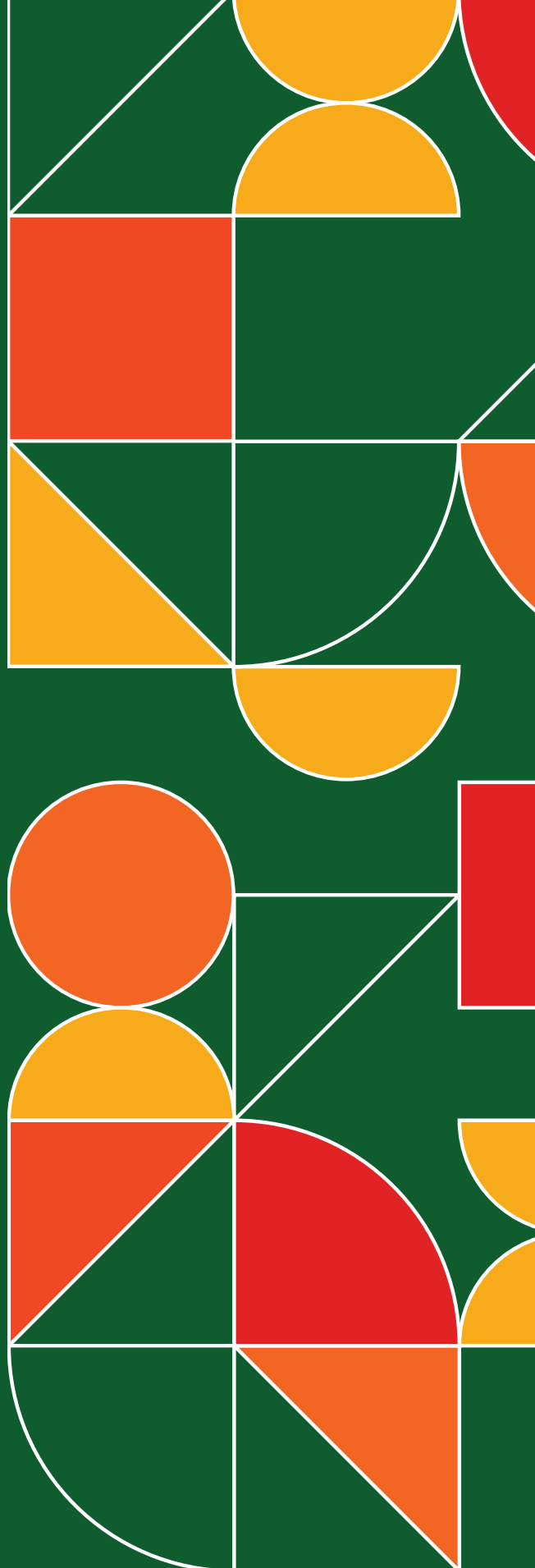


2022

Skills Strategy: Support for the South African Economic Reconstruction and Recovery Plan



higher education
& training
Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA





Published in 2022 by:

Department of Higher Education and Training
Private Bag X174
Pretoria 0001
www.dhet.gov.za

ISBN: 978-1-77018-867-9

2022

Skills Strategy: Support for the South African Economic Reconstruction and Recovery Plan

“Skills development is critical not only in driving South Africa’s economic recovery and reconstruction, but also in sustaining it”

(Economic Reconstruction and Recovery Plan, 2020)





DR BE NZIMANDE, MP
*Minister of Higher
Education, Science and
Innovation*

Foreword by the Minister of Higher Education, Science and Innovation

The Economic Reconstruction and Recovery Plan Skills Strategy (ERRP SS) aims to support the Economic Reconstruction and Recovery Plan (ERRP), ensuring that it is not compromised by skills shortages. It is born out of the urgency for a well-coordinated strategy of skills development to support both the management of COVID-19 and economic and social recovery. President Ramaphosa captured our determination to reset the South African economy when he said: “We are determined not merely to return our economy to where it was before the coronavirus, but to forge a new economy in a new global reality.”

As stated in the ERRP, South Africa is now on the threshold of an important opportunity to imaginatively, and with a unity of purpose, reshape its economic landscape. Skills development is one of the identified enablers for ensuring the successful implementation of the plan. The focus on skills is wide-ranging and entails an optimisation of the regulatory environment, structural reforms to boost education and skills development, and a concerted effort to build the skills base required by our changing economy ahead of global technology advances.

The ERRP SS is located within the broader skills planning arsenal of the Post-School Education and Training (PSET) system, which promotes the use of labour market intelligence (including future work scenarios) to inform PSET provisioning. The Department of Higher Education and Training has identified skills needs in the form of the List of Occupations in High Demand, the Priority Skills List and the Critical Skills List (which it prepared on behalf of the Department of Home Affairs).

This strategy assigns specific roles to players such as Sector Education and Training Authorities, the National Skills Fund and the Quality Councils to ensure that qualifications are developed in response to demand. Though the strategy places emphasis on the role of the PSET system in the provisioning of skills needs, it also seeks to rally the support of government departments such as Trade, Industry and Competition, Employment and Labour, Public Works and Infrastructure, Agriculture and Rural Development, Small Business Development, and Telecommunications, as well as the private sector, to ensure that there are no skills constraints in the implementation of the ERRP.

The strategy is aimed at expanding the participation of young people in skills development programmes as well as workplace-based learning opportunities. The ERRP commits to ensuring that learners access workplace-based learning opportunities and places responsibility on all infrastructure projects to contribute towards the creation of newly skilled artisans.

While equipping more young people to be absorbed into high-potential growth sectors, the strategy also involves retraining workers to prevent further job losses. This strategy thus seeks to prioritise steps that will build the PSET system’s capacity to be responsive to the needs of the economy in the longer term, while putting in place interventions that can more immediately meet the imperatives emerging from the ERRP.

Table of contents

Foreword by the Minister of Higher Education, Science and Innovation	ii
List of figures	2
List of tables	2
List of acronyms	3
Glossary of terms	4
Executive summary	5

PART 1

INTRODUCTION	7
---------------------	----------

PART 2

PURPOSE	10
----------------	-----------

PART 3

MANDATE FOR THE SKILLS STRATEGY	12
--	-----------

PART 4

APPROACH TO THE DEVELOPMENT OF THE SKILLS STRATEGY	14
---	-----------

PART 5

OVERVIEW OF INTERVENTIONS AND ACTIVITIES	23
---	-----------

PART 6

IMPLEMENTATION	55
-----------------------	-----------

PART 7

BIBLIOGRAPHY	57
---------------------	-----------

APPENDIX 1

MEDIUM-TERM STRATEGIC FRAMEWORK, 2019-2024	59
---	-----------

APPENDIX 2

LIST OF OCCUPATIONAL SHORTAGES, WITH REASONS AND INTERVENTIONS	66
---	-----------

List of figures

Figure 1:	Priority interventions and enablers	8
Figure 2:	Relationship between skills, job and occupation	18
Figure 3:	Process flow of analysis of occupational shortage	19
Figure 4:	Dimensions of acute shortage in previous DHET work	20

List of tables

Table 1:	Reasons for occupational shortages and possible interventions	17
Table 2:	Reasons for occupational shortages and SETA responses	21
Table 3:	List of soft skills (behavioural skills)	26
Table 4:	Transversal hard skills gaps	27
Table 5:	Skills gaps associated with key economic focus areas	28
Table 6:	Digital skills gaps	30
Table 7:	Occupations in shortage requiring Intervention 1 (short skills programmes)	31
Table 8:	Occupations in shortage requiring Intervention 3 (WBL)	39
Table 9:	Occupations in shortage requiring Intervention 4 (increased enrolment)	41
Table 10:	Occupations in shortage requiring Intervention 5 (review of qualifications, programmes and curricula)	45

List of acronyms

BBBEE	Broad-Based Black Economic Empowerment	NATED	National Accredited Technical Education Diploma
BPESA	Business Process Enabling South Africa	NBI	National Business Initiative
CATHSETA	Culture, Arts, Tourism and Sports Sector Education and Training Authority	NCV	National Certificate Vocational
CET	Community Education and Training	NDP	National Development Plan
CHE	Council for Higher Education and Training	NEET	Not in education, employment or training
CoS	Centre of Specialisation	NPPSET	National Plan for Post-School Education and Training
CSL	Critical Skills List	NQF	National Qualifications Framework
CTFL	Clothing, textile, footwear and leather	NSA	National Skills Authority
DEL	Department of Employment and Labour	NSF	National Skills Fund
DHET	Department of Higher Education and Training	NYDA	National Youth Development Agency
DSI	Department of Science and Innovation	OECD	Organisation for Economic Co-operation and Development
E&T	Education and training	OFO	Organising Framework for Occupations
ECD	Early childhood development	OIHD	Occupations in High Demand
EDHE	Entrepreneurship Development in Higher Education	OQSF	Occupational Qualifications Sub-Framework
ERRP	Economic Reconstruction and Recovery Plan	PMN	Pathway Management Network
ERRP SS	Economic Reconstruction and Recovery Plan Skills Strategy	PSET	Post-School Education and Training
ESSA	Employment Services of South Africa	PQM	Program and Qualification Mix
ETDP SETA	Education, Training and Development Practices Sector Education and Training Authority	QCTO	Quality Council for Trades and Occupations
ICT	Information and Communication Technology	R&D	Research and development
IOPSA	Institute of Plumbing South Africa	SAQA	South African Qualifications Authority
IRM	Installation, Repair and Maintenance	SEDA	Small Enterprise Development Agency
IYF	International Youth Foundation	SETA	Sector Education and Training Authority
MLAB	Mobile Applications Laboratory	SHEQ	Safety, health, environment and quality
MOOC	Massive open online course	TVET	Technical and Vocational Education and Training
MTSF	Medium-Term Strategic Framework	WBL	Workplace-based learning
		WIL	Work-integrated learning
		YES	Youth Employment Service

Glossary of terms

TERM	DEFINITION
Apprenticeship	A period of workplace-based learning culminating in a listed trade.
Candidacy	A period of workplace-based learning undertaken by a graduate as part of professional designation, as stipulated by a professional body.
Graduate internship	A period of workplace-based learning for the purpose of allowing a person who has completed a post-school qualification to gain workplace experience or exposure to enhance competence and/employability.
Internship for the "N" Diploma	A period of workplace-based learning undertaken for the "N" Diploma.
Learnership	A period of workplace-based learning culminating in an occupational qualification or part-qualification.
Occupational shortage	A situation in which an insufficient number of individuals are available to perform the set of jobs required for a particular occupation in demand by employers, and in which the economy's demand for a particular occupation exceeds the Post-School Education and Training sector's supply.
Reskilling	The process of teaching individuals new skills so that they are able to perform a different role or, in some cases, enter into a new job or new industry altogether. ¹
Skills gap	A mismatch between the tasks employers expect their employees to do and those employees are capable of doing. ²
Soft skills	Competencies that are not job-specific but that instead assist in completing tasks across a wide variety of occupations. ³
Student internship	A period of workplace-based learning for a person who is enrolled at an education and training institution for a qualification registered on the National Qualifications Framework (NQF), which may include vacation work.
Student internship: Category A	A period of workplace-based learning undertaken as part of the requirement for the Diploma, National Diploma, Higher Certificate or Advanced Certificate vocational qualifications, as stipulated in the Higher Education Qualifications Sub-Framework.
Student internship: Category B	A period of workplace-based learning undertaken as a requirement for a professional qualification.
Student internship: Category C	A period of workplace-based learning undertaken as part of the requirement for the Occupational Qualifications of the Quality Council for Trades and Occupations.
Technical skills	Skills that are dependent on the industry within which an occupation falls and often on the occupation itself. Therefore, technical skills rely on an individual's competency to use particular tools or materials that are occupation- or industry-specific. Resultantly, they might not translate across occupations easily. ⁴
Upskilling	The process of teaching individuals new skills to ensure that they can complete their current job more efficiently. ⁵

1 Talentguard (2019), "Reskilling and Upskilling: A Strategic Response to Changing Skills Demands" [online], available at: <https://www.talentguard.com/reskilling-upskilling-strategic-response-changing-skill-demands/>.

2 Levesque (2019), "Understanding the Skills Gap – and What Employers Can Do about It" [online], available at: <https://www.brookings.edu/research/understanding-the-skills-gap-and-what-employers-can-do-about-it/>.

3 Doyle (2020a), "What Are Soft Skills?" [online], available at: <https://www.thebalancecareers.com/what-are-soft-skills-2060852>.

4 Doyle (2020b), "Hard Skills vs Soft Skills: What's the Difference?" [online], available at: <https://www.thebalancecareers.com/hard-skills-vs-soft-skills-2063780>; Department of Public Service and Administration (2021), *The Public Service Occupational Dictionary* (Draft for Consultation), Tshwane: Department of Public Service and Administration.

5 Talentguard (2019).

Executive summary

The skills strategy sets out key interventions to ensure the effective implementation of the Economic Reconstruction and Recovery Plan (ERRP). It is intended to ensure that skills are not a constraint to economic development and therefore proposes interventions and actions that address occupational shortages and skills gaps in the labour market. More importantly, the strategy supports the implementation of the ERRP in ways that both maximise opportunities for new entrants to the labour market and promote the preservation of existing jobs and the creation of new jobs.

The strategy envisages that both the public and private sectors will play a central role in its implementation. It represents a call for collective action, mobilising public and private education and training (E&T) providers, Sector Education and Training Authorities (SETAs), business, government departments, state entities and other social partners to commit to working together to promote skills development.

The strategy identifies the skills implications of the ERRP and outlines ways in which the Post-School Education and Training (PSET) system, together with other key role-players, will ensure that the skills required to implement the ERRP are available. This strategy will therefore evolve as the ERRP itself evolves. The Department of Higher Education and Training (DHET) will serve as the lead department for the development and coordinated implementation of the strategy.

Skills are crucial for sustainable growth, productivity and innovation and are therefore key to the competitiveness of businesses. Human capital theorists advocate that providing people with the right skills improves their work effectiveness, optimises the use of advanced technologies, reduces investments risks, minimises labour market mismatches and lays the groundwork for research and development (R&D) and firm-based innovation.

The skills strategy focuses on those interventions that facilitate access to skills development and workplace-based learning (WBL) programmes for large numbers of young people in order to boost job creation and improve employability. Given the unacceptably high numbers of young South Africans who are not in employment, education or training (NEET), it is imperative to expand access to WBL programmes (e.g., internships) and to improve employability through the provision of work readiness and other kinds of skills development programmes.

It is also imperative to support and incentivise self-employment through entrepreneurship development programmes, which have been recommended in many national plans and strategies, including the National Skills Development Plan (NSDP) and the National Development Plan (NDP). Since entrepreneurship contributes to economic growth and employment, more youth need to be encouraged and trained to become entrepreneurs. Entrepreneurship is generally considered a positive opportunity for youth, not only because it is a means of escaping unemployment, but also because it helps alleviate socio-economic challenges and helps youth build interpersonal and behavioural skills such as perseverance and resilience.⁶

6 DHET (2020b), *National University Entrepreneurship Ecosystem: Baseline Report*, Pretoria: DHET.

There is a similar urgency to undertake interventions that support the retraining of workers so as to prevent further job losses. Access to up- and reskilling opportunities is vital for the millions of workers who have been propelled into short-term work or unemployment, regardless of their current level of skills or area of qualifications. Having the right skills means being able to be more employable or to stay employed more easily and to manage job transitions better. This requires an expansion of upskilling and reskilling opportunities for all people, irrespective of their qualification or skills level.

The strategy examines funding modalities for the various interventions that have been proposed to ensure a comprehensive and holistic approach to skills development.

The strategy consists of the below two dimensions, each of which outlines interventions and actions that support the implementation of the ERRP.

Dimension 1: Interventions focused on the provision of targeted E&T programmes

1. Expand the provisioning of *short skills programmes* (both accredited and non-accredited) to respond to the skills gaps identified in this strategy;
2. Enable the provisioning of *short skills programmes* (both accredited and non-accredited) that respond to the skills gaps identified in this strategy;
3. Expand the provisioning of *WBL opportunities* to respond to the occupational shortages and skills gaps identified in this strategy;
4. Increase enrolments in *qualification-based programmes* that respond to the occupational shortages identified in this strategy;
5. Review and revise *E&T qualifications, programmes and curricula* to respond to the occupational shortages and skills gaps identified in this strategy; and
6. Update the *draft Critical Skills List (CSL)* and associated regulatory mechanisms.

Dimension 2: Interventions focused on enabling and supporting education-to-work transitions

1. Strengthen *entrepreneurship development programmes*;
2. Embed *skills planning* in economic planning processes and vice versa;
3. Facilitate the use of the *National Pathway Management Network (PMN)* in the PSET system; and
4. Strengthen the *PSET system*.

PART 1

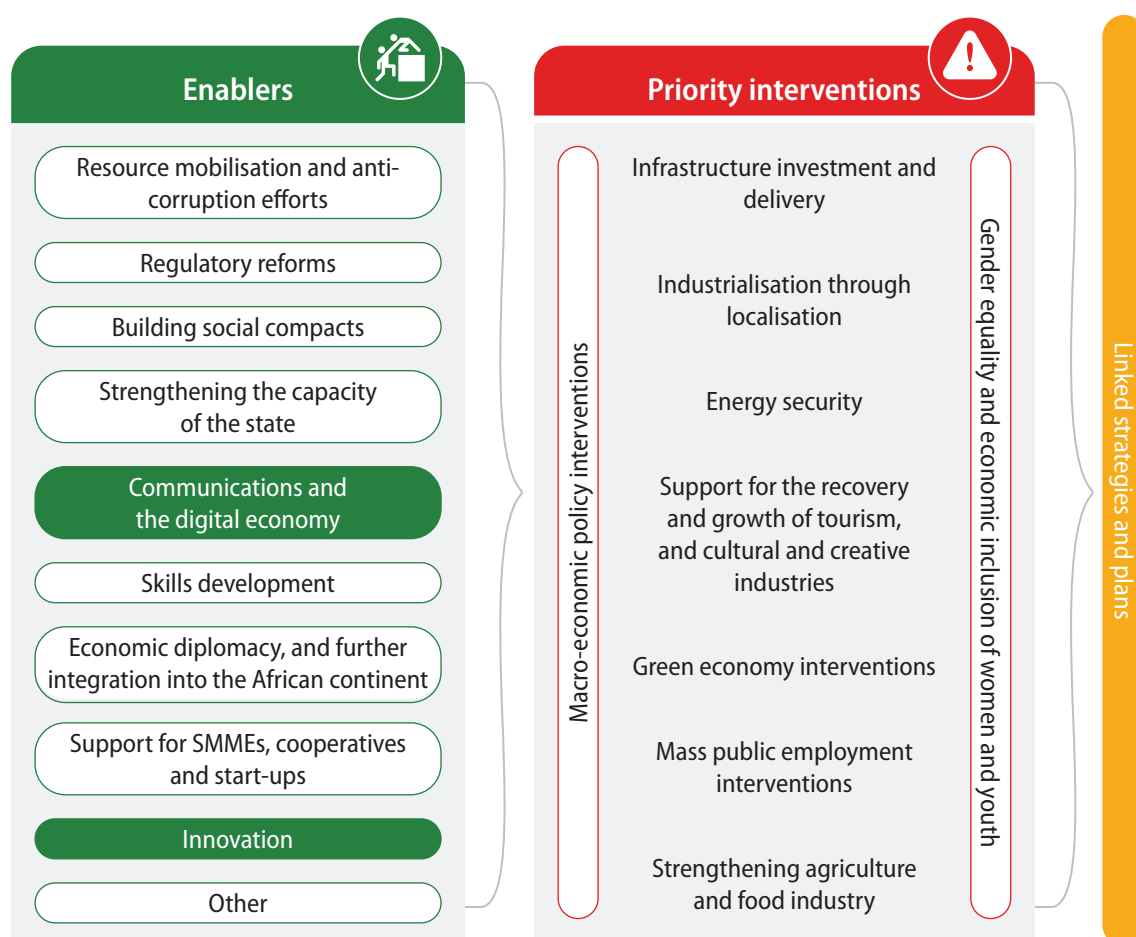
Introduction



The South African government has developed an economic plan as part of its package of responses to the devastating impact of the COVID-19 pandemic on the economy and the deepening levels of unemployment, poverty and inequality in the country. The plan, the ERRP,⁷ aims to catalyse the structural economic change needed for a post-COVID economic recovery while also addressing the broader structural issues facing the economy. The plan recognises the extent of the crisis caused by the pandemic. Moreover, it acknowledges that the impact of this global pandemic is exacerbated by a decade of low levels of investment and growth in South Africa and a stagnant economy. COVID-19 has put a significant strain on collective efforts that are being made to tackle historical structural inequalities, as well as unemployment and poverty. The extent of these challenges has been recognised by all social partners, resulting in a strong commitment to “mobilis[ing] all our resources and efforts in economic activities that will put the economy in a sustainable recovery trajectory”.⁸

The ERRP identifies seven priority interventions and over ten enabling focus areas to grow the economy and create jobs. These are underpinned by macro-policy interventions and are expected to find expression in public and private sector strategies and plans. Figure 1 below provides a summary of these priority interventions and enablers.

FIGURE 1: Priority interventions and enablers



7 President Cyril Ramaphosa launched the ERRP on 15 October 2020.

8 Government of South Africa (2020), *ERRP*, available at: https://www.gov.za/sites/default/files/gcis_document/202010/south-african-economic-reconstruction-and-recovery-plan.pdf, p. 2.

More specifically, the ERRP outlines the seven priority interventions as follows:

- **Infrastructure:** Galvanise aggressive infrastructure investment that will unlock more than R1 trillion in infrastructure investment over the next four years;
- **Industrialisation through localisation:** Promote employment-orientated strategic localisation, reindustrialisation and export promotion to reverse the decline of the local manufacturing sector through deeper levels of localisation and export;
- **Energy security:** Achieve reliable energy supply within two years;
- **Tourism and cultural and creative industries:** Support recovery and growth;
- **Green economy:** Implement applicable government policies and plans;
- **Mass public employment interventions:** Create thousands of jobs through a range of mass employment schemes across multiple economic sectors;
- **Agriculture and food security:** Strengthen implementation.

In all of these priority interventions there is a strong focus on ensuring gender equality and supporting the economic inclusion of women and youth, including through the implementation of the Presidential Youth Employment Interventions.

As indicated in Figure 1 above, the ERRP identifies a wide range of “enablers” that are expected to aid the growth of priority economic sectors. These range from skills development, to resource mobilisation, to anti-corruption measures, to digitisation, to building state capacity, and so on.

The importance of skills development for economic recovery is given expression in the ERRP, which states that “[s]kills development is critical not only in driving South Africa’s economic reconstruction and recovery, but also in sustaining it”. The ERRP also highlights the need to contribute to the prevention of job losses through the expansion of reskilling and retraining programmes for workers.



PART 2

Purpose

This strategy has been designed to ensure that skills are available to support the implementation of the ERRP. It recognises that the priority interventions set out in the ERRP require skills and that if these skills are not available, these interventions will fail. This is why a skills strategy aligned to the ERRP is so vital. In developing this strategy, we have recognised the complexity of the responses required to address the skills needs associated with each of the ERRP interventions, as well as those that cut across economic sectors.

The strategy identifies the skills implications of the ERRP and outlines ways in which the PSET system, together with other key role-players, will ensure that the skills required to implement this plan are available. It aims to ensure that the PSET system, in conjunction with key government departments and other stakeholders, will respond to the new demands being created in the economy. It is intended to support the implementation of the ERRP in ways that both maximise opportunities for new entrants to the labour market and promote the preservation of existing jobs and the creation of new jobs. The strategy highlights the role of the DHET as the coordinating department for the PSET system and itemises the initiatives it will support, working with other government departments, business, labour and all other social partners. This is with a view to ensuring that public, private and workplace E&T providers can support the imperatives of this strategy in the short term, while strengthening the landscape and regulatory frameworks of the PSET system to meet demand in the medium and long term.



PART 3

Mandate for the skills strategy

The mandate of the skills strategy is located within the context of the wider PSET system, as expressed in the NDP. The NDP highlights the importance of the PSET system in ensuring the provision of an appropriately skilled workforce. It states that one of the roles of the PSET system is to “respond to the skills needs of all sectors of society, including business, industry, and the government”.⁹ In addition, the White Paper for Post-School Education and Training asserts that the E&T system should not only provide the knowledge and skills required by the economy, but should also contribute to developing thinking citizens who can function effectively, creatively and ethically as part of a democratic society. As per the White Paper, the ERRP is assisting in developing skills and knowledge, but, importantly, the ERRP also assists in the development of South African citizens who can function effectively in a democratic society, adapting to changes in the labour market through shocks such as the COVID-19 pandemic.

The PSET system includes:

- Public and private E&T institutions, encompassing universities, Technical and Vocational Education and Training (TVET) colleges and Community Education and Training (CET) colleges;
- Other state-owned PSET institutions, such as agriculture and nursing colleges;
- Skills development providers, including workplaces;
- SETAs;
- The National Skills Fund (NSF);
- Quality assurance bodies, such as the South African Qualifications Authority (SAQA);
- Quality Councils; and
- Professional bodies.

9 National Planning Commission (2011), *NDP*, Pretoria: Government Printer.



PART 4

Approach to the development of the skills strategy

4.1 Overview

The strategy lays out a set of skills-focused interventions and activities to support the effective implementation of the ERRP. It is informed by the approach and principles detailed below.

Balance between short and long term. This strategy creates a balance between short- and long-term interventions. We cannot respond to the short-term crisis in ways that undermine or destabilise the system; rather, the aim is that, where possible, we strengthen the system. The strategy is therefore intended to respond *immediately* to the skills-related imperatives of the ERRP, while simultaneously ensuring that the PSET system builds skills that are required in the medium to long term. The aim is to ensure that the changes made to facilitate immediate urgent actions either do not weaken or, in the best-case scenario, strengthen institutional capacity. This requires that the strategy 1) align and integrate work that is already underway in the broader human resource development landscape, and specifically within the PSET system; 2) consolidate and build on those aspects of the system that are working well; and 3) align with existing policies and plans and address blockages. Where changes are required to policies or plans, the strategy sets out steps to achieve these changes, paying close attention to the need for careful transitions.

Public/private. The strategy is directed towards both public and private E&T institutions and skills development providers (including workplaces). The idea is to strengthen partnerships between the public and private sectors, with a view to improving efficiency and effectiveness.

Demand-led approach. The skills strategy is oriented to be demand-led and responsive to the world of work. It therefore identifies occupational shortages and skills gaps associated with the ERRP, with a view to ensuring that these are not a constraint to the implementation of the ERRP. This approach requires coordination between the DHET Labour Market Intelligence (LMI) research programme and the Sector Skills Plans developed by SETAs. It is expected that the provisioning of non-accredited skills programmes will be driven by industry (that is, demand-led), instead of being supply-driven. It is important to emphasise that a demand-led approach to skills planning does not imply that the beneficiaries of E&T programmes linked to this strategy will be guaranteed jobs. The demand-led approach intends to improve employability instead of guaranteeing employment.

Build on and link to current plans and programmes. The strategy builds on work that is currently being undertaken in the PSET system and is not intended to undermine the momentum of current plans and programmes. For instance, the strategy draws on research undertaken through the DHET LMI research programme and SETAs to identify the skills needs associated with the ERRP. More specifically, research undertaken to identify the national list of Occupations in High Demand (OIHD) and the CSL will be drawn upon to identify skills needs linked to the ERRP. The strategy is in line with the goals of the PSET system, which include the intention to improve the responsiveness of the PSET system to the world of work and to strengthen the interface between education and work. More specifically, this skills strategy links well with the National Digital and Future Skills Strategy, the DHET National Plan for PSET (NPPSET) and the DHET's NSDP and to the various economic sector Master Plans. However, if necessary, current plans, such as the Medium Term Strategic Framework (MTSF) and the Annual Performance Plan (APP), may be tweaked to take into account the intentions of this strategy. Targets set by the MTSF are shown in Appendix 1 of this strategy for information purposes. In reviewing existing MTSF indicators, the DHET and the Department of Science and Innovation (DSI) have recognised that the following additional indicators need to be included to address the skills imperatives of the ERPP:

- The DSI will deliver four programmes through its entities to support 1,900 new unemployed graduates to earn an income while gaining meaningful work experience.
- The DSI will connect NEET youth with 225,000 opportunities through the national PMN, in collaboration with the Department of Employment and Labour (DEL), the DHET, the National Youth Development Agency (NYDA) and other role players in civil society.

Better coordination. The strategy recognises the need for a coordinated response across government, business and social partners to enable its effective implementation.

Target groups. The approach adopted by this strategy is designed to ensure that:

- *New entrants* to the labour market are ready to access youth services and/or job opportunities;
- *Existing employees* can be retrained or upskilled to respond to changing demand in their sectors;
- *Unemployed persons* can access short-term training programmes to improve their employment prospects;
- *Students* can enrol in programmes and qualifications that respond to the needs of the labour market;
- *Students and graduates* can access WBL programmes that provide them with work experience; and
- *The PSET system* is strengthened, especially in relation to its responsiveness to and interface with the world of work and to the quality of its provisioning.

Implementation of this strategy. The strategy will be accompanied by an implementation plan, an M&E framework and a communication plan. The DHET will be responsible for establishing coordination and reporting mechanisms to monitor progress on the implementation of this strategy.

4.2 Reasons for occupational shortages and possible interventions

Occupational shortages and skills shortages exist in the labour market for a wide range of reasons. Table 1 shows some reasons employers have difficulty in recruiting staff (or have hard-to-fill vacancies), along with possible interventions to address these. The interventions and actions adopted in this strategy generally align with the underlying reasons for occupational shortages. Table 2 provides further detail on the reasons for occupational shortages, as identified by SETAs through their engagement with employers.

This strategy identifies 103 occupations as being in shortage for the ERRP. Appendix 2 provides a total list of these occupations, together with reasons for their shortage status and identified interventions.

TABLE 1: Reasons for occupational shortages and possible interventions

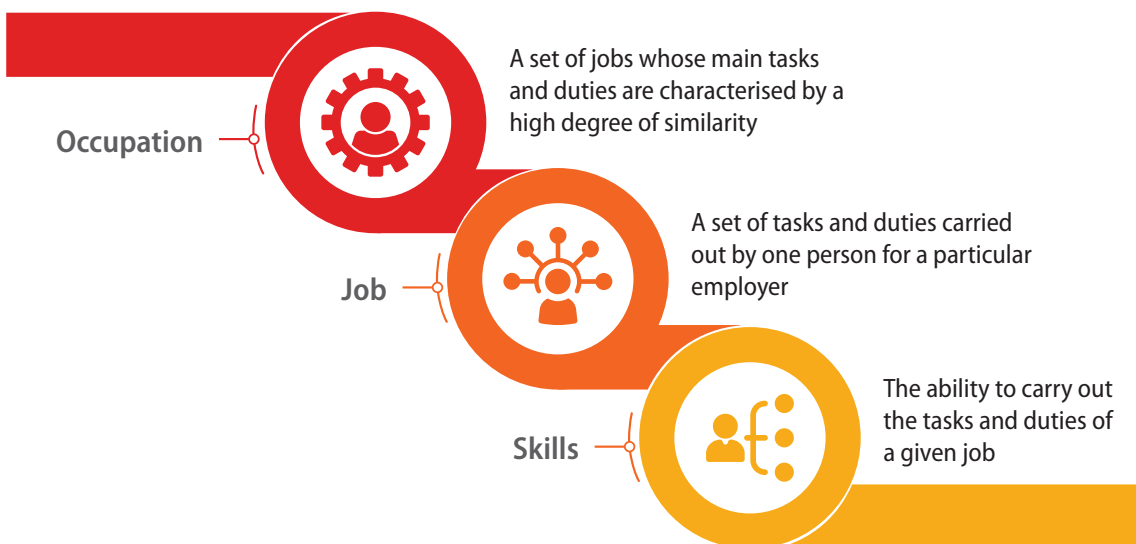
LABOUR MARKET CHALLENGE	INTERVENTION
<p>1. Job applicants have the appropriate qualifications, but do not have sufficient or appropriate work experience.</p>	<p>In this instance, the solution would be to expand opportunities for work experience (see Intervention 3 on WBL in this strategy). A short-term solution to the unavailability of appropriately qualified applicants is to “import” skills (see Intervention 6).</p>
<p>2. Job applicants have the appropriate qualifications as well as work experience, but do not have the specific skills required for the job.</p>	<p>In this instance, the solution would be to provide short skills development programmes that address such skills gaps (see Intervention 1) and/or amend programmes and curricula to respond to skills needs (see Intervention 5). An alternate short-term solution to the unavailability of appropriately qualified applicants is to “import” skills (see Intervention 6).</p>
<p>3. Unemployed persons do not have the skills that would make them employable.</p>	<p>In this instance, the solution would be to provide skills that improve employability. As indicated in Table 2, these are: computer literacy, entrepreneurship skills, know-how for accessing government services that support entrepreneurship, basic literacy and numeracy skills (see Interventions 1 and 7).</p>
<p>4. Graduates with appropriate qualifications and skills are available, but they do not have the networks and/or means necessary for accessing jobs or initiating their own businesses.</p>	<p>In this instance, the solution would be to link graduates/work seekers to job opportunities and other kinds of youth support services (see Intervention 8, with reference to the national PMN). In addition, it will be essential to provide entrepreneurship development programmes to support self-employment (see Intervention 7).</p>
<p>5. Graduates associated with this occupation cannot find employment because they do not have a professional designation due to a lack of work experience.</p>	<p>In this instance, the solution would be to provide WBL opportunities (through candidacy) for those occupations that are identified as being in shortage (see Intervention 3).</p>
<p>6. Insufficient number of or no applicants due to the unavailability of graduates in a particular programme or qualification.</p>	<p>In this instance, one solution could be to increase enrolments in programmes that correspond closely to identified occupational shortages (see Interventions 4 and 5 in this strategy). In cases where qualifications do not exist for new and emerging occupations – and where, as a result, there are no appropriate candidates for available jobs – the solution could be qualifications development or the introduction of new programmes (Intervention 5). Inadequate graduate output could also be a consequence of students not achieving their qualifications because they did not undertake the work-experience component of their qualification (work-integrated learning, or WIL). In this instance, the solution would be to provide opportunities for WBL (see Intervention 3). It is also possible, however, that enrolments in identified programmes are adequate, but that throughput rates may be low. In this instance, the solution would be to increase throughput rates. Finally, in all scenarios, a short-term solution to the unavailability of appropriately qualified applicants is to “import” skills (see Intervention 6).</p>

LABOUR MARKET CHALLENGE	INTERVENTION
7. This is a new occupation in the labour market, and there is no registered qualification/ programme associated with this occupation.	In this instance, the solution would be to develop new qualifications or expand institutions' programme/ qualification mix to include new programmes in existing qualifications (see Interventions 2 and 5).
8. Jobs are located in geographic areas that are generally not suitable to potential applicants.	In this instance, the intervention would be to: <ul style="list-style-type: none"> • Use the national pathway management system to link labour supply and demand (see Intervention 8); • Strengthen career development services (see Intervention 10); and • Improve marketing.

4.3 Methodology adopted to identify skills needs linked to the ERRP

The strategy analyses the occupational shortages and skills gaps associated with the ERRP to ensure that E&T interventions are targeted and that resources are allocated efficiently. Distinguishing between occupations and skills, and understanding their relationship, is important.¹⁰ The diagram below presents this distinction.

FIGURE 2: Relationship between skills, job and occupation



Therefore, an occupational shortage refers to a situation in which an insufficient number of individuals can perform the set of jobs required for a particular occupation in demand by employers. In short, this is a situation where the economy's demand for a particular occupation exceeds the PSET sector's supply. On the other hand, a skills gap is defined as a mismatch between the tasks an employer expects its employees to do and those the employees are capable of doing.¹¹

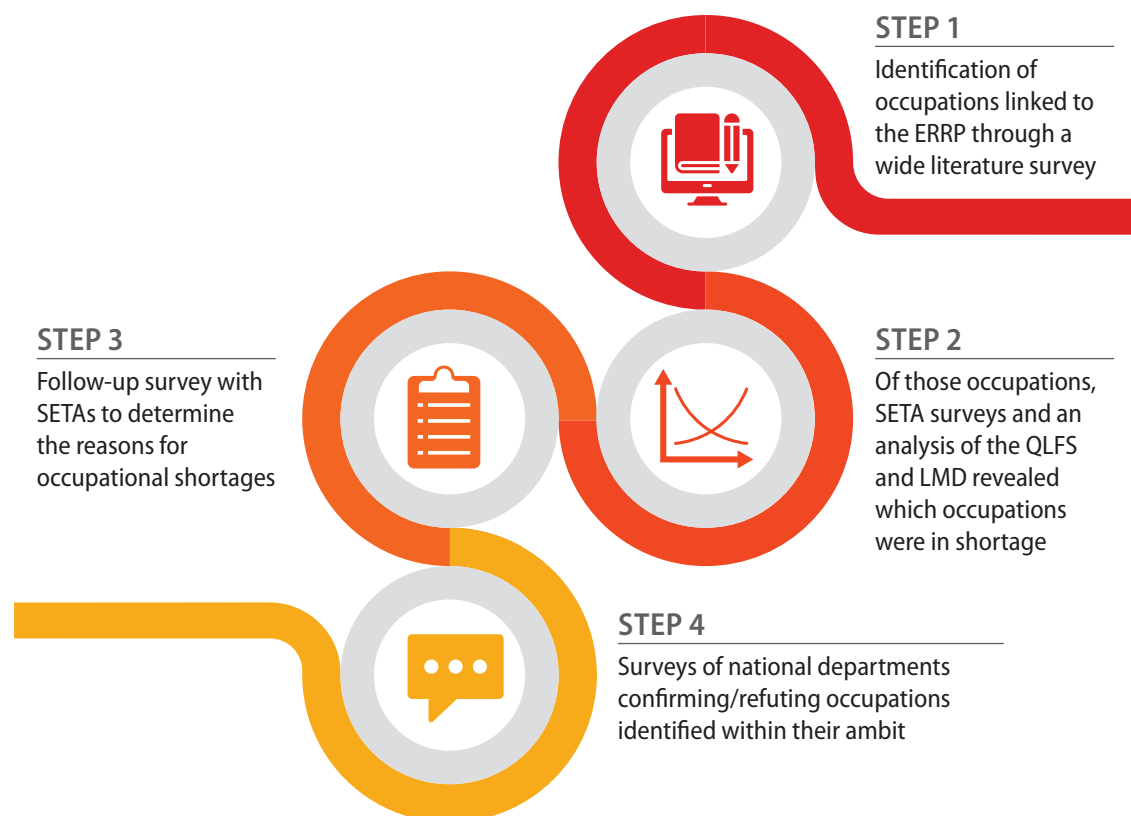
¹⁰ An occupation is defined by the set of jobs it requires, and a job is defined by the set of skills it requires. See the Glossary of Terms.

¹¹ Levesque (2019).

South Africa’s Organising Framework for Occupations (OFO)¹² provides a fitting framework for identifying occupational shortages and skills gaps. The OFO uses the concepts of “skills” and “jobs” to categorise and describe occupations. Despite some limitations, the OFO makes it possible to speak about specific occupations in a common language, and it is therefore an easy-to-use classification tool and an appropriate framework for analysing occupational shortages.

At a high level, the process outlined below sets out how ERRP-specific occupational shortages and skills gaps were identified.

FIGURE 3: Process flow of analysis of occupational shortage



Step 1. As a first step, ERRP strategies and plans (summarised in Appendix 2) were reviewed to identify the economic activities that will expand due to ERRP implementation. The activities were then cross-referenced with the occupation descriptions in the OFO to identify occupations that will experience increased demand.

Step 2. Step two was aimed at identifying those occupations linked to the ERRP that are, indeed, in shortage. Should occupations linked to the ERRP not show signs of shortage, it is unnecessary for the skills strategy to address these occupations. Two sources of information were used for Step 2. First is the work previously conducted by the DHET to develop the List of Priority Occupations and the CSL. Occupations were identified by developing an index of occupational shortage and highlighting those occupations most in shortage according to the index score. The index was based on shortage being signalled by statistical evidence, encompassing the dimensions below.

12 Note: The OFO also includes a list of specialisations or alternative occupation names under each occupation.

FIGURE 4: Dimensions of acute shortage in previous DHET work¹³



This analysis relied on data from the Quarterly Labour Force Survey (QLFS) and the Labour Market Dynamics Survey (LMDS), as well as data from Career Junction (CJ).

To strengthen these findings and ensure that the most recently available information was being utilised, two SETA surveys¹⁴ were conducted. The first survey was aimed at identifying occupations in shortage. An occupation was deemed to be in shortage if either the index score or the SETA surveys (which themselves relied on engagements with private and public sector representatives conducted at the end of 2020 and the beginning of 2021) identified a shortage. Additionally, the survey provided SETAs with the opportunity to identify skills gaps salient to the ERRP. Although there is very little quantitative evidence¹⁵ on skills gaps across the country, engagement with SETAs, government departments and a wide berth of literature ensured the identification of such skills mismatches.¹⁶ The full list of ERRP-associated occupations that are in shortage is provided in Appendix 3.

Step 3. While Step 2 involved identifying occupational shortages and skills gaps, Step 3 involved a process of understanding the reasons for the shortages. The second round of SETA surveys sought to pinpoint why the occupations and skills identified were in shortage.¹⁷ While SETA responses varied per occupation, the responses can be broadly grouped according to the table below.

13 For a full description of this analysis, see the 2020 List of Priority Occupations, available at this link: <https://lmi-research.org.za/publication/2020-list-of-priority-occupations/>.

14 All 21 SETAs responded in the first round, with 17 SETAs responding in the second round.

15 The primary sources of labour market information – the QLFS and LMDS – are at the fourth-digit occupational level and do not speak to skills or competencies.

16 Because there is no formal framework for analysing skills, as there is an organising framework for occupations, the researchers relied on the definitions of soft and technical skills provided below to identify such gaps. These definitions were used as sieves to assess whether submissions from the SETAs or departments spoke to skills, or whether, in fact, the submissions in question spoke to occupations.

17 Here, it is important to flag that SETAs used the most recent data available to them. Some of this information is complementary to what is found in the SETA submissions to the DHET for the development of their respective Sector Skills Plans (SSPs). With that said, there is no complete overlap between SSP submissions and the data provided in the survey. This is because SETA submissions to the survey related directly to the implementation of the ERRP, while the submission of evidence for the SSP is much broader.

TABLE 2: Reasons for occupational shortages and SETA responses

KEY REASONS FOR OCCUPATIONAL SHORTAGES	SETA RESPONSES
<p>1. Many employers claim that new entrants to the labour market do not have the appropriate skills required for the job, even if they have the right qualification or the appropriate level of education.</p>	<ul style="list-style-type: none"> • New entrants to the labour market do not have adequate/ appropriate work experience (see Intervention 3) • The curriculum of the programme or qualification associated with this occupation is outdated (see Intervention 5) • New entrants to the labour market do not have the soft skills required for the job (see Intervention 1) • New entrants to the labour market lack basic literacy, numeracy and computer skills (see Intervention 1)
<p>2. Many employers claim that their staff lack the technical skills required for the job.</p>	<ul style="list-style-type: none"> • Employees do not have the skills required to deal with new technologies or new work processes introduced by employers (see Intervention 1) • Organisational restructuring or poor recruitment practices have led to mismatches between qualifications and occupations • The curriculum taught at E&T institutions is outdated and inappropriate (see Intervention 5) • Some staff may not have sufficient work experience (see Intervention 3)
<p>3. Unemployed persons do not have the skills that would make them employable.</p>	<ul style="list-style-type: none"> • Many unemployed persons do not have computer literacy skills • Many unemployed persons do not have entrepreneurship skills • Many unemployed persons do not have the know-how to access government services that support entrepreneurship • Many unemployed persons do not have basic literacy, numeracy and computer skills (all of these link to Interventions 1 and 7)
<p>4. Employers indicate recruitment difficulties in this occupation because an insufficient number of experienced applicants are applying for these jobs.</p>	<ul style="list-style-type: none"> • Applicants may have the appropriate qualification or minimum level of education, but do not have the appropriate work experience (see Intervention 3)
<p>5. Employers indicate recruitment difficulties in this occupation because applicants do not have the appropriate knowledge and skills (even though they have the right qualifications).</p>	<ul style="list-style-type: none"> • Lack of appropriate skills (see Intervention 1) • Curriculum is inappropriate (see Intervention 5) • Lack of/inadequate practical training at the E&T institution (see Intervention 10) • Lack of adequate/appropriate work experience (see Intervention 3)
<p>6. Employers indicate recruitment difficulties in this occupation because an insufficient number of graduates apply for these jobs. There are insufficient graduates in the field of study/ qualification/programme that match the occupation in the labour market.</p>	<ul style="list-style-type: none"> • Many students are unable to achieve this qualification because of a lack of WBL (WIL) (see Intervention 3) • Not enough students enrol for this qualification/programme (see Intervention 4) • Enough students enrol, but throughput rates are low, resulting in a low number of graduates (see Intervention 10)

KEY REASONS FOR OCCUPATIONAL SHORTAGES	SETA RESPONSES
7. Graduates associated with this occupation cannot find employment because they do not have a professional designation.	<ul style="list-style-type: none"> • Graduates associated with this occupation are unable to find the WBL opportunities required for professional designation (see Intervention 3)
8. This is a new occupation in the labour market.	<ul style="list-style-type: none"> • There is no registered qualification associated with this occupation (see Interventions 2 and 5)

Step 4. The final set of occupational shortages and skills gaps were then sent to the government departments that are set to play a significant role in implementing the ERRP, for validation and/or amendment.

4.4 Stakeholder consultations on the development of this strategy

The DHET has consulted with numerous stakeholders and social partners in the development of this strategy. In addition, it has held a technical workshop with the government’s Economic Sectors, Investment, Employment and Infrastructure Development (ESIEID) cluster members and priority government departments to obtain feedback and input, as well as to validate the occupations and skills found to be in shortage, in sectors identified as important for the recovery of the South African economy. The following organisations were consulted in the process of developing the skills strategy:

- Cabinet Lekgotla;
- SETAs;
- National Skills Authority;
- Human Resource Development Council EXCO;
- National Economic Development and Labour Council (Nedlac);
- ESIEID Director-General and Ministers’ Clusters;
- Quality Council for Trades and Occupations (QCTO);
- Universities South Africa (USAf);
- SAQA;
- Council for Higher Education (CHE);
- National government departments: namely, the Departments of Trade, Industry and Competition; Small Business Development; Basic Education; Agriculture; Land Reform and Rural Development; Communications and Digital Technology; Employment and Labour; Public Works and Infrastructure; Science and Innovation; Tourism; Public Enterprises; and the Presidency; and
- Northern Cape Extended Executive Council Lekgotla.

Technical workshops were held with ESIEID Cluster members and with priority government departments.

PART 5

Overview of interventions and activities



This skills strategy identifies ten interventions and a range of activities associated with each. The interventions focus on two key dimensions:

- **Dimension 1:** The provisioning of targeted E&T programmes; and
- **Dimension 2:** The enabling of education-to-work transitions.

Of the ten interventions, six focus on the provisioning of E&T programmes (Dimension 1), while four focus on education-to-work transitions (Dimension 2).

The identified interventions relate closely to the demand-driven principle of this strategy. Consequently, they overlap well with the reasons for occupational shortages and skills gaps identified by employers, as shown in Tables 1 and 2 above. The interventions are also framed by the other principles of this strategy, as stated above.

Within the strategy, both Dimension 1 and Dimension 2 outline interventions and actions that support the implementation of the ERRP. Specifically:

Dimension 1: Interventions focused on the provision of targeted E&T programmes

1. Expand the provisioning of *short skills programmes* (both accredited and non-accredited) to respond to the skills gaps identified in this strategy;
2. Enable the provisioning of *short skills programmes* (both accredited and non-accredited) that respond to the skills gaps identified in this strategy;
3. Expand the provisioning of *WBL opportunities* to respond to the occupational shortages and skills gaps identified in this strategy;
4. Increase enrolments in *qualification-based programmes* that respond to the occupational shortages identified in this strategy;
5. Review and revise *E&T qualifications, programmes and curricula* to respond to the occupational shortages and skills gaps identified in this strategy; and
6. Update the *draft CSL* and associated regulatory mechanisms.

Dimension 2: Interventions focused on enabling and supporting education-to-work transitions

1. Strengthen *entrepreneurship development programmes*;
2. Embed *skills planning* in economic planning processes and vice versa;
3. Facilitate the use of the *national PMN* in the PSET system; and
4. Strengthen the *PSET system*.

5.1 Intervention 1: Expand the provisioning of short skills programmes

5.1.1 Overview of Intervention 1

This intervention focuses on the provisioning of short skills programmes (both accredited and non-accredited) that respond directly to the skills gaps identified in this strategy. In the case of non-accredited skills programmes, the emphasis is on those that are driven by industry, rather than supply-driven. Skills gaps usually exist because of mismatches between the skills required by employers and those possessed by employees. They also exist because many new labour entrants do not have the skills and know-how needed to navigate the labour market, or the entrepreneurial¹⁸ skills, knowledge, tools or support needed to establish their own businesses and organisations.

Intervention 1 is therefore aimed at ensuring the provision of agile, flexible and demand-led skills development programmes to mainly three categories of beneficiaries:

1. *Employed persons* who require reskilling and or/upskilling, including worker education;
2. *New entrants* to the labour market who may require work readiness, foundational, digital and other types of short skills programmes to improve their chances of employment (including self-employment); and
3. *Other unemployed persons* whose chances of employment (employability) need to be improved (including for self-employment).

Importantly, the shorter, focused skills programmes envisioned here are also designed to *respond to a dynamic and changing economy* – to prepare people for new and emerging skills requirements at the workplace. Such programmes are expected to respond to all levels of skills needs, ranging from elementary to intermediate to higher-level skills. The higher education sector has drawn attention to the need for universities to also offer short skills programmes that are demand-driven instead of supply-led. USAf proposes that these be offered on a platform for lifelong learning, so that such a platform becomes a permanent feature of universities.

Skills development programmes usually aim to foster either soft skills or hard skills. This division between soft and hard skills is intended to serve as a practical tool to guide skills development: it should not be construed as being cast in stone, since there are overlapping areas between these two categories of skills. While soft skills generally aim to improve overall worker effectiveness, efficiency and employability, “hard” or technical skills are critical to undertaking job-specific tasks. Both are essential for ensuring that the skills landscape in the country is not a hindrance to the implementation of the ERRP.

18 See Intervention 7, which deals with entrepreneurship.

5.1.2 Soft skills

Soft skills are competencies that are not job-specific, but instead assist in completing tasks across a wide variety of occupations. Soft skills include, but are not limited to, critical thinking, project management, work readiness, entrepreneurial ability, teamwork, leadership, communication skills, a positive attitude and a strong work ethic.¹⁹ International and national research has revealed that soft skills are key to work satisfaction and improved productivity. A World Bank study²⁰ has found that soft skills encompass problem-solving, resilience, motivation, control, teamwork, initiative, confidence and ethics, while the International Labour Organisation (ILO) *Global Framework on Core Skills for Life and Work in the 21st Century* report²¹ identifies communication, teamwork, conflict resolution and emotional intelligence as core social and emotional skills for the 21st century. A recent survey undertaken by the Manpower Group²² in South Africa draws attention to reliability, self-discipline, tolerance to stress and active learning as key soft skills for dealing with the impact of the COVID-19 pandemic and significant moves towards digitisation. The Culture, Arts, Tourism and Sports Sector Education and Training Authority (CATHSETA) has identified customer care and communication as soft skills that are essential for its economic sectors.

While some of these skills are fostered in the workplace, others can be developed through short courses. In addition, coaching and mentorship programmes, both inside and outside the workplace, are key to sustainable development. The business sector has indicated that opportunities to access tacit knowledge from local South Africans through coaching and mentoring programmes could be of tremendous value. The idea is for senior or retired individuals to establish networks of support, especially for the youth.

The list of soft skills below has been identified through research, including that undertaken by SETAs.

TABLE 3: List of soft skills (behavioural skills)

- Customer care and service orientation
- Leadership
- Coaching and mentoring
- Problem-solving and decision-making
- Communication
- Conflict resolution and negotiation
- Work readiness
- Strong work ethic
- Ethical practices
- Teamwork and interpersonal skills
- Entrepreneurial ability
- Creativity
- Cultural awareness
- Self-management (time management, reliability, discipline, accountability, active learning, flexibility, independent action, adaptability, tolerance to stress, diligence, resilience, motivation, initiative, confidence, positive attitude and curiosity)

19 Doyle (2020b).

20 Guerra, N., Modecki, K., and Cunningham, W. (2014), "Developing Social-Emotional Skills for the Labor Market: The PRACTICE Model", Policy Research Working Paper No. 7123, World Bank Group, available at: <https://openknowledge.worldbank.org/handle/10986/20643>.

21 ILO (2021), *Global Framework on Core Skills for Life and Work in the 21st Century*, available at: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_813222.pdf.

22 Manpower Group (2021), *Employment Outlook Survey*, Quarter 3 2021.

5.1.3 Hard skills gaps

In many instances, skills gaps that exist among employees are specific to their job/occupation. However, labour market research undertaken by SETAs,²³ the DHET²⁴ and the Organisation for Economic Co-operation and Development (OECD)²⁵ indicates that many “hard” or technical skills gaps also cut across economic sectors and occupations. These skills gaps can be categorised according to the domains shown in Table 4.²⁶

TABLE 4: Transversal hard skills gaps

	DOMAIN	SKILLS GAPS
1	Foundational/basic skills	Reading, writing, speaking, listening, memorisation, oral and written comprehension, mathematics, critical thinking, ability to learn, digital, science, civic literacy, finance, health and safety.
2	Technical skills	Equipment maintenance, equipment selection, installation, operation and control, operation monitoring, operations analysis, programming, quality control analysis, repairing, technology design, troubleshooting, occupational health and safety
3	Leadership and management	Project management, planning, organising, coaching, mentoring, instructing, industrial relations, change management, supervisory, legal, governance
5	Complex problem-solving	Identifying complex problems, reviewing related information to develop and evaluate options and implement solutions

Beyond these so-called hard skills, there are also a number of skills gaps that are highly specific to particular sectors. These skills gaps were identified through SETA surveys and a literature review and have been broken down by economic focus areas in Table 5 below.²⁷ Some of these skills gaps²⁸ are also identified as having corresponding short courses available within the South African learning system (some of which are funded by SETAs).

23 Specifically, the SETA SSPs, the National Digital and Future Skills Strategy and various economic master plans.

24 DHET (2020a), *SETA Interview Report on Skills Development*, Pretoria: DHET.

25 OECD (2017), *Getting Skills Right: South Africa*, Paris: OECD Publishing.

26 The categories of skills used here are obtained from O'NET, which is an American system for the classification of skills and occupations.

27 As the reader will note, this list of economic focus areas is not exhaustive. For instance, the energy sector is not represented. This gap is due to a lack of information available from SETAs and the literature, and does not imply that there are no skills gaps in this and other focal areas.

28 Although not an exhaustive framework, O'NET has a list of technical skills that has been overlaid with the inputs from SETAs, departments and the literature to provide a consistent classification of some technical skills. O'NET is extremely useful in its ability to match these technical skills to occupations as well. For ease of reference when assessing which skills pertain to which occupations, see the following link: <https://www.onetonline.org/find/descriptor/browse/Skills/2.B.3/>.

TABLE 5: Skills gaps associated with key economic focus areas

INDUSTRY/FOCUS AREA	SKILLS GAP	SHORT COURSES CURRENTLY FUNDED BY SETAS?
Agriculture, food security and the environment	Livestock disease management	
	Insect taxonomy	
	Generation and use of big data in phenotyping	
	Environmental policy knowledge	
Built environment	Construction monitoring	
	Legal liability and legislative knowledge	
	CAD or computer-aided design	
	CAM or computer-aided manufacturing	
	Photoshop rendering	
	Rigging and slinging at heights	
	Attrition testing	
	Occupational health and safety knowledge	X
	System installation and repair	X
	Advanced Excel	
	Cloud computing	X
	Data analysis (elementary, intermediate, and high-level skills)	X
	Machine learning	
	The Internet of Things	
Digital economy and global business services	Blockchain technology	
	Digital immersion	
	Foreign language skills	
	Monitoring and evaluation	
	Software and systems engineering	X
	Cybersecurity	X
	Data science	X
	Artificial intelligence	X
Manufacturing	CAD or computer-aided design	
	CAM or computer-aided manufacturing	
	Conceptual and 3D design	
Tourism	Digitalisation of processes related to tourism	
	Data analysis (elementary, intermediate, and high-level skills)	X
	Social media marketing	
	Foreign language skills	

Note: Because of the evolving nature of the ERRP, the skills identified in this table are subject to change or amendment in line with new developments along the country's road to economic recovery and reconstruction. This is to ensure that the skills strategy remains agile and adaptive.

5.1.4 Digital skills

The most cross-cutting of skills gaps are arguably linked to the digital economy (inclusive of the global business service industry), where evidence on such skills gaps is most readily available. Mismatches between employer skills needs and employee skills (i.e., skills gaps) in the digital economy might arise for multiple reasons:²⁹

- The evolution of technology may have outpaced the number of individuals trained in particular competencies, creating skills gaps that are as a result of innovation.
- Many South Africans cannot access the internet, do not have access to a computer or have had no or little exposure to the digital world. Consequently, they do not have digital literacy skills.
- It is also likely that qualifications, programmes and curricula do not foster the specific skills that employers require. This problem might relate to the quality of the education received, or simply to the content covered by the programme versus the content required by employers. Content could be either outdated or unrelated to what employers require in the country.
- The brain drain phenomenon also creates occupational shortages and skills gaps within the digital economy. Specialists who leave the country take their knowledge with them, creating skills gaps in specialities without sufficiently transferring their knowledge to others.

The skills required by employers are broad-ranging, encompassing basic, intermediate, and high-level skills. Massive strides towards digitisation across all economic sectors are already driving the kinds of skills programmes that support these requirements. These include a programme undertaken by the Education, Training and Development Practices Sector Education and Training Authority (ETDP SETA) to improve digital literacy among 50 000 early childhood development (ECD) practitioners, teachers and lecturers, as well as initiatives by CATHSETA to provide a range of digitisation skills development programmes aimed at promoting e-tourism.

Stakeholders from the business community have argued that off-the-shelf international e-learning solutions should be adopted together with contact learning, as part of a blended learning approach to building digital skills. They foreground online learning as a key enabler for supporting and sustaining transition in a rapidly changing and disruptive world, where skills have an exponentially shrinking shelf life and where the traditional classroom lacks the scale, speed and agility required to support continuous learning. The business community points out that these solutions are already being widely used in the corporate world because online skills programmes are constantly updated in line with emerging technologies and required standards. The introduction of digital credentialing has also been highlighted. However, some organisations have warned against the unfettered use of Massive Open Online Courses (MOOCs), since experience has demonstrated that many of these programmes are of poor quality.

Research undertaken by the Harambee Youth Employment Accelerator (2020)³⁰ and other sources points to various skills gaps in the digital economy, as shown in Table 6 below.

29 Genesis Analytics and Knowledge Executive (2020), *ICT and Digital Economy Master Plan for South Africa*, available at: https://www.ellipsis.co.za/wp-content/uploads/2020/08/ICT-and-Digital-Economy-Masterplan-for-South-Africa_Draft-for-discussion_-August_-2020.pdf; Harambee Youth Employment Accelerator (2020), *Mapping of Digital and ICT Roles and Demand in South Africa*, available at: <http://digital.harambee.co.za/wp-content/uploads/2020/11/HAR964-ICT-Roles-and-Demand-Support-R2.pdf>.

30 Harambee Youth Employment Accelerator (2020). This research was produced in partnership with Knowledge Executive, CXO, Genesis Analytics, BPESA, the IITPSA, the Digital Council, SiMODISA Start Up and the Public–Private Growth Initiative. The study made use of digital industry surveys, which spanned 102 small, medium and large South African enterprises.

TABLE 6: Digital skills gaps

SHORT-TERM DIGITAL SKILLS GAPS	LONGER-TERM DIGITAL SKILLS GAPS
1. Cloud architecture	1. Artificial intelligence
2. Cybersecurity	2. Biotechnology
3. Data centre operations	3. Blockchain
4. Desktop support engineering	4. Data analysis
5. Enterprise architecture development	5. Data science
6. Integrated systems development	6. Internet of Things
7. Design of learning management systems	7. Machine learning
8. Network analysis, control and security	8. Nanotechnology
9. Software development engineering	9. Quantum computing
10. Systems engineering	10. Robotic automation

Note: Because of the evolving nature of the ERRP, the skills identified in this table are subject to change or amendment in line with new developments along the country's road to economic recovery and reconstruction. This is to ensure that the skills strategy remains agile and adaptive.

5.1.5 Occupational shortages requiring the upskilling and reskilling of individuals

Beyond specific skills that require training, there are certain occupations that SETAs have identified as being in shortage, because there is a mismatch between the skills that individuals within these occupations have and the skills employers require in the South African labour market. In particular, these occupations are flagged across the country's labour market because individuals within these occupations are insufficiently skilled at the tasks associated with their occupation.

Because of this lack of skill, the occupations shown in Table 7 require job-specific skills programmes targeted at individuals to ensure a closer match between the needs of employers and the skills that employees can provide.

TABLE 7: Occupations in shortage requiring Intervention 1³¹ (short skills programmes)

OFO OCCUPATION	OCCUPATION DESCRIPTION
Agricultural Farm Manager	Plans, directs and coordinates production in large-scale agricultural and horticultural operations, such as collective farms and agricultural co-operatives, to grow and harvest crops.
Meteorologist	Studies the physics and dynamics of the atmosphere to increase understanding of weather and climate and to forecast changes in the weather and long-term climatic trends.
Biotechnologist	Studies the anatomy, physiology and characteristics of living organisms and isolated biological molecules and develops new materials for application to a range of purposes.
Microbiologist	Studies microscopic forms of life such as bacteria, viruses and protozoa.
Zoologist	Studies the anatomy, physiology, characteristics, ecology, behaviour and environment of animals.
Agriculture Consultant	Advises farmers, agricultural businesses, rural industries and government on the production, processing and distribution of farm products.
Food and Beverage Scientist	Studies the physical and chemical properties of food and beverages, develops new and improved food and beverage products, and sets standards for producing, packaging and marketing food and beverages.
Earth and Soil Scientist	Analyses the composition, structure and other physical attributes of soil.
Production Engineering Technologist (specialising as Leather and Footwear Production Technologists)	Analyses and modifies new and existing production technologies and applies them in the testing and implementation of production processes.
Civil Engineering Technologist	Analyses and modifies new and existing engineering technologies and applies them in the testing and implementation of civil, mechanical, electrical or electronic engineering projects.
Mechanical Engineer	Plans, designs, organises and oversees the assembly, erection, operation and maintenance of mechanical and process plants and installations.
Metallurgist	Researches, develops, controls and advises on processes used in extracting metals from their ores and processes used for casting, alloying, heat treating or welding refined metals, alloys and other materials to produce commercial metal products or develop new alloys and processes.

31 The following additional three digital economy occupations were indicated by the Department of Communications and Digital Technologies as being in shortage and as relevant to the implementation of the ERRP:

- Business Training Manager;
- Multimedia Designer; and
- Remotely Operated Vehicle (ROV) Pilot.

Although the submission did not provide inputs regarding whether these occupations were in shortage due to a lack of skills, these occupations are included here given the focus of this section on digital occupations and skills. Once more evidence regarding these occupations is provided, they can be classified more accurately.

OFO OCCUPATION	OCCUPATION DESCRIPTION
Electrical Engineer	Designs, develops and supervises the manufacture, installation, operation and maintenance of equipment, machines and systems for the generation, distribution, utilisation and control of electric power.
Architect	Designs buildings and advises on the procurement of buildings, provides concepts, plans, specifications and detailed drawings, and negotiates with builders.
Industrial Designer	Plans, designs, develops and documents industrial, commercial or consumer products for manufacture, with particular emphasis on ergonomic (human) factors, marketing considerations and manufacturability, and prepares them for mass or batch production.
Footwear Designer	Conceptualises, designs and develops footwear and related products for manufacture and prepares designs and specifications of products for mass, batch and one-off production.
Information and Communication Technology (ICT) Systems Analyst	Evaluates processes and methods used in existing ICT systems, proposes modifications, additional system components or new systems to meet user needs, as expressed in specifications and other documentation.
Software Developer	Researches, analyses and evaluates requirements for existing or new software applications and operating systems, and designs, develops, tests and maintains software solutions to meet these requirements.
ICT Security Specialist	Establishes, manages and administers an organisation's ICT security policy and procedures to ensure preventive and recovery strategies are in place and minimise the risk of internal and external security threats.
Electronic Engineering Technician	Conducts tests of electronic systems, collects and analyses data, and assembles circuitry in support of electronics engineers and engineering technologists.
Manufacturing Technician	Provides technical support and services in the development of manufacturing methods, facilities and systems, and in the planning, estimating, measuring and scheduling of manufacturing work.
Building Associate	Supervises construction sites and organises and coordinates the material and human resources required.
Wind Turbine Power Plant Process Controller	Plans, prepares and conducts installation, maintenance and component assembly for wind turbine systems, facilities and equipment. Assembles, installs and maintains wind turbines and associated equipment and compounds.
Solar Photovoltaic Service Technician	Performs maintenance in installations including related inverters and decommissioning of whole or part of a solar PV installation and isolation
Integrated Manufacturing Line Process Control Technician	Provides technical support and services in the development of manufacturing methods, facilities and systems, and in the planning, estimating, measuring and scheduling of an integrated manufacturing line.
Agricultural Technician	Performs tests and experiments and provides technical support to assist agricultural scientists and technologists in areas such as research, production, servicing and marketing.

OFO OCCUPATION	OCCUPATION DESCRIPTION
Safety Inspector/Medical Equipment Inspector	Inspects machines, equipment, working conditions and public places to ensure compliance with government and industry standards and regulations, in relation to occupational health and safety.
Purchasing Officer	Prepares purchase orders, monitors supply sources and negotiates contracts with suppliers.
Carpenter	Constructs, erects, installs, renovates and repairs structures and fixtures of wood, plywood, wallboard and other materials.
Air-Conditioning and Refrigeration Mechanic	Installs, maintains and repairs piping, ducting and equipment for heating, cooling and ventilation of buildings or vessels.
Refrigeration Mechanic	Assembles, installs, maintains and repairs industrial, commercial and domestic air-conditioning and refrigeration systems and equipment.
Steel Fixer	Positions and secures steel bars and steel mesh in concrete forms to reinforce concrete structures.
Metal Machinist	Sets up and operates machine tools to shape and form metal stock and castings to fine tolerances, using detailed drawings and specifications.
Fitter and Turner	Fits, assembles, grinds and shapes metal parts and sub-assemblies to fabricate production machines and other equipment.
Cabinet Maker	Fabricates or repairs wooden furniture, and fits and assembles prepared parts to make or repair furniture.
Furniture Finisher	Applies finishes such as stain, lacquer, paint, oil and varnish to furniture, and polishes and waxes finished furniture surfaces.
Wood Machinist	Cuts, planes, turns, shapes and sands wood stock to specifications.
Apparel and Related Pattern Maker	Produces sets of master patterns following sketches, sample articles and design specifications, and cuts out patterns for garments, footwear and general goods.
Upholsterer	Makes, rebuilds and repairs upholstered furniture such as chairs, sofas and car seats.
Diver	Swims underwater to undertake tasks such as seafood gathering, research, salvage and construction.
Quality Controller (Manufacturing)	Conducts in-line and/or end-line quality inspections and/or analyses final manufactured product to ensure conformance to customer specification. Identifies and investigates causes of non-conformance and recommends corrective action to address non-conformance.
Metal Processing Plant Operator	Operates, monitors, adjusts and maintains single-process machinery and equipment to process and convert mineral ores and refine, harden, roll and extrude metals.
Plastic Compounding and Reclamation Machine Operator	Operates mixing and grinding machines to prepare plastic powders, liquid blends and recycle waste plastic materials from factory operations.
Leather Processing Machine Operator	Operates machines and equipment to convert raw hides and skins into finished leather for use in clothing, footwear, upholstery and leather goods.

OFO OCCUPATION	OCCUPATION DESCRIPTION
Footwear Cutting Production Machine Operator	Prepares, sets up and operates footwear clicking or cutting machinery and equipment.
Footwear Closing Production Machine Operator	Prepares, sets up and operates footwear sewing or closing machines.
Footwear Bottom Stock Production Machine Operator	Prepares, sets up and operates footwear bottom stock machinery and equipment.
Footwear Lasting Production Machine Operator	Prepares, sets up and operates footwear lasting machinery and equipment.
Footwear Finishing Production Machine Operator	Prepares, sets up and operates footwear finishing machinery and equipment.
Seafood Processing Machine Operator	Sets up, operates and attends machinery used to process fish.
Product Assembler	Assembles, according to strictly laid-down procedures, various products that do not include electronic, electrical or mechanical components.
Forklift Driver	Operates a forklift to move bulk materials, containers, crates, palletised goods, cartons and bales.
Timber and Wood Process Worker	Performs routine tasks in paper and pulp mills, sawmills, timber yards, and wood processing and timber products factories.
Food and Beverage Factory Worker	Performs routine tasks in manufacturing food and beverages.
Waterside Worker	Transfers cargo between ships and other forms of transport or storage facilities.

Note: Because of the evolving nature of the ERRP, the skills identified in this table are subject to change or amendment in line with new developments along the country's road to economic recovery and reconstruction. This is to ensure that the skills strategy remains agile and adaptive.

5.1.6 Actions

Provisioning. Public and private skills development providers, employers and labour organisations, as well as universities and TVET and CET colleges, should fast-track the provisioning of short skills programmes (accredited and non-accredited) that respond to the skills gaps identified in this strategy. The DHET should ensure that its own Annual Performance Plans (APPs) – and those of public E&T institutions, the NSF and SETAs – reflect targets for the provisioning of ERRP-linked short skills programmes. The provisioning of short skills programmes should be driven by industry and should include worker education programmes.

Digitisation. The DSI needs to scale up its current initiatives, including the Mobile Applications Laboratory (mLab) and the Data Science for Impact and Decision Enhancement (DSIDE) programme, which gives students the opportunity to be mentored by experienced members of the data science community. The DHET will work with relevant SETAs, the Department of Telecommunications and Postal Services and the Presidency to ensure a coordinated response to implementing the digital skills strategy.

Coordination. The DHET should work closely with other government departments, such as the DEL, the National Treasury, the Project Management Office of the Presidency and the Department of Trade, Industry and Competition, to ensure that its skills development interventions form part of overarching efforts to address skills gaps in the country.

5.2 Intervention 2: Enable the provision of targeted skills programmes

5.2.1 Overview of Intervention 2

This intervention is aimed at enabling the development and provision of agile and flexible demand-led skills training, especially short skills development programmes that can be implemented immediately by both public and private skills development providers.

Stakeholders have noted the following challenges in relation to the disbursement of the Discretionary Grant, which is intended to support skills development in the country:

- The processes involved in registering part-qualifications are too long and cumbersome.
- Employers and skills development providers face a barrage of obstacles and “unrealistic bureaucratic requirements”³² in their attempts to provide accredited and non-accredited skills programmes. These problems are linked to the E&T quality assurance system in South Africa and to the excessive demands of SETA processes for accessing the Discretionary Grant.
- Skills Development Providers are only accredited if they provide programmes that are linked to qualification pathways. Such a requirement does not work in instances where appropriate registered qualifications do not yet exist. This approach also compromises the principle of an agile and responsive skills system.
- QCTO qualification development processes are too dependent on external consultants. As a result, such processes are drawn out, and there is little opportunity to grow institutional memory.
- SETAs and the NSF do not provide sufficient funding for non-accredited programmes, nor do they avail funding for vendor-provided skills programmes that could be updated, agile and appropriate to the needs of the labour market. The need for short-term adjustments to funding mechanisms is driven by deep levels of frustration on the part of employers who remain hampered by the bureaucratic and administrative burdens of the SETA system. It is expected that the revision of the SETA Grant Regulations and Skills Development Act (Act 97 of 1998) and the SETA Standard Constitution will be key to addressing this challenge in the medium to long term.
- The matter of vendor certification has come to the fore, especially in relation to the provision of digital skills. Given rapid changes in technology and work processes, vendors are well placed to provide skills programmes that cannot be quality assured quickly through state quality assurance processes. Some examples of digital skills programmes provided by major vendors are Microsoft Azure Data Science, Microsoft Azure DevOps Engineering, Google Cloud Development, AWS Cloud Practitioner, AWS Machine Learning, CISCO Certified Network Professionals and Google Cloud Security Engineering.

This intervention consists of two models, which encapsulate two different combinations of quality assurance and funding mechanisms. The intention is to enable the faster turnaround of training than is possible in the current system, while still ensuring the quality of these programmes, and while not destabilising the broader quality assurance system.

32 Input from Nedlac: Business Sector.

The first model works with the existing quality assurance system. Two main changes to this system will be implemented. The first is that the CHE and the QCTO, in consultation with SAQA, will urgently establish and implement *streamlined, efficient and user-friendly processes to register part-qualifications* that enable the successful implementation of the ERRP. The objective is to fast-track the development and registration of part-qualifications that do not yet exist. The second imperative builds on work that the QCTO has initiated in relation to the development of accredited skills programmes that are not necessarily linked to qualification pathways. This represents a departure from the current model, which insists on programmes being accredited only when they are part of existing qualifications. To support the ERRP, the QCTO and the CHE will be required to *accredit skills development providers to offer programmes that are not linked to registered qualifications or to pathways that lead to qualifications*. They are encouraged to accredit skills programmes that respond to the ERRP and that are identified by industry associations, community organisations and E&T providers.

The second model builds on the *pay-for-performance model* piloted by the Jobs Fund together with Yellowwoods and Harambee. It creates a mechanism that allows short, non-accredited programmes that have been identified by industry bodies to be funded and quality assured. This model therefore allows SETAs and the NSF to fund training programmes that meet demand for skills in real time and, inter-alia, transition young people into income-earning opportunities. The pay-for-performance model allows SETAs to act as outcomes-based funders paying against clear milestones, set out in rate cards that stipulate the funds that have been allocated to each skills development intervention to employment and the outcomes required from training providers. It is proposed that, in this model, SETAs and the NSF will partner with industry bodies, which will act as the intermediary for training providers. This ensures strong industry ownership of the programme as well as an open and transparent process. An example of this model is provided in Appendix 5.

5.2.2 Actions

Registration of part-qualifications. SAQA, together with the CHE and the QCTO, will urgently establish and implement efficient, user-friendly, streamlined processes for registering part-qualifications linked to the skills gaps identified in this strategy.

Accreditation of providers. The QCTO, in consultation with SAQA (where necessary), will adopt the following measures:

- Fast-track the accreditation of skills development providers, including E&T institutions, that provide *accredited* skills programmes that respond to the skills gaps identified in this strategy.
- Waive the requirement for qualification pathways for skills programmes that respond to the skills gaps identified in this strategy and those that have been identified by industry associations. In so doing, the QCTO will accredit skills development providers, including E&T institutions, to offer such skills programmes.
- Reallocate funds to employ additional staff who will undertake or oversee qualification development internally in order to improve system efficiency and turnaround times for qualification development.

Dedicated structure. SAQA, together with the QCTO, Umalusi and the CHE, should establish a dedicated structure composed of Quality Councils and other stakeholders that would recommend how accreditation and qualification registration processes could be simplified, fast-tracked and made more user-friendly, as well as how articulation blockages could be resolved. This will be a streamlined structure led by the CEO of one of the Quality Councils.

Funding. The DHET, the NSF, SETAs, other government departments (including local government) and public entities will establish funding windows to support the provisioning of skills programmes (accredited and non-accredited) that respond to the skills gaps identified in this strategy, including those associated with worker education. The funding window will support both accredited and non-accredited skills programmes in ERRP priority areas.

Pay-for-performance model. SETAs and the NSF will adopt the pay-for-performance model to fund skills development programmes linked to the skills gaps identified in this strategy, as well as skills that are designated as being important by industry associations and individual employers.

Vendor certification. SETAs, the NSF, government departments and public entities are encouraged to broaden access to and fund skills development programmes that are certified by vendors, particularly those who provide programmes linked to the skills gaps identified in this strategy. The National Treasury will review procurement processes to permit universities, SETAs, TVET colleges and other government departments to procure the services of vendors offering specialised/company-specific skills development programmes.

Review of SETA systems and processes. The DHET is required to analyse the shortcomings of SETA systems and processes in relation to accreditation and funding and to address them.

5.3 Intervention 3: Expand the provisioning of WBL opportunities

The purpose of this intervention is to expand the provisioning of WBL programmes that respond to the occupational shortages and skills gaps identified in this strategy. The focus of this intervention is therefore on ensuring support for the range of WBL programmes referred to in the SETAs' WBL Programme Agreement Regulation of 2018.³³ Specifically:

- Work-integrated learning (WIL) that *students* require in order to complete qualifications (through learnerships, apprenticeships, cadetships and student internships).
- Work experience that *graduates* require after completing a qualification in order to successfully transition into the labour market (through graduate internships).
- Work experience that *graduates* require in order to achieve professional recognition by a professional body (through candidacy programmes).

WBL programmes have been highlighted as a key priority in the Presidential Youth Employment Intervention, especially in relation to the high numbers of students who have completed National Accredited Technical Education Diploma (NATED) programmes at TVET colleges and who require workplace experience in order to attain their N Diploma, as well as those university students who require workplace experience as part of their qualification and/or professional recognition. This intervention is also critical for learners undertaking artisanal programmes who require workplace experience in order to qualify as an artisan. In the absence of WBL opportunities, these students have little opportunity to complete their qualifications or undertake trade tests. COVID-19 has exacerbated this problem, since

33 DHET (2018), *SETAs' Workplace-Based Learning Programme Agreement Regulations*, Government Gazette No 42037, Pretoria: DHET.

most workplaces have cut down on the numbers of workers at the workplace at a given point in time. Even when students are able to successfully graduate, they are often unable to find employment owing to a lack of work experience. In some cases, the economy is unable to absorb these individuals once they have completed their tertiary education. This breeds a set of young people who have qualifications but no access to the labour market, creating a large supply of qualified but untrained individuals whom the labour market will struggle to absorb in the future. Although WBL programmes cannot guarantee employment to students and graduates, they do improve employment prospects for young people.

The following key problems have been identified in relation to WBL:

1. The business sector has pointed out that the tax incentive for learnerships (which includes apprenticeships) ends in April 2022. It therefore suggests that there may be merit in extending the terms of Section 12H of the Tax Act, which allows for a stipend allowance for unemployed individuals that go through skills programmes.³⁴
2. Business has also highlighted the need to optimise the BBBEE skills development scorecard to recognise spending on training, and to review other tax incentives, such as the Employment Tax Incentive and the Youth Employment Services (YES) initiative, which had aimed to create 1 million internships for unemployed youth.
3. At this stage, the DHET does not have data about the number of students who require WBL in order to complete their qualifications, nor is there information available about possible occupations to which such students could be linked. This problem needs to be addressed so that students can be matched to appropriate WBL opportunities.

Currently there are many initiatives to expand WBL opportunities. These include:

- **International partnerships:** Two colleges – namely, the Majuba and Ekurhuleni West TVET Colleges – have a partnership with the Singapore Institute of Technical Education, which allows them to utilise its workshops and equipment for more extensive and relevant workplace training.
- **New workshops:** The DHET has established two workshops to assist those seeking workplace experience in priority trades, such as electricians and Boiler Making for APRL candidates.
- **Learner grants:** The DHET increased the learner grant for employers that place learners in the apprenticeship system, from R165 000 to R206 290, on 1 April 2021.
- **Centres of Specialisation:** The DHET, with support from the NSF, has initiated a major project – the Centres of Specialisation (COS) project – to enable the expansion of quality artisan development programmes. The project is intended to ensure that apprenticeship opportunities are available for the 16 critical trades needed to support infrastructure development in South Africa. Employers and industry associations have been closely involved in the project, not only in facilitating access to apprenticeship opportunities, but also in informing the curriculum for artisan development. The business sector has indicated that it may be wise not to expand the role of the COS programme until sufficient insights have been obtained into its effectiveness and efficiency. There may also be other existing models that could be used for non-trade sectors, such as those used by global business services like Career Box and ShadowCareers. This approach might allow for a more cost-effective model, as the infrastructure for practical training would not need to be procured, and it would also consolidate the partnership with industry in a way that reduces the training costs for employers.

³⁴ Section 12H of the Income Tax Act allows an employer to claim a "learnership allowance" in respect of registered learnership agreements entered into or completed during a year of assessment. As stipulated in Section 12H, the learnership agreement must be registered in accordance with the Skills Development Act.

According to analysis from labour market research, the occupations listed in Table 8 jeopardise the effective roll-out of the ERRP because job applicants lack adequate or appropriate work experience.

TABLE 8: Occupations in shortage requiring Intervention 3 (WBL)

NAME OF OCCUPATION	RELATED QUALIFICATION
Manufacturing Operations Manager	Advanced Diploma in Operations Management, NQF Level 7; Bachelor of Commerce: Supply Chain and Operations Management, NQF Level 7; Postgraduate Diploma in Operations Management, NQF Level 8
Quality Manager	National Diploma in Engineering (Computer Systems), NQF Level 8; Bachelor of Technology in Quality Management, NQF Level 7; Master of Technology in Quality Management, NQF Level 9; National Diploma in Engineering (Computer Systems), NQF Level 8
Construction Project Manager	Postgraduate Diploma in Engineering Construction Project Management, NQF Level 8
ICT Project Manager	According to the QCTO, a qualification for managers should be a qualification at NQF Level 6, 7 or 8
Agricultural Scientist	According to the QCTO, a qualification for managers, professionals and associate-professionals should be a qualification at NQF Level 6, 7 or 8
Environmental Scientist	Advanced Diploma in Environmental Sciences, NQF Level 7; Bachelor of Arts in Geographical and Environmental Science, NQF Level 7; Bachelor of Science in Environmental Sciences, NQF Level 7
Civil Engineer	Advanced Diploma in Civil Engineering, NQF Level 7; Bachelor of Engineering in Civil Engineering, NQF Level 8; Postgraduate Diploma in Civil Engineering, NQF Level 8
Quantity Surveyor	Advanced Diploma in Quantity Surveying, NQF Level 7; Bachelor of Quantity Surveying, NQF Level 7; Bachelor of Science Honours in Quantity Surveying, NQF Level 8
Electrical Engineer	Bachelor of Engineering Honours in Electrical Engineering, NQF Level 8; Bachelor of Engineering in Electrical and Electronic Engineering, NQF Level 8; Bachelor of Engineering in Electrical Engineering, NQF Level 8
Safety, Health, Environment and Quality (SHE&Q) Practitioner	Occupational Certificate: Safety, Health and Quality Practitioner (Occupational Health and Safety Practitioner), NQF Level 5
Programmer Analyst	Bachelor of Information Technology, NQF Level 7
Civil Engineering Technician	National Diploma in Civil Engineering, NQF Level 6; Diploma in Civil Engineering, NQF Level 6
Electrical Engineering Technician	National Diploma in Electrical Engineering, NQF Level 6; Diploma in Electrical Engineering, NQF Level 6
Production/ Operations Supervisor (Manufacturing)	Bachelor's degree specific to an industry, NQF Level 7
Maintenance Planner	National Certificate in Maintenance Coordination, NQF Level 5
Wind Turbine Power Plant Process Controller	Wind Turbine Power Plant Process Controller qualification is not yet registered. Occupational Certificate: Wind Turbine Service Technician is registered.

NAME OF OCCUPATION	RELATED QUALIFICATION
ICT Communications Assistant	Diploma in Computer, NQF Level 6; Bachelor of Computer Technology, NQF Level 7; Diploma in Computer Science, NQF Level 6
Steel Fixer	National Certificate: Iron and Steel, NQF Level 3
Toolmaker	Learnership: Mechanical Engineering (Machining) (Tool, Jig and Die Maker), NQF Level 4; National Certificate: Engineering Studies, NQF Level 1
Lift Mechanic	Occupational Certificate: Lift Mechanic, NQF Level 4
Leather Processing Machine Operator	National Certificate: CTFL Manufacturing Processes, NQF Level 2
Product Assembler	National Certificate: CTFL Manufacturing Processes, NQF Level 2

Note: Because of the evolving nature of the ERRP, the skills identified in this table are subject to change or amendment in line with new developments along the country's road to economic recovery and reconstruction. This is to ensure that the skills strategy remains agile and adaptive.

5.3.1 Actions

Expansion of WBL. SETAs and the NSF will increase opportunities for WBL significantly and will reset their Annual Performance Plan targets in response to this strategy. Employers need to open up spaces for WBL, drawing on all available incentives.

Funding. SETAs and the NSF will redirect their funding of WBL beneficiaries towards those occupations that are in shortage (as indicated in Table 8) and the skills gaps identified in Tables 3, 4, 5, 6 and 7.

Tax incentive. Treasury will extend the period of Section 12H of the Tax Act, which ends in April 2022, in order to continue incentivising the expansion of WBL through learnerships and other modalities.

Coordination of subsidies and incentives. The DHET will participate in a study on the coherence of the levers used by government (e.g., the Employment Tax Incentive, incentives linked to the YES campaign, and BBBEE) to subsidise and incentivise WBL programmes (learnerships, apprenticeships, internships, etc.). The study will be led by the Treasury and the Project Management Office of the Presidency.

Data. The DHET will collate data and information about students and graduates who require all forms of WBL – namely, apprenticeships, learnerships, student internships, graduate internships and candidacies – and share this with the Presidential Youth Employment and YES interventions to enhance access to WBL opportunities.

The DHET/DSI. The DHET and DSI will work together to strengthen the Technology Localisation and Technology Stations Programmes to expand WBL opportunities.

Utilisation of infrastructure programme. The DHET will work with the DEL and the Department of Public Works and Infrastructure to develop a plan on how to utilise government's infrastructure development programme for artisan training.

CoS. A midterm evaluation of the CoS has been concluded and has recommended numerous enhancements to the current model. In order to build on the gains made thus far, the existing CoS project will be allowed to continue enrolments; however, a cautious approach will be required for the further expansion of different colleges and different occupations.

5.4 Intervention 4: Increase enrolments in qualification-based programmes that respond to the occupational shortages identified in this strategy

5.4.1 Overview

This intervention aims to increase the number of students enrolled at public and private E&T institutions in qualification-based programmes *that respond to the occupational shortages identified in this strategy*. It is intended to expand access to programmes where the numbers of students who are currently pursuing particular areas of study are insufficient to meet labour market demand. The business sector has advised that linking enrolment to occupational shortages will improve the employability of graduates. It recommends that E&T institutions reconsider student enrolment in redundant and irrelevant programmes that do not lead to employment opportunities. The business sector further highlights that issues related to the applicability of programmes, the quality and throughput of learners, and the opportunities to find employment once qualified are addressed, as opposed to an overemphasis on enrolment numbers.

In order to improve enrolment in those programmes that respond to the ERRP, it is essential to remove barriers to access to such programmes. One obvious obstacle is funding, which could be addressed by making bursaries available to students who are keen to enrol in targeted programmes. Another possible strategy is to redirect institutional enrolment planning so that emphasis is placed on those programmes that speak to occupational shortages. Expanding student enrolment in programmes that support the implementation of the ERRP can also be strengthened by career development strategies that encourage students to enrol in such programmes.

Labour market research undertaken to identify the occupational shortages associated with the ERRP has identified a number of occupations that are in shortage because of low enrolment in the associated programmes/qualifications. These are presented in Table 9.

TABLE 9: Occupations in shortage requiring Intervention 4 (increased enrolment)

NAME OF OCCUPATION	RELEVANT QUALIFICATIONS	2020 ENROLMENTS	2019 GRADUATES	UNEMPLOYED GRADUATES (IN JUNE 2021)
Research and Development Manager	NQF Levels 8, 9 or 10			110
Call or Contact Centre Manager	NQF Levels 6, 7 or 8			81
Energy Engineer	Bachelor of Commerce Honours in Energy Studies, NQF Level 8; Bachelor of Science Honours in Energy Studies, NQF Level 8			16

NAME OF OCCUPATION	RELEVANT QUALIFICATIONS	2020 ENROLMENTS	2019 GRADUATES	UNEMPLOYED GRADUATES (IN JUNE 2021)
Early Childhood Development Practitioner	Bachelor of Primary Education in Early Childhood Development, NQF Level 7; Occupational Certificate: Early Childhood Development Practitioner, NQF Level 5	148	167	442
Data Scientist	Bachelor of Science in Data Science, NQF Level 7; Postgraduate Diploma in Data Science, NQF Level 8	3 218	361	0
Programmer Analyst	Bachelor of Information Technology, NQF Level 7	5 665	113	84
Web Developer	Diploma in Information Technology in Web Development, NQF Level 6; Advanced Certificate in Web Development, NQF Level 6; Bachelor of Information Technology in Web Design and Development, NQF Level 7	171	21	37
Computer Network and Systems Engineer	Relevant qualification at NQF Level 8	5 772	589	193
Wind Turbine Power Plant Process Controller	Wind Turbine Power Plant Process Controller qualification is not yet registered. Occupational Certificate: Wind Turbine Service Technician is registered.			27
Food and Beverage Manufacturing Process Controller	National Diploma in Electrical and Electronic Engineering, NQF Level 6; Diploma in Electrical and Electronic Engineering, NQF Level 6	7 436	1 398	395
Inbound Contact Centre Consultant	National Certificate: Contact Centre Support, NQF Level 2; National Certificate: Contact Centre and Business Process Support, NQF Level 3			352
Contact Centre Real-Time Advisor	National Diploma Contact Centre Management, NQF Level 5			87

NAME OF OCCUPATION	RELEVANT QUALIFICATIONS	2020 ENROLMENTS	2019 GRADUATES	UNEMPLOYED GRADUATES (IN JUNE 2021)
Horticultural Farmer	National Certificate (Vocational) in Agriculture, NQF Level 4; Diploma in Agriculture, NQF Level 6; Bachelor of Agriculture (Horticulture), NQF Level 7; National Certificate (Vocational) in Agriculture, NQF Level 4	1 121		54
Plumber	Further Education and Training Certificate: Plumbing; or Occupational Certificate: Plumber (General) on the OQSF	666		3 012
Refrigeration Mechanic	National Certificate: Engineering Studies, NQF Level 3; Air-Conditioning, Refrigeration and Ventilation, NQF Level 4	43 686		33
Mechanical Equipment Repairer	Supervision of Construction (Roads and Earthworks), NQF Level 4			179
Electrician	Occupational Certificate: Electrician, NQF Level 4	465		4 748
Instrument Mechanician/ Medical Equipment Repairer	National Certificate: Engineering Studies, NQF Level 3	43 672		160
Crop Produce Analyst	Occupational Certificate: Crop Produce Analyst, NQF Level 5			22
Leather Processing Machine Operator	Clothing Textile Footwear and Leather Manufacturing Processes, NQF Level 2			116
Paper and Pulp Mill Operator	National Certificate: Engineering Studies, NQF Level 4	35 352		82

Note: Because of the evolving nature of the ERRP, the skills identified in this table are subject to change or amendment in line with new developments along the country's road to economic recovery and reconstruction. This is to ensure that the skills strategy remains agile and adaptive.

5.4.2 Actions

Enrolment planning. Universities and TVET colleges will revisit their enrolment plans to incentivise student enrolment in qualifications and programmes that are key to the effective implementation of the ERRP.

Funding for E&T institutions. SETAs and the NSF will redirect their funds to support TVET colleges, universities and CET colleges that may seek to expand enrolment in targeted programmes or that may require funds for infrastructure (especially workshops), equipment and lecturer development.

Student bursaries. SETAs and the NSF will redirect their funds to support students who enrol in programmes that are linked to occupational shortages (as identified in Table 9 above).

Coordination. The DHET will initiate processes to ensure that funding from the fiscus and the skills levy complement each other. This is necessary to allow for identified programmes to be implemented at scale.

5.5 Intervention 5: Review and revise E&T qualifications, programmes and curricula

5.5.1 Overview

This intervention focuses on the need for public and private E&T institutions and skills development providers to *review and revise their qualifications, programmes and curricula to respond to the occupational shortages and skills gaps identified in this strategy*. The intention is to ensure that E&T institutions and skills development providers are assisted in adapting qualifications and programmes to the needs of the ERRP.

The intervention therefore focuses on putting in place mechanisms to review existing qualifications, programmes and curricula so that they are more responsive to the needs of the economy. The review is expected to produce graduates who have the skills required to ensure the successful implementation of the ERRP. The assumption is that while the curricula offered in E&T institutions are broadly appropriate for preparing learners to work in a range of occupations, there may be instances where adaptations are required to respond to the occupational shortages and skills gaps identified in this strategy.

Public and private colleges, universities and skills development providers are therefore encouraged to rationalise programmes that are not responsive to the needs of the economy as part of their annual Programme and Qualification Mix (PQM) review processes. In so doing they are expected to work closely with professional bodies and/or industry bodies in processes that review qualifications, programmes and curricula. While this strategy acknowledges that it takes time to change PQMs and curricula – since it involves preparing lecturers, developing curricula and ensuring the availability of appropriate infrastructure and equipment – it also emphasises the importance of such change in order to improve graduate employability. It is encouraging to note that a diverse range of initiatives are already underway to develop qualifications and revise PQMs and curricula. These are as follows:

- **International partnerships:** Discussions are underway between the Bundesinstitut für Berufsbildung (Germany) and the QCTO about setting up an expert group to support qualification development processes.
- **Enrolment planning:** The DHET is currently reviewing low enrolment in NCV programmes.
- **Subject review:** 38 NATED subjects in high demand were reviewed in 2019/20 and 14 of these updated in January 2021. The remaining 24 subjects will be implemented by 2022. Thereafter, 10 subjects per annum will be reviewed based on demand and the need for specific content to be updated.
- **Industry initiatives:** TVET colleges and key industry bodies such as the Institute of Plumbing South Africa (IOPSA) and the National Association of Automotive Component and Allied Manufacturers (NAACAM), together with the National Business Initiative (NBI) and the International Youth Foundation (IYF) have launched the Installation, Repair and Maintenance (IRM) and the automotive components High Gear initiatives. These interventions seek to translate analysis of labour demand into the curriculum through the adaptation of related modules. The models also cement a partnership approach whereby lecturers in TVET colleges are supported by industry to ensure the relevance of the provision.
- **Research on qualifications and programmes:** SETAs have identified various TVET programmes needing amendment or alignment to sector-specific needs. The qualifications of 19 occupations have been identified as requiring amendments or updates. Of these, nine are required for the automotive and medical equipment manufacturing industries.

Labour market research undertaken to identify the occupational shortages associated with the ERRP has highlighted those occupations that are in shortage because of sub-optimal curricula, because of a mismatch between what employers require and what prospective employees are taught, or because there is no formal curriculum in place to train such individuals. These are displayed in Table 10.

TABLE 10: Occupations in shortage requiring Intervention 5 (review of qualifications, programmes and curricula)

OFO DESCRIPTION	MINIMUM QUALIFICATION	PRELIMINARY NUMBER OF ENROLLED (2020)	GRADUATED (2019)	NUMBER OF INDIVIDUALS UNEMPLOYED (IN JUNE 2021)
Call or Contact Centre Manager	Qualification at NQF Level 6, 7 or 8			81
Energy Engineering Technologist	Diploma at NQF Level 6			8
ICT Systems Analyst	Advanced Diploma in Information and Communications Technology, NQF Level 7	1 577	152	117
Developer Programmer	Diploma in Information Technology in Software Development, NQF Level 6; Bachelor of Science in Software Development, NQF Level 7; Postgraduate Diploma in Information and Communication Technology in Software Development and Media, NQF Level 8	5 665	113	71

OFO DESCRIPTION	MINIMUM QUALIFICATION	PRELIMINARY NUMBER OF ENROLLED (2020)	GRADUATED (2019)	NUMBER OF INDIVIDUALS UNEMPLOYED (IN JUNE 2021)
Web Developer	Diploma in Information Technology in Web Development, NQF Level 6; Advanced Certificate in Web Development, NQF Level 6; Bachelor of Information Technology in Web Design and Development, NQF Level 7	171	21	37
Biomass Plant Technicians	Fossil Power Plant Operations, NQF Level 4			49
Wind Turbine Power Plant Process Controller	Wind Turbine Power Plant Process Controller qualification is not yet registered. Occupational Certificate: Wind Turbine Service Technician is registered.			27
Computer Network Technician	Bachelor of Computer Technology, NQF Level 7; Diploma in Computer Science, NQF Level 6	5 772	589	733
Outbound Contact Centre Consultant	National Certificate: Contact Centre Support, NQF Level 2; National Certificate: Contact Centre and Business Process Support, NQF Level 3	29		240
Contact Centre Real Time Advisor	National Diploma: Contact Centre Management, NQF Level 5			87
Contact Centre Resource Planner	National Diploma: Contact Centre Management, NQF Level 5			72
Contact Centre Forecast Analyst	National Certificate: Contact Centre Operations, NQF Level 4			55
Call or Contact Centre Agent	Diploma: Contact Centre Management, NQF Level 5			2 030
Commercial Digital Printer	No formal qualification required			158
Electrical Equipment Mechanic	Electrical Equipment Mechanic recorded as Trade	81		252
Leather Processing Machine Operator	National Certificate: CTFL Manufacturing Processes, NQF Level 2	41		116
Fishing Hand	No formal qualification required			164

Note: Because of the evolving nature of the ERRP, the skills identified in this table are subject to change or amendment in line with new developments along the country's road to economic recovery and reconstruction. This is to ensure that the skills strategy remains agile and adaptive.

In addition to such qualifications that require amendment, it is also important to flag that the skills gaps discussed in Tables 3 and 4 also require this intervention. Where there are insufficient short courses or skills programmes to close said skills gaps, these courses require reworking and revising.

5.5.2 Actions

PQMs. Universities and colleges will review and or/expand their PQMs in order to address the occupational shortages identified in this strategy.

Qualifications development. Universities will initiate the development of new qualifications that are necessary to address the occupational shortages identified in this strategy. The DHET and the QCTO will undertake a similar exercise, together with TVET colleges, in this regard. The CHE, the QCTO and SAQA will support processes to expedite the development of new qualifications that are linked to this strategy.

Curriculum review. Universities will review the curricula of applicable programmes in order to address the skills gaps identified in this strategy. The DHET and the QCTO will undertake a similar exercise.

Funding. SETAs and the NSF will redirect funding towards universities and the South African Institute for Vocational and Continuing Education and Training project to support the development of new qualifications, the introduction of new programmes through expanded PQMs and the review of curricula.

Quality assurance. The QCTO and the CHE, in consultation with SAQA, will allow some flexibility in the structure of programmes to facilitate greater responsiveness and agility in programme design for those occupations that have been identified as being in shortage in this strategy. It is proposed that about 20% of a programme structure be flexible.

Partnerships. Universities will partner with industry, professional bodies and other stakeholders to develop new qualifications or review PQMs and curricula. Similarly, the DHET will establish sustainable structures and mechanisms to engage with industry and other stakeholders to review TVET college PQMs and curricula. Universities, TVET colleges and the DHET will partner with leading international educational institutions to accelerate the development of curricula.

R&D. The DSI will support R&D-led industrial development that supports the ERRP and will ensure that skills are available for such R&D by supporting PQM and curriculum review processes.

5.6 Intervention 6: Update the draft CSL and associated regulatory mechanisms

5.6.1 Overview

The purpose of this intervention is to update the draft CSL to take into account the effects of COVID-19 and to respond to the occupational shortages associated with the ERRP. It also draws attention to the need to reduce the time required to obtain work permits and improve the regulatory frameworks and processes for issuing critical skills visas (as cited in the ERRP).

This intervention seeks to ensure that those sectors in the ERRP that require individuals who have knowledge and skills sets that are not available in South Africa and that are required immediately will be able to access such skills internationally.

Employers who find it difficult to recruit staff for some occupations have “hard-to-fill vacancies” that can sometimes only be filled by persons from outside of South Africa. Quite often this phenomenon coexists with high levels of unemployment in the country for the same occupations.³⁵ This is because, in some cases, graduates lack experience or lack specialist skills, or because the curricula related to their qualifications do not adequately meet the needs of employers in their respective fields. In addition, some jobs have specific language requirements while others are associated only with a company’s software, equipment and work processes.

Employers point out that SAQA processes for the verification of foreign qualifications often cause delays and could result in compromising investments. These challenges are currently being reviewed as part of the Operation Vulindlela process, which notes that there is a need to improve the regulatory frameworks and processes for issuing visas for critical skills and to reduce the time required to obtain such visas.

5.6.2 Actions

Update the CSL. The DHET will update the draft CSL to take into account the impact of COVID-19, the implications of the ERRP and stakeholder input on the draft CSL.

Update the OFO. The DHET will update the OFO to incorporate new and emerging occupations.

Verification of foreign qualifications. SAQA will fast-track its processes for verifying foreign qualifications that are linked to the CSL.

Skills transference. The DEL will encourage employers to adopt knowledge and skills transference strategies where there is a reliance on immigrant workers.

Regulations. The Department of Home Affairs will review its processes and regulatory mechanisms regarding the issuing of the critical skills visa, with a view to making them more efficient.

Coordination. The DHET will work actively with other government departments, the private sector, professional bodies and the government’s Operation Vulindlela process to ensure that the CSL responds to the needs of the economy.

³⁵ As evidenced by the Employment Services South Africa (ESSA) database.

5.7 Intervention 7: Strengthen entrepreneurship development programmes

5.7.1 Overview

This intervention focuses on the need to provide the skills required for entrepreneurship development in ways that enable entry-level entrepreneurial activities (private and social) through to higher-end enterprises that rely on innovative research and development.

This intervention focuses on the skills required to grow income-generating opportunities in local economies through the establishment of private as well as social enterprises. These initiatives will be supported by the PMN (Intervention 8) and by services provided by the Department of Small Business Development, as well as by national efforts to improve public access to low-cost data. The NSDP³⁶ recognises that entrepreneurship is less about obtaining formal occupational qualifications and more about applied, peer and mentored learning and support. It emphasises that bespoke support produces better entrepreneurs and more sustained businesses.

Current initiatives to support entrepreneurship development include:

- **Mapping of youth services:** The DSI is mapping the services available to young people, including those related to supporting emerging entrepreneurs.
- **Technology Innovation Agency (TIA):** The DSI TIA programme supports universities in translating innovation into entrepreneurship.
- **Presidential Youth Service:** The Presidential Youth Service programmes supports participants in public employment programmes in establishing social enterprises to sustain the services undertaken.
- **Entrepreneurship hubs:** TVET colleges are establishing entrepreneurship hubs with assistance from the Small Enterprise Development Agency (SEDA).
- **Entrepreneurship Development in Higher Education (EDHE):** The DHET has developed a comprehensive national approach towards supporting entrepreneurship through its EDHE programme. This multi-faceted approach has been successful in identifying structures and mechanisms to advance entrepreneurship within and across universities. Identification of pockets of excellence is continuously followed by the sharing of best practices within the sector, both through regular events (e.g., the annual EDHE Lekgotla) and through regular engagement of a network of focused communities of practice. Most universities have at least one hub – with different names at different institutions – positioned to support entrepreneurship (e.g., centres for entrepreneurship, incubators/accelerators, innovation offices/entities).

36 DHET (2019), *Promulgation of the National Skills Development Plan*, Government Gazette 42290, Pretoria: DHET.

5.7.2 Actions

Presidential Youth Service Programme. CET colleges, with the support of the DHET, will assist Presidential Youth Service programme participants in transitioning into social entrepreneurship initiatives.

TVET college Entrepreneurship Hubs. The DHET will develop a workable and sustainable model for the establishment of Entrepreneurship Hubs at TVET colleges and scale these up to more colleges.

University EDHE Programme. The DHET will continue to strengthen its EDHE programme.

Funding. SETAs, the NSF, relevant government departments and state entities will fund efforts to support entrepreneurship development programmes and projects. The Department of Small Business Development will fund the development of technology stations and living labs in TVET colleges.

Coordination. The DHET will work closely with the SEDA and the DSI to enable entrepreneurship development in PSET institutions.

The DSI. The DSI will:

- Strengthen existing and grow new initiatives to support entrepreneurship and innovation through its mLabs, Living Labs, Agri Innovation Hubs, dLabs, Enviropreneurs, Grassroots Innovators, and other programmes. This includes the development of accredited and quality-training entrepreneurship development programmes.
- Continue its project to map the availability of entrepreneurship development services through the PMN. The DSI will ensure that entrepreneurship development services offered by TVET colleges, universities and SETAs are included in the project.
- Continue to support universities in translating innovations into marketable products through its TIA and other programmes.
- Initiate processes to establish technology stations and Living Labs at TVET Colleges and thereby support entrepreneurship development.

5.8 Intervention 8: Embed skills planning in economic planning processes and vice versa

5.8.1 Overview

This intervention aims to ensure that skills planning is embedded in economic planning processes and, conversely, that economic planning is embedded in skills planning processes. The idea is for economic planning to incorporate issues pertaining to skills supply and demand, and for skills planning to be demand-led and responsive to the needs of the economy. In this way, skills are part of a package of industrial interventions, together with incentives, trade agreements and other interventions, instead of a separate or parallel “add on”.

Currently, there are several initiatives to support alignment between economic and skills planning processes. These are as follows:

- **Master Plans:** The government is currently developing Master Plans to build the economy in priority sectors. Some of these Master Plans, such as the Digital, Automotive and Steel plans, include helpful information about skills needs. However, many others are yet to factor in the implications of skills supply and demand in their plans. The DHET is working together with those involved in the development of Master Plans to ensure coherence in approaches to identifying skills needs and developing interventions in response to these.
- **Sector Skills Planning:** Over the past two decades, SETAs have been developing Sector Skills Plans that identify occupational shortages and skills gaps. These plans are used by SETAs to direct resources towards where skills are needed the most.
- **Macro-demand (OIHD):** Over the past six years, the DHET has gazetted lists of OIHD intended for use by public and private E&T institutions and skills development providers to inform the kinds of programmes they offer. The idea is to improve employability by ensuring that E&T programmes are responsive to the needs of the economy. The list of OIHD is a signalling tool to also inform career development services and guide young people towards occupations that are in high demand. In addition, the list of OIHD is being used to prioritise the use of resources and qualifications development.
- **Digital/ICT demand:** Business Process Enabling South Africa (BPESA) and Harambee have mapped digital and ICT roles and demand through a research process aimed at identifying high-demand digital occupations and skills gaps in the digital sector. In doing so, they have examined the nature and extent of the offshoring of digital demand in South Africa, the roles and responsibilities associated with high-demand digital occupations, and the nature and level of the competencies required for occupations that are in high demand in the digital sector.
- **IRM initiative:** The DHET, together with key players in the automotive industry (i.e., NAACAM) and the IYF, has undertaken a range of initiatives to determine real-time demand for IRM skills and intervene to respond to such skills needs. The NBI, Harambee, IOPSA, the Presidency and the Gauteng Provincial Government are also involved in this process.

5.8.2 Actions

Embed skills in economic planning processes. The DHET and relevant SETAs will participate in economic planning initiatives – such as Master Plan development processes, industry-led planning processes, public sector human resource planning processes, the circular economy initiative and the Public–Private Growth Initiative – to ensure that skills planning is embedded in these economic planning processes. The DHET and SETA representatives in these processes will ensure that skills remain on the agenda and that there is a collective, ongoing and iterative process of determining which skills are required, the reasons for skills shortages and the types of skills development interventions that will meet this demand.

Embed economic planning in skills planning. The DHET and SETAs will analyse economic plans and strategies in their processes to identify current and future skills needs.

Skills audit. The DHET will undertake a comprehensive skills audit to ascertain the availability of skills in South Africa in relation to skills needs. This work will be done in collaboration with industry and other relevant government departments.

5.9 Intervention 9: National Pathway Management Network

5.9.1 Overview

This intervention focuses on promoting the widespread adoption and strengthening of government's national PMN. The PMN was announced by President Ramaphosa during the 2020 State of the Nation Address. The central objective of the PMN is to support individuals in transitioning from "learning to earning".

The PMN is part of the Presidential Youth Employment Intervention and is being taken forward by the DEL together with a range of other partners. The DSI, working with the Southern African Labour and Development Research Unit at UCT and other partners, is playing a key role in the mapping of services available to young people. More specifically, the PMN seeks to:

- Aggregate job and work opportunities that are currently driven by, among other things, government's mass employment programme and private sector jobs.
- Link youth to opportunities and support interventions by connecting people to job opportunities and youth service programmes through a network of digital, telephone and other platforms.
- Drive system change by identifying and advocating policy and regulatory changes that address barriers to employment. These include focus areas such as the zero-rating of data, shifting qualification requirements and coordinating employment incentive and subsidy schemes.

The PMN draws on a range of platforms to achieve its objectives. These platforms include the SA Youth mobi-site, the SA Youth Support Line, social media, inbound and outbound toll-free support lines, ESSA, etc. The key message is that regardless of where individuals access the network – whether through NYDA centres, DEL offices (Public Employment Services) or on the SA Youth mobi-site – they will have visibility across the network and access to a myriad of available job opportunities and support services.

5.9.2 Actions

Utilising PMN. The DHET will work with the DEL and the Presidency's Project Management Office to ensure that PSET institutions are aware of the national PMN and are encouraging their students to join the PMN when they enrol. The idea is for students to build their profile and visibility to access WBL opportunities or to transition into the labour market.

Mapping of services. The DSI will support the PMN in mapping all the youth services offered by government and its social partners.

Zero-rating of data. The DHET will work with the Department of Telecommunications and Postal Services to expand and sustain efforts to ensure that the online learning tools used by PSET institutions, as well as not-for-profit applications that support work seekers, are zero-rated.

5.10 Intervention 10: Strengthen the PSET system

5.10.1 Overview

This intervention focuses on ensuring that the schooling and PSET systems are strengthened to meet the medium- and long-term demands of the economy. The DHET's draft NPPSET provides clear direction on the kinds of interventions required to address structural weaknesses in the PSET system. Among these are the need for a review of the NQF system, the need for an improved interface between E&T institutions and employers, and the need for greater responsiveness on the part of the PSET system to the world of work. This intervention therefore places emphasis on key dimensions of the draft NPPSET that are applicable to the sustainable implementation of the ERRP.

There is general acknowledgement that the current quality assurance system for E&T in South Africa needs to be loosened and be made more efficient in order to facilitate the provisioning of E&T programmes (see also Interventions 2 and 5). USAf concurs that there has to be a more effective and efficient quality management and accreditation system put in place. It proposes that the provisioning of short skills programmes in particular requires new forms of credentialing and consideration of what some describe as "block chain credentialing".

Many stakeholders have proposed the need for the adoption of MOOCs as a means to provide flexible, learner-centred and agile E&T programmes on a large scale. However, the CHE has, as mentioned, issued a precautionary note, indicating that MOOCs present quality as well as regulatory concerns, since they do not have any admission requirements and they are often not formally quality-assured or accredited (or both). There is therefore a need to interrogate the matter of MOOCs, especially in the context of the internationalisation of E&T.

Many PSET institutions and skills development providers have been unable to provide quality E&T to students during the COVID-19 crisis, although some have performed remarkably well. There is therefore recognition of the need to build "surge capacity" in E&T institutions, especially for non-contact learning. Surge capacity refers to excess institutional strength that can be drawn on to shift direction in moments of difficulty. Institutions that have the capacity to adapt their programme offerings as well as the mode in which these are offered need enormous capacity to be able to respond in an agile manner to short-term labour market demands. Such institutional capacity cannot be built up the instant a crisis emerges. One of the constraining factors in building surge capacity is the current funding model, which is based rather tightly on learner enrolments. Funding to E&T institutions should thus include an orientation towards the need to build surge capacity during crises.

The business sector has drawn attention to the dependence of PSET on ECD and basic education, emphasising that "it should therefore be cognisant of the constraints and areas of weakness in these sectors". It is generally well known that while access to ECD and basic education has grown enormously over the past two decades, and while, according to UNESCO, upper secondary completion rates in South Africa are similar to those of middle-income countries, the quality of schooling and ECD in the country leaves much to be desired. It is also important to note that 24% of school learners who complete Grade 11 drop out before finishing Grade 12, while about 15% of learners who complete Grade 10 drop out before proceeding to Grade 11.³⁷ It is very likely that the majority of those learners who drop out of

37 BusinessTech, "This Is the School Dropout Rate in South Africa" [online], 6 October 2020, available at: <https://businesstech.co.za/news/government/438509/this-is-the-school-drop-out-rate-in-south-africa/>.

school make their way to the labour market, largely as job seekers. The need for a coordinated approach across the E&T system is therefore essential to ensure that young people have skills that can assist them in navigating the labour market.

The provision of TVET needs to be conceptualised within the framework of broader economic and labour market contexts. Decisions about industrial transformation and skills are interrelated, and vocational skills development cannot be seen as exogenous to a wider outlook on policy for industrial development and growth. Equally importantly, partnerships between TVET colleges and their public and private partners must not be designed around project formats, which have a defined and finite life span. Such engagements must rather be built on multifaceted areas of mutual benefit that will endure over time and respond to the skills challenges faced on both sides. This is to ensure a tighter compact between all parties to do what is needed or change what needs to change through common understanding and consensus. Central to TVET provisioning is the need for effective communities of trust that involve all stakeholders with an interest in particular job clusters, “occupational families” or “vocational streams”. As a minimum, such communities of trust should include employers, worker representatives, professional/vocational associations, educators and relevant government officials. Equally important is building expert capacity in government institutions and, with it, long-term institutional capacity to engage with different vocational and occupational groups.

5.10.2 Actions

Quality assurance system. The DHET, in consultation with SAQA, the three Quality Councils, professional bodies, employer associations and other stakeholders, will review the current E&T quality assurance system (including those regulations governing professional bodies) with a view to improving its effectiveness and efficiency and adopting new approaches to credentialing (such as block chain and micro credentialing), especially for short courses.

MOOCs. The DHET, in consultation with SAQA, the three Quality Councils, professional bodies, employer bodies and other stakeholders, will investigate how MOOCs (both national and international) can be used in a manner that does not compromise the quality of E&T.

Accreditation. The QCTO and the CHE, in consultation with SAQA, will relax requirements for curriculum compliance on qualifications identified as immediate priorities. It is proposed that 20% of the programme be flexible, so that institutions can be responsive to the short-term requirements of employers and sectors.

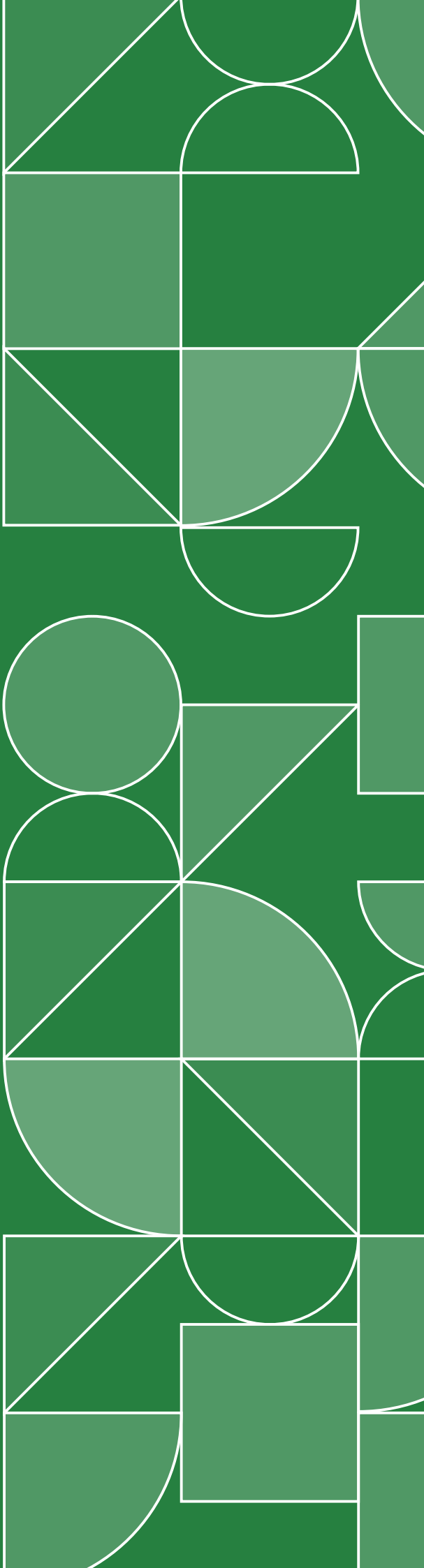
Funding. The DHET will adopt funding mechanisms to provide surge funding to E&T institutions in order for them to respond effectively to crises and develop a sustainable funding model for the PSET system. The DHET will revisit its funding and institutional support mechanisms with a focus on building medium- to long-term institutional capacity and ensuring optimal use of existing resources.

Basic education. The DHET will request that the Human Resources Development Council facilitate engagement regarding the role of the Department of Basic Education (responsible also for ECD) in the implementation of this strategy.

Partnerships. The DHET, together with SETAs, will support TVET colleges in becoming more *embedded* in industrial, social and especially occupational developments.

PART 6

Implementation



The success of this strategy is dependent upon a well-developed implementation plan that can actively direct the strategy's execution and monitoring. Without an implementation plan, the strategy will remain a guide, and its implementation will rest on the goodwill and/or interests of key players. The ERRP SS will therefore be accompanied by an implementation plan that will detail who will do what, when, how and with what funds. The implementation plan will be developed by the DHET (which is the lead organisation in respect of this strategy) in consultation with other role-players. The plan will also create a mechanism for accountability, which will compel key actors to provide progress reports to a Technical Implementation Forum. Monitoring and reporting progress on the implementation plan will be built into this accountability mechanism. Details of how monitoring will occur and the structures that will be established to ensure accountability will be included in the implementation plan. It is certain, however, that progress reports on the implementation of the ERRP SS will be part of the overall ERRP progress reports that will be available to social partners. As indicated earlier, this skills strategy will evolve as the ERRP itself evolves, in order to ensure that skills development initiatives respond to the needs of the economy.

As stated above, all the interventions and actions committed to in this strategy are expected to be built into existing planning tools and mechanisms in order to avoid unnecessary duplication of reporting and to prevent the overburdening of reporting in the system.

It is also important to note that the implementation of the ERRP SS is not dependent on the finalisation of the implementation plan. The actions identified in the ERRP SS are expected to be effected as soon as is possible.

Finally, it is quite possible that the ERRP itself may evolve as national and international socioeconomic conditions change. Undoubtedly, in such an instance, and particularly in light of it being demand-led, the ERRP SS would also have to change in tandem with the ERRP.

PART 7

Bibliography



- BusinessTech. "This Is the School Dropout Rate in South Africa" [online]. 6 October 2020. Available at: <https://businesstech.co.za/news/government/438509/this-is-the-school-drop-out-rate-in-south-africa/>.
- Department of Public Service and Administration (2021). *The Public Service Occupational Dictionary* (Draft for Consultation). Tshwane: Department of Public Service and Administration.
- DHET (2018). *SETAs' Workplace-Based Learning Programme Agreement Regulations*. Government Gazette No 42037. Pretoria: DHET.
- DHET (2019). *Promulgation of the National Skills Development Plan*. Government Gazette No 42290. Pretoria: DHET.
- DHET (2020a). *SETA Interview Report on Skills Development*. Pretoria: DHET.
- DHET (2020b). *National University Entrepreneurship Ecosystem: Baseline Report*. Pretoria: DHET.
- Doyle (2020a). "What Are Soft Skills?" [online]. Available at: <https://www.thebalancecareers.com/what-are-soft-skills-2060852>.
- Doyle (2020b). "Hard Skills vs Soft Skills: What's the Difference?" [online]. Available at: <https://www.thebalancecareers.com/hard-skills-vs-soft-skills-2063780>.
- Genesis Analytics and Knowledge Executive (2020). *ICT and Digital Economy Master Plan for South Africa*. Available at: https://www.ellipsis.co.za/wp-content/uploads/2020/08/ICT-and-Digital-Economy-Masterplan-for-South-Africa_Draft-for-discussion_-August_-2020.pdf.
- Government of South Africa (2020). *ERRP*. Available at: https://www.gov.za/sites/default/files/gcis_document/202010/south-african-economic-reconstruction-and-recovery-plan.pdf.
- Guerra, N., Modecki, K., and Cunningham, W. (2014), "Developing Social-Emotional Skills for the Labor Market: The PRACTICE Model". *Policy Research Working Paper No 7123*. World Bank Group. Available at: <https://openknowledge.worldbank.org/handle/10986/20643>.
- Harambee Youth Employment Accelerator (2020). Mapping of Digital and ICT Roles and Demand in South Africa. Available at: <http://digital.harambee.co.za/wp-content/uploads/2020/11/HAR964-ICT-Roles-and-Demand-Support-R2.pdf>.
- ILO (2021). *Global Framework on Core Skills for Life and Work in the 21st Century*. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_813222.pdf.
- Levesque (2019). "Understanding the Skills Gap – and What Employers Can Do about It" [online]. Available at: <https://www.brookings.edu/research/understanding-the-skills-gap-and-what-employers-can-do-about-it/>.
- Manpower Group (2021). *Employment Outlook Survey*. Quarter 3 2021.
- National Planning Commission (2011). *NDP*. Pretoria: Government Printer.
- OECD (2017). *Getting Skills Right: South Africa*. Paris: OECD Publishing.
- Talentguard (2019). "Reskilling and Upskilling: A Strategic Response to Changing Skills Demands" [online]. Available at: <https://www.talentguard.com/reskilling-upskilling-strategic-response-changing-skill-demands/>.

Appendix 1: Medium-Term Strategic Framework, 2019–2024

PRIORITY 3: EDUCATION, SKILLS AND HEALTH

2024 IMPACT: IMPROVED ECONOMIC PARTICIPATION AND SOCIAL DEVELOPMENT			
Outcome	Indicators	Baselines	2024 targets
Expanded access to PSET opportunities	Annual enrolments in PSET by key areas: <ul style="list-style-type: none"> Public universities (degrees and certificates) TVET colleges CET colleges Annual registration for SETA-supported WBL 	Public universities: 1 074 912 (2019 audited data)	Public universities 1 131 000
		TVET colleges: 673 490 (2019 audited data)	TVET colleges: 620 000
		CET colleges: 171 409 (2019 audited data)	CET colleges: 388 782
		WBL: 158 651 (2019)	WBL: 190 000
	Number of learners registered for SETA-supported skills learnerships annually	W111 681 (2017)	116 000
	Number of learners completing SETA-supported internships annually	6 496 (2018)	11 000
	Number of university students receiving funding through NSFAS bursaries	260 002	450 000
	Number of TVET college students receiving funding through NSFAS bursaries	200 339	400 000
Enrolment plans in place for universities, TVET and CET colleges are developed and implemented	Costed enrolment plans submitted	Five-year enrolment plans approved and all institutions enrol students accordingly	
Number of TVET colleges with Disabled Student Units established	New indicator	4	

2024 IMPACT: IMPROVED ECONOMIC PARTICIPATION AND SOCIAL DEVELOPMENT

Outcome	Indicators	Baselines	2024 targets
Expanded access to PSET opportunities	Number of students enrolled in diploma in agriculture at agricultural colleges	Enrolment for 2018 was 1 969	Cumulative enrolment target for 2024 is 3 200 (DALRRD)
	Number of learners entering artisanal programmes annually	Artisan registrations: 16 218 (2019)	Artisan registrations: 36 375
	Number of youth participating in Public Employment Programmes	58 707 (2019/20)	54 840 by 2024 (DEL)
	Number of UIF contributors provided with learning opportunities	3 434	167 000 by 2024 (DEL)
	Approved integrated financial aid policy, implementation plan and sustainable funding in place	No policy for dealing with the “missing middle” is in place	An approved policy, implementation plan and funding strategy
	Efficient NSFAS IT system in place	Weak NSFAS IT system	Elimination of delays in disbursement of NSFAS funds
	New CET funding model, norms and standards in place	Outdated funding norms and standards in place	New CET funding model, norms and standards approved by 2022
	Guidelines for the DHET bursary scheme for students at public universities in place annually	2019 guidelines	Guidelines for the DHET bursary scheme for students at public universities approved by the Minister in December following academic year
	Number of PhD students awarded bursaries through NRF and DSI	3 380	Not < 12 200 (cumulatively)
	Number of pipeline postgraduate students awarded bursaries through NRF and DSI	9 774 (2018)	Not < 24 400 (cumulatively)
	Targets in the SLA between DHET and SETAs to improve performance are met	Percentage of targets in the SLA met	100%
Program to build, refurbish, maintain and expand universities, TVET and CET colleges is implemented on time	List of TVET college projects attached for monitoring	All budgeted infrastructure projects are completed on time	

2024 IMPACT: IMPROVED ECONOMIC PARTICIPATION AND SOCIAL DEVELOPMENT

Outcome	Indicators	Baselines	2024 targets
Improved success and efficiency of the PSET system	Completions in PSET by key area: Number of students completing a university qualification annually	210 931	237 000
	Number of doctoral graduates annually	3 057 (2017)	4 300
	Advocacy campaign on the use of Open Access LTSM is undertaken	New indicator	Advocacy campaigns on the use of Open Access LTSM conducted annually
	Number of funded University Capacity Development Plans (UCPDs)	New indicator	26 funded UCPDs in place
	Number of funded University Capacity Development Plans (UCPDs)	New indicator	26 funded UCPDs in place
	Number of TVET students enrolled in the prevocational learning programme (PLP) annually	3 597 (2019 enrolment verified)	4 000
	Percentage improvement in the eradication of certification backlog	Current backlog for NATED is 15 862 and 4 828 for NC(V) (2018 POA)	100% by 2024
	Final Policy on Conduct, Management and Administration of Assessment approved	Old policy in place	Final Policy on Conduct, Management and Administration of Assessment approved by 31 March 2022
	Policy on number of national assessment for TVET in place	Old policy in place	New policy in place by 2021
	Number of TVET college students completing NC(V) L4 annually	10 921 (2019 to be confirmed)	14 000
	Number of TVET college students completing N6 qualification annually	114 012 (2019 to be confirmed)	76 000
	Number of graduates in engineering annually	13 714 (2019)	14 800

2024 IMPACT: IMPROVED ECONOMIC PARTICIPATION AND SOCIAL DEVELOPMENT

Outcome	Indicators	Baselines	2024 targets
Improved success and efficiency of the PSET system	Number of graduates in natural and physical sciences annually	9 121 (2019)	11 400
	Number of human and health sciences graduates annually	10 456 (2017)	11 600
	Number of master's graduates (all masters degrees) annually	13 519 (2019)	16 600
	Number of animal science and veterinary science graduates annually	284 (2019)	185
	Number of initial teacher education graduates annually	28 335 (2019)	30 000
	Number of CET college students completing Grade 12 annually	New indicator	110 000
	Number of learners completing SETA-supported learnerships annually	48 002 (2018)	53 000
	Number of learners completing SETA-supported internships annually	6 496 (2018)	11 000
	Number of learners completing SETA-supported skills programmes annually	122 979 (2018)	128 000

2024 IMPACT: IMPROVED ECONOMIC PARTICIPATION AND SOCIAL DEVELOPMENT

Outcome	Indicators	Baselines	2024 targets
Improved quality of PSET provisioning	Proportion of TVET college lecturers with appropriate qualifications	60% (TVET) lecturers with professional qualifications by 2018	90%
	Number of universities offering accredited TVET college lecturer qualifications	5 universities	10 universities
	Number of new nGAP lecturer posts allocated to universities through nGAP	New indicator	A minimum of 85 per annum
	Proportion of university lecturers (permanent instruction/research staff) who hold doctoral degrees	46% (2018) proportion of university lecturers who hold PhD	51%
	Percentage of universities that meet standard of good governance	78%	95% of universities that meet standard of good governance
	Percentage of TVET colleges that meet standard of good governance	New indicator	95% of TVET colleges that meet standard of good governance
	Percentage of CET colleges that meet standard of good governance	New indicator	95% of CET colleges that meet standard of good governance
	Percentage of SETAs that meet standard of good governance	New indicator	95% of SETAs that meet standard of good governance
	Allocated grants paid on time to employees	New indicator	100% allocation disbursed on time
	Effective NSFAS administration	NSFAS under administration	Effective NSFAS administration in place adhering to policy
	Number of universities that are supported to develop articulation implementation plans with TVET colleges	New indicator	9
	Number of emerging researcher grants to improve the percentage of PhD-qualified staff	800 research grants (DSI)	3 000 (DSI) (cumulative)
	Number of researcher grants to improve the percentage of PhD-qualified staff	800 researcher grants	800 researcher grants per year

2024 IMPACT: IMPROVED ECONOMIC PARTICIPATION AND SOCIAL DEVELOPMENT

Outcome	Indicators	Baselines	2024 Targets
A responsive PSET system	Percentage of TVET college lecturing staff appropriately placed in industry or in exchange programmes	8.8%	18%
	Number of protocols signed with industry to place TVET college students and lecturers for workplace experience	New indicator	All TVET colleges sign at least two protocols with industry and place learners for workplace experience accordingly
	TVET college curriculum to align with industry needs	New indicator	40 new/revised subject curricula for TVET colleges (cumulative)
	Number of hubs established to promote entrepreneurship	New indicator	9 hubs
	Number of TVET colleges with compulsory digital skills training	New indicator	50 TVET colleges by 2024 (cumulative)
	SETAs develop credible sector plans, which include forecasting	New indicator	SETAs fund programmes identified through research that meet the needs of emerging and small enterprises in TVET and CETC
	Percentage of NEET taking part in CETC occupational skills programmes becoming economically active	New indicator	90% NEET taking part in CETCs becoming economically active
	Number of universities that are implementing student-focused entrepreneurship development activities	26 universities	All public universities (26) universities implementing student-focused entrepreneurship development programmes
	Number of TVET colleges that are implementing student-focused entrepreneurship development activities	New indicator	All public TVET colleges (50) implementing student-focused entrepreneurship development programmes
	Number of users from the education and research sector supported through SANREN (DSI)	New indicator	1.3 million users
	Number of IP awareness sessions in TVET colleges conducted (DSI)	New indicator	At least two per annum
	Number of people reached through outreach, awareness and training programmes in Space Science (DSI)	New indicator	600 000 (cumulative) (120 000 people per year)
	Number of lecturers participating in project-based lecturer capacity building programmes in engineering (electrical, plumbing and mechanical)	New indicator	300
	Number of TVET colleges offering 4IR aligned skills training	New indicator	50
Number of lecturers participating in digital literacy programmes	New indicator	6 000	

PRIORITY 2: ECONOMIC TRANSFORMATION AND JOB CREATION

OUTCOME	INDICATORS	BASELINES	2024 TARGETS
Investing for accelerated Inclusive growth	Priority Skills Plan developed	New indicator	Priority Skills Plan developed by 2020
	Percentage increase in investment gross expenditure on research and development (GERD) of Gross Domestic Product (GDP)	0.82% of GDP in 2016/17	Increase investment gross expenditure on research and development to 1.1% of GDP by 2024
Improve competitiveness through ICT adoption	Number of disclosures licensed for the first time, received from publicly financed research and development institutions and recipients as reported to NIPMO	15 disclosures	35 disclosures

Appendix 2: List of occupational shortages, with reasons and interventions

OFO CODE	OFO DESCRIPTION	MAIN REASON(S) FOR SHORTAGE	MOST APPROPRIATE INTERVENTION(S) BASED ON ERRP INTERVENTION DEFINITIONS
2019-121202	Business Training Manager		
2019-122301	Research and Development Manager	Insufficient number of graduates	Enrolment planning
2019-131101	Agricultural Farm Manager	Lack of required technical skill	Access to targeted skills programmes
2019-132102	Manufacturing Operations Manager	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-132107	Quality Manager	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-132301	Construction Project Manager	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-133102	ICT Project Manager	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-143905	Call or Contact Centre Manager	Equity considerations; sub-optimal curriculum content	Enrolment planning and curriculum development
2019-211201	Meteorologist	Lack of required technical skill	Access to targeted skills programmes
2019-213105	Biotechnologist	Lack of required technical skill	Access to targeted skills programmes
2019-213108	Microbiologist	Lack of required technical skill	Access to targeted skills programmes
2019-213109	Zoologist	Lack of required technical skill	Access to targeted skills programmes
2019-213201	Agriculture Consultant	Lack of required technical skill	Access to targeted skills programmes
2019-213202	Agricultural Scientist	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-213205	Food and Beverage Scientist	Lack of required technical skill	Access to targeted skills programmes
2019-213302	Environmental Scientist	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-213304	Earth and Soil Scientist	Lack of required technical skill	Access to targeted skills programmes

OFO CODE	OFO DESCRIPTION	MAIN REASON(S) FOR SHORTAGE	MOST APPROPRIATE INTERVENTION(S) BASED ON ERRP INTERVENTION DEFINITIONS
2019-214104	Production Engineering Technologist (specialising as Leather and Footwear Production Technologists)	Lack of required technical skill	Access to targeted skills programmes
2019-214201	Civil Engineer	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-214202	Civil Engineering Technologist	Lack of required technical skill	Access to targeted skills programmes
2019-214401	Mechanical Engineer	Lack of required technical skill	Access to targeted skills programmes
2019-214605	Metallurgist	Lack of required technical skill	Access to targeted skills programmes
2019-214904	Quantity Surveyor	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-215101	Electrical Engineer	Lack of required technical skill; lack of relevant experience	Access to targeted skills programmes; access to workplace experience (WIL, internships, candidacies)
2019-215103	Energy Engineer	Insufficient number of graduates	Enrolment planning
2019-215104	Energy Engineering Technologist	Sub-optimal curriculum content	Curriculum development
2019-216101	Architect	Lack of required technical skill	Access to targeted skills programmes
2019-216302	Industrial Designer	Lack of required technical skill	Access to targeted skills programmes
2019-216304	Footwear Designer	Lack of required technical skill	Access to targeted skills programmes
2019-216603	Multimedia Designer		
2019-226302	Safety, Health, Environment and Quality (SHE&Q) Practitioner	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-234201	Early Childhood Development Practitioner	Insufficient number of graduates	Enrolment planning
2019-251101	ICT Systems Analyst	Lack of required technical skill; sub-optimal curriculum content	Access to targeted skills programmes; curriculum development

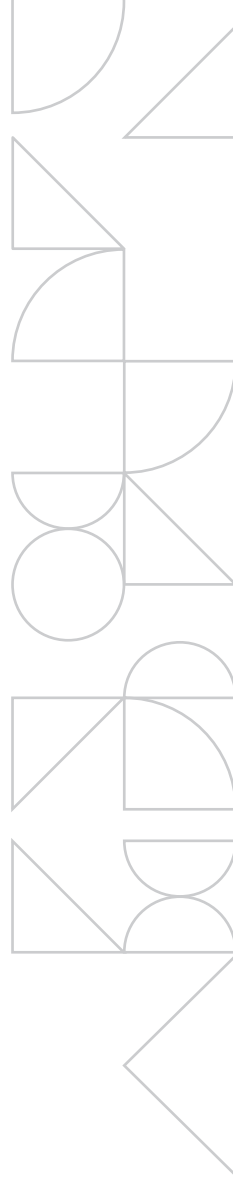
OFO CODE	OFO DESCRIPTION	MAIN REASON(S) FOR SHORTAGE	MOST APPROPRIATE INTERVENTION(S) BASED ON ERRP INTERVENTION DEFINITIONS
2019-251102	Data Scientist	Insufficient number of graduates	Enrolment planning
2019-251201	Software Developer	Lack of required technical skill	Access to targeted skills programmes
2019-251202	Programmer Analyst	Lack of relevant experience; insufficient number of graduates	Access to workplace experience (WIL, internships, candidacies); enrolment planning
2019-251203	Developer Programmer	Sub-optimal curriculum content	Curriculum development
2019-251302	Web Developer	Equity considerations; sub-optimal curriculum content	Enrolment planning; curriculum development
2019-252301	Computer Network and Systems Engineer	Insufficient number of graduates	Enrolment planning
2019-252901	ICT Security Specialist	Lack of required technical skill	Access to targeted skills programmes
2019-311201	Civil Engineering Technician	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-311301	Electrical Engineering Technician	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-311401	Electronic Engineering Technician	Lack of required technical skill	Access to targeted skills programmes
2019-311904	Manufacturing Technician	Lack of required technical skill	Access to targeted skills programmes
2019-312201	Production/ Operations Supervisor (Manufacturing)	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-312202	Maintenance Planner	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-312301	Building Associate	Lack of required technical skill	Access to targeted skills programmes
2019-313102	Biomass Plant Technicians	Sub-optimal curriculum content	Curriculum development
2019-313105	Wind Turbine Power Plant Process Controller	Lack of required technical skill; equity considerations; lack of relevant experience; insufficient number of graduates; sub-optimal curriculum content	Access to workplace experience (WIL, internships, candidacies); enrolment planning; curriculum development

OFO CODE	OFO DESCRIPTION	MAIN REASON(S) FOR SHORTAGE	MOST APPROPRIATE INTERVENTION(S) BASED ON ERRP INTERVENTION DEFINITIONS
2019-313109	Solar Photovoltaic Service Technician	Lack of required technical skill	Access to targeted skills programmes
2019-313901	Integrated Manufacturing Line Process Control Technician	Lack of required technical skill	Access to targeted skills programmes
2019-313907	Food and Beverage Manufacturing Process Controller	Insufficient number of graduates	Enrolment planning
2019-314201	Agricultural Technician	Lack of required technical skill	Access to targeted skills programmes
2019-325705	Safety Inspector/ Medical Equipment Inspector	Lack of required technical skill	Access to targeted skills programmes
2019-332302	Purchasing Officer	Lack of required technical skill	Access to targeted skills programmes
2019-351201	ICT Communications Assistant	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-351301	Computer Network Technician	Sub-optimal curriculum content	Curriculum development
2019-422201	Inbound Contact Centre Consultant	Insufficient number of graduates	Enrolment planning
2019-422202	Outbound Contact Centre Consultant	Sub-optimal curriculum content	Curriculum development
2019-422203	Contact Centre Real-Time Advisor	Insufficient number of graduates; sub-optimal curriculum content	Enrolment planning; curriculum development
2019-422204	Contact Centre Resource Planner	Sub-optimal curriculum content	Curriculum development
2019-422205	Contact Centre Forecast Analyst	Sub-optimal curriculum content	Curriculum development
2019-422206	Call or Contact Centre Agent	Sub-optimal curriculum content	Curriculum development
2019-611202	Horticultural Farmer	Insufficient number of graduates	Enrolment planning
2019-641502	Carpenter	Lack of required technical skill	Access to targeted skills programmes
2019-642601	Plumber	Equity considerations	Enrolment planning
2019-642701	Air-Conditioning and Refrigeration Mechanic	Lack of required technical skill	Access to targeted skills programmes

OFO CODE	OFO DESCRIPTION	MAIN REASON(S) FOR SHORTAGE	MOST APPROPRIATE INTERVENTION(S) BASED ON ERRP INTERVENTION DEFINITIONS
2019-642702	Refrigeration Mechanic	Lack of required technical skill; insufficient number of graduates	Access to targeted skills programmes; enrolment planning
2019-651403	Steel Fixer	Lack of required technical skill; lack of relevant experience	Access to targeted skills programmes; access to workplace experience (WIL, internships, candidacies)
2019-652201	Toolmaker	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-652301	Metal Machinist	Lack of required technical skill	Access to targeted skills programmes
2019-652302	Fitter and Turner	Lack of required technical skill	Access to targeted skills programmes
2019-653302	Mechanical Equipment Repairer	Insufficient number of graduates	Enrolment planning
2019-662216	Commercial Digital Printer	Sub-optimal curriculum content	Curriculum development
2019-671101	Electrician	Insufficient number of graduates	Enrolment planning
2019-671204	Lift Mechanic	Lack of relevant experience	Access to workplace experience (WIL, internships, candidacies)
2019-672105	Instrument Mechanician/Medical Equipment Repairer	Equity considerations	Enrolment planning
2019-682201	Cabinet Maker	Lack of required technical skill	Access to targeted skills programmes
2019-682301	Furniture Finisher	Lack of required technical skill	Access to targeted skills programmes
2019-682303	Wood Machinist	Lack of required technical skill	Access to targeted skills programmes
2019-683202	Apparel and Related Pattern Maker	Lack of required technical skill	Access to targeted skills programmes
2019-683401	Upholsterer	Lack of required technical skill	Access to targeted skills programmes
2019-684101	Diver	Lack of required technical skill	Access to targeted skills programmes
2019-684301	Crop Produce Analyst	Insufficient number of graduates	Enrolment planning
2019-684305	Quality Controller (Manufacturing)	Lack of required technical skill	Access to targeted skills programmes

OFO CODE	OFO DESCRIPTION	MAIN REASON(S) FOR SHORTAGE	MOST APPROPRIATE INTERVENTION(S) BASED ON ERRP INTERVENTION DEFINITIONS
2019-712101	Metal Processing Plant Operator	Lack of required technical skill	Access to targeted skills programmes
2019-714202	Plastic Compounding and Reclamation Machine Operator	Lack of required technical skill	Access to targeted skills programmes
2019-715501	Leather Processing Machine Operator	Lack of required technical skill; equity considerations; lack of relevant experience; insufficient number of graduates; sub-optimal curriculum content	Access to workplace experience (WIL, internships, candidacies); enrolment planning; curriculum development
2019-715601	Footwear Cutting Production Machine Operator	Lack of required technical skill	Access to targeted skills programmes
2019-715602	Footwear Closing Production Machine Operator	Lack of required technical skill	Access to targeted skills programmes
2019-715603	Footwear Bottom Stock Production Machine Operator	Lack of required technical skill	Access to targeted skills programmes
2019-715604	Footwear Lasting Production Machine Operator	Lack of required technical skill	Access to targeted skills programmes
2019-715605	Footwear Finishing Production Machine Operator	Lack of required technical skill	Access to targeted skills programmes
2019-716112	Seafood Processing Machine Operator	Lack of required technical skill	Access to targeted skills programmes
2019-717102	Paper and Pulp Mill Operator	Insufficient number of graduates	Enrolment planning
2019-721901	Product Assembler	Lack of required technical skill; lack of relevant experience	Access to targeted skills programmes; access to workplace experience (WIL, internships, candidacies)
2019-733211	Remotely Operated Vehicle (ROV) Pilot		
2019-734402	Forklift Driver	Lack of required technical skill	Access to targeted skills programmes
2019-821601	Fishing Hand	Sub-optimal curriculum content	Curriculum development

OFO CODE	OFO DESCRIPTION	MAIN REASON(S) FOR SHORTAGE	MOST APPROPRIATE INTERVENTION(S) BASED ON ERRP INTERVENTION DEFINITIONS
2019-832903	Timber and Wood Process Worker	Lack of required technical skill	Access to targeted skills programmes
2019-832904	Food and Beverage Factory Worker	Lack of required technical skill	Access to targeted skills programmes
2019-833303	Waterside Worker	Lack of required technical skill	Access to targeted skills programmes





DPRU CONTACTS

Programme Leader: Prof Haroon Borat – haroon.bhorat@uct.ac.za

Programme Manager: Ms Kezia Lilenstein – kezia.lilenstein@uct.ac.za

DHET CONTACTS

Programme Leader: Ms M Khuluvhe – Khuluvhe.M@dhet.gov.za

Project Secretariat: Ms M Ramasodi – Ramasodi.M@dhet.gov.za