studies. At first a graduate tax might seem attractive as a more equitable option than a loan scheme, but it has several drawbacks which are similar to those discussed for a fully tax funded system, where the student has no incentive to make cost effective choices and all private investment is crowded out. Graduate taxes can also only be collected from those who remain tax-payers of the country. There is the potential for a graduate tax to act as a disincentive for graduates to remain in the country and this would undermine another government priority of attracting and retaining skilled people in the country in support of growth and development. Lastly, a graduate tax might also suffer from the same problems as earmarked taxes, particularly whereby a surplus cannot be re-diverted to other needs, while a deficit has to be made up from general taxes. In the context of South Africa's narrow tax base it would probably be regarded as a general tax increase as most of the country's tax is collected from people who have degrees. For these and other practical reasons no country has truly implemented a graduate tax (in its strict interpretation) as mentioned in the box below; and loan schemes are generally preferred.

There are many practical considerations that need to be in place for a loan scheme to be successful. Firstly there must be sufficient levels of repayment - likely through the use of a payroll tax - although this also assumes that the economy can absorb the number of graduates produced. Secondly, such a scheme will typically be income contingent to ensure that graduates do not become trapped by high student debts. Ensuring that debt levels do not become unsustainable would also require that the state tax funding to universities is sufficient and that fees remain at reasonable levels. An additional way to ensure equity is to provide bursaries, rather than loans to those facing the greatest need (e.g. the very poor or those with disabilities).

#### **Deferred charge schemes and graduate taxes in practice**

Deferred charge schemes are widely used to incentivise students to make education choices that are effective in terms of study costs and future earnings while minimising the long-term cost to the state. While there are no countries that apply a formal graduate tax, countries such as Australia, the UK, Chile and New Zealand provide repayment terms that are income contingent and only payable above certain thresholds.

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<sup>30</sup> See (Barr, 2003) for a more detailed discussion

Other countries provide interest-free subsidies to economically disadvantaged students (e.g. Brazil and Thailand). Tax credits provide an indirect subsidy to either households or businesses and are commonly used within the United States. The differential pricing of tuition fees is also commonly used; with lower fees charged on disadvantaged students (either economically or due to gender or disability), or by charging higher fees on international students.

There is therefore a strong theoretical case to be made for a funding model that incorporates tax funding, upfront charges and deferred charges.

Some have suggested that South Africa's highly unequal income distribution of wealth and history of racially discriminatory policies justifies a move to free education. This ignores the fact that free higher education would be a tremendously regressive in a country where university attendees are substantially better off than most in the population. As discussed earlier, under free education there would inevitably be a constraint on either the number of students in the system and / or the quality of tuition. In either case, this would only act to limit access to quality education for the poor. The arguments for a mixed funding approach are very strong.

Although such a mixed funding system is arguably already in place, there are several ways in which it can be improved:

- Ensure that enrolment plans are developed and reviewed regularly so that they are aligned with the funding that is likely to be available for university grants and NSFAS loans. This will likely constrain enrolment growth, but it will increase the affordability of higher education to all participants and enable NSFAS to keep pace with the full cost of study. It will also go some way to avoid a situation where large numbers of students enrol in university but do not have the means to either pay fees or support themselves during their studies.
- Repayment rates on NSFAS should be improved: This could be achieved by (a) having SARS administer collection of repayment (b) removing the policy that those passing their third year have that part of their loans converted to bursaries (as this benefits those most likely to repay) and c) concurrently improving support to poor students so as to improve the throughput rates and absorption into employment – the key to long term increases in repayment levels.
- In the medium term, a sustainable loan scheme for the middle class should likely be established to address the “missing middle” problem. For such a scheme to be successful it would require repayment rates far in excess of what is currently achieved within the NSFAS, but this is a realistic goal in relation to those coming from more affluent households. Even then it will still require a substantial investment from the fiscus – in the form of tax incentives and or underwriting loans - and so the planned pilots need to be carefully examined to determine possible cost implications. The details of the design and implementation of such a scheme will be critical to its success and it should be the topic of further research.

#### 4.2.2 *Appropriate funding mix: College sector*

The theoretical basis upon which the college sector should be funded is quite different to that for universities. Firstly, many of the programmes presented are at lower NQF levels (typically 2 to 4) relative to university training. This suggests a greater degree of public benefit relative to private benefit. As a result it's likely that the state should take an even greater share of the responsibility for funding these colleges. Indeed within OECD countries upper-secondary education (which often includes vocational programmes) is generally viewed as part of basic education is therefore usually provided free or at low fee levels.<sup>31</sup>

Within the South African context the economic demographics of the attendees of colleges suggests that fee income paid by students is always likely to be minimal. However, if public TVET colleges can establish themselves as institutions of choice and quality, it is likely that private funds will become available to a much greater extent than is currently the case. Currently there are initiatives whereby companies “adopt a college” and there are examples of increasing college-employer partnerships, some brokered by SETAs. However this needs to be taken to a much higher level and will require a change in perception (and reality) that will not happen overnight and will require an upfront investment in increasing quality, likely at the expense of enrolment growth in the shorter term.

It is proposed that long term enrolment growth rates should be higher in the college sector, and hence that the proportion of funding to the college sector should steadily increase relative to that to universities, but that enrolment growth targets in both sectors are set such that grant funding per student can be kept at the required level.

In the college sector there is the potential for expanding funding from the private sector. The challenge is to establish the value of the colleges and to find ways of leveraging available funds. There are a number of mechanisms that should be explored. The first is to make use of the SDL levy income more creatively in the TVET colleges. The NSF should consider how funding for such things as infrastructure development can be used to leverage additional funds and PPPs. If there is a regular commitment within the NSF to fund infrastructure it should be possible to attract private investment to enable such funds to achieve more. The NSF should also consider how it can expand what it already calls its “catalytic” role.

There should be a specific focus on building the capacity of TVET colleges to deliver occupational qualifications that are in demand within the economy. Colleges that seek to become centres of specialisation in a particular set of occupational qualifications should be supported, but on the basis that they can demonstrate local industry support. Funding from the NSF (or SETAs if PIVOTAL funding remains at a SETA level) could be based on requiring matching funding from employers. The aim should be to create a virtuous cycle whereby funding goes to colleges that partner with employers and SETAs, and as capacity and quality improves additional funding can be attracted. It is important to put in place mechanisms that attract employers to work with colleges and to increasingly view the colleges as an important source of recruitment.

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<sup>31</sup> (OECD, 2010)

The White Paper enrolment targets inherently suggest a greater growth focus towards the college sector, relative to the university sector. If aspects of the plan are to be rationalised it might therefore be argued that funding available for expansion should be re-allocated towards the college sector.

Care is needed before such an approach is adopted. As discussed earlier, reducing university grants per student puts pressure on universities to increase fees which can make higher education unaffordable for many students. The events of 2015 demonstrated both the massively increased demand for university places and the potential for a crisis if those attending cannot afford the fees or are unable to support themselves. An additional R15 billion has been allocated for the current MTEF period towards higher education and this should stabilise the situation, but the underlying problem of increased demand will not go away. Part of the problem is that a university degree is viewed as leading to employment whereas a college education is not. The White Paper is seeking to change that and to make a college education one that is valued in the labour market. If this is to be achieved substantial investment is required in the college sector.

The NSF could also play a role in enabling community colleges to generate additional income. It is suggested in the policy scenario that once the 40% of discretionary funding is dedicated to PIVOTAL programmes and located in the NSF (as per SETA Landscape paper) the existing 20% (R3 billion) allocated to the NSF could be targeted at those that will not benefit from PIVOTAL programmes. In other words the unemployed who are not able to enter full qualification programmes. Up to R1 billion could be allocated to fund programmes in community colleges targeted at the NEETs. Again the NSF should explore how these funds might leverage additional funds. One potential source of funds would be the CSI budgets of companies. NSF funding could be allocated on the basis of partnership agreements with companies to fund programmes for the unemployed.

### **4.3 Increase government funding to PSET**

Tax funding to PSET can be increased in two broad ways:

- Re-prioritise spending towards PSET from other sectors
- Raise taxes

There is an argument for the reprioritisation of PSET within the national budget and to some extent this is already happening with PSET experiencing real increases in funding whilst other government programmes are receiving reduced funding. The justification is that investing in quality education and training is an investment that will contribute to economic growth and reduce dependency on social grants. The challenge is that there are many other national priorities such as health and housing that also require significant additional funding and have at least an equally strong economic and social case for increased funding. Given the large deficits estimated here, expanding PSET on the basis of an ongoing process of expanding its share of the national budget is likely to only be a minor contributor to meeting the deficit; unless wider government policy creates substantial cuts in other sectors.

Raising taxes is an option and there are a number of potential tax changes that could be considered as part of the general approach of funding PSET from taxation. One option would be to

discontinue the skills levy and increase PAYE by 1% instead. This would make another R15 billion a year available to fund PSET without the need to negotiate the changes through Nedlac. There is already a sizable proportion of employers who write off the levy as a tax and the view of business is that the implementation of SETA Landscape proposals would increase that proportion. However there would be substantial opposition to this from organised labour and some sections of business. It is extremely unlikely that such a proposal would be achievable. In spite of there being overwhelming agreement that the levy grant system is not working well, and that “something” has to be done, there remains a high level of support for a specific focus on workplace training. There are few who would support an increase in the 1% levy but most believe it can be managed to achieve better results than it currently does.

So essentially the discussion at a policy level has to be whether to increase taxes in the expectation that funding PSET expansion will increase productivity, expand GDP and enable the funding available to expand. Given the challenges that the country is facing in terms of credit rating and currency weakness it is unlikely that there will be support to increase taxes substantially, at least not to the extent required to fund the targets. Nor is the correlation between countries that invest in PSET and strength of their economies so strong that causality can be ascribed. It would not automatically follow that expanding PSET will produce improved growth. So this route cannot be a recommendation from this project.

## **4.4 Making the funding system more effective**

### **4.4.1 Increase the focus on quality in the fiscal funding formula**

The low throughput rates remain a major source of concern for the PSET system as a whole, as it leads to large and systemic efficiency losses as fewer students complete their studies for a given level of funding.

There are opportunities to use the funding framework to promote performance and counteract some of the unintended consequences associated with enrolment based targets. Whilst state funding to universities is currently partially determined by performance; i.e. graduates and publications, more could be done to shift the emphasis from enrolment numbers to graduations. This cannot be done in a simple or crude manner and the formula will inevitably remain quite complex. Nevertheless more could be done to ensure that universities do what is needed to support students and address academic and psycho-social challenges. More should be done to reward higher throughput and pass rates. Currently, in the funding mechanisms for TVET colleges, there is no direct incentive to achieve quality standards. It would be sensible to incrementally introduce and tighten quality requirements within funding formulas throughout PSET.

There are a number of mechanisms that need to be explored in relation to how funding is linked to learner numbers. Currently whilst there is a funding formula for universities that addresses enrolment and graduation figures (albeit skewed towards enrolment) funding in TVET colleges is entirely based on enrolments. There is a need to increasingly gear funding to graduation rates. Improving throughput and pass rates is a complex matter that needs investment in student support and is dependent on previous education experience and socio-economic conditions. However there is a need to provide funding in a manner that focuses attention more on quality and

throughput and less on enrolments. If well performing colleges and universities are able to obtain funds for expansion, whereas those that are not obtain less, this could start a process of incentivising improved throughput. This may result in some of the less well run institutions falling behind others and this could create challenges. However there is a need to create a system where there are consequences if performance is persistently not up to standard.

#### *4.4.2 Clarify the intent of the SDL and use it to create a focussed and sustainable funding stream*

It is clear that much better value could be obtained from the Skills Development Levy. The achievement of better coordination between the skills development institutions and the rest of the PSET system is an important goal and one that could achieve significant gains across PSET. This can only be achieved if there is stakeholder agreement and so it is recommended that a thorough process of engagement takes place on the following set of goals:

- That the focus of skills development, and therefore the use of the levy income, is and will remain worker education, i.e. employed workers and new entrants; rather than the public PSET system as a whole. The perception that the Department is attempting to use the levy to fund PSET broadly is not without foundation. There needs to be a renewed commitment to the SDL primarily being to fund training on employed workers and new entrants to the labour market and in particular in scarce skills occupations needed in the economy.
- The 20% allocated to the NSF needs to be understood as having a different focus to the 80% of the levy funds that currently go to SETAs. Traditionally the 20% (currently R3 billion a year) has been to fund training for those who cannot benefit from employer training – young people, rural women, people with disabilities and the unemployed. The funds are also intended to support national priorities. It is suggested that more clarity should be found on what the NSF is to fund in future so that whatever is agreed is sustained over time. It is suggested that the focus should be: bursaries for poor students to study in scarce skills subjects; capacity building across the PSET system; infrastructure (a regular amount allocated each year); and training for the NEETs through community colleges.
- That the skills system and its institutions must work closely with public PSET institutions. This process should not exclude private trainers, but a better public-private balance should be achieved. In particular there must be support provided to public TVET colleges to deliver occupational qualifications with a particular emphasis on employers offering workplace experience and learning for learners in college programmes. It is important to acknowledge that one of the unintended consequences of the levy-grant system is that the focus of the skills system has been on funding private provision of skills training. The White Paper objective of closer working between the public education system and the skills system cannot be achieved without a review of how the levy is allocated.
- That for those enrolling in occupational qualifications there is a need to simultaneously fund both theory, practice and workplace training and experience. To achieve this an integrated funding model is needed. This is difficult to achieve within the current funding modalities within SETAs. Whilst there is concern being expressed by employers over the proposed transfer of funds to the NSF, there is a need to find agreement on how an integrated funding model can be developed and implemented. Unless learners in colleges have

workplace access they will not gain either the qualifications or work readiness that they need to gain employment and the only mechanism in place to incentivise employers is the funding from the levy. Whether the funds are located centrally, devolved to SETAs or a combination of the two a critical issue must be how to align funding of the theoretical and practical training provided in colleges and universities and the funding of work placements from the levy.

- That a proportion of the SDL money should be used to encourage and incentivise the following: (1) good performance in SETAs (or whatever structures replace them); (2) quality provision of occupational qualifications – particularly TVET colleges that achieve employer agreed quality standards; (3) public private partnerships; (4) opening up workplaces for occupational training. That a mechanism be found to better align expenditure planning from the levy and from the fiscus. One of the challenges of the levy-grant system is that it has been set up to be independent of the public PSET system and disburses funds quite independently of the public budgeting process. This is true of the SETA processes, whereby a grant is given to an employer and the employer contracts training. However it is also the case for the NSF whereby a grant can be provided for infrastructure (10 new colleges) independent of the Departmental budgeting process for staffing the institutions once they are built. There are a number of problems related to this which have been explored in other parts of the report. The central challenge is to find a mechanism for coordinating budgeting and funding processes.

It is complicated by the need to obtain Nedlac constituency support for the closer working between skills development and public PSET, but if agreement could be reached the potential for improved supply of occupational qualifications is there.

## APPENDIX 1 COSTING MODEL SCENARIOS

This section describes the key assumptions made in the costing model scenarios that are presented within this paper. These assumptions are given here simply to contextualise the different scenarios; the detailed results of these costing modules are provided in the Costing Model Output report.

The costing model consists of three distinct modules for the three primary public sector of the post-school education and training system with the associated White Paper enrolment targets given in Table 14 below:

- Technical and Vocational Education and Training (TVET) colleges
- Universities
- Community Colleges

**Table 14: Summary of enrolment targets in the White Paper on Post School Education and Training**

| Sector             | Actual   | Target (2030) | % change |
|--------------------|----------|---------------|----------|
| TVET               | 702 000* | 2 500 000     | 255%     |
| Community colleges | 265 000^ | 1 000 000     | 277%     |
| University         | 937 000* | 1 600 000     | 71%      |

Source: DHET (2014)

Baseline years differ: ^ 2011 and \*2014

These sectors are modelled individually given the stark differences between them and the distinct White Paper targets and objectives for each of them. However to allow comparability between the sector modules, the results within each sector are presented within the frame of three high level scenarios:

- 1) **Status Quo scenario:** Illustrates the expenditure implications of meeting the White Paper total enrolment targets, while assuming that all the key cost drivers (e.g. student to lecturer ratios, the mix of enrolments by programme and, throughput rates) remain as they currently are. Effectively this scenario looks at the costs of increases to student access, while keeping the key input factors that might affect quality the same
- 2) **Full Policy scenario:** Illustrates the implications of not only meeting White Paper enrolment targets, but additionally considering changes to the cost drivers and input factors that are likely to improve quality. The changes in these factors are informed both by the White Paper and NDP, as well as the results of interviews carried out by the project team with policymakers
- 3) **Balanced scenario:** Given funding limitations, it might not be possible to meet the full White Paper enrolment targets or implement all the interventions to improve quality that were considered under the Full Policy scenario. This scenario therefore shows the possible

implications of less ambitious increases in enrolments and input factors; effectively representing a mix between attempts to increase access and improve quality.

It should be noted that given the relatively open-ended nature of many objectives in the White Paper and the absence of detailed plans and strategic goals in many cases, these draft scenarios were in many cases left to the subjective judgement of the project team. They will therefore need to be discussed and debated in depth with the Project Steering committee to ensure that they provide an accurate depiction of current strategic plans and objectives.

For all the scenarios considered, inflation is assumed to be 6.2%, based on estimates provided by National Treasury

## A 1.1 Appendix University Costing Scenario Assumptions

The table below shows the assumptions for the three costing scenarios within the university sector. The status quo scenario assumes that the university sector reaches the enrolment target as set out in the white paper, but inputs remain unchanged from what they were in 2014. In addition to also reaching the enrolment target, the full policy scenario also reaches the other White Paper, NDP and departmental targets for academic staff qualification, student housing and types of enrolment. Finally, in the balanced scenario, enrolments continue to grow at the same rate as the DHET's 2007 – 2019 enrolment plan, meaning that by 2030, there will be approximately 1 335 711 students enrolled in South African Universities. The parameter values are somewhat moderated from the full policy scenario, but still show some improvement from the status quo. A more in-depth discussion on each of the scenarios is presented in their respective sections.

**Table 15: Universities scenarios**

| Parameter                    | Description                                                                          | Status Quo           | Full Policy Scenario | Mixed Scenario       |
|------------------------------|--------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|
| 2030 Target enrolments       | The number of head count enrolments to be reached in 2030                            | 1 600 000            | 1 600 000            | 1 336 711            |
| % academic staff with PHD    | The percentage of academic staff have Doctorate degrees                              | 37%                  | 75%                  | 55%                  |
| % PHD enrolment              | The percentage of all enrolled students enrolled in PhD programmes                   | 1%                   | 5%                   | 3%                   |
| % in Distance learning       | The percentage of all enrolled students enrolled in distance-learning qualifications | 31%                  | 45%                  | 37%                  |
| Residences 2030 bed capacity | The number of available residences beds as a percentage of total enrolment           | 23.80%               | 50%                  | 40%                  |
| Throughput rate              | The cumulative number of graduates at the end of the cohort's maximum time period.   | 0%-point improvement | 8%-point improvement | 4%-point improvement |

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## A 1.2 Appendix TVET Costing Scenario Assumptions

Table 16 below outlines the differences between the three scenarios that are considered in the subsequent sections for TVET colleges. The first scenario (Status Quo), assumes that the 2.5 million enrolment target is achieved, but that all the key cost and performance input factors in the model, including the mix of programmes, stays the same. The second scenario (Full White Paper) also assumes the full enrolment targets is met, but additionally assumes that a number of input factors change. While the White Paper does highlight the need to improve quality in the system, it does not explicitly articulate in detail how quality improvement might occur and the likely scale of changes to key input factors. Therefore, the project team have made these parameter value choices based on the views expressed during the interviews conducted with DHET staff during the project. The third and final scenario (Balanced) assumes a growth rate in enrolments of only 2% (this is assumed to be an achievable level of increases to real funding) and assumes that the key input factors do adjust in attempt to improve quality, but that they do adjust as much as they do in the Full White Paper scenario.

**Table 16: TVET Input Assumptions by scenario**

| Parameter                    | Programme                                        | Status Quo Scenario | Full Policy Scenario | Mixed Scenario |
|------------------------------|--------------------------------------------------|---------------------|----------------------|----------------|
| Target enrolments            | All programmes                                   | 2 500 000           | 2 500 000            | 1 000 000      |
| Throughput rates             | NC(V)                                            | 10.6%               | 20.0%                | 20.0%          |
|                              | NATED                                            | 25.8%               | 50.0%                | 50.0%          |
| Student : Lecturer FTE Ratio | NC(V)                                            | 19.6                | 13.0                 | 13.0           |
|                              | NATED                                            | 33.6                | 25.0                 | 33.6           |
| Programme mix                | NC(V)                                            | 22.3%               | 20.0%                | 20.0%          |
|                              | NATED                                            | 69.1%               | 5.0%                 | 5.0%           |
|                              | Occupational                                     | 2.8%                | 30.0%                | 30.0%          |
|                              | Foundational / Bridging courses                  | 0.6%                | 15.0%                | 15.0%          |
|                              | Skills Programmes / Modules of Employable Skills | 2.3%                | 5.0%                 | 5.0%           |
|                              | Higher Certificate                               | 1.5%                | 25.0%                | 25.0%          |
|                              | Other                                            | 1.5%                | 0.0%                 | 0.0%           |
| Direct costs                 | NC(V)                                            | R1 699              | R12 000              | R12 000        |
|                              | NATED                                            | R1 216              | R5 000               | R1 216         |
| % in Distance learning       | All programmes                                   | 0%                  | 10%                  | 10%            |
| Residences %                 | N/A                                              | 1.5%                | 20%                  | 10%            |

Source: TVET costing model

### A 1.3 Appendix Community College Costing Scenario Assumptions

There are three scenarios that have been developed for estimating the cost of community education and training colleges (CETCs) up to 2030. First is the Status Quo scenario which assumes that the White Paper target of 1 000 000 enrolments in the CETCs is achieved by 2030. Apart from achieving this target all key input variables are assumed to remain unchanged. In other words, the scenario estimates the cost of expanding access to CET over time to meet the White Paper target but that all the key cost and performance input factors in the model, including the staffing/learner ratios, direct costs and mix of programmes, stays the same.

The second scenario (Full Policy) attempts to achieve the White Paper target enrolments but in addition considers other policy imperatives for improving the CET sector. As already highlighted, the CETCs have a numerous historical weaknesses and the White Paper together with the Policy on Community Colleges proposes measures to improve the quality of provision and the design of the sector as a whole. However this is a sector in transition and some of these proposals are still being discussed in the Departmental committees established by DHET to shape the CET sector of the future. The scenario thus makes assumptions some of which were made by the project team based on the views expressed during the interviews conducted with DHET staff during the project. The third and final scenario (Mixed) assumes a growth rate in enrolments of only 6.8% and achieves enrolment of 750,000 by 2030. The scenario assumes that the key input factors are mostly similar to those in the Full Policy scenario except where variations to Full Policy and Status Quo are made.

**Table 17: Community college scenarios**

| Parameter                         | Description                                                                        | Status quo | Full Policy Scenario | Mixed Scenario |
|-----------------------------------|------------------------------------------------------------------------------------|------------|----------------------|----------------|
| 2030 Target enrolments            | The number of head count enrolments to be reached in 2030                          | 1,000,000  | 1,000,000            | 772,831        |
| Throughput rate                   | The cumulative number of graduates at the end of the cohort's maximum time period. | 17.5%      | 17.5%                | 17.5%          |
| New infrastructure need           | The proportion of additional college enrolments requiring new infrastructure build | 0%         | 50%                  | 15%            |
| Student: Lecturer ratio           | The number lecturers per enrolled student                                          | 18         | 23                   | 23             |
| Occupational programme proportion | The proportion of learners enrolled on occupational programmes                     | 3%         | 35%                  | 25%            |

### A 1.4 Appendix Skills Development Levy Costing Scenario Assumptions

The model allows the user to change a number of input parameter and assumptions; most of which are located or accessible from the Dashboard. This allows the user to investigate the impact of changes to these key parameters; as illustrated through the scenario analysis presented. **Error! Reference source not found.** below provides a screenshot of the main variables that can be adjusted by the user.

**Figure 5: Screenshot of the key input parameters**

## Inputs and Assumptions

|                             |              |          |  |
|-----------------------------|--------------|----------|--|
| Occupational Grant Value    |              | R 45,000 |  |
| Mixed Programme funding Mix | User Defined |          |  |

|                                |            |             |       |
|--------------------------------|------------|-------------|-------|
|                                | Status quo | Full Policy | Mixed |
| NSF Allocation to Learnerships | 61%        | 0.0%        | 0.0%  |

|                                       |    |     |     |
|---------------------------------------|----|-----|-----|
| Workplace Grants for TVET             | 0% | 70% | 30% |
| CET Skills Programmes funded by NSF   | 4% | 50% | 30% |
| TVET Occupational funded by SETAs     | 5% | 5%  | 5%  |
| CET Skills Programmes funded by SETAs | 1% | 10% | 10% |

It has been suggested that there may be a third “middle way” with agreement being reached on different percentages to the two set out. It is not possible to speculate on that. Currently there is the status quo and the proposals in the SETA Landscape Gazette. This will require legislation. If the Minister decides not to go ahead with the proposals then the likelihood is that the status quo will prevail. Either the transfer of 40% from SETAs to the NSF occurs or it does not. It is completely open to discussion how the 40% is spent once it has been transferred to the NSF and in the following sections the various options are explored.

## A 1.5 Overview of scenarios

Table 16 below outlines the differences between the three scenarios that are considered in the subsequent sections for SETAs and NSF. The first scenario (Status Quo), assumes that the skills system remains the same. The second scenario (Full White Paper) assumes the full integration of the SETAs and the NSF into the public education and training system, including the integrated funding model that is being proposed. The third and final scenario (Mixed) assumes that the current trend of increased collaboration between SETAs and the NSF and public PSET institutions continues and that some level of integration is achieved. The table below provides a breakdown of the SDL to the different institutions and focal areas for funding.

**Table 18: SDL Input Assumptions by scenario**

| Parameter                    | Description                                                                                              | Status Quo Scenario | Full Policy Scenario | Mixed Scenario |
|------------------------------|----------------------------------------------------------------------------------------------------------|---------------------|----------------------|----------------|
| Administrative costs         | The costs of skills development institutions                                                             | 10%                 | 10%                  | 10%            |
| Mandatory Grant to employers | The amount that is paid to employers on submission of a workplace skills plan and annual training report | 20%                 | 20%                  | 20%            |
| Allocation to the            | The amount allocated to the NSF to                                                                       | 20%                 | 60%                  | 60%            |

| Parameter                         | Description                                                                   | Status Quo Scenario | Full Policy Scenario | Mixed Scenario |
|-----------------------------------|-------------------------------------------------------------------------------|---------------------|----------------------|----------------|
| NSF                               | support education and training to those not benefiting from employer training |                     |                      |                |
| Discretionary grants to employers | The grants allocated by SETAs and the NSF to fund training                    | 50%                 | 10%                  | 10%            |

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## APPENDIX 2 RESULTS UNDER HISTORICAL FUNDING GROWTH SCENARIO

Table 19: Estimated nominal costs, revenue and deficit under the historical funding growth scenario

| Sector                          | Historical (R'm)                 | 2014           | 2030 (Nominal)      |                      |                  |
|---------------------------------|----------------------------------|----------------|---------------------|----------------------|------------------|
|                                 | Item                             | Current Value  | Status Quo Scenario | Full Policy Scenario | Mixed Scenario   |
| TVET                            | Current Costs                    | R8 501         | R73 255             | R244 402             | R98 151          |
|                                 | Funding and financing            | R9 667         | R50 888             | R37 233              | R29 747          |
|                                 | <b>Deficit (-) / Surplus (+)</b> | <b>R1 166</b>  | <b>-R22 368</b>     | <b>-R207 169</b>     | <b>-R68 404</b>  |
| Universities                    | Current Costs                    | R52 920        | R243 722            | R343 905             | R254 002         |
|                                 | Funding and financing            | R58 854        | R200 460            | R216 130             | R188 751         |
|                                 | <b>Deficit (-) / Surplus (+)</b> | <b>R5 934</b>  | <b>-R43 262</b>     | <b>-R127 775</b>     | <b>-R65 251</b>  |
| Community Colleges              | Current Costs                    | R1 884         | R14 451             | R21 228              | R15 169          |
|                                 | Funding and financing            | R1 884         | R11 286             | R11 286              | R11 286          |
|                                 | <b>Deficit (-) / Surplus (+)</b> | <b>R0</b>      | <b>-R3 165</b>      | <b>-R9 942</b>       | <b>-R3 883</b>   |
| NSFAS                           | Current Costs                    | R7 453         | R48 370             | R40 373              | R29 314          |
|                                 | Funding and financing            | R6 429         | R29 382             | R29 382              | R28 805          |
|                                 | <b>Deficit (-) / Surplus (+)</b> | <b>-R1 024</b> | <b>-R18 988</b>     | <b>-R10 991</b>      | <b>-R509</b>     |
| Other institutions (incl. DHET) | Current Costs                    | R427           | R1 419              | R1 419               | R1 419           |
|                                 | Funding and financing            | R427           | R1 419              | R1 419               | R1 419           |
|                                 | <b>Deficit (-) / Surplus (+)</b> | <b>R0</b>      | <b>R0</b>           | <b>R0</b>            | <b>R0</b>        |
| Total                           | Current Costs                    | R71 185        | R381 217            | R651 327             | R398 055         |
|                                 | Funding and financing            | R77 261        | R293 434            | R295 450             | R260 008         |
|                                 | <b>Deficit (-) / Surplus (+)</b> | <b>R6 076</b>  | <b>-R87 783</b>     | <b>-R355 877</b>     | <b>-R138 047</b> |
|                                 | Costs as % of GDP                | 1.7%           | 2.6%                | 4.9%                 | 2.9%             |
|                                 | Shortfall as % of GDP            |                | 0.7%                | 2.8%                 | 1.1%             |
|                                 | Shortfall as % of tax revenue    |                | 2.7%                | 10.8%                | 4.2%             |

Source: Costing and revenue model estimations

Table 20: Estimated real costs, revenue and deficit under the historical funding growth scenario

| Sector       | Historical (R'm)                 | 2014          | 2030 (Real)         |                      |                 |
|--------------|----------------------------------|---------------|---------------------|----------------------|-----------------|
|              | Item                             | Current Value | Status Quo Scenario | Full Policy Scenario | Mixed Scenario  |
| TVET         | Current Costs                    | R8 501        | R27 980             | R93 350              | R22 000         |
|              | Funding and financing            | R9 667        | R19 437             | R14 221              | R11 362         |
|              | <b>Deficit (-) / Surplus (+)</b> | <b>R1 166</b> | <b>-R8 543</b>      | <b>-R79 128</b>      | <b>-R10 638</b> |
| Universities | Current Costs                    | R52 920       | R93 090             | R131 355             | R97 016         |

|                                        |                                  |                |                 |                  |                 |
|----------------------------------------|----------------------------------|----------------|-----------------|------------------|-----------------|
|                                        | Funding and financing            | R58 854        | R76 566         | R82 551          | R72 094         |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R5 934</b>  | <b>-R16 524</b> | <b>-R48 804</b>  | <b>-R24 923</b> |
| <b>Community Colleges</b>              | Current Costs                    | R1 884         | R5 520          | R8 108           | R5 794          |
|                                        | Funding and financing            | R1 884         | R4 311          | R4 311           | R4 311          |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R0</b>      | <b>-R1 209</b>  | <b>-R3 798</b>   | <b>-R1 483</b>  |
| <b>NSFAS</b>                           | Current Costs                    | R7 453         | R18 475         | R15 421          | R11 197         |
|                                        | Funding and financing            | R6 429         | R11 222         | R11 222          | R11 002         |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>-R1 024</b> | <b>-R7 252</b>  | <b>-R4 198</b>   | <b>-R195</b>    |
| <b>Other institutions (incl. DHET)</b> | Current Costs                    | R427           | R542            | R542             | R542            |
|                                        | Funding and financing            | R427           | R542            | R542             | R542            |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R0</b>      | <b>R0</b>       | <b>R0</b>        | <b>R0</b>       |
| <b>Total</b>                           | Current Costs                    | R71 185        | R145 606        | R248 775         | R136 549        |
|                                        | Funding and financing            | R77 261        | R112 077        | R112 847         | R99 310         |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R6 076</b>  | <b>-R33 529</b> | <b>-R135 928</b> | <b>-R37 238</b> |

Source: Costing and revenue model estimations

Table 21: Estimated real costs, revenue and deficit under the projected funding growth scenario

| Sector                                 | Projected (R'm)                  | 2014           | 2030 (Real)         |                      |                 |
|----------------------------------------|----------------------------------|----------------|---------------------|----------------------|-----------------|
|                                        | Item                             | Current Value  | Status Quo Scenario | Full Policy Scenario | Mixed Scenario  |
| <b>TVET</b>                            | Current Costs                    | R8 501         | R27 980             | R93 350              | R22 000         |
|                                        | Funding and financing            | R9 667         | R21 043             | R15 828              | R12 968         |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R1 166</b>  | <b>-R6 937</b>      | <b>-R77 522</b>      | <b>-R9 032</b>  |
| <b>Universities</b>                    | Current Costs                    | R52 920        | R93 090             | R131 355             | R97 016         |
|                                        | Funding and financing            | R58 854        | R83 465             | R89 450              | R78 993         |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R5 934</b>  | <b>-R9 625</b>      | <b>-R41 905</b>      | <b>-R18 024</b> |
| <b>Community Colleges</b>              | Current Costs                    | R1 884         | R5 520              | R8 108               | R5 794          |
|                                        | Funding and financing            | R1 884         | R2 805              | R2 805               | R2 805          |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R0</b>      | <b>-R2 715</b>      | <b>-R5 304</b>       | <b>-R2 989</b>  |
| <b>NSFAS</b>                           | Current Costs                    | R7 453         | R18 475             | R15 421              | R11 197         |
|                                        | Funding and financing            | R6 429         | R12 871             | R12 871              | R12 651         |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>-R1 024</b> | <b>-R5 604</b>      | <b>-R2 549</b>       | <b>R1 454</b>   |
| <b>Other institutions (incl. DHET)</b> | Current Costs                    | R427           | R656                | R656                 | R656            |
|                                        | Funding and financing            | R427           | R656                | R656                 | R656            |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R0</b>      | <b>R0</b>           | <b>R0</b>            | <b>R0</b>       |
| <b>Total</b>                           | Current Costs                    | R71 185        | R145 721            | R248 890             | R136 663        |
|                                        | Funding and financing            | R77 261        | R126 444            | R124 159             | R106 619        |
|                                        | <b>Deficit (-) / Surplus (+)</b> | <b>R7 100</b>  | <b>-R24 881</b>     | <b>-R127 280</b>     | <b>-R28 591</b> |

*Source: Costing and revenue model estimations*

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