



Education, Training and Development Practices Sector Education and Training Authority

ETDP SETA

RESEARCH ORGANISATIONS

SECTOR SKILLS PLAN

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The full version of this report will be available on the ETDP SETA Website: www.etdpseta.org.za

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List of Acronyms

AGRISETA	Agriculture Sector Education and Training Authority
CASE	Community Agency for Social Enquiry
CEPD	Centre for Education Policy Development
CERT	Centre for Education Rights and Transformation
CHIETA	Chemicals Industries Education and Training Authority
CSIR	Council for Scientific Research
ESETA	Energy Sector Education and Training Authority
ETD	Education Training and Development
ETDP SETA	Education, Training and Development Practices SETA
FPMSETA	Fibre Processing and Manufacturing Education and Training Authority
HEI	Higher Education Institution
HESA	Higher Education South Africa
HRD-SA	Human Resource Development Strategy for South Africa, 2010-2030
HSRC	Human Sciences Research Council
HWSETA	Health and Welfare Sector Training Authority
IPAP	Industrial Policy Action Plan
ISETT SETA	Information Systems, Electronics and Telecommunication Technologies Education and Training Authority
NSDS III	National Skills Development Strategy III
JET	Joint Education Trust
NSI	National System of Innovation
OFO	Organising Framework of Occupations
PoA	Programme of Action
R&D	Research and Development
SARChI	South African Research Chairs Initiative
SSETA	Services Sector Education and Training Authority
SETA	Sector Education and Training Authority
TEIs	Tertiary Education Institutions
WITS EPU	University of the Witwatersrand Education Policy Unit
WSP	Workplace Skills Plan

Chapter 1: Overview of the Research Organisation Constituency

1.1 Introduction

Research organisations constitute a crucial sub-sector within the education and training environment. Over the past decade, the centrality of the research sub-sector in the generation and dissemination of new and existing forms of knowledge that are both innovative and high-level has been highlighted in numerous national policy documents in South Africa including: the 2002 Research and Development Strategy, the Human Resources Development Strategy for South Africa (HRDS-SA) 2010-2030, NSDS III, The 10-Year Innovation Plan and most recently, the Green Paper on Post-School Education and Training. Research organisations form an integral part of South Africa's National System of Innovation (NSI) which can broadly be defined as a network of players whose interactions and activities constitute the country's innovation system (CSIR, 2012). Significant players in the NSI comprise the higher education institutions (HEIs), science councils and small and large business.

1.2 Research Methodology and Analysis

The research methodology adopted comprised quantitative and qualitative components, using a two-pronged strategy; the desktop research and field research. The desktop research included the collection, collation and analysis of available data and databases, including the HSRC survey into research and development, and information available inter alia from the Department of Science and Technology, and the National Research Foundation. In addition, various policy documents were studied such as the HRDSA, NSDS III, Industrial Policy Action Plan (IPAP), The 10 Year Innovation Plan, the Green Paper on Post-School Education and Training and, the National Research and Development Strategy. These documents also informed the Political, Economical, Social, Technological, Environmental and Legal (PESTEL) analysis for research organisations. The analysis of the Workplace Skills Plans (WSPs) and Annual Training Reports (ATRs) was conducted for 2011 and 2012 submissions to inform the needs of the sector.

The field research comprised of a quantitative survey and qualitative interviews. The instrument used for the quantitative study was a survey through the administration of an online questionnaire posted to about 39 research organisations across different economic sectors using the Survey Monkey tool. The field research aimed to address the following:

- Employment trends – disaggregated according to occupations, skill levels (qualifications); vacancy rates; attrition rates; profiles according to developmental imperatives including race, gender, age, disability, geographical spread;
- Skills demand – drivers of skills demand, scarce skills demand, critical skills demand;
- Skills supply – profile and analysis of learning programmes/qualifications and education and training institutions/providers for the sub-sector, skills supply in terms of qualifications, throughput, profiles according to development imperatives including race, gender, age, disability and geographic spread.

The qualitative study consisted of key informant interviews with respondents from nine research organisations mostly in Gauteng (Appendix 1). The combination of a survey and qualitative interviews was an improvement on the 2011 update of the SSP where by six interviews were conducted with stakeholders. The list of research organisations that were interviewed were cross-sectoral and are as follows:

- WITS Education Policy Unit (EPU)
- Higher Education South Africa (HESA)
- Human Sciences Research Council (HSRC)
- Centre for Education Policy Development (CEPD)
- Joint Education Trust (JET)
- UMALUSI
- Centre for Education Rights and Transformation (CERT)
- Institute of Race Relations
- Economic Policy Research Institute

The above sample represents a selection of research organisations of varying sizes and across a multitude of discipline foci including education, economic development and the human and social sciences. The core business of each of the above organizations is research, with a particular emphasis on policy-based research, on both a small and large scale, seeking to better understand societal challenges surrounding amongst other things, poverty, gender, children’ rights, race relations, unemployment, economic growth, basic, further and higher education and training, issues pertaining to the rights of learners, the transformation of the education sector, quality assurance of education at different levels of the system and service delivery.

The intention was not to collect ‘hard’ data, but to explore key issues around the demand and supply of research skills in particular and identify what interviewees see as critical to improve Research and Development (R&D) activities and outputs. Furthermore, the interviews sought to highlight some of the systemic issues pertaining to the skills planning and development environment more broadly by seeking to understand, more specifically, what research organisation understood by the term skills development and how the use of existing skills development language impacted on skills planning and development within the sector. Finally, the research organisations were probed in terms of their role within the skills planning and development trajectory and had to identify the research capacities necessary to be able to conduct effective skills planning and skills development.

1.3 Limitations

As with any research process there are limitation to what can be achieved within a finite time and using limited resources. The intention was to use the Human Sciences Research Council’s (HSRC) National Research and Experimental Development Survey (R&D Survey) results which were due to be released in September 2012. The delay in the release of the survey results has meant that the 2008/9 report was used instead. Whilst the data in the 2008/9 report remains valid, it may not point to the latest development in the sub-sector.

With regards to the online survey that was administered, there were challenges in terms of the response rate of research organisations. A response rate of almost 40% was achieved. When contacted telephonically research organisations pointed out that they did not have time to do the survey or that they did not see the need to do the survey as there has been limited focus on research organisations in the past by the SETA. Given the good response rate of the focused interviews conducted, the survey results used with the interviews helped to achieve the research objectives.

Chapter 2: Sector Profile

The Department of Higher education and Training (DHET) announced a new SETA landscape in 2010, allocating seventeen sector industrial classification (SIC) codes to the ETDP SETA. Two of these SIC codes, 87110 – General Research, e.g. CSIR and 87132 – Research and Development, represent research organisations. The ETDP SETA has Chamber made up of research organisations and Higher Education Institutions (HEIs). This chamber forms part of the ETDP SETA governance structures and is made up of representatives from member organisations.

Research is a broad area which cuts across the entire economy. Due to the sector based nature of the South African SETA landscape, it has been differentiated by sectors and allocated to a number of SETAs. Thus there is no one SETA responsible for all research related skills development activities in the country. The general challenge in the SETA landscape is that SETAs are structured in terms of the South African Revenue Service (SARS) industrial classification coding (SIC codes) which is not the same as the SIC coding used by Statistics South African (Stats SA). The Stats SA coding is aligned with the international SIC coding used by the World Trade Organisation and this makes it easier to conduct comparable economic or social research. The table 2.1 below details the allocation of research areas to the various SETAs.

Table 2.1: S ETA Allocation of Research SIC Codes.

SETA	Research Area
CHIETA	87140 Industrial Research E.g. Fuel Research
ETDP SETA	87110 General Research e.g. CSIR 87132 Research and Development
Energy SETA	87141 Industrial Research for Electrical Energy
FIETA	87144 Forest Research
HWSETA	87000 Research and Development
ISETT SETA	87142 Research and Development of Electronic Equipment and Systems 87146 Research and Development in the Physical and Engineering Sciences
AGRISETA	87120 Agricultural and Livestock Research
Services SETA	88130 Market Research and Public Opinion Polling

Source: SARS, 2010

This section profiles the research organisations sub-sector as outlined in the table 2.1 above. It focuses on the types of organizations represented in the sector, size of the organizations as well as their location. It further considers the environment under which the research organisations operates, including the legislative and policy framework, socio-economic issues and drivers of change in the sub-sector.

2.1 Institutional Profile: Size, Shape and Scope of the Research Organisation Constituency

There are various types of research organisations found in the public and private sectors, the higher education sector and in the not-for-profit sector. Others are advancing a specific scientific research agenda as part of a science council. Ultimately these organisations are driven by different agendas and have different needs. The Human Sciences Research Council (HSRC) has identified the following categories of research organisations in the R&D Survey:

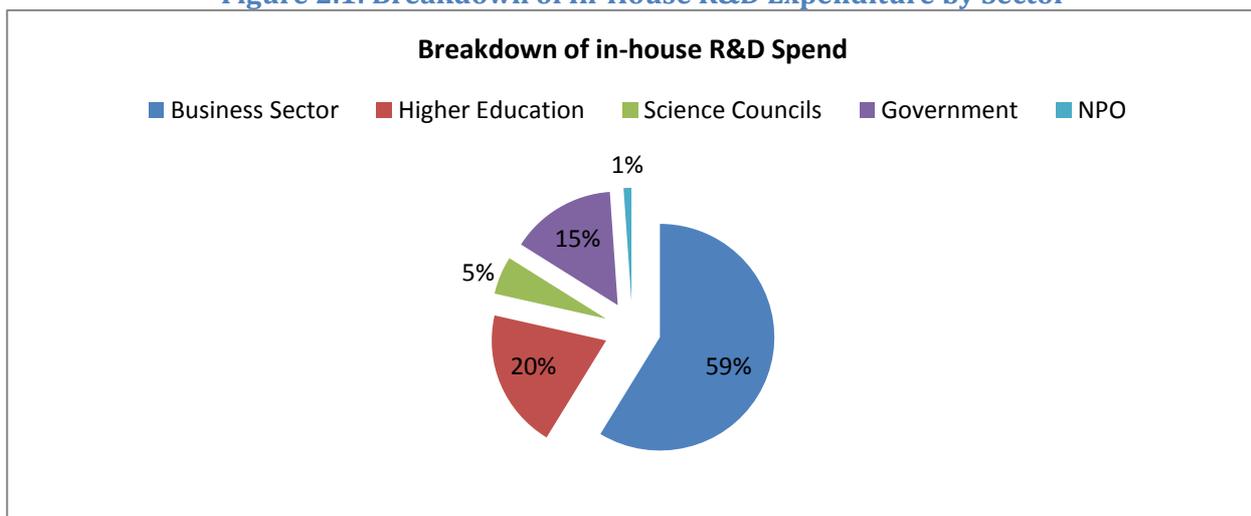
- The Business Enterprise sector comprises small, medium and large enterprises including state-owned enterprises
- The Government sector comprises local, provincial and national tiers of government with a R&D focus
- The Higher Education sector comprises all public higher education institutions (HEIs) and one private HEI
- The Not-For-Profit sector comprises non-governmental organisations formally registered not-for-profit organisation
- The Science Council sector comprises nine science councils (DST, HSRC & NSS: 2011, p. 12)

The scope of the ETDP SETA does not extend to all research organisations in the economy. However, it is important to understand the ‘Research & Development Sector’ as a whole in order to be able to contextualise the challenges facing research organisations within the ETD domain.

2.1.1 Size and Shape of the South African R&D Sector

The 2008/9 HSRC R&D Survey has recorded Gross Domestic Expenditure on R&D (GERD) of over R 21 billion, an increase from R18.6 billion in 2007/08, and constituting 0.92% of South Africa’s GDP. The business sector contributes about 58.6% towards GERD whilst the Non Profit Sector is the least contributor at 1.1%.

Figure 2.1: Breakdown of In-House R&D Expenditure by Sector

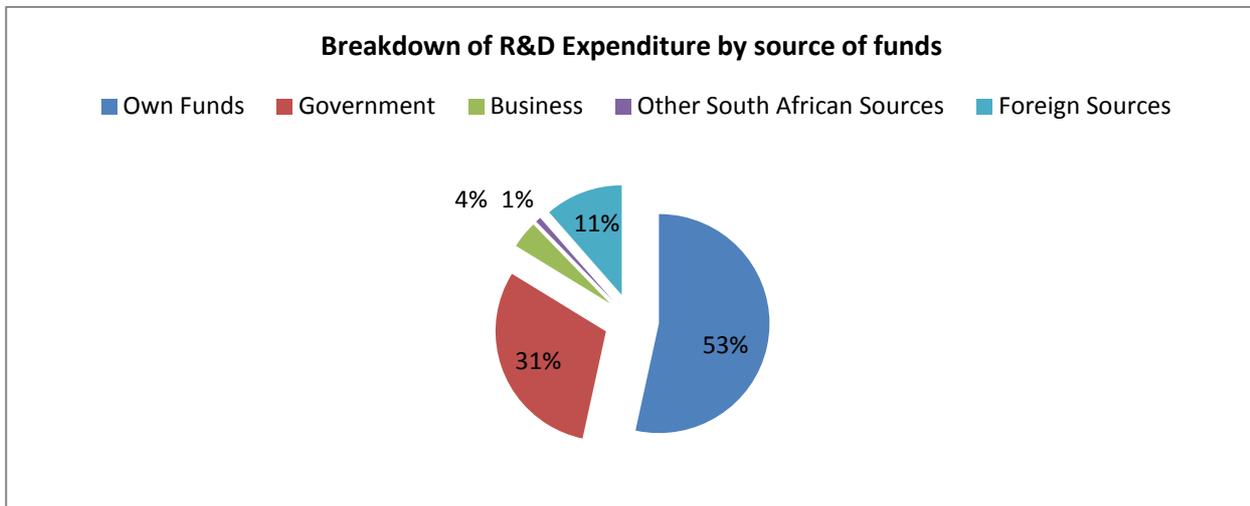


Source: National HSRC National Research and Experimental Development Survey 2008/9

The source of funding for the research expenditure above (Figure 2.1) does not necessarily come from the specific organisations represented in the figure above. Research & Development often relies on grants or funding from external sources. According to the Green Paper on Post School Education, economic development depends both on innovation (the creation of new knowledge within the country) and technology absorption (the ability to exploit knowledge developed elsewhere). A shortage of high-level skills has been a hindrance for both innovation and technology absorption in South Africa. Investment in knowledge generation has substantially increased since 1994, to levels three times higher in real terms than they were in the mid-1990s (including investment from government and business). However, there has not been an equally rapid increase in the number of research personnel. The Green Paper further notes that skills shortages have an impact on the capacity to undertake research and development as well as on the capacity of high-technology and skill-demanding firms to compete in global markets. South

Africa has managed to maintain its leading position in mining technology, but performance in other sectors has been less remarkable.

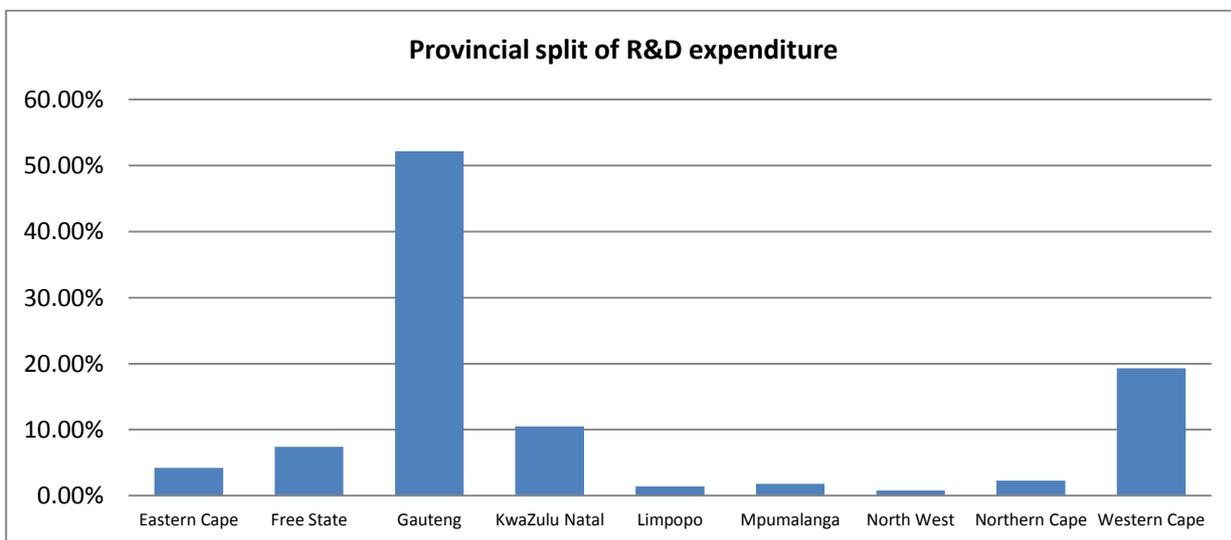
Figure 2.2: Breakdown of R&D Expenditure by Source of Funds



Source: National HSRC National Research and Experimental Development Survey 2008/9

The R&D Survey has indicated that over half of the R&D expenditure in South Africa is from own funds, in other words, organisations use their own financial resources (see Figure 2.2). There is, however, still a reliance of external sources of funding to conduct research, implying that challenges in the external sources could signal lower research expenditure and/or output.

Figure 2.3: Provincial Split of R&D Expenditure



Source: National HSRC National Research and Experimental Development Survey 2008/9

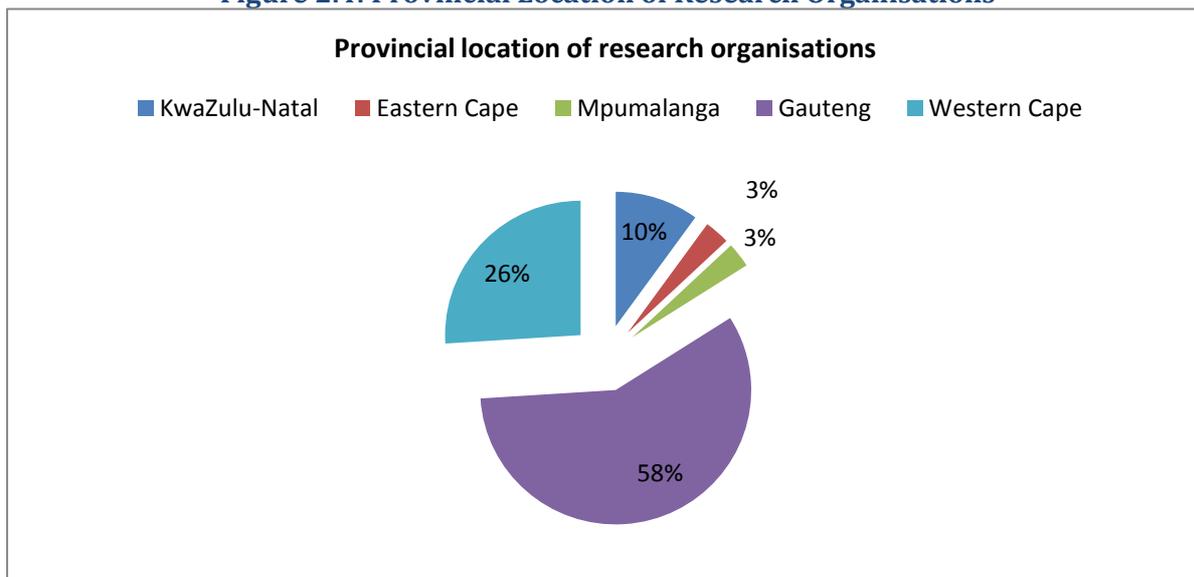
Figure 2.3 reflects that research expenditure is skewed towards the most developed provinces of the country. Gauteng, Western Cape and KwaZulu-Natal jointly account for over 82% of all research spend in the country, signalling that majority of the research organisations are located in these main centres. Gauteng accounted for over 50% of spend followed by the Western Cape.

2.1.2 Size and Shape of the ETD sector Research Constituency

The available R&D research information from the R&D survey and other sources does not provide for a disaggregation to the specifics of the research organisations in the ETD sector which is concerned only with two SIC codes out of many. Data is provided only at a national level for all R&D activity. The ETDP SETA's membership database has 49 organisations classified as research organisations. Based on analysis, the ETDP SETA has discovered that some of these organisations are not actively conducting research while others have been found to be involved in activities associated with supporting research. There is solid data pertaining to 39 organisations whilst the additional 10 have partial data and were only discovered or identified to be research organisations during the submissions of WSPs. The classification of organisations and allocation of SIC codes is done by SARS when organisations first register for tax purposes. There are instances where the core business of some organisations changes as they evolve but they remain classified under their original codes. Some organisations are classified incorrectly from the start and this often results in inaccurate reporting at SETA level.

The research organisations in the ETDP SETA membership base are located at main centres within metropolitan areas. They are situated in the most developed provinces of Gauteng, Western Cape and KwaZulu-Natal, with the exception of one organisation in Mpumalanga. The majority of the research organisations (58%) are situated in Gauteng, followed by 26% in the Western Cape and 10% in KwaZulu-Natal. Figure 2.31 below graphically demonstrates the provincial spread of these research organisations.

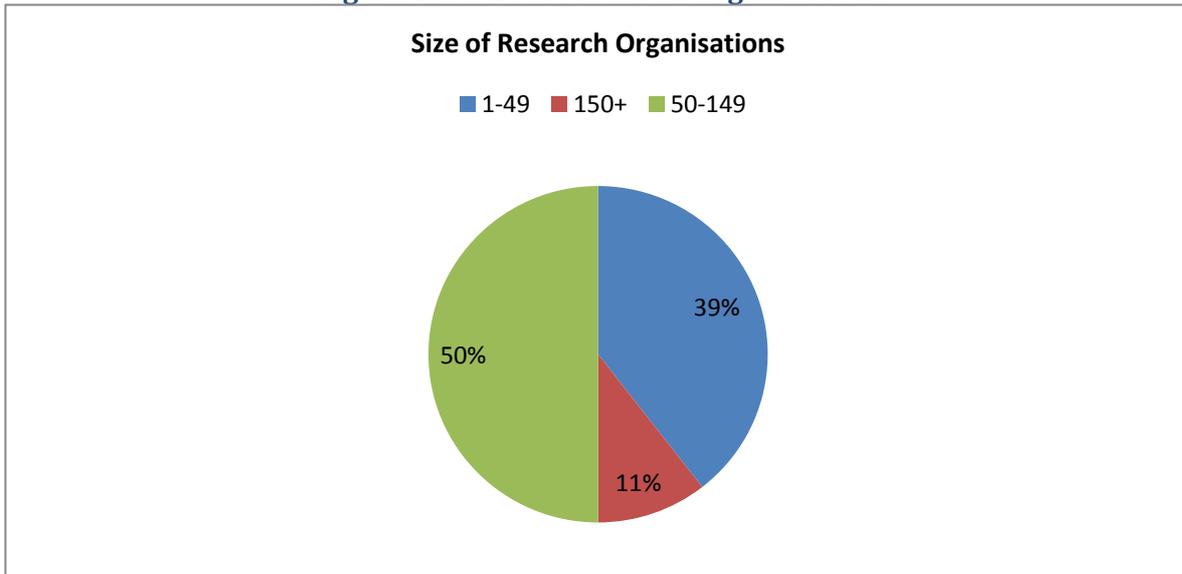
Figure 2.4: Provincial Location of Research Organisations



Source: ETDP SETA member database, 2012

The size of research organisations (Figure 2.5) plays an important role in terms of how they are internally structured, the amount of resources they may have as well as the type of skills development support they may require from a SETA. The research organisations do not mirror South Africa's general norm, which depicts a pyramid structure in which the majority of the organisations are small and a few are relatively large. Half the research organisations are medium sized (staff complement of between 50 and 149) whilst almost 40% are small (employing less than 50 people).

Figure 2.5: Size of Research Organisations



Source: ETDP SETA member database, 2012

The research organisations are not typical organisations employing a high number of people in elementary and lower level occupations and fewer people in mid-level to management occupations. They require high level skills and are often not independent bodies but part of larger organisations. The employee number breakdown in Figure 2.5 above should be read with caution as it may not represent the most recent employment data on research organisations. It is unclear if SARS updates these figures annually or if the figures represent the status when the organisation first registered as a tax payer. Most large organisations that employ more than 150 people - tend to have a research and development unit and, most recently, they established innovation units which perform a research function.

2.1.3 Scope of the R&D Constituency

The scope of the ETDP SETA include organisations involved in general research such as the CSIR and other organisations involved in ETD related research and development work . The R&D Survey has identified two main research divisions, namely, Natural Sciences, Technology & Engineering as well as Social Sciences and Humanities. The Natural Sciences, Technology & Engineering division is very broad and consists of 13 sub-divisions. Due to the way the research landscape is structured it is difficult to identify which organisations should be constituent members of the ETDP SETA.

It became clear during this project that there is a particular challenge facing the ETDP SETA in relation to meeting the needs of research organisations. The challenge is that whilst a certain number of research organisations are located in the ETDP SETA as member organisations, many similar organisations are located in other SETAs such as the Services SETA. Research organisations can also have a focus in another sector (such as energy or agriculture) but also work in the ETDP SETA focus areas from time to time, or have a unit that works continuously in the ETDP sphere. Whilst this report focuses primarily on the organisations that are members of the ETDP SETA, it seeks to identify broader challenges that may not be resolvable within the ETDP SETA, but might be worth examining in an inter-SETA process. The ETDP SETA may wish to consider taking on a coordinating role within the 21 SETAs to examine research capacity in a more holistic manner.

If one considers the type of research conducted by the ETDP SETA's constituent organisations, almost 80% of those researched focus on primary research, in other words, research based on the collection of new, raw data conducted by the organisations themselves. In addition, the organisations use a range of

research methodologies such as qualitative and quantitative methods as well as mixed methods of research. The need to often blend research methodologies used in research projects has skills implications for these organisations in that research staff must be competent in working with a range of methodologies, using a variety of research tools such as surveys, interviews, focus groups, desktop studies and case studies. The client base of the research produced consisted of, largely, the public sector (including government and statutory bodies), as well as civil society and international donor organisations and, to a lesser extent, the private sector and the media.

Chapter 3: ETD Skills Supply and Demand

3.1 Drivers of Change for the Research Organisation Constituency

The main drivers of change for research organisations include developments in the policy environment, new projects of national importance as well as changes of a technological and environmental nature in the business sector and the broader economy.

3.1.1 Policy Framework

Government has identified high-level skills as a significant constraint in the development of a knowledge-based economy. South Africa, therefore, has to increase its investment in human capital development and produce a greater number of skilled individuals, particularly in science, engineering and technology. The Department of Science and Technology plays a key role in R&D by supporting and promoting research, development and innovation (DST, p.2). In responding to the priority relating to human capital development, the DST has identified three areas namely:

- Growing the next generation of researchers and academics i.e. supporting more postgraduate students and postdoctoral fellows.
- Developing and supporting emerging researchers i.e. supporting more new-generation researchers and giving them the opportunity to become established researchers; and
- Supporting and maximising the output of established researchers i.e. increasing the number of active researchers and ensuring that they produce the required knowledge and innovation outputs and supervise the next generation of researchers (DST, p. 6).

The following policies have a direct impact on research organisations in South Africa:

- The **National Research and Development Strategy, 2002**: This strategy essentially highlighted the need to expand the role of R&D in the South African economy. It proposed the target of gross expenditure on R&D comprising 1% of gross domestic product (GERD/GDP) for 2008. South Africa has failed to achieve this target to date.
- The **10-Year Innovation Plan**: This plan builds on the National System of Innovation, a system constituting a “set of functioning institutions, organisations and policies that interact in the pursuit of a common set of social and economic goals and objectives and that use the introduction of innovations as the key promoter of change”. The Plan began with the 1996 White Paper on Science and Technology and was later followed by the National Research and Development Strategy (2002). The 10-Year Innovation Plan ultimately supports the transition to a knowledge-based economy. R&D plays a pivotal role in this process. The Plan outlines a set of strategic objectives known as Grand Challenges that South Africa hopes to meet by the year 2018. The Grand Challenges include: developing the Farmer to Pharma value chain through advancements in biotechnology; increasing the contributions to global space science and technology; building energy security; contributing to a better understanding of global climate

change through the use of science and technology (S&T) and; developing a better understanding of human and social change (including behavioural changes) that feeds into the entire system.

- **Policy framework for the Government-wide Monitoring and Evaluation Systems (2007):** Aims to provide an integrated, encompassing framework of M&E principles, practices and standards to be used throughout Government, and function as an apex-level information system which draws from the component systems in the framework to deliver useful M&E products for its users. This creates a platform for state institutions to conduct evaluations that assess relevance, efficiency, effectiveness, impact and sustainability of their programmes. Impact evaluations should examine whether underlying theories and assumptions were valid, what worked, what did not and why. Evaluation can also be used to extract crosscutting lessons from operating unit experiences and determining the need for modifications to strategic results frameworks.
- **The National Evaluation Policy Framework (2011):** This is one of the policy elements introduced in the Policy Framework for the Government-Wide Monitoring and Evaluation System. There has been a big increase in the demand for evaluation-related research. This policy framework provides the basis for a minimum system of evaluation across government. Its main purpose is to promote quality evaluations which can be used for learning to improve the effectiveness and impact of government, by reflecting on what is working and what is not working and revising interventions accordingly. It seeks to ensure that credible and objective evidence from evaluation is used in planning, budgeting, organisational improvement, policy review, as well as on-going programme and project management, to improve performance. It provides a common language for evaluation in the public service.

Additionally, both the New Growth Path and the Industrial Policy Action Plan 2 identify a number of priorities for industrial policy, that have implications for the research organisations, especially in terms of the need for the development of high-tech capacity.

3.1.2 Socio-Economic Profile

Research and Development has become the significant contributor of competitiveness and innovation globally as evidenced in the Global Competitiveness Index and the Global Innovation Index. Countries that feature prominently in these indices tend to invest significantly in research and development and have matured national systems of innovation.

South Africa's 10 year innovation plan seeks to stimulate the country's research community to engage in multidisciplinary approaches which transcend narrow and traditional disciplinary boundaries, develop new tools, techniques and teaching materials to better solve contemporary problems and position the country at the frontier of the knowledge enterprise. There is clearly a drive towards promotion of research in the country. Public sector research is an essential component of an NSI due to its longer term and more applied nature. Whereas in the private sector, competitiveness is the major driving force for innovation, socio-economic return is of major importance in the public sector. A large proportion of TEI research, for instance, is undertaken in the interest of advancing knowledge. This role for government funding is most obvious from an examination of the Frascati categories, which shows that business enterprise R&D is mostly concentrated on experimental development (research closely linked to the development of new products and services), whereas the research by TEIs is dominated by basic research.¹

South Africa has a strong culture of innovation, underpinned by a well-established research base. According to Zachary (2010)², based on a survey of recently published research papers, South Africa

¹ CSIR, 2012: www.csir.co.za

² G. Pascal Zachary (2010), South Africa Promotes Techno-Scientific Development of Its People To Address Human Needs, www.earthzine.org

accounts for 64% of all research undertaken in Africa. The country however continues to fall short in transforming this innovation and research into commercially-viable products and services and the creation of new industries.

South Africa has moved up by four places to attain 50th position in the 2011/12 Global Competitiveness Index, remaining the highest-ranked country in sub-Saharan Africa and the second-placed among the BRICS economies. The country does well on measures of the quality of institutions and factor allocation, such as intellectual property protection (30th), the accountability of its private institutions (3rd), and its goods market efficiency (32nd). South Africa also does reasonably well in more complex areas such as business sophistication (38th) and innovation (41st), benefiting from good scientific research institutions (30th) and strong collaboration between universities and the business sector in innovation (26th). The report states that these combined attributes make South Africa the most competitive economy in the region. However, in order to further enhance its competitiveness the country will need to address some weaknesses. South Africa is also ranked 59th out of 125 countries in the Global Innovation Index.

Efforts must be made to increase the university enrolment rate of only 15 percent, which places the country 97th overall, in order to better develop its innovation potential. The 'innovation chasm' or the gap between the local knowledge base and the productive economy had been identified in the national research and development strategy as a key challenge facing the NSI. For South Africa to bridge the innovation chasm, it must amongst other things focus on human capital development.

Government is increasingly seeking research into areas of social development and transformation – baseline studies, situational analyses, policy options and evaluation. Events such as Marikana and other community crises require a greater level of understanding of social issues, particularly in rural areas and areas where there is economic disadvantage. Whether it is Home Affairs developing policy on immigration or DSD developing policy on social services for people with disabilities these policy areas require in-depth research.

Knowledge Management has emerged as an academic discipline in recent years and there is a particular focus on the creation and/or strengthening of indigenous knowledge systems. Increasingly researchers are being challenged to make research more relevant to Africa and to the South African transformation agenda.

3.1.3 Technological and the environment factors

South Africa's IPAP notes a number of key economic focus areas which include plastics and pharmaceuticals, bio-fuels, green industries, agro-processing, automotive products and mining beneficiation efforts. In order for the country to be competitive in any of these areas there is a concomitant need for in-depth research into these areas some of which is spearheaded by organisations like the CSIR. South African manufacturers are indicating that R&D is important for coming up with innovative products that can be patented to compete internationally. They are exploring working in partnership with universities to achieve their objectives. These manufacturers require researchers with understanding of latest technologies to help them be competitive.

The issues of climate change have come to the mainstream. The advent of the green industries and the complex interaction between current and future demand for energy and the rising cost of existing fossil fuel energy on the use of fossil fuels has put pressure of researchers to come up with cleaner fuels that do not harm the environment. There is an increasing need for researchers to come up with new methods and products that are cleaner and will not harm the environment.

3.2 Overview of current challenges in the Research Organisation Constituency

Research organisations across the various economic sectors face similar challenges. These include: financial and researcher skills demand and supply-related challenges. The most pertinent challenge facing all the research organisations is that of limited and or reduced funding from both local and international sources. The global economic recession is a contributing factor to reduced funding along with the perception that international donors now regard South Africa as a more stable democracy and as such have begun to re-distribute funds to other countries in the region. Funding challenges across the sub-sector have forced research organisations to change the way they work. Self-initiated research projects have in many instances become a luxury of the past and have been replaced by shorter-term, contract research projects acquired through competitive tender processes.

Pressures to deliver what may be described as 'relevant research' have also risen. One research organisation described the need for more sustainable funding models that involve the corporate sector in South Africa to supplement government and donor funds.

Overall, researcher capacity was identified as the second largest challenge experienced by research organisations. It was noted that "there isn't a large enough pool of researchers and we use the same ones over and over. This is a national problem." The researcher population, like the academic population, is aging and this poses immense challenge to the sustainability of the research sub-sector. In addition, employment equity candidates are difficult to find. Many research organisations experience skills competency gaps due to researchers having inadequate methodological, writing, analytical, statistical and conceptualisation skills that may be brought together to carry out innovative research and development.. The research profession continually faces the challenge of attracting sufficient numbers of post-graduate students into its realm (2012: Interviews).

3.3 Employment Profile

The employment profile of the research organisations in the ETD sector is difficult to ascertain as the organisations do not always submit this data to the ETD SETA. Data available from SARS is not always accurate whilst data from research databases is generally not structured in terms of the SETA landscape demarcation of the R&D sub-sector. The R&D Survey of 2008/9 depicts the profile of the entire South African R&D sector, which includes research organisations outside the ETD sector. The R&D Survey indicates that research organisations in South Africa employ over 58 000 people, 67.8% of which serve as researchers. The majority of these (53%) are employed by HEIs whilst business enterprises employ 31.6%. Science Councils, government and NPOs employ 9.5%, 5% and 0.9% of these researchers respectively.

3.3.1 Employee Demographic Profile

There are more male personnel in the South African R&D sector as compared to females. The data from the R&D Survey indicates that female employees comprised 33.8% of the business sector R&D personnel headcount of 18 595 in 2008/09; an increase from 33.2% in 2007/08 and 32.6% in 2006/07. The representation of women researchers in the HE sector has remained fairly static at 43.3% in 2006/07, 42.7% in 2007/08 and 43.1% of 20 223 in 2008/09. The majority of employees in the R&D sector are white. In the HE sub-sector, more than 60% of the 20 223 employees are white followed by blacks at 24%.

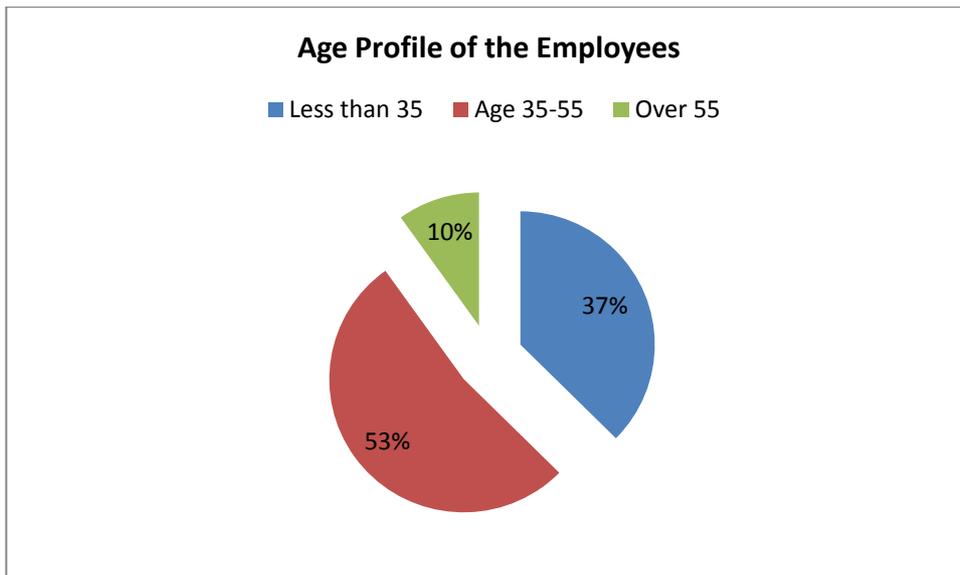
Figure 3.1: Breakdown of Employees by Occupational Category



Source: ETD P SETA WSP Submissions 2012

The ETD P SETA member database depicted 39 research organisations with comprehensive data. These research organisations collectively employ over 2,500 employees. However, the details of their occupations level or education are not available. The veracity of the employee figures cannot be ascertained as they are based on information from a SARS database and not on direct input from the employers. Analysis of WSP submissions for 2012 revealed 949 employees, 38 % of which are Professionals whilst Technicians and Associated Trades accounted for 21% (see Figure 3.1).

Figure 3.2: Age profile of the employees.



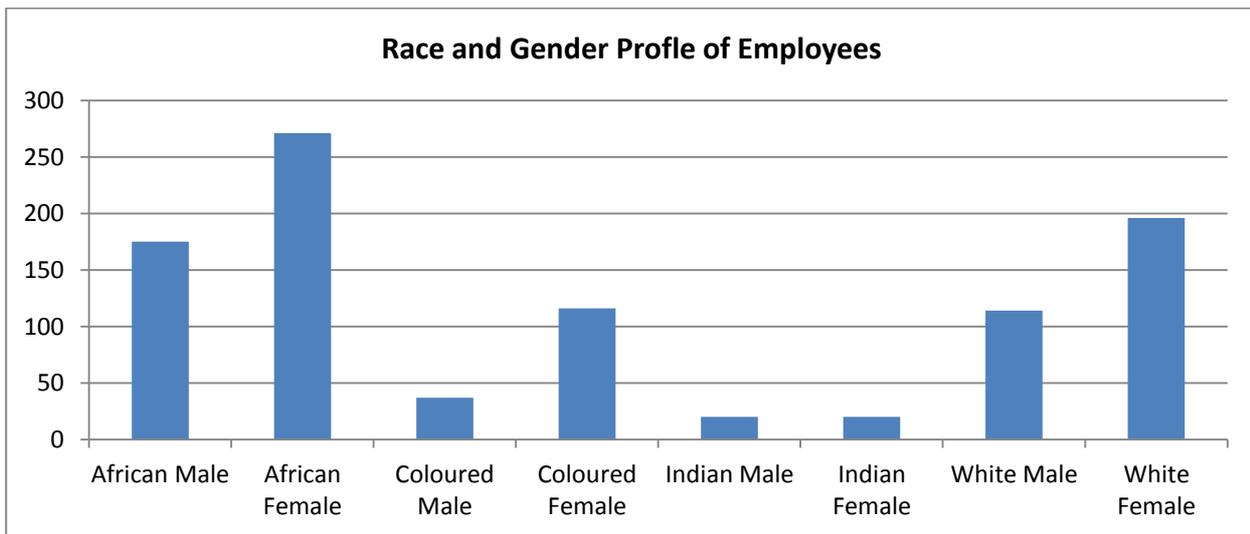
Source: WSP Submissions 2012

According to the age profile details above (Figure 3.2), the majority of people employed in the research organisations that submit WSPs are younger than 55 years, with those over 55 years constituting 10% of

the 949 employees. This points to research organisations consisting of young to middle aged individuals and could indicate that these organisations are attracting younger individuals.

The research organisations that submitted WSPs employ more females (63% of 949) than males. Africans have the highest representivity at 47% whilst Indians are the least represented at 4%. There are more African females (29%) employed by these organisations followed by White females at 21%. Africans constitute a majority within elementary occupations (86% of 166) whilst amongst management level jobs there are more Whites (71% of 91).

Figure 3.3: Race and Gender Profile of Employees



Source: WSP Submissions 2012

Very few research organisations submit WSPs and therefore the information in Figure 3.3 above cannot be considered a true reflection of the employment profile of the sub-sector. The ETDP SETA may have to conduct targeted research in this field to get a clearer picture.

3.3.2 Employment Patterns and Trends (National/Provincial)

The number headcount in the general South African R&D sector stood at 58,895 in 2008/9. The total headcount of R&D personnel in the business sector was 18 595 in 2008/09, an increase of 3.6% from the headcount of 17 951 in 2007/08 and 2.7% from 17 467 in 2006/7. In the HE sector, the number of researchers, excluding postgraduate students, employed in the higher education sector has decreased by 4.1% between 2007/8 and 2008/9 to 20 223. In 2006/7 the headcount was 21 746. The number of postgraduate students in the HE sector increased from 35 278 in 2006/7 to 36 527 in 2008/9.

The employment patterns of the research organisation sub-sector are influenced by social factors including an aging researcher population, the ability of the profession to attract post-graduates students and other potential employees who may be developed as researchers and, the skills gaps within the sub-sector that have become problematic particularly at higher and more specialist researcher levels. In addition to these scarce skills, competency gaps are evident with respect to various methodological, conceptual, writing, monitoring and evaluation, statistical and managerial skills (2012: Interviews).

South Africa is already dominated by a knowledge economy, with over 60% of the economy based in the services sector. As outlined in the National Research and Development Strategy, in order to be competitive in the global economy, the country has to invest significantly in research and development so

that new products can be developed and manufactured locally. The strategy calls for increased investment in research and development and increased investment will inevitably have an impact on the demand of skills in the sector.

In order to encourage research and development, the National Research Fund (NRF) manages a number of initiatives. One such initiative is the South African Research Chairs Initiative (SARChI), which is a key intervention designed to address the scientific leadership development needs in the universities and is increasingly forging new public-private partnerships in order to give South African universities and industry a competitive edge. The Rated Researchers Incentive Funding (RRIF) programme which is a component of the SARChI aims to reward research excellence. Researchers with valid NRF rating receive Incentive Funding based on their rating level.

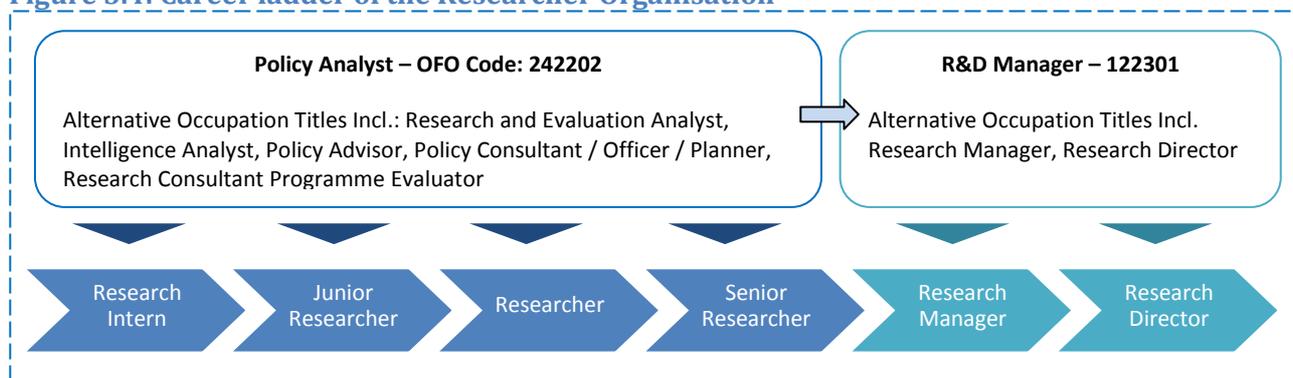
The National Skills Fund is also setting aside funding for research into skills development and SETAs are being urged to devote more to research in terms of research of their sectors . These initiatives are intended to encourage participation and advancement in research and development.

3.4 Skills Supply

3.4.1 Occupational routes into the Specific Sector Labour Market

Due to the varied nature of the R&D sector there are no codified occupational routes. Often, to become a researcher one has to go through postgraduate studies before identifying research as a career. In some research organisations the minimum requirement for researchers is a Master’s degree, whereas in others it is a Bachelor’s degree. While most of the hard research skills are learned on the job, re are, however, some generic research competences that one requires such as analytical skills, writing skills and conceptual abilities. The following (Figure 3.23) is a typical career ladder of the Researcher occupation:

Figure 3.4: Career ladder of the Researcher Organisation



Typically, one would start as a research intern with a Masters degree and through acquiring experience progress to being junior researcher, researcher and senior researcher. In terms of the OFO codes, the incumbent would fall under occupation code 242202 throughout this movement on the career ladder, because the OFO is not structured in terms of level of seniority or rank but on the performance of similar or identical tasks. It is when someone becomes a Research Manager that the OFO code changes to 122301. This code would not change even when the incumbent were to become a research director.

It is possible for professionals in other sectors to enter the research realm after having spent years in their respective industries and having established specialisations or interests in particular research areas. This means such people could have critical skills gaps that could inhibit their performance. In order to address such critical skills gaps, appropriate skills development interventions that are carefully thought through are

put in place. Thus, understanding the importance of context with regards to skills development initiatives is paramount in order to do justice and ensure that skills needs are met in order to make a difference in the life of an individual, the organisation they work for and the country. Therefore, we need to understand the needs of research organisations differently so that we can better meet their needs for them to contribute to and add value towards a knowledge-based economy.

3.4.2 Availability of Training Providers and Gap Areas

South Africa's 23 public HEIs and various private institutions of higher learning are involved in research. Research at these institutions is typically conducted at postgraduate level. While postgraduate studies tend to be a path into research, often students choose careers in other sectors of the economy. A lack of understanding about research as a career amongst graduates points to inadequate career guidance at school or university level.

Research organisations have indicated that there is limited availability of training for researchers who need to train in diverse methodologies, particularly quantitative skills. In other words, there aren't sufficient training providers and credible programmes that researchers can enrol for. To further complicate matters, there is no professional qualification for research per se. In fact, in most cases, researchers do not plan to be researchers but end up being researchers usually by default.

3.4.3 Skills Supply Analysis

There are a range of reasons provided by the research organisations for the existence of skills gaps. Although the number of postgraduate students in the HE sector exceeds 35 000, these students do not always choose research as a career. Given the lack of a professional qualification in research, many do not choose to pursue it as a profession.

The university system does not produce sufficient graduates at postgraduate level in areas such as economics and statistics which are required in the sub-sector. The fact that the country is simply not producing enough Masters' and Doctoral graduates to create a researcher pool is a challenge being pointed out by research organisations. In addition, there is competition for this small pool of good researchers from government and the corporate sector, with salaries in the latter being often higher and conditions of employment more attractive. Researchers are also poached by universities where research budgets may be more long term and less restrictive in terms of the individual research interests. Also, universities usually offer permanent posts with various other perks associated with being an academic.

There is a systematic challenge on the whole issue of skills supply. The limited writing and analytical skills of learners exiting the schooling system and graduates exiting the post-schooling education and training system restricts the number of candidates for research. This may relate to other issues beyond the scope of this study. Poor writing, thinking and analytical skills due to systemic weaknesses in our schooling and post-schooling education and training system are some of the greatest challenges on the supply side. Some of the research organisations have found that the local South African graduates do not have the ability to think laterally and creatively as compared to equivalent graduates from outside of South Africa, such as from Europe and the United Kingdom (UK), who are much more rounded in terms of their experience and education.

3.5 Skills Demand

3.5.1 Factors Impacting on Demand

Indications from the interviews conducted at research organisations are that the researcher population, like the academic population, is aging. There is a need to attract more postgraduate students and to

develop more black researchers at the senior researcher and research manager levels. Ideally, university students need to be introduced to the research profession earlier on so that it becomes a potential career choice and not simply a career that develops by default. Existing skills gaps amongst mid-upper level occupations include researchers, research managers and research specialists.

Factors that impact on demand include the general war for talent fuelled by globalisation. Advanced researchers are required in developed economies as they seek to achieve further advancements. Locally not many students are attracted to a career in research as it often requires them to embark on further studies, the opportunity cost of which are higher earnings through employment in other sectors of the economy.

There are a few projects such as the Square Kilometre Array initiative, the Strategic Integrated Projects (SIPs) and initiatives funded by the National Research Fund, Technology Innovation Agency and the Department of Science and Technology that could spark a higher demand for researchers. The Square Kilometre Array initiative will require researchers in astronomy and this is likely to put pressure on the employers of such researchers in research organisations and universities. The initiatives such as research chairs being funded by the NRF will also make research more palatable and thus more people are likely to want to be involved.

3.5.2 Scarce Skills

The issue of attracting and keeping experienced staff is important for research organisations who work on specialised assignments that require individuals who have experience in the sector, and who also can function at higher conceptual levels due to the complexity of issues they often research and provide advice on. Such high level skills are paramount within a knowledge-based economy so that they enable better analysis and interpretation in order for South Africa to contribute to and play a leading role in research and development across the African continent and at a global level. The research organisations expressed difficulties in filling a number of posts. These include:

- Senior researchers (OFO: 242202) (Baseline Target: 6)
- Statisticians (OFO: 212103) (Baseline Target: 21)
- Labour market economists (OFO: 263101) (Baseline Target: 9)
- Policy analysts (OFO: 242202) (Baseline Target: 6)
- Research and development managers (OFO: 122301) (Baseline Target: 10)
- Programme or project managers (OFO: 121905) (Baseline Target: 10)

The main reason provided for the scarcity of senior researchers was the degree of diversity in the skills required at that level. Senior researchers must be able to project manage, think analytically and creatively, use varied methodological approaches, write reports, source funding, conduct effective monitoring and evaluation and network with various role-players in the sector. These are all skills required for management and senior management positions broadly, and so research organisations are competing with public and private sector employers who often pay salaries in excess of what ought to be offered for research manager positions. Other reasons for scarcity were based on the fact that there were no or very few candidates available in the country for such positions.

An analysis of the 2012 submissions of the WSPs for research organisations has demonstrated that there are scarce skills amongst managers, professionals and clerical support workers. Table 3.1 below illustrates the occupations which have been identified as scarce skills as well as the estimated demand for such occupations. It must be noted that the table below denotes occupations and not varied jobs that may be linked to an occupation. Additionally it is worth noting that the information demonstrates needs, based on WSP submissions and does not include the research organisations that have not submitted WSPs.

Table 3.1: Scarce Skills Demand by Occupation

Occupational Group	OFO CODE	Occupation	Estimated Demand
Managers	121905	Programme or Project Manager	10
	121908	Quality Systems Manager	1
	122301	Research and Development Manager	10
Professionals	211201	Meteorologist	2
	212103	Statistician	21
	213105	Biotechnologist	2
	213106	Botanist	6
	215202	Electronics Engineering Technologist	1
	216603	Multimedia Designer	0
	225101	Veterinarian	6
	235101	Education or Training Advisor	3
	235205	Adult Education Teacher	3
	241102	Management Accountant	0
	242202	Policy Analyst	6
	243103	Marketing Practitioner	0
	251101	ICT Systems Analyst	1
	262202	Information Services Manager	6
	263101	Economist	9
264201	Copywriter	2	
Clerical Support Workers	411101	General Clerk	5
	422201	Inbound Contact Centre Consultant	6
	422501	Enquiry Clerk	3
	441902	Contract Administrator	3

Source: WSP Submissions 2012

3.5.3 Critical Skills

Research organisations have indicated that research employees, particularly interns or junior researchers, are not properly prepared for the workplace in terms of their knowledgebase, and understanding of research tools and methodologies, thereby indicating that the quality of their training is questionable. A respondent indicated that new recruits are “completely ignorant of important research tools”. Another indicated “incumbents are limited to narrow qualitative approaches” whilst a further respondent stated that there is a “lack of institutions offering enough courses linked to industry needs”. “There is insufficient career guidance to students”, claimed a respondent. These comments highlight a need for research to be conducted on the types of graduates that are being produced in the field of research and how best to ensure that they are better prepared to enter the labour market in a range of research contexts.

The importance of one’s contextual understanding of the sector in which the research organisation operates varied between the research organisations studied. Some highlighted the need for researchers to understand the intricacies of their particular sector, especially the policy environment, whilst others did not share the same view and felt that research competencies are generic across different sectors and that one’s knowledge of a particular sector can be developed on the job. Table 3.49 contains some of the general critical skills required by researchers.

Table 3.2: General Critical Skills Areas for Researchers

Critical Skill	Rationale
Conceptualisation skills	To be able to conceptualise a research project and express the best way to go about finding the information required. This would involve the ability to think laterally and creatively.
Methodological skills	Usually involving the ability to work with a range of research methodologies including quantitative, qualitative and mixed methods, and to select the appropriate methodology for particular research conducted in different contexts.
Inter-personal and people skills	A good researcher is someone who has empathy and can draw useful information from people in a way that is not invasive and is participatory in nature.
Data management skills	Particularly with respect to managing large projects with large and often complicated datasets.
Analytical skills	To be able to analyse data and draw interesting conclusions - turning data into information and information into knowledge.
Project management skills	Including the ability to plan a research project, manage and complete within budget, and conduct effective monitoring and evaluation during the entire project life cycle.
Writing skills	The ability to effectively communicate the outcomes of the research to a particular client is very important. The ability to structure a paper that presents research data, and builds the case for conclusions and recommendations is a skill that is often lacking in researchers.
Fundraising	The ability to source funding for research projects is crucial in an environment where funding has been cut and remains a challenge to the very existence of research organisations. Conceptualising and motivating a research need are important skills.
Policy analysis skills	To be able to contextualise the research questions in the policy sphere, including structuring a research process using a policy analysis approach.
Time and Pressure Management	The ability to work in what is often a pressurised working environment where there are always deadlines, where funding is scarce and job security often questioned. Such conditions are particularly experienced in NGO-type research organisations where there is no regular stream of income filtering into the organisation, but this is also true of much research funded through tenders or donors.
Networking skills	The ability to draw on one's work and life experiences as well as on that of others where necessary, when conducting research.

Source: Interviews with Stakeholders (2012)

The critical skills applicable to research organisations are rather extensive, particularly at the level of senior researcher/research manager. Table 3.49 above outlines the skills that are critical in research organisations.

Table 3.3: Critical skills by Occupation for Research Organisations

Critical Skill	OFOCODE	Occupation	Total
Accounting	331301	Bookkeeper	1
Business Acumen	216603	Multimedia Designer	1
	242101	Management Consultant	1
	243103	Marketing Practitioner	1
	264201	Copywriter	1
Communications/ Fund raising	121905	Programme or Project Manager	1
Compost production	122301	Research and Development Manager	1
Conflict Management	112101	Director (Enterprise / Organisation)	1
	122301	Research and Development Manager	1
Consumer psychology	213105	Biotechnologist	1
Database development	262202	Information Services Manager	1
Database management	413201	Data Entry Operator	1
Events Management	412101	Secretary (General)	1
Farm animals behaviour	122301	Research and Development Manager	1
Fundraising	134904	Office Manager	1
Governance	242203	Company Secretary	1
Graphic design	252301	Computer Network and Systems Engineer	1
Health and Safety	121202	Business Training Manager	1
ICT application in a library	262202	Information Services Manager	1
Labour relations	112101	Director (Enterprise / Organisation)	1
	122301	Research and Development Manager	2
	242202	Policy Analyst	1
Leadership skills	122301	Research and Development Manager	2
Payroll administration	242303	Human Resource Advisor	1
Plato	351302	Geographic Information Systems Technicians	1
Project management	334101	Office Supervisor	1
Research	121905	Programme or Project Manager	1
Scientific report writing	213105	Biotechnologist	1
	242202	Policy Analyst	1
Telephone antique	422201	Inbound Contact Centre Consultant	1
Urban Planning Content	121905	Programme or Project Manager	1
Writing skills	334101	Office Supervisor	1

Source: WSP Submissions 2012

The analysis of WSPs further identified a number of critical skills. Table 3.50 above demonstrates the critical skills as well occupations in which these are required. Critical skills have to be linked to occupations because the type of learning intervention must respond to the critical skills need e specific to that occupation so that the individuals involved get what they require. For example, the accounting skills

required for a Bookkeeper to be effective are not the same as the Accounting skills that may be required by a Project Manager who is involved in management of research budgets.

3.5.4 Demand and Supply Analysis – what are the Gaps? Is there oversupply?

In dealing with the issue of demand and supply of skills it is vital to first discuss research in the skills development value chain context. There is a fundamental challenge in terms of how the SETAs have historically conducted skills planning. There have been instances in which false demand for skills was created or skills gaps were generated in a vacuum without proper research being conducted to understand the scarcity as well as to design the most appropriate intervention to deal with the skills gap (2012: interviews). Some of the research organisations that have been retained by the SETAs to assist with skills planning have indicated that they had sufficient, generic research skills and competencies to be able to conduct skills planning and skills development research. But the scale of their involvement is largely constrained by internal capacity constraints including the number of experienced researchers and the lack of labour market analysts, economic research and methodological skills. These research organisations have identified a list of research competencies deemed necessary for conducting effective skills planning and skills development research. Such skills would supplement general research skills and include:

- Labour market analysis skills
- Economic research skills
- Statistical gathering and analysis skills
- A good understanding of the education and training sector as well as the policy environment
- Good interpersonal skills
- Varied methodological skills
- A good understanding of the political environment, political economy, the developmental state and the provision of education and training as a public good.

On the supply side, whilst the HE sector appears to be producing thousands of postgraduate students, these are not always in the scarce skills areas required by research organisations such as statistics, economics and policy analysis. Moreover, there is a general shortage of experienced researchers due to factors such as retirement, discharge due to ill health, morbidity and general competition for talent. Graduates do not always possess the requisite skills that would enable them to function effectively in their research roles. Despite over 100 research-related unit standards on the SAQA database, there is a paucity of training providers offering credible and specific training that meets the needs of the sub-sector.

It is important to understand that there are a host of measures that have been adopted by research organisations to deal with scarce and critical skills gaps within the sub-sector. Some of these include:

- Due to financial challenges and difficulties in offering salaries that are on par with government and the private sector, some research organisations have resorted to offering flexible working conditions where, for example, researchers are entitled to work from home for a certain amount of time and or have more flexible working hours.
- Providing access to development and training programmes to supplement existing skills.
- Some research organisations use incentives to encourage researchers to publish more. Where financial incentives are not implemented, some research organisations give their researchers time off to write papers.
- Where possible, research organisations are trying to offer permanent posts for research staff as a means to try and retain more staff.

Despite these and other measures, research organisations struggle to retain good research staff, especially at senior and management levels. Over and above research skills gaps, project management

and general management skills competencies remain a challenge. This is largely because researchers at senior levels of the organisations are expected to be both researchers and managers. In some research organisations the finance managers may require a range of skills including finance, accounting, bookkeeping and investment skills as well as an understanding of the education and training sector in which the research organisation operates.

3.5.5 Priorities and Projections – Short, Medium and Long-term

There are a number of challenges that have been presented in the previous sections, that the ETDP SETA would have to deal with. The four priority areas where ETDP SETA intervention could make an impact are:

- **Capacity of research organisations to conduct skills planning research** is a priority area because the development of credible mechanisms for skills planning requires a mix of skills such as labour market analysis, skills development, econometrics, research and strategic planning. Given the scarcity in these skills in the various research organisations, in the short-term there should be focus on addressing the critical skills of the current workforce in the research organisations whilst in the medium-term there should be focus on developing postgraduates into the scarce skills areas. The long-term goal is to ensure that all research organisations have the requisite capacity to support all SETAs to conduct credible skills planning research.
- **General skills shortages in the sub-sector** that were identified above need to be addressed. A number of scarce and critical skills gaps were identified and the appropriate interventions to address such gaps were highlighted. The ETDP SETA should focus on internship, mentoring and skills programmes that concentrate on the scarce and critical skills gaps in the short to medium term. The long-term objective should be to have a competent researcher workforce that is capable of helping the economy.
- **Schooling:** The South African schooling system is remains with challenges despite some gains since 1994. The National Planning Commission's Diagnostic has noted that the quality of education for poor black South Africans' is substandard and there are huge variations in South African education outcomes depending on school type. The literacy and numeracy levels in the schooling system are amongst the worst in the world. This issue ought to be tackled through researching the root causes of the problems. in the short-term focus should be on identifying the blockages and developing programmes to address the causes and gaps identified. Conducting teacher development interventions would be a medium-term effort.. All these efforts should be aimed towards the long term objective to achieve Quality Basic Education in South Africa.
- **Provider development** should also be prioritised by the ETDP SETA. One of the challenges identified was the lack of training providers that could provide skills programmes that are relevant and meet the critical skills needs of research organisations. The ETDP SETA should engage the research organisations on an on-going basis to understand their specific needs. In the short term, there is a need to determine if there are available unit standards that providers could use to develop interventionist programmes. In the medium-term skills programmes should be available to the sub-sector to bridge the critical skills gaps.

3.5.6 Implications

The implications for the ETDP SETA in terms of the above are varied. In order for the ETDP SETA to develop a credible SSP and build credible institutional mechanisms for skills planning. In the short term it is vital that the capacity of research organisations is bolstered, especially in the scarce skills areas identified.

In order to address the general skills shortages in the sub-sector, the ETDP SETA will have to ensure equitable allocation of limited resources to all its sub-sectors.

The implications for addressing the schooling challenge are that research resources would have to be secured, and the ETDP SETA will have to work collaboratively with the Department of Basic Education.

Once research has been conducted and the root causes of the problems are known, there will be the bigger challenge of developing interventions and learning programmes that would address such challenges. The roll out of these programmes would require sufficient provider capacity.

One of the issues of provider development, if it is found that there aren't sufficient unit standards, then occupational awards can be developed using the QCTO route. Then efforts should be directed towards identifying providers who can develop accredited learning programmes..

Chapter 4: Sector Strategy

4.1 Priority Areas and Alignment with National Strategies/Imperatives

The following is an analysis of relevant government policies in relation to the research organisations in the ETD constituency.

Medium-Term Strategic Framework (MTSF)

The MTSF notes that investment in quality education for all young people and in skills development should form the bedrock of Government's approach. Researchers are generally produced by universities and thus the MTSF's focus in investment in quality education for all young people signals the drive and commitment to promote researchers who are vital to create knowledge in an economy.

Programme of Action (PoA)

The MTSF manifests government's PoA which outlined 12 outcomes. Outcome 5 refers to a skilled and capable workforce to support an inclusive growth path, which incorporates the following outputs:

- a credible institutional mechanism for skills planning,
- access to programmes leading to intermediate and high level learning,
- access to occupationally directed programmes in needed areas and thereby expand the availability of intermediate level skills (with a special focus on artisan skills),
- access to high level occupationally-directed programmes in needed areas,
- research, development and innovation in human development for a growing knowledge economy

The ETDP SETA identifies itself as a SETA at the cutting edge of skills development. One of the ETDP SETA's responsibilities is to ensure skills development innovation in the ETD sector. The ETDP SETA must have a mandate to conduct research into the sector and to support research organisations in the sector to contribute meaningfully to a growing knowledge economy.

NSDS III

The NSDS III gives expression to the HRDS-SA and government's strategic objectives and provides an overarching framework for sector skills planning. One of the goals of the NSDS III is the development of a credible institutional mechanism for skills planning. This goal stems from the government's POA. In order to develop a credible institutional mechanism for skills planning, the 21 SETAs must conduct skills planning research into their respective sectors to derive an in-depth understanding of the sector dynamics as they relate to issues of skills demand and supply. The SETAs have to develop internal capacity to conduct research and also forge alliances and partnerships with research organisations. This implies an increased demand for capable researchers across the SETA landscape.

The ETDP SETA supports research organisations involved in General Research and ETD Research development. As outlined above, these could take different formations including private enterprises, public entities, not-for-profit organisations, science councils and other organisations involved in ETD research. There are various SETAs are members of the ETDP SETA but are currently classified under

different SIC codes in the SETA membership database. The NSDS III has highlighted the mandate of SETAs as becoming centres of excellence for sector specific skills development research and thus re-positions SETAs as research organisations in the ETD sector. As SETAs grapple with the research focus, it is vital to understand how they build skills planning capacity and conduct relevant sector research.

In the NSDS III context, there is overall support and consensus among research organisations for a greater role for research in the broader skills development system both in terms of planning and implementation. There is a need for grounded theory to develop a proper skills system and model. In other words, research is critical. To date, research has not been used to adequately inform the planning and implementation processes of SETAs in general, particularly with respect to internal strategic planning processes, labour market analyses that determined skills needs within the sector and skills programme implementation. (2012: interviews) This has been a general trend across government and one that government has taken a conscious decision to change. After all, it is crucial that quality research underpins all policy planning and implementation across different spheres of government, in other words, there is a need for evidence-based policy.

4.2 New/Emerging sector challenges regarding Skills Development

Research organisations agreed on the notion that skills development as defined within the South African landscape has become narrowly focused and tied to an endless number of competencies. The system was described as, “rules-based and compliance driven” and it was suggested that the “sheer complexity of the system undermined its effectiveness.” There was overall consensus that skills development needs to be seen in a multi-faceted way whereby the goal is not to simply produce simplified learning outcomes based on unit standards so that an employee can perform a specific activity or function in the economy but to develop a well-rounded individual with the necessary foundational knowledge that enables them to contribute meaningfully to society.

The structural challenges within the SETAs were identified as being a contributing factor to the existence of a disjointed skills system. The structures within SETAs (for example, between ETQA, Learnerships and Skills Planning units within the SETA) often operate in silos and these impacts at a systemic level as the practice of skills development becomes fragmented.

Furthermore, an emerging criticism of the current skills development system is that it makes the assumption that employers know exactly what they are looking for in terms of skills development interventions to address their needs. There are thousands of unit standards and it is unlikely that an employer will know which ones are more relevant to their circumstances and therefore such an assumption may be flawed. In the words of one particular interviewee, “employers seem to be interested in other signals such as high levels of endurance and commitment” as opposed to merely being able to perform a task. Any skills development system should encompass a values-based and ethical component. Doing research has a number of ethical dimensions. As such, skills development should always ask the question “Why am I learning this” and “How will an individual’s contribution fit into the bigger picture?” Having said that, it is important to bear in mind that there are certain hard skills that are easier to teach, for example, the quantitative skills required by researchers, and there are other softer skills that are much more difficult to teach, for example, the need for ethical practice and empathetic approaches to research, that are usually learned through work and life experiences over much longer periods of time.

An ideal skills system needs to focus on the development of both hard and soft skills. Both practical and theoretical elements of a skills programme are important and training providers need to find a way to incorporate both elements even if this is too skewed towards either the practical or theoretical. With respect to the current skills development language used, almost all research organisations regarded it as “restrictive” and unhelpful. In fact, some of these research organisations found the use of jargon such as “scarce” and “critical” skills somewhat confusing in terms of differentiating clearly between the two.

Despite the fact that research was identified as a vital component of any skills development system, and SETAs generally lack the capacity to conduct quality research, research organisations are currently not being engaged in skills planning and or skills development research in a very coordinated manner focussing on the medium to long-term needs of the sector. The research commissioned directly by the SETAs has mainly been linked to the review of the SSPs and SETA's strategic plans, and occasional evaluations, whilst other projects were commissioned outside of the SETAs by government and other role-players, for example, the Labour Market Intelligence Project has been strategic and longer term in nature.

4.3 Proposed ETDP SETA Intervention (Short, Medium and Long-Term recommendations)

There are numerous ways in which the ETDP SETA can better support research organisations in their sub-sector. Notwithstanding these, there was agreement amongst the interviewees that the ETDP SETA needs to engage more heavily in supporting the development of research organisations but that existing skills challenges are largely the result of a poor basic education system which subsequently impacts on the ability of SETAs to drive an effective and high quality skills development system in the country.

4.3.1 Programme 1: Development of a Credible SSP

The development of a credible SSP requires a basket of skills which are not always available. There is a need to encourage greater collegiality between like-minded research entities who share the same vision as the ETDP SETA. There is a need to develop longer term partnerships with research institutions to help the SETA to better understand the issue of skills planning. The partnerships could include the funding of research into specific areas of the ETD sector.

4.3.2 Programme 3: Teacher Development in support of the ISPFTED-SA

Schooling has been identified as an area that problematic for the research organisations in that learners being produced lack numeracy and writing capabilities. In order to support teacher development and to unpack the core problems in the basic education system, the SETA needs to work with research organisations to study the challenges. The establishment of research chairs in education at Universities could help advance this research agenda which is of interest to the sector whilst at the same time helping to develop a cadre of capable researchers out of Masters Students.

4.3.3 Programme 5: Customised interventions for all ETDP SETA constituencies for the following programmes:

There are numerous interventions that the SETA should focus in to support research organisations:

- Given the number of scarce and critical skills gaps identified amongst the research organisations constituency, the SETA should offer research organisations a "suitcase of research skills" from which they can draw from to be able to access specialist research courses and training programmes. Such skills programmes may include: how to use statistics in education research, research for social scientists, the use of quantitative methodologies, understanding government the way government works and, developing knowledge and skills in how to operationalise policy and plans.
- Fund internship programmes for researchers for example in analytical and instrument design skills.
- Fund mentoring programmes for the development and sustainability of a pool of high quality researchers
- Initiate and develop a seminar series on research related issues and how to apply research.
- Work with universities to implement skills interventions at a programme level, such as the implementation of multi-disciplinary Masters Programmes and the provision of short courses on

labour market analyses including labour market trends and forecasting. This ultimately requires bigger picture thinking on the part of the ETDP SETA.

- In rethinking the role of SETAS in terms of supporting research organisations, some of the questions we need to ask ourselves are: Are the SETA structures adequate to drive skills development within the research sub-sector? Also, can we train researchers outside of a particular discipline or focus area?
- Facilitate the creation of linkages between NGO-type research organisations and universities.
- Facilitate the formation of a research organisation committee within the sub-sector.

4.4 Inter-SETA collaboration to Address Wider National Need

As has been stated the ETDP SETA is uniquely located to consider wider capacity challenges in relation to research, beyond the scope of the ETDP SETA membership. Universities are constituent members, and therefore have a research interest across economic sectors, not just in the narrow scope of ETDP. Whilst the data for this report mainly comes from ETDP SETA organisations a lot of the data and findings are relevant to research organisations across economic sectors. Whilst it would not be appropriate to generalise the findings of this research, it could provide the basis for an inter-SETA discussion and some possible joint projects. It would seem logical to find a way of developing a research capacity building agenda for the nation and to avoid a silo approach. In discussing such an inter-SETA approach with the Department of Higher Education and Training, a number of potential agenda items emerge:

- A presentation of this research and a discussion on how the research can be enhanced and deepened through inter-SETA collaboration
- A particular focus in skills planning research (this might be best done through the current forums for skills planning managers)
- The development of a cross-sector research capacity building plan.

Chapter 5: Way Forward Regarding SSP Research

5.1 Challenges regarding Research Process

The findings of the HSRC annual study into research and development organisations were not released at the time of developing the preliminary report and this has resulted in the 2008/9 data which is relatively outdated being used in the report.

One of the biggest challenges was the participation rate of research organisations in the online survey. As research was coming to a close it became clear that Universities are an integral part of the research value chain and somehow, the specialised research units may have to be incorporated as they are likely to be facing similar skills development challenges as other research organisations.

5.2 Gaps regarding Research Update

The NSDS III places SETAs at the centre of sector specific skills development research and with SETAs being constituent members of the ETDP SETA, it would be vital to understand the skills planning research capacity and capabilities that currently exist. Whilst efforts were made to contact the SETAs, they appeared to be busy with other pressing matters and were not receptive to the research.

There is a general challenge in terms of how 'workplace skills planning' is conducted. Not all organisations submit WSPs and when submitted information is not always accurate. WSP information is vital in any sector skills planning exercise and when information is piecemeal it may skew a picture or not reflect the real challenges in the sector.

5.3 Recommendations in terms of Gaps (Short, Medium and Long-Term)

In the future the SETA should work on plugging a number of gaps:

- Turnover of research organisations should be available to understand the general economic trends of the sub-sector
- There should be a way to ascertain the accurate number of employees in any constituent organisation to have a complete picture of the employment patterns in the sector
- Focus on validation and verification of WSPs and ATRs. Allocate resources once annually to discuss WSP with employers
- There should be identification of and continuous training of internal SDFs within constituent organisations. SDFs can serve as the brand ambassadors and agents of the SETA in the organisations and when they know and understand the SETAs agenda, they will be in a position to add value to the sector skills planning process by providing accurate data and sharing real sector dynamics. The SDF function should not be an outsourced function even in small organisations. The mainstreaming of skills development and the role of the SETA will help the SETA achieve more impact
- OFO coding is generally a challenge with many organisations. The small companies should be allowed to submit simplified WSPs and jobs or posts instead of occupations should be accepted by the SETA. The SETA should help large organisations to code their jobs as occupations in their payroll systems so that it is easier to conduct workplace skills planning
- Lobby DHET not to change the OFO coding quite so regularly and only when there are new jobs to be added and not to change everything as this has cost implications for organisations that have to recode jobs

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Appendix 1: List of Organisations Interviewed

Organisation	Interviewee(s)
Human Sciences Research Council (HSRC)	Mapotlo Ledwaba & Christa van Zyl
Centre for Education Policy Development (CEPD)	Michelle Buchler
South African Institute for Race Relations (SAIRR)	Lucy Holborn
Centre for Education Rights and Transformation (CERT)	Salim Vally
Centre for Development Enterprise (CDE)	Antony Altbeker
Higher Education South Africa (HESA)	Ahmed Bawa
Joint Education Trust (JET)	Carla Pereira
Community Action for Social Enquiry (CASE)	Mohamed Motala
UMALUSI	<u>Emmanuel Sibanda & Marie Botha</u>