Construction Education and Training Authority

CETA Sector Skills Plan

2021/22 TO 2025/26

2020/21

Submission due date: 31 August 2020

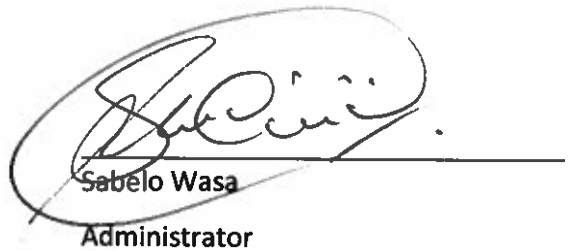
Foreword

The Sector Skills Plan (SSP) has been prepared in accordance with the Department of Higher Education and Training's (DHET) SSP framework and guidelines within the framework of the National Skills Development Plan (NSDP). The planning takes place under harsh economic conditions brought about by the Covid-19 pandemic which have disrupted economic activities globally. Prior to this pandemic being declared, South Africa was already in a technical recession.

The principal aim of the SSP is to guide and inform skills development initiatives in the sector and provide guidance to the CETA's research, strategic planning and annual performance planning process. In line with DHET Sector Skills Planning Guide for 2019 for the SETAs, the CETA has reviewed its SSP to ensure that it provides a basis to obtain insight into further engagements with the construction sector and to implement relevant skills development initiatives.

The CETA's Accounting Authority supports the CETA's efforts to ensure relevant research activities are conducted for the submission of the CETA SSP. The focus has continued to be on the CETA's relevance to its stakeholders and ensuring that the needs of stakeholders are met adequately. The CETA has, therefore, sought to ensure the update of occupational shortages and skills gaps in line with inputs from the sector as identified through Workplace Skills Plans and Annual Training Reports.

The Accounting Authority will continue to provide guidance and support to the CETA to encourage and ensure industry representation. Furthermore, due to the numerous primary data sources consulted, it is important to highlight that the CETA SSP is endorsed by industry as a true reflection of the construction sector's needs.



Sabelo Wasa

Administrator

CETA

Acronyms

	Description
AQP	Assessment Quality Partner
BER	Bureau for Economic Research
BIBC	Building Industry Bargaining Council
CBE	Council for Built Environment
CE	Civil Engineering
CETA	Construction Sector Education and Training Authority
CIDB	Construction Industry Development Board
COSATU	Congress of South African Trade Unions
CPDs	Contractor Development Programmes
DHET	Department of Higher Education and Training
DHS	Department of Human Settlements
DoL	Department of Labour
DPW	Department of Public Works
DQP	Development Quality Partner
DTI	Department of Trade and Industry
EB	Electrical engineering (building)
ECSA	Engineering Council of South Africa
EP	Electrical engineering (infrastructure)
EPWP	Expanded Public Works Programme
EWSETA	Energy and Water Services Sector Education and Training Authority
FITA	Flooring Industry Training Association
GB	General Building
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GVA	Gross Value Added
HEIs	Higher Education Institutions
HTFVs	Hard to fill vacancies
IMF	International Monetary Fund
JIBAR	Johannesburg Interbank Average Rate
MBA	Master Builders Association
MBSA	Master Builders South Africa
ME	Mechanical engineering
MIG	Municipal Infrastructure Grant
MTEF	Mid-term expenditure framework
NCDP	National Contractor Development Programme
NHBRC	National Home Builders Registration Council
NQF	National Qualifications Framework
OHS	Occupational Health and Safety
PMTE	Property Management Trading Entity
QCTO	Quality Council for Trades and Occupations
SACAP	South African Council for the Architectural Profession
SACLAP	South African Council for the Landscape Architectural Profession
SACP	South African Communist Party
SACPCMP	South African Council for the Project and Construction Management Professions
SACPVP	South African Council for the Property Valuers Profession
SACQSP	South African Council for the Quantity Surveying Profession
SAFCEC	South African Forum of Civil Engineering Contractors
SAGRA	South African Grain Farmers Association
SAICE	The South African Institution Of Civil Engineering
SANRAL	South African National Roads Agency Limited
SAQA	South African Qualifications Authority
SARB	South African Reserve Bank
SARS	South African Revenue Service
SETA	Sector Education and Training Authority
SIP	Strategic Infrastructure Project
SSP	Sector Skills Plan
Stats SA	Statistics South Africa
SW	Special Works
TETA	Transport Education Training Authority
Wits	University of the Witwatersrand

Executive Summary

This Sector Skills Plan (SSP) represents a high-level view of the construction sector, as investigated by the Construction Education Training Authority (CETA). The purpose of the document is to provide the reader with insights into the nature of skills demand and supply within the construction sector and provide mechanisms for addressing gaps that exists between demand and supply.

The CETA's objectives of contributing to government's strategic growth plans require a thorough understanding of the sector in order to inform how the CETA targets its support for training initiatives, to meet the current and foresee the future demands of the labour market. The construction sector is one of the largest employers in the Republic. The sector is diverse with four broad categories or subsectors namely; Materials Manufacturing, Construction, Building, Built Environment Professions. The need for skilled employees is driven by spending in these subsectors by both public and private investors.

Significance of the Sector

The construction sector is an important contributor to the South African economy. In 2018, its real Gross Value Added was 3,9% and its output nearly 14% of the country's GDP. Total average employment in the sector was 1 473 000, 9% of total employment in the economy. A sector of the economy this big cannot but have an impact on economic growth and job creation. The construction sector has been the sector most affected by the deterioration in the performance of the economy in recent years and the sector's Gross Value Added fell by 0,6% in 2017 and 1,2% in 2018. Overall, the COVID-19 has not necessarily triggered the negative outlook and poor performance of the construction sector, there has been a steady decline at least since around 2015. However, what the pandemic has done, is to deepen the crisis in a sector already on a downward spiral. This context matters for how the CETA navigates its mandate of skills development in the construction space. There are other contextual realities to be navigated and be cognisant of, if this SSP is to accurately reflect the supply-demand dynamics in the sector and these include:

COVID-19

The onset of the pandemic has exploded much of our recent economic models and forecasts for the sector and introduced a variable that makes economic planning extremely difficult – uncertainty. Like the rest of the world, South Africa's economy (not excluding the construction sector) was plunged into unprecedented chaos and uncertainty when government declared a National State of Disaster in March 2020. This effectively meant a halt in all economic activity, with devastating consequences for jobs, growth and global trade. Although the lock-down rules have been somewhat relaxed, large swathes of the economy (including important value chains of the construction sector) remain shut or severely limited. Scores of construction firms have folded, are under business rescue and holding on precariously. For survival This has implications for the CETA's revenue, as levies will be lost. Training programmes and activities have all but come to a complete stand still, accreditation and monitoring has been affected, with implications for much of the CETA's performance for the current financial year.

The CETA is Under Administration

In February 2020, the Minister of Higher Education and Training put the CETA under Administration, following allegations of serious governance breaches and impropriety at the entity. Accordingly, an Administrator was appointed to among other things, attend to the alleged transgression while, at the same time, overhauling and reforming the CETA so it pursues its principal mandate more effectively. In essence, this means that over and above its normal business, the CETA will simultaneously be undertaking major organisational change processes, which will impact its functioning, governance, processes and procedures. Together with the COVID-19, this will constitute a major shock to the system for the CETA and its stakeholders. Concerted efforts will be made to minimise negative impact.

Social Compact

An overriding insight arising from the analysis throughout this SSP consistently underline the need for improved cooperation between the CETA and its stakeholders (social partners) in the sector. This is required in order to mount effective ways of negotiating the current pandemic, but also to emerge, on the other side of the pandemic, with a sector that is an improvement to what currently obtains. Changes are called for in the sector's investment in research, development and innovation, transformation and social inclusion. With a bit of insight and ingenuity, COVID-19 could very well be turned into a great opportunity for change and reform.

Skills Supply and Demand

The analysis in chapter three (and a running theme throughout the SSP) suggests that the key fault-line in the education and training system in South Africa, continues to ring true for the construction sector. This is that despite billions of Rand invested in training and skilling scores of learners, the sector (as in the workplace) and by extension the economy) is still struggling to receive or attract skilled and appropriately trained personnel for the available vacancies. Therefore, a lot of money is devoted to training that is simply not adequate and appropriate for the sector (skills mismatch); critical questions need to be posed around value for money, impact analysis and M&E. Important questions must be posed regarding quality versus quantity in the CETA's skills production activities. Above all, however, though some inroads have been recorded (at least in terms of numerical achievements), it is clear that the CETA needs to do a searching review of its performance in meeting its primary reason for existence – producing skills that respond to the changing needs of the sector and the labour market.

Transformation

The analysis of social inclusion, equity and the extent of absorption of designated groups, suggest that progress has been sluggish. The profile of the sector still reflects that, in large measure, the cleavages of the past (race, gender, disability, geography), remain largely intact. There has, over the years, been insufficient penetration of designated groups in higher skills and professional occupations, with the vast majority located at entry level, unskilled and informal employment. This representation is also poor in large construction firms (despite a phenomenal uptake of black and women of courses and subjects in the sector), as various reports of the Department of Labour's Employment Equity Survey on equity in the South African workplace demonstrates (Department of Labour). The CETA will is paying focused attention to this aspect of its work, as it is integral to its mandate and the country's socio-economic mission.

Intelligent research and investment decisions

As the CETA actively designs programmes and interventions to respond to the immediate occupational gaps identified in this and past SSPs, the COVID-19 pandemic, the Fourth Industrial Revolution and pressure on the environment globally, seem to point to an additional consideration - the need for foresight. On the global stage, the construction sector is galloping ahead in terms of research, development and innovation (including green construction). South Africa has been extremely slow in keeping up with these developments and this is down to two factors. Insufficient attention is being devoted into investing into future growth areas and innovation in the sector. Indeed, it is an urgent and vital necessity that the CETA forges partnerships with research entities and Universities, in order to stay ahead in the innovation game. The second limitation relates to the absence of global partnerships with sector players abroad (especially those leading in new construction technology and innovation technics). This limitation denies South Africa and the sector access to skills and technology transfer opportunities. There is quite clearly a pressing need for the CETA to play a catalytic role in supporting efforts at enhancing local manufacturing in the sector.

Internal Re-organisation

To overcome the daunting challenges set out above, the CETA itself needs to be fit for purpose. Recent reports from the National Skills Authority (NSA) and the forensic investigation conducted by the Gobodo group, would seem to suggest that there is a lot that is wrong with how the CETA has been conducting its business in the past few years. There are serious allegations of financial impropriety, breaches of governance procedures and processes and crucially, the CETA's weak impact in delivering the skills required by the sector. In this regard, the new administration has set in motion a number of processes designed to remedy these anomalies. These include ongoing work in reprioritising the budget (in light of COVID-19 and the Administration order); conducting an Organisational Development (OD) exercise to ensure a better skills-structure fit; a comprehensive M&E framework to improve efficiencies and impact; strengthen project management to improve accountability and value for money.

Stakeholder Engagement

Stakeholders are the life-blood of the CETA. Since the beginning of the year the CETA management has been hard at work actively engaging our key stakeholders, in order to obtain better insights and perceptions. Overwhelmingly, the feedback that is coming through is that the CETA can do much more to improve communication and its interaction with stakeholders. Even while the engagement is ongoing, work is already underway to collate this feedback into a comprehensive plan, designed to improve stakeholder experience and perception of the CETA. In these efforts we are guided by our absolute commitment to reforming and overhauling the CETA into one that is relevant, responsive and agile in meeting the expectations of our partners in the private sector, training institutions, other state entities, learners etc. All of this in the putative interest of driving and meeting the skills needs of the construction sector.

Contents

List of Figures

List of Tables

Research Process and Methods

The onset of the novel corona virus 2 (COVID-19) has exploded much of our previous economic forecasts, trend analyses and predictions for the sector. This is because the pandemic has already led to a liquidation of scores of construction companies, massive job losses, drastically reduced operating revenue for the CETA and above all, an uncertain investment climate (this will affect heavy machinery, construction equipment and other capital goods products). For this reason, the usual review and analysis of WSPs and ATRs, whilst important to get a sense of the lay of the land, will by no means be sufficient to plan for a post COVID-19 scenario for the construction sector. Thus, over and above WSP/ATR analysis, extensive research and comparative analysis of various scenario planning instruments were utilised. The utility of scenario planning tools for CETA in the immediate and medium terms resides in the fact that data from Statistics South Africa (StatSA), the local and global construction sector can be extrapolated to predict flow of income in the sector and its value chains. The scenarios are a continuum ranging from optimistic to a pessimistic outlook (for the recovery of the construction sector) in the immediate to long term. What determines the scenario that is likely to materialise are a variety of endogenous and exogenous dependencies. These are discussed in more detail in the chapters that follow.

1.1 CETA Research process

The internal research processes were significantly disrupted by both the COVID-19 and the legal processes that followed the dissolution of the CETA Board. Nevertheless, the table below illustrates succinctly the research approval process followed.

Timeline	Process
Feb/March	Approval of research process by AA
March/April	Regional stakeholder engagements
March/April	Employer engagement and interviews
May/July	Mandatory Grant submissions
May/July	Research and analysis
June/July	Stakeholder engagement
August	Approval by AA

1.2 Review of Historical SSPs

The process started with a critical review and gap analysis of the CETA 2019 SSP in conjunction with earlier versions. As all the SETAs operate within the South African economy and therefore labour markets, SSPs from other related SETAs, such as the SSETA and merSETA, were also reviewed to identify emerging trends, which may also have an impact on the construction sector.

1.3 Management Interviews

Interviews were conducted with various members of the CETA management to understand the strategic direction, industry insights, observations and requirements for the SSP.

1.4 Review of Strategic Plan and Annual Performance Plan

The 2018/2019 Annual Report, 2019/2020 Annual Performance Plan, Service Level Agreement and Strategic Plan were evaluated to ensure that the strategic intent and goals of the CETA were clearly understood.

1.5 Economic Review

The macroeconomic situation was analysed and potential trends and scenario set out in order to understand not only the flows and ebbs occasioned by the COVID-19 pandemic. Crucially, the research and analysis were designed to identify possible growth trajectories and scenarios for the global economy (and the associated disruption in global supply chains on the construction sector), the South African economy post lock-down and above all, what all of these dynamics might mean for future growth as far as the South African construction sector is concerned. At the heart of this analysis is the reality that South Africa's macroeconomic imbalances pre-date the COVID-19 pandemic.

1.5.1 Ongoing Research

The pandemic and its aftershocks mean that finality and absolute accuracy are an illusion, in the midst of such endemic uncertainty. For this reason, the endeavours to ensure that this SSP is a product of rigorous and robust research will continue. All indications are that by the fourth quarter of 2020, there will be a measure of certainty regarding therapeutics and vaccines to bring the virus under control. At the same time, there will also be much better appreciation of both the damage wrought on the sector, jobs and the local and global economy. At that point, the capacity to plan and forecast will also be much improved. Thus, the plan is to continuously improve the quality and rigour of the SSP.

1.6 WSP and ATR Review & Analysis

1.6.1 Analysis Objectives

Some time was spent on analysing and reviewing the WSPs and ATRs from some of the key sub-sectors in the construction sector. As is expected, the information derived from this exercise is highly variable across firms. This information is simply not sufficient in providing an accurate picture of skills formation and skills needs across the sector, more so following the disruptions occasioned by the onset of the COVID-19 pandemic and its possible aftermath on much of the sector in the foreseeable future.

1.6.2 Stakeholder interaction

The new leadership of the CETA has spent much of the lock-down period interacting (remotely) extensively with some of the key partners and stakeholders. The focus was on obtaining insights and inputs from each of the key sub-sectors making up the construction sector. These culminated in the broader stakeholder engagement held in July, via webinar. All of these interactions contributed significantly in obtaining primary material and informing the insights in this SSP. The disruptions occasioned by the pandemic and the uncertainty that still persist means that accuracy will be illusive until, at least, the third or fourth quarters of 2020.

1.6.3 Data Analysis Methodology

The files received for each year differed considerably from one another and a significant amount of data cleansing and file normalisation was required prior to data consolidation.

Data hierarchies were applied to OFO Codes, SIC Codes and Regions. Assumptions were made with regards to missing data; however, subject matter experts were employed wherever possible in order to apply this data reliably. All remaining uncategorised data was still included in the analysis as "Uncategorised Data". Much more reliance was placed on Statistics South Africa, International Monetary Fund and National Treasury (SA) data. This is because the pandemic has rendered much of the pre-COVID-19 assumptions and predictions superfluous. The global nature of the crisis we face, coupled with the deep integration of South Africa into the world trade and global supply chains, means that global trends, data economic trajectories had to be front and centre in the analytical work that produced this SSP.

1.7 Literature Reviews

An extensive literature review exercise was conducted to understand the current issues pertinent to supply and demand of skills and the oft-lamented mismatch in the construction sector. The literature included academic papers and journals, periodicals, newspapers, blogs and internet sites. The topics covered included:

- Identifying key role players in the sector.
- Understanding the employer profiles within each of the identified sub-sectors.
- Obtaining a clearer understanding of the labour market in the sector and the issues relevant to it.
- Identifying emerging trends and technologies, which could be described as being, change drivers to the sector.
- The post-school education system in South Africa.

The COVID-19 pandemic has also unleashed a rich and very large body of literature and analyses of the impact and growth (recovery) prospects of the South African economy, following the pandemic. This work has brought to the fore all manner of trends, scenario plans and forecasting. This review benefited handsomely from this work.

1.8 Structured Interviews

Qualitative, in-depth interviews were conducted with key influencers from each of the five identified stakeholder groups. Discussion durations varied between 30 and 60 minutes, with each respondent providing feedback on specific, pre-identified topics in a semi-structured interview. Table 1 below shows the five stakeholder groupings, as well as the entities targeted within each stakeholder grouping.

Table 1: Entities Targeted Across Five Stakeholder Groups

Employee Bodies	Industry Bodies	Higher Education Institutions	Employers	Government & Related
Trade Workers Union Building Construction and Allied Workers	Flooring Industry Trade Association (FITA)	University of Pretoria	LYT Architects	DBSA
	South African Council for Project and Construction Management Professions (SACPCMP)	Tshwane University of Technology	RWP Taemane Consulting Electrical Engineers	DHET
	Consulting Engineers South Africa (CESA)	Tshwane South TVET College	WHBO	DBSA
	South African Institute of Architects (SAIA)	South West Gauteng TVET	Paragon Architects	SALGA
	Institute of Plumbing South Africa (IOPSA)	Private Training Provider: Aveng Grinaker	Abbeydale Building & Civils	Presidency: Infrastructure Unit
	Master Builders South Africa (MBSA)			Council for Built Environment
	Black Business Council in the Built Environment (BBCBE)			
	National Federation for the Building Industry (NAFBI)			
	South African Forum of Civil Engineering Contractors (SAFCEC)			

The findings of the qualitative phase informed the design of a more concise, structured, quantitative questionnaire in order to understand the scale of the feedback among a robust, representative sample.

Quantitative Survey

Quantitative research was conducted to determine the magnitude and extent of the sentiments and opinions gathered during the structured interviews.
Questionnaire completion took place using a hybrid approach in the form of online completion, supplemented with telephonic interviews. In instances where respondents were not responding to the online questionnaire link sent to them, qualified computer-assisted telephonic interviewers (CATI) contacted the stakeholders to complete the questionnaire.

A stakeholder contact database was compiled using the WSP database. This information was initially used to contact the companies and institutions, as it was believed that accurate and up-to-date e-mail addresses and telephone numbers were available. The original plan assumed that the majority of the study would be completed online, with telephone follow-up calls where required; however, the poor quality of the WSP database contact details resulted in 65% of all questionnaires being completed telephonically. Furthermore, an additional industry-specific business database was purchased in an attempt to reach respondents via e-mail and encourage online questionnaire completion.

The questionnaire included 20 closed questions, with an additional 10 open-ended questions. The questionnaire was structured to include three sections: Economic Impact, Demand for Skills and Training Providers.

The quantitative phase targeted two stakeholder groups, namely:

- Training Providers: a total of n=126 questionnaires were completed.
- Employers: a total of n=399 questionnaires were completed.

As part of the questionnaire, the respondents were required to indicate the sub-sector where they conducted their primary business to allow for a more granular approach to understanding the dynamics and factors influencing the participants involved in each sub-sector. The sample of 399 employers constitutes a significant sample considering that the CETA has approximately 2000 registered levy-paying members.

The majority of Training Provider respondents were from Private Training providers (84%), with the balance made up of TVET respondents (16%) and one respondent from a University of Technology. More than half of the Training Provider respondents were Executives or Owners of the targeted institutions (54%), with a quarter filling the role of Training Manager or Facilitator.

Key Research Topics

Some of the key research topics identified for the sector are set out in the tables hereunder. There is a deliberate shift and bias towards interventions that are likely to help the sector in navigating a post-COVID-19 economic and skills environment.

a) Green Construction

Objective	A documentation of available and emerging construction innovations, with a particular focus on green construction, in South Africa and abroad.
Research Design	Qualitative
Method	Interviews, workshops and desktop
Sample	Open- information gathering
Data sources	Interview results, workshop/conference minutes, industry research
Duration	Three months

b) Technology and innovation

Objective of study	Documentation of available and emerging technological advances in the construction sector.
Research Design	Qualitative
Research method	Interviews, conferences, desktop
Sample size	Open- information gathering
Data source	Interview results, workshop/conference minutes and resolutions, industry research
Duration	Three months

c) Skills demand

Objective of study	Analysis of trends in skills demand and supply
Research Design	Quantitative
Method	Interviews and WSP data analysis
Sample size	
Data source	Interview results, WSP/ATRs, StatSA, economic and labour market data, industry data and desktop research
Duration	Ongoing

d) Hard-to-fill vacancies and skills gaps

Objective of study	Analysis of WSP/ATR data, employer interviews in order to generate a list of hard to fill vacancies in the sector
Research Design	Qualitative and quantitative
Research Method	Desktop and analysis of interview data
Sample	
Data source	WSP/ATR and transcripts
Duration	Ongoing

e) Transformation (race and gender)

Objective of study	To document the role and place of women and blacks in the different sub-sectors of the construction sector
Research Design	Quantitative and qualitative
Research method	WSP data analysis, interviews and analysis of Department of Labour data
Sample	
Data Source	Interview results, WSP/ATR, Department of Labour survey reports
Duration	Three months

f) Skills of the future

Research Objective	Using data from the green construction and new technology projects, identify future and emerging skills for the sector
Research Design	Quantitative and qualitative
Research method	Analysis and interpretation of green construction and new technology projects research data. Comparative analysis
Sample	
Data Source	Desktop, focus groups, interviews
Duration	Three months

1 Sector Profile

1.1 Introduction

This chapter lays out the key constituent elements of the construction sector and providing a detailed profile in terms of size, scope and its role in the South African labour market. In terms of the guidelines set out by the Department of Higher Education and training, the chapter would also focus attention on the role and place of the construction sector in the overall performance of the South African economy. As things stand, the chapter does all of the above and much more besides. The onset of the COVID-19 pandemic necessitates that the chapter deals with three additional factors. The first relates to the impact of the pandemic on the South African economy, the second looks at the impact on the construction sector specifically and finally prospects for recovery and the critical interventions required to facilitate such recovery. The analysis and definition of the construction sector discussed in this chapter is product of a wide and varied range of data and information sources. These include but are not limited to Statistics South Africa, Department of Labour Equity Surveys, WSP/ATR, South African Reserve Bank, IMF, World Bank, International Labour Organisation (ILO) and a variety of industry focused research sources.

1.2 Scope of Coverage

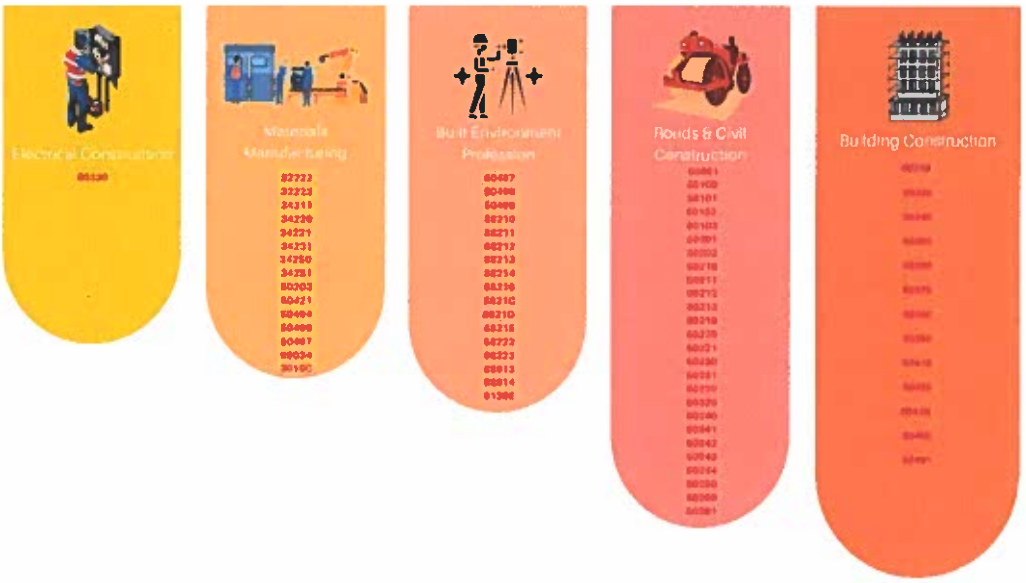
The construction sector is demarcated through the Standard Industrial Classification (SIC) of all economies. The SIC Code consists of a coherent and consistent classification structure of economic activities based on a set of agreed concepts, definitions, principles and classification rules. It is derived from International Standard Industrial Classification (ISIC) Rev 4.0 1 but adjusted for South African conditions.

Under this classification structure, the construction industry consists of a wide and diverse range of activities, including the construction of residential and non-residential buildings, and civil works such as roads, bridges, tunnels, harbours as well as energy, water and sewerage infrastructure. CETA coverage includes five distinct sub-sectors within the construction industry covering 72 SIC codes (see Figure 1 below): Building Construction, Roads and Civil Construction, the Built Environment Profession, Materials Manufacturing, and Electrical Construction.

Building Construction is the largest sub-sector and comprises all contractors including civil engineering contractors, steel, structural, mechanical contractors, residential and non-residential contractors. Roads and Civil Construction consists of activities involved in the construction of buildings other than categories defined as Building Construction, and the development and maintenance of civil works including the construction, maintenance and repair of roads, runways, bridges, tunnels and related structures including draining and road services.

The Built Environment Profession includes architects, engineers, quantity surveyors, landscape architects, land surveyors, town and regional planners, property valuers, project and construction managers. This group is made up of the professionals governed by the Built Environment Professions Act. The activities of the Materials Manufacturing sub-sector include the manufacturing of a wide variety of products, including wooden fixtures, tiles, sanitary ware, ceramic products, and bricks, concrete and cement products, building-related aluminium products, plumbing and heating equipment and tombstones.

Figure 1: Subsector Breakdown by SIC Code

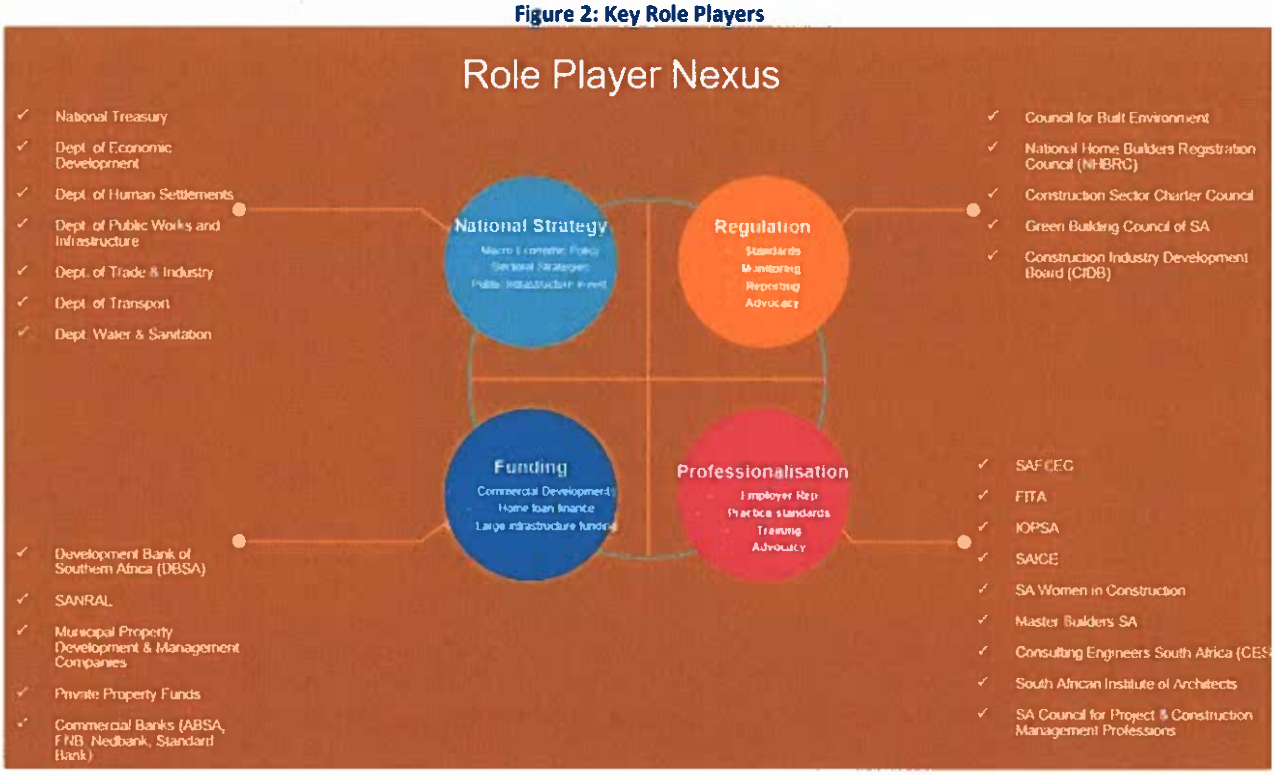


The final sub-sector, Electrical Construction, comprises two sets of activities: electrical contractors for infrastructure and electrical contractors for buildings. The former install, alter or renovate electricity generation, transmission and distribution infrastructure, including power stations, and residential power and lighting reticulation. The latter contractors specialise in the installation and maintenance of electrical wiring and equipment in buildings.

1.2.1 Key Role Players

The construction sector encompasses various role players that link and integrate a mixture of business processes and activities of the demand and supply chain.

Figure 2: Key Role Players



It is therefore not surprising that considerable time and attention are directed at construction sector role player alignment, relationship management, industry productivity, and performance. Key role

players in this sector are employers, employees, organisations that represent the interests of employers and employees, government departments and agencies that set policies and regulations, and invest in public infrastructure. Training institutions are also a key partner in the supply of skills and expertise demanded by the sector. However, all of these stakeholders have a common interest in promoting skills development and education in the construction sector to ensure its long-term sustainability and competitiveness. Figure 2 above is a comprehensive illustration of these role players and their place in driving NSDP outcomes and broader growth and job-creation imperatives for the construction sector. For instance, The Department of Higher Education and Training is recognised for its legislative, regulatory and political oversight role for the pursuit of the CETA mandate. This role DHET plays through NSDP and White Paper on Post-School Education and Training. The CETA reflects the imperatives set out in these policy instruments through the SSP, Strategic Plan and the Annual Performance Plan (APP).

Another key role player is business (employer organisations), on whose relationship the CETA relies for the credibility of the SSP. This role is played through WSP/ATRs, mandatory grant information, all of which make it possible for the CETA to keep abreast with the skills situation in the sector and the changes in the labour market. Similarly with TVET colleges, Universities of technology and Universities, as clearly depicted in the diagram above.

The Department of Higher Education and Training, through the CETA therefore harnesses these various roles and interests to engender a developmental approach towards achieving a skills and demand supply balance whilst effecting societal and economic change at the downstream. Accounting Authorities, made up of representatives of these various players, are there to ensure oversight in fulfilment of this mandate.

1.3 Economic Performance

1.3.1 Broader Outlook

Statistics South Africa, National Treasury and the International Monetary Fund (IMF) paint a bleak picture of South Africa's economic outlook. The downward trajectory pre-dates the onset of the COVID-19, what the pandemic has done is to deepen the crisis and render the prospects of a quick recovery evermore doubtful as the starting base is so pathetically low. The South African Reserve Bank forecasts a sharp decline of -6.1% for 2020, with a modest rebound of 2.2 in 2021. The IMF forecast is ever so slightly optimistic, setting the rebound in 2021 at 4% GDP growth, the table below succinctly sets out South Africa's growth prospects:

Table 2: South Africa's growth prospects

Region	Actual 2010-2018	2019	Forecast 2020 (3rdQ)	2021 (1stQ)
Global	3.8	2.9	-3.0	5.8
Developing Countries	5.2	3.7	-1.0	6.6
Sub-Saharan Africa	4.2	3.1	-1.6	4.1
South Africa (SARB)	1.8	0.2	-6.1	2.2
South Africa (IMF)	1.8	0.2	-5.8	4.0

Source: IMF World Economic Outlook, April 2020/SARB

A Fragile fiscal outlook

The debt-to-GDP ratio has been rising steadily over the past several quarters, with the debt service burden hovering around 15% of public revenue. At the same time, given the financial exigencies imposed by the COVID-19 pandemic on households and businesses, it is expected that the South

African Revenue Services (SARS) will lose up to R285 billion in tax revenue this year. This is the equivalent of between 15% and 20% lower than projected.

Rising borrowing costs

Ratings agencies Fitch and Standard and Poor downgraded South Africa to junk status in 2017, thereby severely impacting the country's standing in the World Government Bond Index. However, a complete exit was prevented by rival agency Moody's maintenance of South Africa at sub-investment grade, until March 2020. The downgrade by Moody's marked the end of South Africa's precarious standing above junk status. Given the performance of the economy in the past several years, this was inevitable. Nevertheless, junk status by all major ratings agencies will make borrowing extremely costly for South Africa, going forward.

Stubborn unemployment numbers

Unemployment has been South Africa's Achilles-heal for decades, this is in part a function of an economy that has yet to graduate from its narrow and racially defined focus, to one that actively includes all socio-economic and racial groups in South Africa. It is important to underline that unemployment and access to economic opportunities is largely racially defined, has gender and geographic dimensions. Blacks, women, the disable, rural dwellers and those located in South Africa's townships continue to suffer the brunt of economic and social exclusion. Current unemployment rates are at 29.1 % and the expanded definition places it at 38.7%, with young people between the ages of 15 – 34 representing 40.1% of the unemployed. The impact and aftermath of the COVID-19 pandemic is expected to worsen these numbers significantly. The economic outlook is therefore dire.

1.3.2 Construction Sector Performance

The construction sector plays a significant role in terms of its contribution to capital formation. From 2005 to 2019, the construction sector's average contribution to gross fixed capital formation was around 43%, this is in line with a number of studies which have confirmed that approximately half of the investment in gross fixed capital formation in developing countries is done by the construction sector (CIDB, 2019). The global construction market is driven by the growing population, increasing urbanisation, and the rise in domestic manufacturing. The residential segment is exhibiting a strong growth, primarily in the single-family construction segment. The non-residential buildings sector has also shown a growth in the historical period, thus further enhancing the growth of the global construction market. The increasing modernisation of transportation infrastructure (roads, bridges, rail) is also aiding market growth. Infrastructure related to sporting (the construction of stadia and other sporting facilities) events is propelling the market forward.

An increase in the infrastructure and housing spending by governments across the globe is invigorating the market growth for construction. Increasing private sector investments in construction is further aiding the growth of the industry. Expanding manufacturing footprint and rising foreign investments are also enhancing the construction market growth. This global construction market attained a value of nearly USD 11.7 trillion in 2019 and was expected to witness a further growth in the forecast period of 2020-2025, growing at an AGR of 3.5%. Initial projections estimated that the industry could reach a value of almost USD 14.4 trillion by 2025.

While this optimism once held true for South Africa, with average contribution to gross fixed capital formation around 43%, current realities point to a different trajectory. The global economy has suffered a significant slowdown amid prolonged trade disputes and wide-ranging policy uncertainties. While a slight uptick in economic activity is forecast for 2020, the World Economic

Situation and Prospects 2020 warns that economic risks remain strongly tilted to the downside in the near future (UN, 2020).

1.3.3 COVID-19 Impact

Impact on skills planning

Reliance on "business as usual" skills planning instruments (WSPs, ATRs etc) is going to be extremely difficult given the immense disruption to normal economic activity, production, jobs and firms. Any information received from those firms that have survived the devastating impact of the pandemic is likely to be sketchy and inadequate and is not likely to fully capture the full impact of the current moment. As much as this is an important limitation, like all crises it also presents opportunities to do skills planning in new and, hopefully, more effective ways. Planners are compelled to make far more effective use of economic data, economic trends and comparative analysis (how is the construction sector elsewhere in the world managing the crisis and how are other sectors of our economy negotiating the current disruption and uncertainty). Has our preoccupation with WSPs and ATRs forced us to be overly in-ward looking, when we should have (like the rest of the world) been exploring innovative ways of growing our sector? Have we paid sufficient attention to the potential role of technology in our sector (3 D technology and the 4th Industrial Revolution)? Have we invested enough in exploring the great potential benefits of the "green economy" as far as the construction sector is concerned? The first three months of the lock-down have exposed South Africa's over reliance on exports, in much of the construction value chain. Strictly speaking, there should be no contradiction between support for global free trade and a strong opposition to autarchy on the one hand, and a determined commitment to strengthen local capacity to produce goods and services (local manufacturing). These are all critical questions that are emerging as we go beyond the 'normal' and as we seek ways to re-imagine the construction sector in a post- COVID-19 environment.

Impact on the Sector

The impact of the pandemic on the construction sector has largely unfolded through the following channels:

- Direct impact on production: slow growth in the first half of 2020 due to national lockdown
- Supply chain and market disruption: small and medium-sized firms facing greater difficulty in surviving the disruption.
- Financial impact on firms and financial markets: temporary disruptions of inputs and/or production might stress some firms, particularly those with inadequate liquidity.
- Impact on household demand for goods and services: a precarious financial position will mean constrained demand for domestic housing construction projects, alterations and other domestic services.

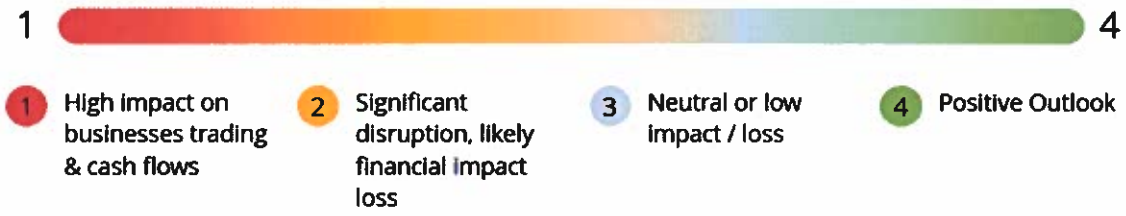
In the longer-term, the sector will have to contend with decreased demand as governments face rising deficits and residential and commercial projects are dampened by unemployment and low GDP growth. Although some companies may be able to execute on the backlog of projects, the pipeline is expected to be weak for the foreseeable future. This suggests that

- Construction companies with high levels of debt and low cash reserves may face a liquidity crisis.
- As smaller businesses, sub-contractors may fail rapidly.
- Contract management will come into sharp focus, as customers seek to terminate or renegotiate contracts.

- Internationalization will become less viable as companies reconsider the regions in which they want to operate, and countries put more restrictions on foreign companies.

The protracted economic downturn and reduced levels of public infrastructure investment have exacted a heavy toll on contractors, including most of the sector's major players, compelling some to file for business rescue. Below is a summary of the general impact of the Post COVID-19 Growth prospects and scenarios within the construction sector:

Figure 3: Impact Indicator



Other sectors

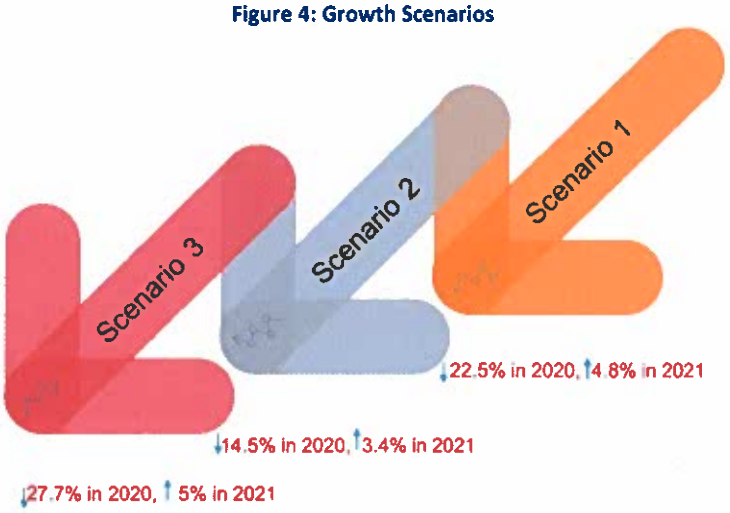
This bleak picture is not unique to the construction sector. The International Labour Organisation (ILO) and the Minerals Council of South Africa, show that there are similar concerns in the mining sector. The 420 000 odd employees in that sector are also facing uncertainty and so too, does the future of several mining houses, with restructuring, mergers and bankruptcies a real possibility. On a positive note, there are efforts afoot to re-imagine mining in the COVID-19 period and a post-pandemic environment. The Minerals Council of South Africa has recently published a 10-Point Action Plan, which sets out measures to operate in the current environment. As discussed above, the mining sector is also looking into investing into research and innovation (skills of the future). These include the possibility of self-driving haul trucks, remote operations centres, fully automated loaders and drills.

Innovation, creativity, research and development have also been thrust forcefully on other sectors of the economy notably, the new protocols introduced at airports and taxi ranks for the transport sector and new measures regarding buffets dishes at hotels and restaurants for the tourism sector. Or, the additional safety protocols for the beauty industry, gyms and increased role of online shopping and delivery services, throughout the services sector. Thus, while the impact of the COVID-19 and a sluggish economy is uneven across sectors, no sector has been left unscathed by the need for innovation, new technology and environmental awareness, in how business is conducted, moving forward.

Growth scenarios

Forecasting in the time of Covid-19 has become difficult as there are a number of factors and circumstances to take into account. A key complexity resides in the uncertainty, nobody can accurately predict how long the lock-down is going to last and what impact it is likely to have on the local and global economy. Given these complexities, the best way to venture and intelligent prediction of the sector's growth prospects is the development of a continuum of scenario, from best to worst case scenario. This is illustrated in the figure below:

Figure 4: Growth Scenarios



Source: Adapted from Industry Insight

- **Scenario 1**: Industry activity levels are forecast to decline by 22.5% in 2020, with a recovery to 4.8% growth in 2021 but followed by annual declines in activity of 2.1%, 2.9% and 2.4% in the next three years.
- **Scenario 2**: In the more optimistic scenario (with a 30% probability), construction activity levels will decline by 14.5% in 2020 but grow by 3.4% in 2021. However, activity levels will then decline by 1.9% in 2022 and 0.8% in 2023 before growth of 3.7% in 2024.
- **Scenario 3**: The more pessimistic scenario (which has a 55% probability), anticipates construction activity levels declining by 27.7% in 2020, growing by 5% in 2021 but then declining by 2.1%, 2.9% and 4.5% in the next three years.

The growth paths depicted in the three scenarios in

Figure 4 lead over time to considerable differences in the overall level of economic activity in South Africa, as well as considerable differences in the unemployment rate. Scenario three inevitably leads to an increase in the unemployment rate and the collapse of more firms as a consequence of low or no economic activity in the sector. On the contrary, Scenario one results in a decline in unemployment, as the economic growth rate, levelling out at above 4% per annum, is well above the population growth rate.

The outlook for the construction sector is largely dependent on South Africa's economic growth performance, primarily fixed investment spending. The three scenarios show high economic growth over the forecast period results in substantially different prospects for the construction sector in the outer forecast years, compared to the low growth scenario.

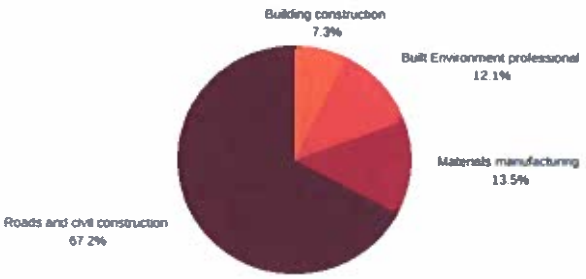
Scenario two is more plausible as government can play a counter-cyclical role to stimulate economic activity in a time of crisis. The proposed multi- billion Rand infrastructure stimulus project is a real opportunity in this direction. There were promising signs of early recovery, pre-Covid-19, at the end of 2019, triggered by big road and water projects were coming out to tender. However, there remains massive pressure on the fiscus in the medium to long term, with the ratings downgrade, paying back the stimulus loans, the massive slump in tax revenue.

1.4 Employer Profile

Firms in the construction sector vary widely in size and ownership, from sole proprietors to large multinational construction services groups. In 2018 there were over 59 000 firms (including building materials firms) registered with CETA and over 51 513 firms registered with the CIDB. Table 13 shows a breakdown of the number of businesses by level of employment and broad activity in the sector.

Table 3: Employers by Subsector in 2020

	Large (>149)	Medium (50-149)	Small (< 49)	Total
Building construction	1 506	1 604	3 503	6 613
Built Environment professional	2 496	1 833	4 503	8 832
Materials manufacturing	2 779	1 938	2 676	7 393
Roads and civil construction	13 879	9 637	10 646	34 162
Uncategorised SIC code	1	568	2039	2608
Total	20 661	15 580	23 367	59 608



Source: CETA WSP data, 2020

There is clearly a significant rise in the number of entrants into the construction sector; the CETA experienced a 47% annual increase from 2019 to 2020, while similarly the CIDB saw a 28% incline. Of the 51 513 contractors listed on the Register of Contractors, 3 013 were processed for upgrades. About 85% of these registrations are at Grade 1, indicating the attractiveness of the industry to potential entrepreneurs, many of whom do not have the required skills or experience. This perhaps explains the significant jump in small companies represented in the CETA; from 14 648 to 23 367 – nearly a 60% hike. This rise no doubt runs contrary to the downward trajectory of the overall sector. However, the chronic scarcity of formal employment coupled with governments recent anti-cyclical measures – increased tender advertisement – could perhaps be linked to an upsurge in business registrations. The CIDB's vision for the construction sector is that 90% or more of the capacity of the construction sector is 90% or more black-owned and delivers 90% or more of construction contracts by value. In this regard, the Construction Monitor on Transformation (CIDB, 2020) notes that "the state of transformation decreases with increasing CIDB Grade (size of company). Specifically, for ownership of 51% and above, less than 40% of CIDB registered enterprises in Grade 9 are black owned." Although about 48% of companies registered at CIDB are women owned, 95% of these are at grades 1-6 with only 8 at grade 8

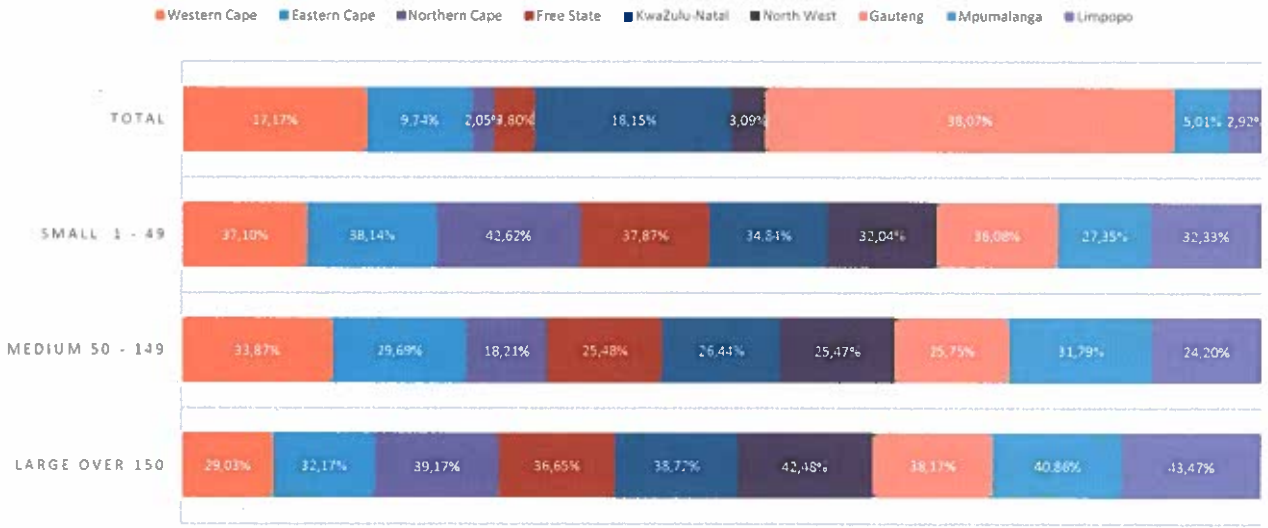
Most of the firms employ fewer than 100 people and over one-third employ fewer than 50. Most employees are in the roads and civil construction sub-sector. One major trend in recent years has been the deteriorating financial performance of large public companies and their exit or reduction in their activities in the domestic construction sector. For companies registered with the CIDB, Black-

owned companies represent 80% of all companies for Grades 2 to 6 compared to 35% of companies at the highest grade of 9 (a grade at which there is no maximum value a contractor may bid for in a contract with the public sector).

1.4.1 Geographic location of employers

Construction services activities reflect the general geographic location of economic activity in the country. The graphic below shows the sector's number of employers by province in 2018 registered with CETA. Gauteng is by far the largest area of firms' activities and concentration, representing 35% of the industry's GVA, followed by Kwazulu-Natal (19%) and the Western Cape (17%). As would be expected, the geographic location of firms' activities closely matches the structure of employment in the industry by province.

Figure 5: Geographic Location of Construction Activities 2020



Source: CETA WSP, 2020

In more recent financial years, there has been a worrying trend with respect to the relationship between the CETA's spending patterns and where the bulk of the economic activity and concentration of much of the construction sector was located.

The analysis of CETA projects and skills interventions show an uncharacteristic growth of expenditure in the Free State, with Local Government as training sites. Further analysis is required both to understand the key drivers of this anomaly but crucially, to understand the impact and value add derived from what seems a counter-intuitive expenditure pattern on the part of the CETA.

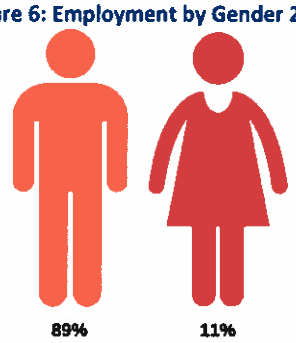
1.5 Labour Market Profile

There is little doubt that the COVID-19 pandemic has had a devastating impact on the construction sector and the South African labour market more broadly. Early indications are that the sector lost around 7000 jobs in Quarter 1 of 2020 (StatSA, 2020). Employment in the construction sector in 2019 averaged 1 350 000, and is estimated at 1 343 000 for Q2 2020; accounting for about 6% of total employment in South Africa. Although the sector started the last decade robustly across the board, largely driven by massive state and private sector led infrastructure investments (stadia, dams and water, roads malls etc). From around 2015, things have been trending downwards, as evidenced by

the liquidation of several 'big players' in the sector (with the associated losses in jobs). In the meantime, the sector has been experiencing a mushrooming of informal construction activity. The level of informal employment in the sector is higher than in other sectors of the economy, an average of 35% of total employment compared to 21% for total employment excluding the agricultural sector.

The construction sector employs far more men than women as shown in Figure 8. The proportion of women employed in the industry has remained relatively stable over the total period from 2011 to 2019. In this period, the proportion of women showed a varying trend, although the highest percentage (12,5%) was reached in 2017. This was followed by a sharp decline to 10,7% of total employment in 2019. The ratio is considerably below the average for total female employment in the economy during the period, i.e. 11% female employment in the construction sector compared to 44% overall female employment. While the net employment effect is a decline for both genders during the pandemic period, there has been a disproportionate impact on females relative to their male counterparts.

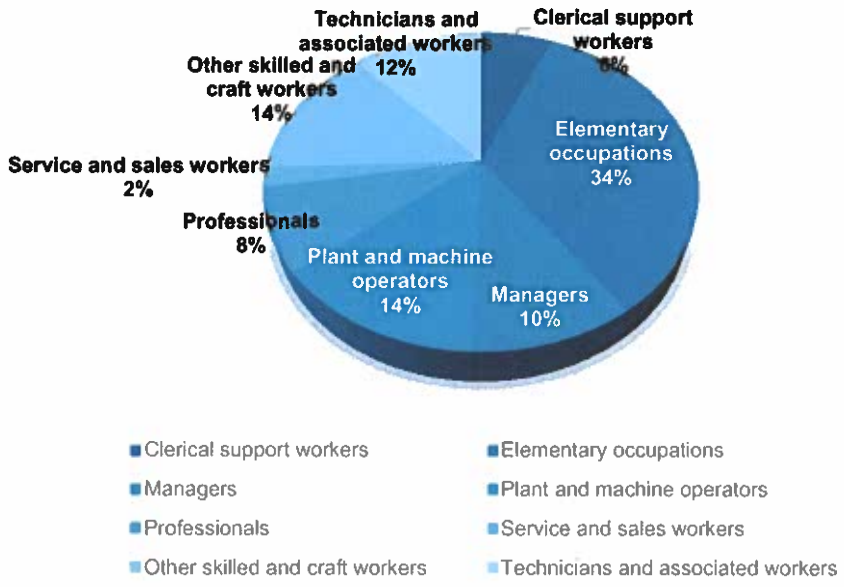
Figure 6: Employment by Gender 2020



Source: Stats SA, 2020 and own calculations

The sector employs a wide range of occupations, many that are specialist to the sector, such as civil engineers, architects and similar professionals, but also others of a more general nature, such as clerical support, and service and sales employees. Figure 8 shows our estimates of total employment in the sector by broad occupation using the Quarterly Labour Force Survey and WSP data. Elementary occupations represent the largest proportion of employees, nearly 34% of the labour force, followed by skilled craft workers, plant and machine operators and technicians. The proportion of elementary occupations in the industry is considerably higher than the national average of 23% for these occupations. Managers account for 10% of employees in the industry, a little above the national average of 9%.

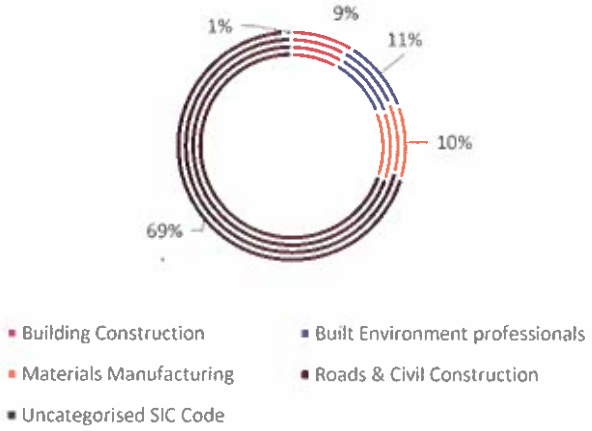
Figure 7: Estimated Employment by Major Occupation 2020



Source: Stats SA and CETA WSP data, 2020

Most employees work in the roads and civil sub-sector, nearly 70% of the total employed in the whole sector. There has been little growth in employees in any of the broad sub-sectors since 2015.

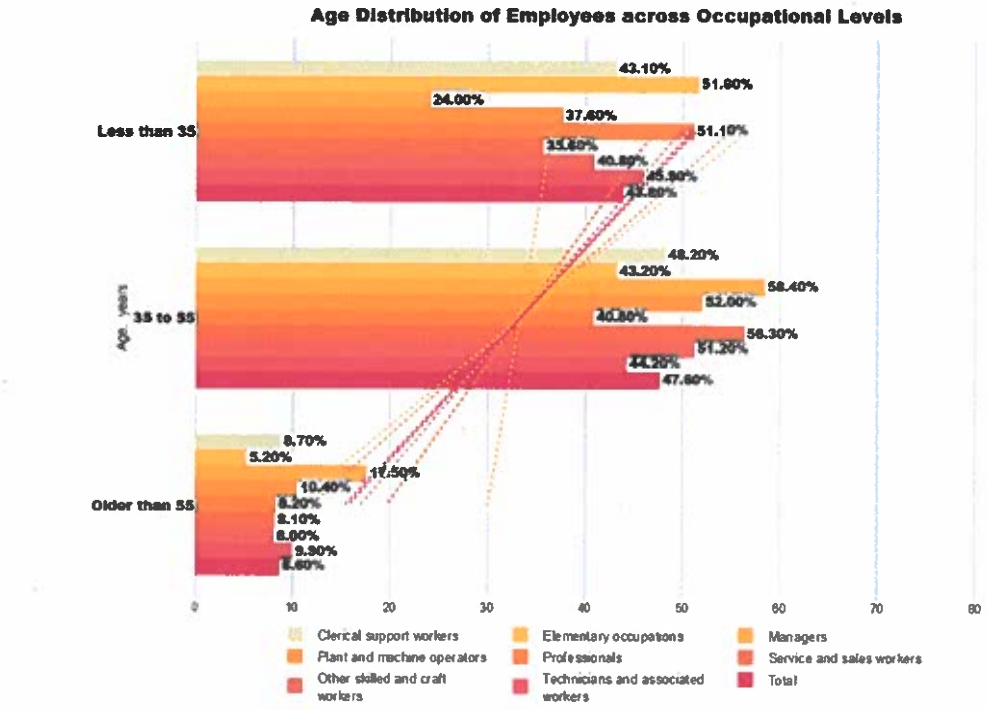
Figure 8: Employment by Subsector



Source: CETA database, 2020

The age distribution of workers in the sector using WSP data for 2018 is shown in Figure 11. The data breaks down permanent employees in three groups by major occupation in the industry: employees under 35 years of age (111 815), those between 35 and 55 years (121 303), and those above 55 years (21 978). The table shows, as would be expected, that there are relatively few workers over 55 years in the industry, accounting for under 9% of total employees, although for managers the proportion is higher at 17,5%. The number of employees below 35 years, and between 35 to 55 years is broadly similar but vary significantly by occupation.

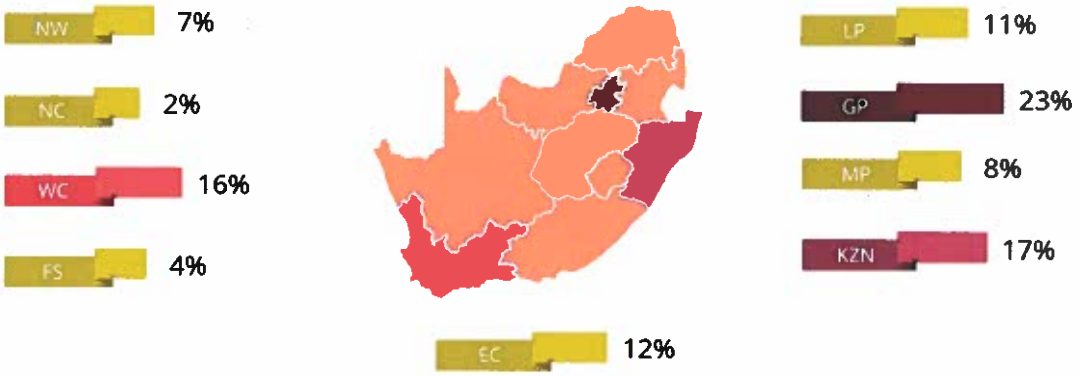
Figure 9: Age Distribution of Employees



Source: CETA WSP data, 2020

Figure 10 shows the numbers employed in the construction sector by province. Employment is well-dispersed among the provinces. In 2019, Gauteng employed the largest number of construction workers, 310 000 (23% of the total), followed by KwaZulu-Natal and Western Cape provinces. Together, these three provinces accounted for 56% of the total number employed in the sector during the year.

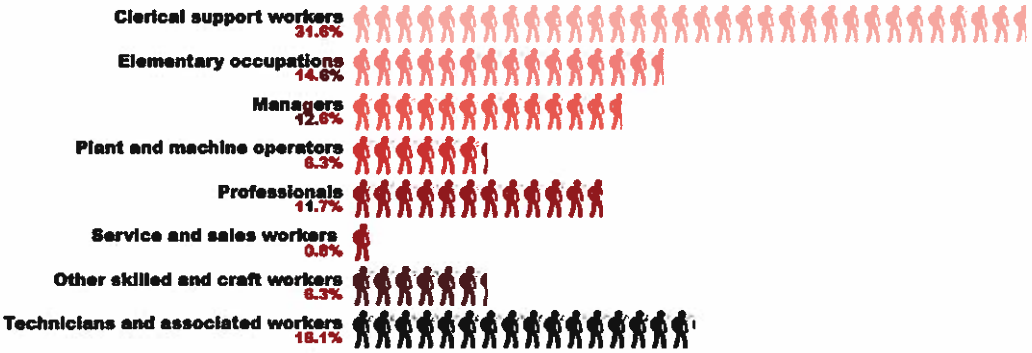
Figure 10: Employment by Geography 2020



Source: Stats SA, 2020

In 2019, there were 1 120 disabled employees in companies registered with the CETA. Figure 11 shows the number of disabled employees by occupation in 2020. Over a third worked in clerical support activities followed by technicians, elementary occupations, managers and professional employees.

Figure 11: Disabled Workers by Occupation 2020

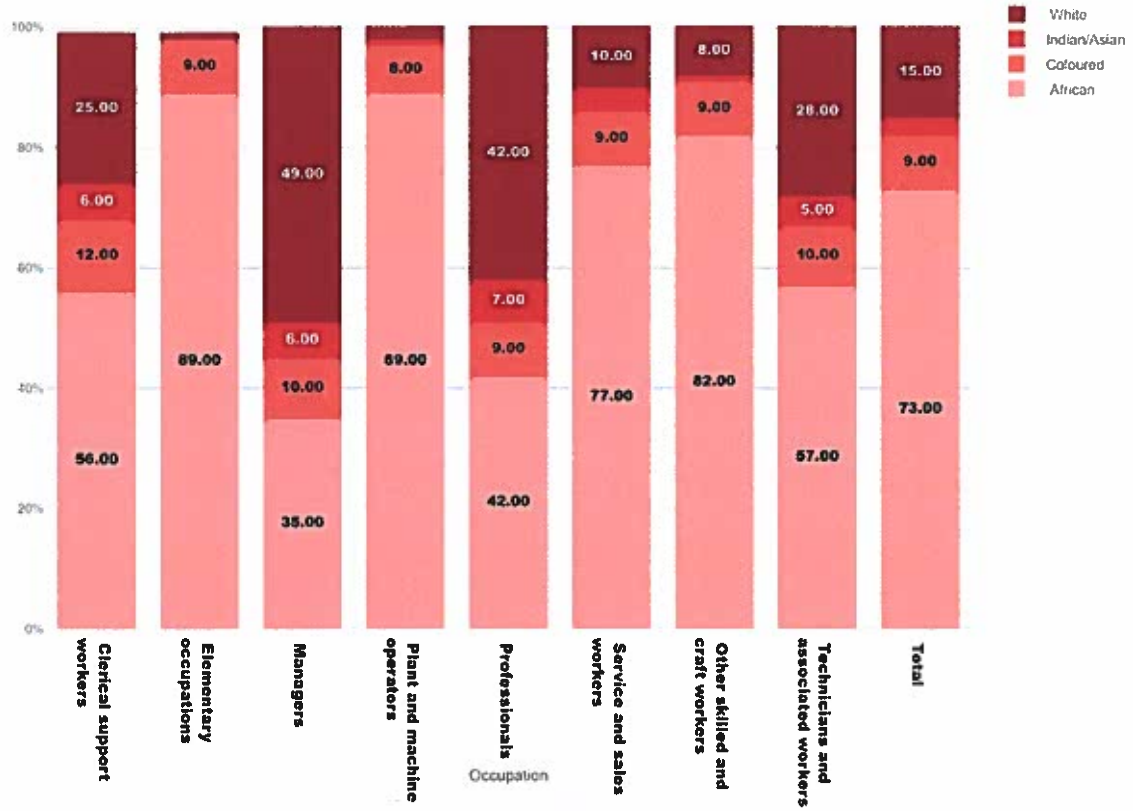


Source: CETA WSP data, 2020

The distribution of employees by race and occupation in 2020 based on WSP data is shown in Figure 12. African employees represent 73%, coloured employees 9%, Indian/Asian employees 3% and White employees 15% of the total number employed in the sector. African employees account for higher proportions of total employees than average in the sector in elementary occupations (89%), plant and machine operators and 'other skilled and craft workers' (82%).

Even though seven out of 10 employees in the construction sector are African, in the management occupational category about half of the employees are White while 35% are African. In the professional occupational category African and White employees account for 42% each. In other words, about six out of ten employees in the professional category are Black (i.e. African, Indian and Coloured) whilst about four out of 10 are White. This is clearly not reflective of the racial demographics of the country as contemplated in the Employment Equity Act.

Figure 12: Race Distribution Across Occupational Levels



Source: WSP data

1.6 Conclusion

The construction sector is an important contributor to the South African economy. In the first quarter of 2020, its real Gross Value Added was 3,9% and its output nearly 14% of the country's GDP. Total employment in the sector averaged 1 350 000, 8% of total employment in the economy. The construction sector is one of the most adversely affected segments of economic activity as a result of long standing macroeconomic imbalances and more recently due to the shock exerted by the COVID-19 pandemic.

Moving forward, the government (together with other industry players) will have to build a social compact (a growth coalition to be sure). One designed to navigate the sector out of the current doldrums, onto a new growth and development trajectory. This will also have a counter-cyclical effect to stimulate economic activity in a time of crisis. There were promising signs of early recovery, pre-Covid-19, at the end of 2019; triggered by big road and water projects that were coming out to tender. However, there remains massive pressure on the fiscus in the medium to long term, with the ratings downgrade, paying back the stimulus loans and the massive slump in tax revenue. A forward-looking pipeline of planned projects and programmes of economic and social infrastructure is urgently required to help construction companies understand which infrastructure investments government is currently prioritising.

2 Key Skills Change Drivers

2.1 Introduction

This chapter identifies factors that are driving change in the supply and demand of key skills in the construction sector and analyses their implications for skills development by the CETA and its partners in the sector.

Several objectives are addressed, firstly, to identify key change drivers behind skills demand and supply in the construction sector, secondly, to identify national strategies and plans, their impact on the construction sector and implications for skills supply, and thirdly, to address the implications of the key change drivers for skills planning in South Africa's construction sector and the labour market.

2.2 Key change drivers

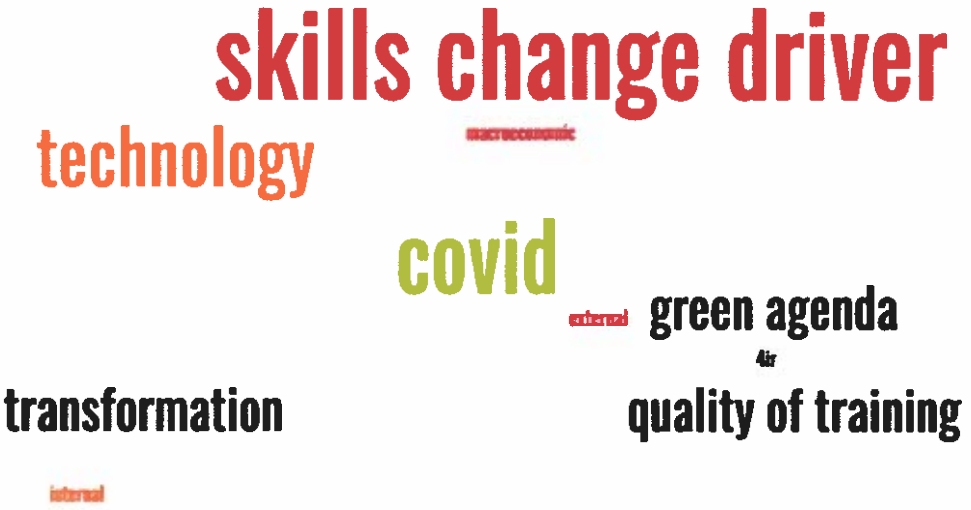
Key drivers affecting changes in demand and supply of skills in the construction sector can be divided into internal and external factors. There exist a complex and dynamic interplay between these factors. The internal factors, which are also change drivers, are those that are internal (endogenous) to the construction sector and CETA, over which they have a degree of control. The external factors, or change drivers, on the other hand, are external (exogenous) to the CETA and not within their direct control.

External factors include the South African macro economy, technological change affecting the sector and the policy environment including the National Development Plan (NDP), and the quality of school-leavers entering the post-school environment. The recent COVID-19 pandemic, a global economic contraction, a war situation and other natural disasters would also belong to this category.

Internal factors include the employment absorption rate in both the formal and informal sectors, skills shortages, and skills development and training, the quality of such training and the capacity of the CETA to drive and effectively oversee skills development in the construction sector.

Figure 13: Key Change Driver

The table below illustrate some of the key strategic priorities that are necessitated by a poor performing economy, COVID-19 and the internal capacity challenges of the CETA:



2.2.1 Covid-19

The COVID-19 pandemic has created profound disruptions to the South African economy and society. Many South African industries, sectors and sub-sectors are experiencing an adverse impact from the pandemic, which is consistent with other countries fighting the disease. In its response to the crisis, the South African government has (from 27 March 2020) placed the country under a national lockdown to reduce the spread of the virus, resulting in the closure of many businesses. The majority of businesses in South Africa, 65,0% according StatsSA(2020), anticipate that the COVID-19 pandemic will have a substantially worse impact on their business compared with the financial crisis of 2008/2009. The pandemic has impacted the construction sector in a variety of ways that will preclude a business as usual approach in the future, these include:

A squeeze on budgets. There are key strategic priorities that are necessitated by a poor performing economy, COVID-19 and the internal capacity challenges of the CETA. The ability of the CETA to spend on skills development has been impacted by loss of revenue, due to current and impending liquidations of many of its levy paying members. More directly for the CETA, government has ordered a four-month payment holiday (a halt in payment of skills levies by employers). This means that the CETA will be compelled to deploy the resources it has with far more circumspection, including conducting an audit of what constitutes priority interventions and what programmes and projects it will forego, as a consequence of the squeeze on its resources. This will have a negative effect on skills supply in the sector.

Liquidation of firms. Evermore construction firms are filing for bankruptcy and this number is expected to increase in the coming months. Not only is the CETA losing revenue, but further pressure is exacted on an already precarious national fiscus. Above all, however, this exacerbates an already chronic jobs crisis in South Africa, which only serves to deepen the country's racially defined social exclusion problems. As more firms get liquidated, there will be a pool of skilled workers who could find employment in other sectors or worse still, in other countries. This will be a loss to the sector and will intensify scarcity.

Disruption of the global trading system. The supply of capital inputs, heavy machinery and other equipment central to the production process of the construction sector, have been severely affected. On the export side, the economy has lost foreign exchange due to the disruption in cross border trade. This disruption could lead to projects stalling and skilled people being out of work.

Disruption in service delivery programmes. The CETA's training programmes, site visits and monitoring exercises came to halt, thereby negatively impacting the process of transforming the labour market. A large part of this work is dependent on face-to-face interactions. There are other moments of disruption throughout the value chain of CETA operations, how the CETA and sector navigates these disruptions will, in large measure, determine how quickly the sector gets back on track. This will also determine how successfully the sector navigates what will, effectively, be a "new normal", post the pandemic.

2.2.2 Transformation

The pandemic has exposed the internal vulnerabilities and frailties of the South African socio-economic system, especially its racial, gender and geographic cleavages. It is a fragile system with massive poverty and income inequality at the bottom, it is held together, though precariously, by the state's social grant payments to a large percentage of society. This is unsustainable at the best of times, with the devastation wrought by COVID-19 and the state's teetering fiscal position, the fallout could lead to a collapse of the post-1994 consensus.

The construction sector is not immune to the country's racial and gender inequities, with black, women, disabled persons and those located in rural areas and townships. In the main, these groups bear the brunt of such inequality of opportunities, throughout the pipe-line and value chain of the sector.

According to the latest CIDB Annual Construction Monitor: Transformation (CIDB, 2019), even though there is a steady increase in the number of black-owned contractors in higher grades, less than 40% of CIDB registered Grade 9 contractors are black-owned. The CIDB reports show that over the past three years, black-owned contractors are accessing around 54% of total public sector contract awards. Of particular concern is that the Grade 9 contractors (large contractors) are only accessing around 25% of public sector awards. Women-owned contractors access around 25% of total public contract awards. Only 36% of the CIDB registered Grade 9 contractors and 48% of the Grade 7 and 8 have a minimum B-BBEE Level of 1 or 2 –which represents some signs of good progress towards broad-based transformation. Furthermore, around 85% to 90% of all medium and large contractors have a minimum B-BBEE Level of 4, which is regarded as being fully compliant with the Sector Codes. In terms of professional occupations and general but especially at managerial and supervisory levels, the vast majority of the incumbents are while males at 89%, with women (of all races) occupying a measly 11%.

Given the extent of racial and gender inequality in the construction sector, the CETA has a responsibility of actively contributing to removing the logjam. More attention will be focused on transformation profiles of training providers, assessors and moderators. Historically black institutions of higher learning and TVETs will be supported with the aim of ensuring that they have necessary infrastructure to offer construction related courses. A Reference Group is being established in order to 1) review CETA bursary funding and 2) explore the adequacy of current candidacy programmes (especially as they affect black and women candidates)

Identifying transformation as a key change driver provides the sector with an opportunity to shine the spotlight firmly on the racial and gender inequities afflicting the sector. There is a definite need to ensure representativity of women and Black people in highly skilled occupational categories in the sector. There is also a pressing need for a definition of more effective tools to monitor and measure transformation in the sector. With this in mind, a post-COVID-19 CETA will have to pay focused attention on the vulnerable groups. While preferential procurement (and other opportunities for black and women) are important, the most potent instrument in the hands of the CETA is that of ensuring that all obstacles to the production of a predominantly black and gender representative skilled workforce in the construction sector, are removed. The CETA is planning to hold a colloquium or "thinking" session on transformation in the coming months. The purpose of this session will be to take stalk and evolve new and creative ways of pushing the transformation agenda in the construction sector.

2.2.3 Technology and Innovation

For the better part of five months, communication, globally, has relied almost exclusively on technology (zoom, facebook live, skype etc). Whilst not all CETA work lends itself to remote performance, there are large swathes of the mandate that can be performed more effectively with less travelling and social contact. There are several computer-based project management applications, that allow for regular reporting, monitoring, quality management and oversight. A large chunk of the CETA's work is essentially project delivery. As a strategic response to the current crisis and in an endeavour to enhance efficiency and save costs, the CETA might want to explore the

viability of increased deployment of technology in its workings and operations. Outside the CETA, the sector is increasingly going digital too and these innovations need to be invested in and supported and skills would inevitably be required to bring these innovations into practice.

Examples of such change and innovation consist of emerging technologies such as the Fourth Industrial Revolution, Three-Dimensional Printing of prefabricated walls, Artificial Intelligence (AI), Machine Learning and advanced Data Analytics. These technological drivers are expected to shape the future skills demand in the construction sector, but not in the immediate term, where South African building techniques are expected to remain traditional, with the dominance of bricks-and-mortar and steel frame methodologies. However, foresight and early investment in the future is critical. After all, the process of producing skills is not instantaneous, instead, it calls for advance planning. Other technological changes affecting construction skills are advances and developments in "Smart Buildings", "Green Buildings", communication, materials production and handling, transport of construction materials, and assembly methods.

2.2.4 Green Agenda

The world faces significant environmental challenges and to help combat these, the construction sector needs to play its role in reducing C02 emissions by designing and building more energy efficient structures, homes and materials; reduce the costs of heating and help meet the country's required energy needs. Delivery of low carbon buildings and adapting the existing building fabric is the biggest and most pressing challenge facing the property and construction sector. However, provided with the right conditions, decarbonising the building stock could also be a huge opportunity to drive growth across the sector, export skills around the world and provide a much-needed lever for training a new generation of skilled workers.

Although the pursuit of a green agenda in the construction sector is far advanced in other global centres, its fuller exploration in the South African context is constrained by lack of skills, poor investment and planning. Accordingly, there is an opportunity to be forward looking in this regard. The CETA should invest in Research and Development (R&D) focused on pursuing evermore greener technologies and innovations, across the construction value chain (including timber and wood technology). Where there are institutions and training providers offering some of these courses, the CETA and its partners in the sector might want to invest in projects designed to supporting learners, in order to equip them with these future skills.

2.3 Policy Frameworks affecting skills demand or supply in the sector

National policies and plans which could have a direct impact on skills in the construction sector include the National Skills Development Plan (NSDP, 2030), the Amended Skills Development Act, the Medium Term Strategic Framework 2014-2019, the Labour Market Intelligence Partnership, and CETA itself.

2.3.1 National Skills Development Plan (NSDP)

The aim of the NSDP is to maximise the relevance and accuracy of the skills and training offered by the Post-School Education and Training system (PSET). Essentially, the NSDP sets out a framework for integration and better connectivity between training offered at PSET and the ever-changing requirements of the labour market and the economy. For the CETA and the construction sector, this policy framework constitutes a loadstar, that drives accuracy in the definition of both skills needs and the production of appropriate skills to meet those needs (skills supply and demand).

2.3.2 Infrastructure Development Programme

Government recently introduced a comprehensive and focused infrastructure plan upon identifying a need for a credible project pipeline of infrastructure projects that are ready and bankable for investment and implementation. The infrastructure plan will see over R700 billion invested in high-impact infrastructure development projects, including in water and sanitation, energy, transport, digital infrastructure, agriculture and agro-processing as well as human settlements (SA Government, 2020). The programme is coordinated by the Department of Public Works and Infrastructure in partnership with the infrastructure investment office in the Presidency. This infrastructure spending commitment is a critical life-line for the recovery of the sector and the drive for skills development associated with it. With this in mind, the CETA is actively engaging with the Presidency and the Department of Public Works and Infrastructure. This is to ensure that in its conception and implementation, construction training, demand and supply at the core of this programme, throughout its cycles (and across value chains).

2.3.3 Labour Market Intelligence Partnership

The Partnership aims to build a credible institutional mechanism for skills planning in South Africa. In support of this objective, the Department of Higher Education and Training (DHET) has contracted a research consortium led by the University of Cape Town's Development Policy Research Unit.

In addition to establishing a foundation for labour market information systems in South Africa, it has set up systems for reliable data. These indicate the skills needs, and supply and demand in a manner that will enable South Africa, including government and business, to plan more effectively for human resources development needs for our country, thereby enabling CETA to improve its plans and to access data. The CETA will endeavour to ensure that construction sector research and data collection features prominently in the work of this partnership, through regular engagements so that our unique (and constantly changing) research needs are well understood and promptly acted upon.

2.3.4 Construction Sector BBBEE Sector Code

This Amended Construction Sector Code seeks to support the transformation in the sector as well as advance the objectives of the National Development Plan. The CETA has determined that positive and proactive response through the implementation of the Amended Construction Sector Code, will address inequalities (and social exclusion) in the Construction Sector, unlock the sector's potential and enhance its growth. As such, this Sector Code supports the introduction of Economically Active Population (EAP) targets, which aims to address the unequal representation of race sub-groups participating in the sector. Moreover, the code constitutes an important response to the CETA's own concerns about race and gender representation in the sector (social exclusion). Through our research agenda, Strategic Plan and APP, the CETA will be paying focused attention and actively support the goals of this code in our sector.

2.4 Conclusion

This chapter has focused attention on some of the key drivers that are likely to shape and impact the sector in the short and medium term. The driver considered to have the highest impact currently is the Covid-19 pandemic, which imposes both devastation and profound opportunity at the same time. The devastation resides in the shock to the economy and the sector and the resultant uncertainty. The opportunity can be found in the unprecedented space to reset, re-imagine the entire sector in ways that will create a post-COVID-19 construction environment that I a major improvement to what obtained before. There is a real opportunity to shift investment in ways that do away with current exclusion and inequality, and there is a real opportunity to take advantage of innovation and technological changes, so too, the enhancement of "green buildings", smart buildings and smart

cities etc. There is much to be explored. With the exploration of new ways of doing construction also come opportunity to review our curricula and partnerships, entities and countries that are already pursuing these innovations will be approached to explore skills and technology transfer opportunities. It is important that the CETA and its partners in construction are ahead of the curve and ready for training and skills programmes that will propel the sector into the future.

The chapter shows that there are other potential benefits in the legislative and regulatory front. These arising from the national strategies and plans such as the National Skills Development Plan (NSDP), the BBBEE sector codes, the infrastructure development programme and the Labour Market Intelligence Partnership. The implications for skills development and change are that all of these national initiatives and support strategies are likely to drive demand for skills as well as create conditions for improvement of skills in the sector.

3 Occupational Shortages and Skills Gaps

3.1 Introduction

This is a critical chapter of the SSP, for it is a research and evidence-based analysis of the state of the Constructions Sector in terms of skills supply and demand. Fundamentally, the chapter focuses on occupational shortages and skills gaps in the sector and endeavours to shine the spotlight on occupations and skills that the CETA should pay increased attention to, when deciding on investment and funding priorities. The COVID-19 pandemic has turned much of our earlier assumptions on their head and call attention for more rigour and foresight in speculating about the post COVID-19 construction environment.

Initial investigations included a critical analysis of existing literature. The research methods employed drew on a combination of both quantitative and qualitative research techniques. The quantitative approach included the collection and thematic analyses of data collected from key industry stakeholders, CETA WSP data and Stats SA. The qualitative approach included consultative interviews and online questionnaire surveys involving key industry stakeholders. A comprehensive sectoral analysis of the construction sector was undertaken to establish vacancies and occupations that are difficult to fill, numbers of enrolments and graduations, as well as other supply-side information.

3.2 Sectoral Occupational Demand

This section presents findings on hard to fill vacancies (HTFVs) based on WSP data. HTFVs are defined as occupations that take longer than a year to find a suitably experienced and qualified candidate. It is imperative to note that while the WSP template requests that respondents identify vacancies in their organisation, the data may not necessarily be a true reflection of the actual vacancies in the sector. It is difficult to verify the accuracy of secondary data where the criteria used may have been manipulated to ensure compliance. Therefore, the findings discussed here are corroborated by literature and stakeholder comments based on consultative interviews undertaken.

3.2.1 Hard to fill vacancies by occupation

Over the past two decades, a number of reforms have been initiated in South Africa to address economic growth and employment challenges. However, the country's labour market is still characterised by an oversupply of unskilled workers and a shortage of skilled workers (Rasool & Botha, 2011). According to Kraak (2005), the skills shortages experienced by the South African labour market are major impediments to economic growth and job creation in the country.

Skills needs of the construction sector have been explored in the context of developmental goals and appropriate technologies. Chapter 1 provided forecasts of employment in the construction sector based on three scenarios: a core projection, a high growth scenario and a low growth scenario. The growth paths depicted in the three scenarios lead over time to considerable differences in the overall level of economic activity in South Africa, as well as considerable differences in the unemployment rate in the economy and employment levels in the construction sector. What is more, the onset of the COVID-19 pandemic has exploded all scenarios, forecasts and modelling exercises conducted heretofore. A severe choke on economic activity for the better part of five months, because of the lock-down is bound to have an unprecedented shock and long-term impact on the economy. Until the COVID-19 dust settles, it will be extremely difficult to accurately predict and price-in growth prospects and skills needs in the future. It now seems that the picture will get clearer around the fourth quarter of 2020. In the meantime, the best we can do is to work with the current data base of

skills needs in the construction sector and to factor in a speculative analysis of how the pandemic is likely to colour the current (pre-COVID-19 data).

Based on an analysis of WSPs submitted by close to 2600 employers in the sector, a total of 188 occupations were identified as hard to fill vacancies. The top 15 occupations identified are outlined in Table 4. It is unclear what the impact of Covid-19 would be on the veracity of these occupations remaining hard to fill in the current economic trajectory. The one certainty thus far is that the construction sector lost 7000 jobs in the first quarter of 2020, and the losses are expected to deepen in the coming quarters, as large parts of the economy remain on lock-down. So, the table below shows the picture as it existed prior to the onset of the pandemic.

Table 4: List of hard-to-fill vacancies in the Construction Sector – 2020

Major Group	OFO Code	OFO Occupation	Hard To Fill Vacancy Reason	Frequency
Managers	2019-121904	Contract Manager	Lack of relevant qualifications, Lack of relevant experience, Equity considerations	14
	2019-132104	Engineering Manager	Lack of relevant qualifications, Lack of relevant experience, Equity considerations	17
	2019-132301	Construction Project Manager	Lack of relevant qualifications, Lack of relevant experience, Poor remuneration	117
Professionals	2019-214201	Civil Engineer	Unsuitable job location , Lack of relevant qualifications, Lack of relevant experience,	120
	2019-214202	Civil Engineering Technologist	Lack of relevant qualifications, Lack of relevant experience, Equity	14
	2019-214401	Mechanical Engineer	Lack of relevant qualifications, Lack of relevant experience	15
	2019-214904	Quantity Surveyor	Unsuitable job location, Unsuitable working hours, Equity considerations	39
	2019-215101	Electrical Engineer	Equity considerations, Lack of relevant qualifications, Lack of relevant experience	25
	2019-216101	Architect	Equity considerations, Lack of relevant qualifications, Lack of relevant experience	38
	2019-226302	Safety, Health, Environment and Quality (SHE&Q) Practitioner	Lack of relevant experience, Equity considerations, Other	14
	2019-242101	Management Consultant	Lack of relevant experience, Poor remuneration, Equity considerations	16
Technicians and Associate Professionals	2019-311201	Civil Engineering Technician	Lack of relevant experience, Equity, Lack of relevant qualifications	89
	2019-312201	Production / Operations Supervisor (Manufacturing)	Lack of relevant experience, Unsuitable working hours, Equity considerations	17
	2019-312301	Building Associate	Unsuitable job location, Unsuitable working hours, Equity considerations	72

Major Group	OFO Code	OFO Occupation	Hard To Fill Vacancy Reason	Frequency
Trades Workers	2019-641502	Carpenter	Equity considerations, Lack of relevant qualifications, Lack of relevant experience	22

Source: CETA WSP Database, 2020

The analysis illustrated above suggests that the trend to enrol and graduate higher numbers of science, technology, engineering and maths (STEM) graduates from both universities and TVET colleges is not having the desired impact in the construction sector. The skills mismatch remains stubbornly intact. There is clearly a need for higher enrolments and completion rates in technical and trade-related programmes. The interviews undertaken have suggested that higher education graduates tend to be employed in high-skilled occupations as managers, professionals and technicians, as well as associate professionals. However, it appears the that equity considerations, lack of relevant experience and poor remuneration are also key factors that contribute to hard to fill vacancies.

3.2.2 Identification of major skills gaps

Skills gaps refer to areas within an occupation where a worker is not fully competent to perform a particular task. These can include cognitive skills, such as problem solving, language and literacy skills. These "top-up" skills can be specific to a particular occupation resulting in skills gaps, which might arise because of phenomena such as improved technologies or new forms of work organisation. Hard-to-fill vacancies are in some cases a result of a skills gap in an occupation. The nature of the skills gap varies from soft-skills, procedures that may be company specific, experience related and technical or qualification related that may require a combination of several competencies.

A combination of interview discussions, online questionnaire and WSP/ATR data analysis were used in the assessment of skills gaps in the construction sector. When the respondents were asked if they feel that there is a good match between the overall skills needed for specific positions in the construction sector and the way graduates are trained by training providers, a majority of the respondents stated that there is very often a mismatch of the fundamental skills required. There were very strong views that, in line with global trends, the construction environment is rapidly changing and, as such, there is a shift towards technology-driven construction methods and innovation.

Graduates with TVET qualifications often work as technicians and associate professionals. It is at this level that more focus is required in terms of skills development, to make technical skills more attractive. The focus should not just be on technical skills but also on innovation and entrepreneurial skills.

Another view is that a tremendous amount of resources is invested in training and up-skilling artisans. However, due to the sub-contracting nature favoured by the sector, many trained artisans struggle to find work between projects. Thus, keeping skills honed and up to date becomes extremely challenging when artisans only find work sporadically.

Table 5: Skills gaps for workers in the sector

Major Group	Occupations		Skills Gap
Managers	2019-121904	Contract Manager	Complex Problem Solving
	2019-132104	Engineering Manager	Systems Skills
	2019-132301	Construction Project Manager	Resource Management Skills
	2019-132302	Project Builder	Technical Skills
Professionals	2019-214201	Civil Engineer	System Skills
	2019-214202	Civil Engineering Technologist	Technical Skills
	2019-214904	Quantity Surveyor	Complex problem-solving skills

Major Group	Occupations	Skills Gap
	2019-216101 Architect	Resource management skills
Technicians and Associate Professionals	2019-311201 Civil Engineering Technician 2019-312201 Production / Operations Supervisor (Manufacturing) 2019-312301 Building Associate	Resource management skills System Skills Technical Skills Complex problem-solving skills
Clerical Support Workers	2019-441903 - Program or Project Administrators 2019-441902 - Contract Administrator 2019-441501 - Filing or Registry Clerk 2019-432201 - Production Coordinator 2019-432101 - Stock Clerk / Officer	Complex Problem Solving Systems Skills Resource Management Skills Technical Skills
Service and Sales Workers	2019-524401 Call Centre Salesperson 2019-524903 Salesclerk / Officer 2019-522301 Sales Assistant (General)	Complex Problem Solving Systems Skills Resource Management Skills Technical Skills
Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	2019-641502 – Carpenter 2019-641101 - House Builder 2019-641403 - Civil Engineering Constructor 2019-641401 – Concreter	System Skills Technical Skills Complex problem-solving skills Resource management skills

Training Provider feedback indicates that the occupation area with the largest gap in skills and knowledge is that of Construction Managers (30%); with just less than a quarter of respondents claiming a lack of skills among Construction Supervisors (22%). From an engineering perspective, over a quarter of Training Providers indicated a lack of knowledge and skills among Civil (26%) and Environmental (24%) Engineers.

Throughout this document, the notion of future skills has been underlined in light of globalisation, innovation and competitiveness. Along with these trends, arise critical skills and skill sets, which are required by workers that are not necessarily found in traditional institutional learning. The world of work is changing and so too, is the notion of a workplace. In order for workers to keep pace and for their training to remain relevant over time, they need to possess key skills that will allow them to be more successful in their work and more marketable to relevant sectors. The nature of skills gaps implies specific skills within an occupation, which may not necessarily be covered in institutional training. Broad categories of skills gaps include critical thinking and problem-solving, leadership, resilience, agility and adaptability, communication, interaction with ICT and creativity. A few critical considerations flow from the above discussion. First, there is a need for the CETA and its partners to keep pace with changes and innovation in the sector, so that skills invested in remain relevant and are future orientated. Second, there is an urgent and pressing need to re-visit the relationship between CETA and institutions of higher learning (universities and TVETs), the relationship can no longer be only a financial transaction. Research and development, quality, planning curriculum development and innovation should be integral to these relationships. Third, instead of fitting into what is offered by institutions, CETA should endeavor to push for interventions that will have the most impact on the labour market and the skills gaps in the sector. For instance, construction management, supervisor training, civil and environmental engineering – these are all interventions that are desperately need by the sector.

3.3 Extent and nature of supply

The determination of the supply of skills within the construction sector is a culmination of comprehensive analyses of Higher Education Management Information System (HEMIS) data, various publications from DHET, and the Mandatory Grant data submitted by employers to CETA. The picture that emerged is that there are skilled labour shortages in the construction sector. This is mainly

prevalent in trade skills such as electrical, plumbing and welding. The shortages are correlated with the need for certification and the view that there is a difference between the quality of work produced by certified skilled workers and those that are uncertified. The research suggests that the fundamental factors that affect skilled labour supply are the lack of basic education, declining economic growth and the need for certification from a ranking perspective.

3.3.1 State of education and training provision

There exist 26 public higher education institutions (HEIs), 50 Technical and Vocational Education and Training colleges (TVETs), 123 private HEIs, and 279 private colleges. Other entities forming a critical part of the PSET system include: Community Education and Training Colleges (CETCs), private TVET colleges, the National Skills Authority (NSA), the Department of Higher Education and Training (DHET), Sector Education and Training Authorities (SETAs), and Regulatory bodies responsible for qualifications and quality assurance, namely, the South African Qualifications Authority (SAQA) and the Quality Councils (QCs).

Table 6: Overview of post-school education and training, 2018/19

	HEIs			Colleges				Total PSET
	Public	**Private**	**Total**	**TVET**	**CET**	**Private**	**Total**	
Number of institutions	26	135	161	50	9	268	327	488
Number of students enrolled	1 036 984	185 046	1 222 030	687 955	193 185	187 354	1 068 494	2 290 524

Source: DHET Annual Report, 2018/19

For the purposes of the SSP, there are two fundamental challenges linked to the state of the E&T system that impact on skills development. The first is ***access.*** Despite improvements in access over the past decade, a very small percentage of the population are able to access PSET. Access to PSET is constrained by the poor quality of basic education, high school dropouts, as well as the limited financial aid (although improving in recent years) and absorption capacity at PSET institutions. The massification of the PSET system is required to ramp-up provision and access. The system is recognised for its inverted, pyramid shape – with the bulk of enrolments in universities rather than colleges. This limits skills development in desperately needed mid-to-higher-level bands of the NQF. Universities have reached their peak in terms of capacity and cannot provide the level of access required to meet the skills needs of the country, particularly in the mid-level band. The 50 TVET colleges across the country have greater potential to expand access, although there is concern over the quality of lecturers, resources, curriculum and governance. Until such time that public TVET colleges become quality institutions of first choice, a partnership approach to skills development between SETAs, certain selected TVET colleges and employers is more viable, with SETAs driving increased collaboration and quality assurance within TVET colleges, negotiating on their behalf with employers.

A second challenge is that of ***success.*** Throughput and graduation rates across the PSET system, although improving somewhat, remains poor. The total number of graduates was 227,188 in 2018, which was 7.7% (16 257) higher when compared with the number of graduates reported in 2017 (210 931). The annual number of graduates increased from 165 995 during the 2012 academic year, a growth of 38.6% over the six-year period to 2018. (DHET PSET Statistics, 2020).

3.3.1.1 Schooling System

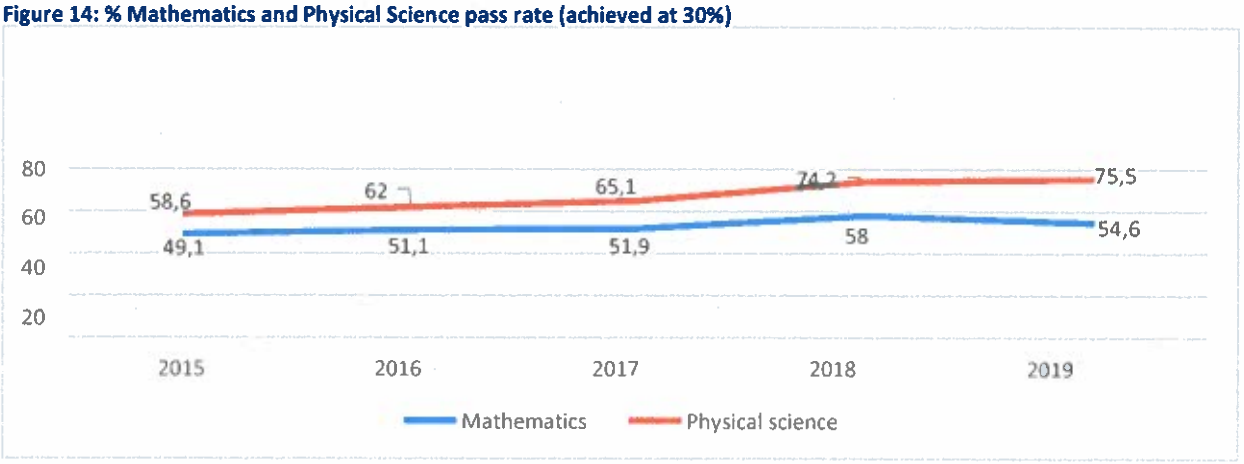
The basic education and training sector as the feeder into the PSET sector seem to be improving overtime; the achievements of the class of 2019 confirm that the standard and quality of the South

African examinations system is improving annually and stabilising. According to (NSC, 2020) the proficiency of our education system is confirmed by:

- An improvement in the pass rate and quality of passes in many gateway subjects;
- A noteworthy and credible increase in the percentage of learners who achieved the NSC; A significant increase in the percentage of learners qualifying for Bachelor Studies; and Phenomenal gains in the margins of improvement among Quintile 1 to 3 schools.

Nevertheless, critical challenges remain. These include lack of study material, overcrowding and inadequate teaching staff. Significantly, these problems have a race, gender, class and geographic definition. There have been changes in the curriculum of the Basic Education system, with evermore focus on the 4IR and other vocational subjects (NSC, 2018). AS a consequence, there has been a gradual improvement in the overall performance of the matric class, 81.3% for the class of 2019 – a 3.1% improvement on the previous year of 78.2% (Business Tech, 2020).

Figure 14: % Mathematics and Physical Science pass rate (achieved at 30%)



Source: DBE, 2020

When comparing the average pass rate of mathematics and physical science for 2015 to 2016, mathematic increased from 49.1% to 51.1% and physical science increased from 58.6% to 62%. The pass rates seem to be increasing continuously since 2015 for both subjects with physical science increasing from 74.2% to 75.5% in 2018 to 2019. Although mathematics had declined by 3.4% from 58% to 54.6% in 2018 to 2019. The figure shows that physical science pass rates increased by 3.1% between 2016 and 2017 and almost 10% increase between 2017 and 2018 (NSC Examination Report, 2018). The downside, however, is that the pass rate is achieved at 30% , which is insufficient for the curriculum requirement to enter training at PSET level for the sector.

Skills such as literacy, numeracy and science are all interconnected to things such as team- work, critical thinking, communication, persistence and creativity. These skills are part of the skills set necessary to meet the demands of a changing economy and the future of work.

TVET Colleges

TVET colleges, just like the HEIs, are considered suppliers of the workforce in the different sectors of the economy. Unlike HEIs, TVET colleges are very limited in their provision of training in engineering programmes but play a vital role in artisan training (merSETA, 2017). The South African government mandated education and training institutions to equip students with knowledge and skills that are relevant and responsive to the needs and priorities of the economy of the nation (Chileshe & Haupt, 2007). In order to meet the demands in the various sectors, the government increased access into

higher education as well as Technical Vocational and Education (TVET) training institution. In spite of such positive developments, trends have revealed outcomes that are of concern within the construction sector. The CIDB (2007) document underline the point succinctly:

> the low throughput ratios, lack of access to experiential training for qualification purposes and non-accreditation of certain curricula together with normal attrition rates as well as changes in work processes, the ability of the supply pipeline to meet the required demand is far from certain (p. 3)

Over the past years, as efforts by the government to reconcile the supply-demand needs, statistics have shown that what government invests in the form of enrolled students falls short of the expected yield. The table below shows the examination results in Engineering studies from N1 to N6 in 2014 to 2018. There was a marked increase from 2014 to 2017 in the pass rates of students who enrolled the below listed N courses.

Table 7: Examination results in Engineering at TVET colleges: 2014 – 2018

Course			2014	2015	2016	2017	2018
N1	Enrolled	N	50 692	46 446	55 680	55 677	53 312
	Wrote exam	N	45 851	41 862	50 925	53 507	45 181
	Passed	N	30 473	33 604	41 071	43 970	37 135
		%	66.5	80.4	80.6	82.2	82.2
N2	Enrolled	N	61 313	63 490	80 923	79 995	64 164
	Wrote exam	N	58 562	60 577	77 789	75 974	58 950
	Passed	N	33 444	41 278	53 703	54 981	48 361
		%	57.1	68.1	69.0	72.4	82.0
N3	Enrolled	N	44 082	50 589	62 391	63 835	45 304
	Wrote exam	N	42 244	47 811	59 409	60 711	41 804
	Passed	N	23 411	31 023	39 102	46 641	34 793
		%	55.4	64.9	65.8	76.8	83.2
N4	Enrolled	N	30 703	33 568	39 971	50 542	36 255
	Wrote exam	N	29 186	31 423	37 701	49 216	33 256
	Passed	N	19 018	24 157	29 316	46 807	26 950
		%	65.2	76.9	77.8	95.1	81.0
N5	Enrolled	N	22 648	25 609	32 002	45 733	27 413
	Wrote exam	N	21 493	24 106	30 084	44 580	25 667
	Passed	N	13 850	16 809	21 580	42 377	21 120
		%	64.4	69.7	71.7	95.1	82.3
N6	Enrolled	N	16 769	18 387	22 471	36 798	18 834
	Wrote exam	N	15 928	17 086	21 069	35 941	17 289
	Passed	N	7 925	10 277	12 848	33 388	13 514
		%	49.8	60.1	61	92.9	78.2

Department of Higher Education, Science and Technology, TVETMIS.

The National Certificate (Vocational) (NC (V)) was introduced to replace the traditional National Certificates, and provides an alternative to the NSC. Although the NC(V) qualifications are to a large extent occupationally directed, they include more fundamental educational components such as languages and life orientation. The NC (V) also provides access to some higher education programmes. The table below shows the examination results of selected NC (V) courses at public TVET colleges in 2017. The overall pass rates are low.

Table 8: Examination results of selected National Certificate (Vocational) courses at TVET colleges: 2017[1]

NCV Level	Course	Enrolled	Wrote exam	Passed	
		N	N	N	%
Level 2	Civil Engineering and Building Construction	6 117	2 994	1 721	57.5
	Electrical Infrastructure Construction	10 900	5 553	2 898	52.2
	Engineering and Related Design	10 491	5 242	2 968	56.6
	Mechatronics	574	283	156	55.1
Level 3	Civil Engineering and Building Construction	1 998	1 571	875	55.7
	Electrical Infrastructure Construction	3 775	3 163	1 438	45.5
	Engineering and Related Design	4 170	3 044	1 608	52.8
	Mechatronics	282	244	84	34.4
Level 4	Civil Engineering and Building Construction	1 866	1 652	608	36.8
	Electrical Infrastructure Construction	3 064	2 823	777	27.5
	Engineering and Related Design	3 567	3 177	1 104	34.7
	Mechatronics	234	214	102	47.7

Source: Department of Higher Education, Science and Technology, TVETMIS.

Changes in occupational patterns and structures in the construction sector are reflected in the profile of skills that most employers will require in the foreseeable future.

Public HEIs

Over the years, South Africa has made efforts to increase enrolment of students in higher education and especially in the Science, Engineering and Technology programmes that experienced a higher leap in enrolment between 2009 and 2017 (DHET, 2019). Higher Education Institutions (HEIs) provide the requisite high-level skills for the sector. One of the biggest challenges is that previously disadvantaged universities have not developed engineering faculties, implying that the pipeline of graduates is limited to universities that have traditionally produced engineers (ECSA Report, 2019).In 2020, 26 public universities will provide access to 201 042 new students wishing to pursue their studies across all fields of study, of these, 16 152 will enrol in engineering programmes (DHET Report, 2020).

The Higher Education Minister Blade Nzimande has recently announced in a media briefing that COVID-19 continues to take a heavy toll not only on the health, but on people's ability to learn and develop. Some impediments to learning at this time includes a lack of access to devices and internet connection, lack of alternative and flexible teaching methods, the phased- in return of students and staff and financial sustainability into the future. Ideally, these efforts would eventuate in dynamic collaborations between employer organisations, CETA, and training institutions, in a drive to push through relevant skills into the labour market. However, the mismatch between what the labour market requires and what is produced by training institutions continues to undermine impact. At the heart of the country's failure to arrest this mismatch (among other things) is the absence of a social compact between the key partners, a compact that clearly defines expectations, has built-in monitoring and evaluation elements and crucially, constantly measures output, throughput, quality and impact.

Table 9 shows the number of first degrees awarded in specific engineering fields between 2014 and 2018. The fields with the largest number of graduates were electrical, electronics and communications engineering and mechanical and mechatronic engineering. Chemical engineering and industrial engineering follow. These fields showed substantial growth over the five-year period.

Table 9: First degrees awarded in selected engineering fields: 2014 – 2018

[1] **Still awaiting data from DHET in order to update this table datasets**

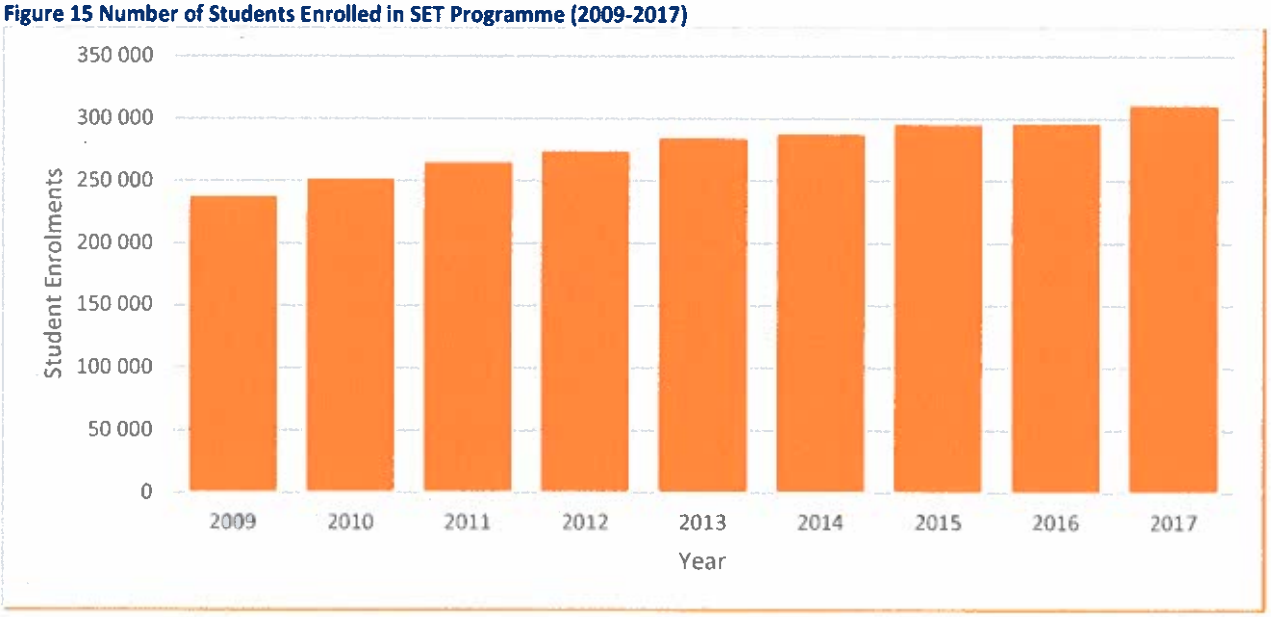
CESM Category	2014	2015	2016	2017	2018	AAG (%)
Electrical, Electronics & Communications engineering	1 174	1 332	1 309	1 321	1 535	6.9%
Engineering mechanics	47	45	38	48	60	6.3%
Materials engineering	33	40	41	37	33	0.0%
Mechanical & Mechatronic engineering	1 160	1 282	1 419	1 553	1 531	7.2%
Industrial engineering	569	711	751	757	1 122	18.5%
Manufacturing engineering	38	41	39	47	46	4.9%

Source: Department of Higher Education, Science and Technology, HEMIS

Enrolment Throughput and Completion in Public HEIs

One of the challenges facing HEI, and largely within SET programmes, is the low completion rate and throughput rate coupled with high dropout rate. As has been discussed earlier, over the years, the number of students enrolled to pursue SET programmes have been on a steady increase. Figure 15 Number of Students Enrolled in SET Programme (2009-2017) shows how between 2009 and 2017 enrolment of students across public universities in SET has steadily increased, promising a potential availability of qualified graduates to meet the demand for labour in the working world.

Figure 15 Number of Students Enrolled in SET Programme (2009-2017)



While enrolment rates have shown promising prospects for the construction sector among others that the SET programmes serve, these programmes are also among those that are affected by high dropout rate over time. This, in turn, has had an effect on the role of the institutions as suppliers of the workforce. Below is depicted the dropout rates of students enrolled to pursue engineering programmes in public higher education institutions over the period of 2000-2015.

3.3.2 Skills supply problems experienced by firms

The research undertaken suggests that the factors influencing skills shortages include the construction sector's poor image, the role of the government, the quality and relevance of the training provided, the ageing workforce, the cyclical nature of the demand for construction services, technological advancements, economic conditions and the need for certification. A strong negative perception exists in South Africa that construction sector jobs are of low social standing, high physical

demands, long hours, remote work sites and nomadic lifestyle (CIDB, 2007). Artisanship requires people with hands-on experience rather than supervisory experience. According to Mukora (2008), today's youth have no preference for hands-on labour and would rather work with computers. As a result, the sector has struggled to attract young people and has failed to replace the labour that has left the sector (Cattell, 1997).

Some of the major issues that came out of both the interview discussions and the online questionnaire were that employees at the manager and professional levels often lacked leadership, management and financial skills. In technical and trade-related occupations in construction, skills gaps were reported mainly in problem-solving, critical thinking and computer literacy. These findings confirm those of Reddy et al (2018) in that the five major construction sector stakeholders highlighted the same areas as lacking and requiring more focus in terms of skills development.

Both the interview discussions and online surveys conducted sought to investigate the perceptions of the key stakeholders, regarding the current skills levels of those working across different job functions in their different organisations. The extent to which the public and private sectors should be involved in any sector of the economy is the main issue in political economics. It was considered prudent, therefore, to establish the kind of experiences and perceptions harboured by people who work in these areas in construction. It was anticipated that findings would shed some light on some of the fundamental skills gaps and how officials think these can be potentially overcome.

The economic forecasts developed in the first chapter showed that the construction sector is expected to continue to shrink in 2020 with the resultant job losses that have been experienced for the last four years. Thanks to COVID-19, this trend is expected to deepen in what remains of 2020 and beyond.

Companies within the sector, particularly smaller firms, could not afford to keep skilled labour employed on a full-time basis, thus forcing skilled employees to find alternative means to support themselves. The consequence is that the workers in the elementary and artisanal areas find work in the informal sector while professionals either emigrate or trade as individuals where their activity is not recorded in the WSP data.

A model of outsourcing work to sub-contractors is adopted by most of the larger construction firms, where there is a strong tendency to employ on a contract basis when extra manpower or specific areas of expertise and specialisation are needed. Smaller companies who are contracted to the larger companies often, therefore, have to source 'off the street' - where skill levels are notoriously low. This further exacerbates the skills problem, as there is little incentive to invest in training and upskilling of these temporary workers.

Another strong sentiment expressed by stakeholders was that a large part of the skills problem in the sector stemmed from the low standard of Mathematics and Science being taught at schools, which consequently affected engineering-related skills.
Despite concern around the quality of secondary schooling standards, many expressed the view that the job-specific skills shortages in the sector are not stemming from the professional job functions such as Engineering, Quantity Surveying or Architecture, but rather at Artisan level.

The research indicated that there was a concern that the standard of professionals is gradually slipping with many of the extremely experienced professionals leaving the workforce (emigrating, joining another business sector or retiring). This situation is aggravated when experienced professionals are promoted to management positions and their replacements not being sufficiently skilled and experienced to adequately fulfil the role. When analysing the WSP demographic data

shown in the table below, the age distribution of professionals and technicians stood out and could provide some explanation for the concerns raised regarding the absorption of younger employees in this field as they represent the greatest number of employees.

A key recommendation is that the CETA embarks on a formal programme to incentivise mentoring and provide job entrants with formal graduate development programmes.

Despite theoretical and practical job-specific skills, the importance and growing lack of soft skills is becoming an increasing threat to the sector. Generationally, it would seem that the younger workforce is significantly less likely to apply self-motivation and discipline, as well as a high degree of pride in their work. This does not only apply to younger individuals, but it seems to be a growing tendency for new entrants to the industry. It is felt that training providers should incorporate academic modules that help to develop and instil high personal standards, and the importance of aspects such as teamwork, time management and ethics. The CETA could make these important considerations and prerequisites, when investing in skills programmes, moving forward.

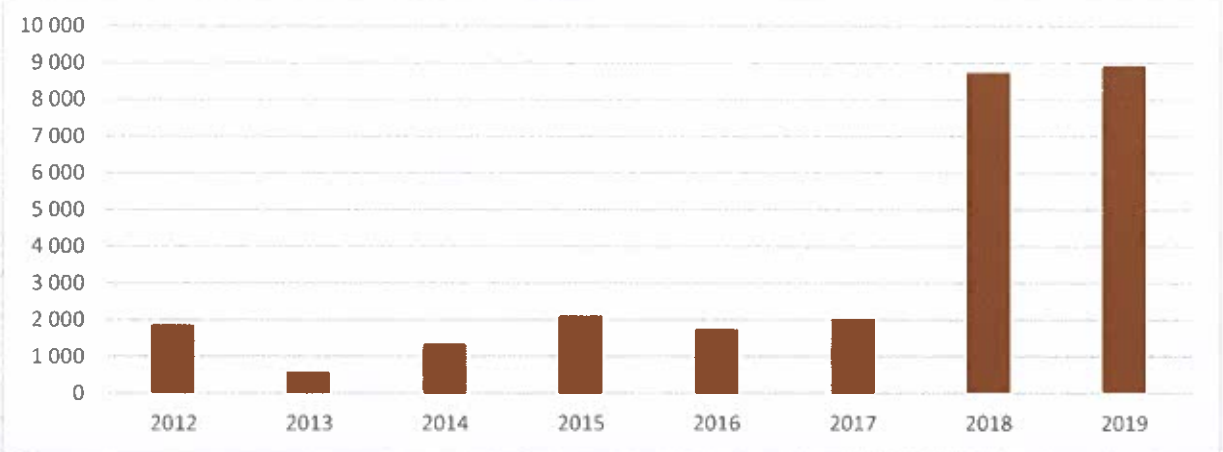
3.3.3 Extent of occupational skills supply

In addition to having a relatively small share of high-skilled individuals, high unemployment, inactivity and informality further reduce the effective use of the pool of skills available and their development through further training. The labour market in South Africa is characterised by persistently high unemployment and low participation rates, affecting mainly youth, low skilled and individuals from disadvantaged backgrounds (Ranchhod, 2019). The unemployed and inactive represent a pool of unused skills, which are at risk of obsolescence and depreciation.

In order to ensure a constant supply of occupational skills in the construction sector the CETA funds various learning interventions including learnerships, skills programmes artisanal programmes and internships. These learning programmes are funded to increase access to occupationally directed programmes and to encourage better use of workplace-based-skills programmes.

There is a continuous need for suitably qualified artisans to sustain industries and support economic growth in South Africa. Artisan development has therefore been elevated as a priority area for skills development in the country. Government's National Development Plan (NDP) and the White Paper for Post-School Education and Training indicates that by 2030 the country should be producing 30 000 qualified artisans per year.

Figure 16: Apprentices enrolled in CETA artisanal programmes



Source: DHET PSET Statistics, 2020

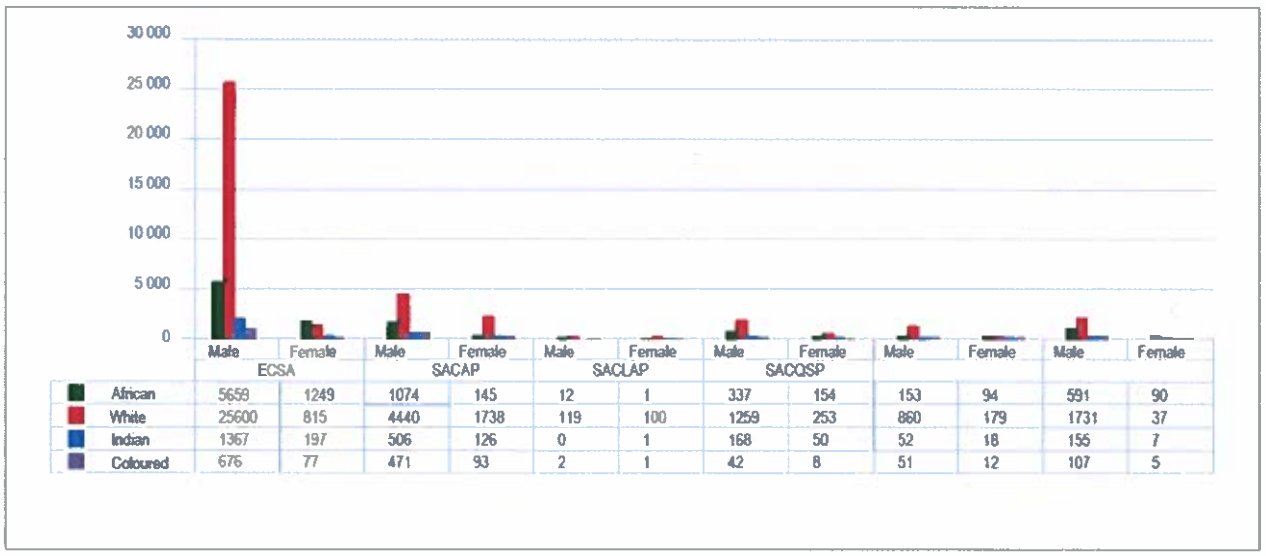
The number of learners entering artisanal learning programmes was 29 982 during the 2018/19 financial year, of which 79.6% (23 851) of these artisans were in the Special Infrastructure Projects scarce skills. Additionally, 19 627 learners completed their artisan programmes during the 2018/19 financial year, of which 83.5% (16 385) of them were in the scarce skills (DHET, 2020). In 2018/19, the CETA recorded the highest number of persons who entered artisanal learning programmes with 8 913 learners.

Professional registration plays a crucial role in the supply of occupational skills in the sector. The six Councils for the Built Environment Professions (CBEPs) regulate the registration of people into the different professional under the auspices of the Council for the Built Environment (CBE). There are almost 51,000 people registered across the six CBEPs. The percentage distribution of professionals across the six CBEPs in 2019 was as follows:

- Engineering Council of South Africa (ECSA) - 70%
- South African Council for Architectural Profession (SACAP) - 17%
- South African Council for the Project and Construction Management Professions (SACPCMP) - 5%
- The remaining three CBEP - South African Council for Landscape Architecture (SACLAP), South African Council for Quantity Surveying Profession (SACQSP) and the South African Council for Property Valuers Profession (SACPVP) - combined, made up less than 10% of registered professionals in the CBEP

By the end of the 2018/19 financial year, 89% of the individuals registered with the CBEP were male. Women make up more than half of the South African population; however, they are significantly under-represented in the built environment professions - only 11% of registered persons are women. This demonstrates the need to implement further mechanisms to offer females support to ensure their representation in the BEPs improves significantly. It is evident that white males comprise the bulk of the registered professionals accounting for 34 010, followed by African males at 7 826 and white females at 3 121. Indian and coloured women are the least prominent groups in the CBEP membership (CBE, 2019).

Figure 17: CBEP comparison per Gender, Race and Profession, 2019



	ECSA		SACAP		SACLAP		SACQSP					
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
African	5659	1249	1074	145	12	1	337	154	153	94	591	90
White	25600	815	4440	1738	119	100	1259	253	860	179	1731	37
Indian	1367	197	506	126	0	1	168	50	52	18	155	7
Coloured	676	77	471	93	2	1	42	8	51	12	107	5

Source: Council for Build Environment Annual Report, 2018/19

Enhancing the participation and leadership of women in the technically skilled workforce will generate a greater positive impact on knowledge-based, technological and highly competitive global economy (CBE, 2019). Additionally, ensuring a pipeline of Black individuals into the professions is necessary to advance transformation. The CETA supports bursaries and candidacy programmes for the built environment professions. In the 2019/20 financial year the CETA supported 593 individuals with bursaries and planned to support 500 people into candidacy programmes.

3.4 Sectoral Priority Occupations

CETA gathers data of scarce skills on an annual basis, i.e. occupations where employers experience difficulties recruiting qualified people. The methods employed include WSPs, construction stakeholder surveys and interview discussions. CETA is also in constant engagement with industry bodies operating in the sector, engaging them around skills development issues.

3.4.1 Methods employed in identifying occupations in the PIVOTAL list

As outlined above, there are various typologies for skills that are identified as scarce. In estimating scarce skills for the construction sector, a model was developed taking into account the number of WSPs submitted per sub-sector. In addition, the model was weighted on the size of employers. A number of assumptions were used to calculate the weighting and these were developed in order to estimate demand for the whole sector. The model was applied to the scarce skills needs identified for the sector through WSP submissions and a list of over 185 occupations was developed. Once the scarce skill occupations have been identified, PIVOTAL interventions are matched with these occupations. The analytical method employed broadly comprised the following steps:

- **Analysis of WSP vacancy data;** to determine trends in vacant occupations (albeit very anecdotal, there is recognition of the fact that the data are not very reliable, but it does serve as the best data available that can be attributed to the construction sector and its sub-sectors). The analysis broadly incorporates filtering out hard to fill positions relative to employment rates per occupation, the number of companies indicating difficult to fill vacancies and representation across construction sub-sectors.
- **Analysis of skills lists from DHET, Home Affairs, SIPs;** these lists were merged to form one master list of skills in high demand and were again merged with the list of skills from the WSP analysis.
- **Skills emerging from construction research institutions;** research reports were used to extract skills needs and merged with the master skills list. This list was then forwarded to CETA for consultation with construction sector stakeholders on the skills highlighted.
- **Assessing demand for skills based on PIVOTAL plans,** the extent of demand was determined from what stakeholders had indicated that they require for the next financial year on the CETA PIVOTAL plan.
- **Determining PIVOTAL interventions;** the interventions were determined through analysis of the PIVOTAL plan in terms of the type of intervention (apprenticeship, learnership, learning programme, etc.). The interventions that appear most often against a particular OFO were determined to be in higher demand. These analyses also highlight sector trends in terms of skills sets and multi-skills, but these would need further investigation to determine more concrete trends.
- **Determining the NQF level;** once again, the PIVOTAL plan was used to determine the NQF level or range of NQF levels. The analyses also indicated sector trends in terms of demand for

higher level skills as many were above NQF 4. The resultant NQF levels were determined based on the range (lowest to highest) the mode (most-repeated level) and the average (average across the range).

3.4.2 Factors that informed the interventions indicated in the PIVOTAL list

Engineering positions (both Civil and Structural) are hard to fill. As such, it is thought that the quality and calibre of engineers working on projects is deteriorating. This deterioration directly impacts construction projects to a great degree. It often results in delays, which necessitates the redesigning of various aspects during the construction process in an attempt to fix engineering mistakes.

Many stated that the positions that are hard to fill are at the lower level, including more manual job functions due to a perceived decline in training received by artisans.
Transformation in the industry is considered a tremendous challenge. Many stakeholders claim that the rate of transformation, particularly among female, black, middle and top management, as well as professional positions, is extremely slow and mostly lacking, making these positions extremely hard to fill with suitable candidates.

3.4.3 Ranking of occupations in the PIVOTAL list

The analyses above resulted in the occupational ranking of scarce skills, specialisations, interventions and NQF levels. The ranking is based on relative demand across the construction sector, with subsectors having their skills needs weighted to ensure representation in terms of relative demand. Table 35 is a culmination of the comprehensive research process undertaken. It shows a list of priority occupations in the construction sector that CETA would need to focus on.

Table 10: Pivotal Interventions

SETA Name	Period	Occupation Code	Occ Description	Specialisation Alternative Title	Intervention Planned by CETA	NQF Level	NQF Aligned	Quantity Needed	Quantity envisaged to be supported by CETA
CETA	2020/21	2019-121904	Contract Manager	Franchise Manager	HET Placement	NQF 7	Y	110	110
					Bursary	NQF 6, NQF 7	Y	110	110
CETA	2020/21	2019-121905	Programme or Project Manager	Labour Recruitment Manager	Bursary;	NQF 4, NQF 5, NQF 6	Y	110	110
CETA	2020/21	2019-132301	Construction Project Manager	Construction site manager; Construction manager; Property development manager; Building & construction manager; Construction project director	Bursary; Candidacy	NQF 6, NQF 7, NQF 8	Y	100	100
CETA	2020/21	2019-214201	Civil Engineer	Structural engineer; Construction engineer; Transportation and urban planning engineer; Site design engineer	Bursary; Candidacy	NQF 6, NQF 7, NQF 8	Y	80	80
CETA	2020/21	2019-214202	Civil Engineering Technologist	Environmental Engineers	Bursary; Candidacy	NQF 5, NQF 6, NQF 7 NQF 5, NQF 6, NQF 7	Y	300	100
CETA	2020/21	2019-214301	Environmental Engineer	Environmental Engineering Technician	Bursary; Internship; HET Student Placement; Candidacy	NQF 6, NQF 7, NQF 8 NQF 6, NQF 7, NQF 8 NQF 6, NQF 7, NQF 8	Y	70	70
CETA	2020/21	2019-214904	Quantity Surveyor	Construction economist; Building economist	Bursary; Candidacy	NQF 6, NQF 7, NQF 8 NQF 6,	Y	60	60

SETA Name	Period	Occupation Code	Occ Description	Specialisation Alternative Title	Intervention Planned by CETA	NQF Level	NQF Aligned	Quantity Needed	Quantity envisaged to be supported by CETA
						NQF 7, NQF 8			
CETA	2020/21	2019-216101	Architect	Building Architect	Bursary; Candidacy	NQF 6, NQF 7, NQF 8 NQF 6, NQF 7, NQF 8	Y	60	60
CETA	2020/21	2019-311201	Civil Engineering Technician	Surveying or Cartographic Technician	Bursary; Candidacy	NQF 4, NQF 5, NQF 6 NQF 4, NQF 5, NQF 6	Y	550	550
CETA	2020/21	2019-311301	Electrical Engineering Technician	Energy Efficiency Technician	Learnership; Apprenticeship	NQF 4, NQF 5, NQF 6 NQF 4, NQF 5, NQF 6	Y	200	200

3.5 Conclusion

This chapter sought to analyse all the key data collected through WSPs/ATRs, interviews, stakeholder engagements and meetings with the leadership of the sector (including the CETA management). Although the onset of the COVID-19 pandemic has made traditional forms of research and stakeholder engagement a tad difficult and the rigour of the analysis less than optimal, there is nevertheless enough for useful inferences to be drawn.

An overriding outcome of the analysis is that change is slow to come by. In a word, the education and training fraternity is yet to produce skills that are relevant and accurately representative of the requirements in the economy and the labour market. This means that the partnerships

between the key players in the supply and demand for skills do not, as yet, have a properly structured relationship that drives the production of current and future skills needs of the construction sector.

Nevertheless, the analysis in the chapter identifies some of the key skills gaps (across all sub-sectors), the need for improved stakeholder partnerships (across the training pipe-line) and the pressing need for a social compact that will guide the sector in negotiating the current and post-COVID-19 realities. For the CETA, this might well be an opportunity to re-prioritise, re-imagine and overhaul much of its workings and operations. Clearly, focused attention needs to be paid to curriculum change, improved and more strategic relations with HEI and TVETs (and move away from purely financial transactional relationships). Specifically, the report shines the spotlight on transformation (insufficient presence of black, women and people with disabilities in key occupations in the sector). These include construction managers, supervisors, civil engineers, environmental engineers. There is also recognition that much of the data we rely upon on in this analysis and assumptions emanating from such analysis may be rendered superfluous and turned on its head by disruptions to do with the pandemic.

Thus, we recognise that the SSP and its reliability as an effective planning instrument will improve as better data trickles in and certainty returns and set the scene for more rigour. Later versions of the SSP will also pay more focused attention on neglected areas for analysis, notably, CETA work in local government and the impact of this increased investment. So, too, increased levels of expenditure in the Free State as against other provinces (notably key centres of economic activity in the sector, like Gauteng, KZN and WC).

4 CETA Partnerships

4.1 Introduction

According to the guidelines on the development of SSPs, partnerships are contextually defined as "A collaborative agreement between two or more parties intended to achieve specified outcomes directed towards addressing mutually inclusive skills, priorities or objectives within a specified time frame."

This chapter sets out key CETA partnerships and assesses the effectiveness of partnerships between the labour market, employers, education and training institutions, and service providers that lead to the supply of appropriately qualified entrants to the labour market.

4.2 An Analysis of Existing CETA Partnerships

Partnerships are essential to CETA achieving its strategic goals. In order to do this, partnerships have been established across the country to ensure the creation of capacity for CETA to stimulate skills development at all education levels, through the commissioning of research projects relevant to the sector as well as stimulating innovation that will lead to the formalisation of skills through RPL programmes and new venture creation.

Current partnership agreements include:

- Government departments
- Public Higher Education Institutions
- TVET Colleges
- Not-for-profit organisations
- Employer organisations
- Informal employment vehicles
- International organisations

Set out below is the table of existing partnerships.

Table 11: Partnership (existing partnerships)

Name of institution/ partner organisation	Nature of partnership (Term and duration)	Objectives of partnership	Value added by the partnership	Success of partnership
KH Institute	5 Years	Create an apprenticeship model based on theoretical, practical and WIL opportunities. Develop a sustainable education model based on proven best practice	Sustainable model for employment through an integrated approach to vocational training	Partnership on dual artisan training, learning from the German model. KH has facilitated the learning from the German experience by CETA management, the South African training providers as well as employers. The partnership has allowed also the starting and running of a pilot project in this regard with Umfolozi TVET College
Chinese Culture and International Education Exchange Centre	5 Years	Contribute positively to the growth and development of the South African economy by bridging the skills gap Internship placement opportunities for students at TVET Colleges in China. Partnership includes co-funding to place South African TVET graduate in Chinese Universities/Colleges to upskill their knowledge in the Built Environment Qualifications and to place them in different companies in China to gain experience.	Lack of opportunities for internships and other WIL opportunities both locally and internationally	The 26 interns who participated in the programme in 2019 have returned to South Africa and because of the success of the internship there are plans to send another 100 learners to China
Technical and Vocational Education and Training (TVET) Branch within the Department of Higher Education and Training (DHET)	Roll out of Centres of Specialisation over 5 Years	The main purpose of the partnership is to support the rollout of the Centres of Specialisation at TVET Colleges, where the Department is funding the learning materials and college costs whilst the CETA funds the grants for the apprentices who are engaged in the project. The Centres of Specialisation are a new project of the DHET for artisan development.	The partnership is spearheading a new way of artisan development using the National Occupational Curriculum.	The CETA has funded the first cohort of apprentices and they are currently finishing their second year of training.

4.3 Model for an Ideal Partnership

The CETA has had varied levels of success with its partnerships. The partnerships are currently at different levels of maturity. The partnership with the Chinese Culture and International Education Exchange Centre has produced a cohort of trainees who have completed their programme and the project management was impeccable. On the other hand, the partnership to pilot the dual artisan model has also recorded some successes. The partnership has allowed the starting and running of a pilot project Umfolozi TVET College. These partnerships are receiving constant reviews to ensure that the model for an ideal partnership is developed. The key learning points from these partnerships are that the strategic aim of the CETA partnerships should be to:

- Help in the drive for the transformation of the South African labour market
- Develop individual growth and promotions in construction-related jobs.
- Develop high-quality, skilled workers within the construction sector.

The key factors to consider when deciding on the partners are as follows:

- Their ability to contribute to the strategic objectives of CETA.
- The impact on small businesses and non-SDL paying employers.
- Contribution to the country and sector's transformation imperatives

The partnerships should:

- Ensure that there are common agreed goals and objectives.
- Include clearly defined performance indicators with realistic time-frames.
- Have clearly articulated and written tactical plans with milestones specifying how the objectives are to be achieved.
- Clearly define roles and responsibilities to drive accountability and execution.
- Map out engagement sessions to review the action plan, results and to update the strategic and tactical plans to ensure the intended goals are achieved.

As a general rule, all partnerships are regulated and reviewed through Service Level Agreements (SLA). These set out, in some detail the content of each partnership, expectations and role of each signatory to the partnership and above all, value add (return on investment) for the CETA. Accordingly, each SLA and partnership is liable to review, depending on performance and circumstance.

4.4 Planned Partnerships

More than ever before, partnership building is going to prove critical in the re-imagination of both the role and place of the CETA (in post-COVID-19 conditions) and the construction sector more broadly. For real impact and an effective recovery plan to emerge, the CETA will either have to lead or instigate for the initiation of a construction sector INDABA, that covers all the key sub-sectors. This would achieve several objectives:

- Obtain an accurate picture of the damage wrought by the pandemic across sub-sectors (from industry directly).
- Obtain a better sense of the worse affected sub-sectors (in order to put in place appropriate mitigation interventions)
- Together agree a set of innovations and changes that need to be factored into the workings of the sector, as a consequence of COVID-19.

- Together agree a minimum programme for recovery (and especially) how we are going to ensure that the government's envisaged infrastructure-built intervention hits the spot, in terms of skills development.

If an INDABA is not feasible in the immediate term, the CETA will simply take matters into its own hands by directly and individually engaging some of the key sub-sectors, essentially continuing a process that we started at the beginning of the pandemic.

The CETA has also considered other strategic partnerships, which are currently in the development phase with no Memorandum of Understanding signed. The CETA recommends the following partnerships for implementation.

Table 19: Planned new partnerships

Name of institution / partner organisation	Gaps that the partnership will be addressing
Council for the Built Environment (CBE)	• The is currently a lack of representativity of black individuals across the professions in the built environment • This partnership aims to amongst other things conduct research on the throughput of black students in the built environment degrees as well as factors impeding them from achieving professional registration • The partnership aims to facilitate for a new pipeline of professionals in sector to ensure representativity in line with demographics of the country
South African Local Government Association (SALGA)	• There is currently a lack of adequate built environment skills across the South African local government landscape • Working with SALGA, the CETA aims to identify factors leading to a lack of skills in local government and also work on joint solutions to build a pool of requisite skills (notably, town planning and architecture).
South African Women in Construction (SAWIC)	• The partnership aims to cover the following: • Collaboration on and implementation of strategies to increase enrolment of women and/or their representatives into CETA funded projects in line with the Sector Skills Plan; • Initiate programmes to mobilise and/or fund women in construction and the built environment; • Create CETA specialised capacity building platforms directed to women
Black Business Council in the Built Environment (BBCBE)	• Black owned businesses are currently not participating fully in skills development due to a number of factors • Collaboration on and implementation of strategies to increase enrolment of black business into CETA funded projects in line with the Sector Skills Plan; • Initiate programmes to mobilise and/or fund black business in construction and the built environment; • Create CETA specialised capacity building platforms directed to black business • Participation on the CETA SMME Strategy
Construction Industry Development Board (CIDB)	• Through this partnership the CETA and CIDB aim to work on collaborative projects aimed at developing the construction sector in line with their respective legislated mandates • The purpose of this partnership would be to reduce duplicated work or efforts, create common technical deliverables and mobilise newly un-utilised capacity to deliver against the partnership goals planned to be set out. • Currently CIDB registration is difficult for start-up small businesses and contractors that are in their early stages of development. This results in the inability to tender for government work.
Department of Public Works and Infrastructure	• A definition of the up-coming infrastructure stimulus package that does not exclude training and skills development. • Build a partnership between state and private sector, in an endeavour to use the stimulus package as an opportunity to grow the construction sector

Name of institution / partner organisation	Gaps that the partnership will be addressing
Infrastructure Unit in the Presidency	• Building partnership with this Unit in order to ensure that government infrastructure stimulus programmes and projects are underpinned by a skills development element (throughout the value chain). • Strengthen construction sector growth coalition to drive growth and jobs in the sector beyond COVID-19
National African Federation for the Building Industry (NAFBI)	• Black owned small businesses in South Africa are lacking in a number of areas including business management, financial management, business development, and technical skills • The purpose of this partnership would be to drive the growth of small businesses to create jobs by ensuring that training and development needs are aligned with their requirements. • The result of increased revenue in these businesses would increase the number of businesses contributing to the SDL

The objectives of the planned partnerships are to drive collaboration between the construction sector bodies and to work with CETA to collaborate on employee development, women in leadership programmes and funding deficit management.

4.5 Critical Evaluation

There is an ongoing process of reviewing all current partnerships to ensure that they comply with CETA strategic objectives and can through performance review demonstrate value for money. The review process can be expected lead to the abandonment of some partnerships, strengthening of others and the emergence of new partnerships, depending on performance, relevance and changed circumstances.

The CETA's purpose is to provide skills development services to the construction sector, to implement the objectives of the NSDS III and the outcomes of the NSDP 2030, and to ensure that people obtain the critical or scarce skills that are needed to build the capacity of the construction sector to become economically sustainable and globally competitive.

4.6 Conclusion

Partnerships remain a strategic lever for the CETA towards achieving its mandate. The CETA will remain committed to strengthening its partnership model to more effectively support national strategies and plans, enhance synergies between the CETA and the sector. The CETA is particularly considering new partnerships that would respond to the effects of Covid-19 in the sector. The review of existing partnerships once concluded would provide the CETA with insights on how to move forward with the implementation of planned partnerships.

5 CETA Monitoring and Evaluation

5.1 Introduction

This chapter constitutes a critically important cog in the ongoing work of producing a credible SSP for the CETA. The significance of M&E in the work of the CETA resides in two important factors. First, effective monitoring and evaluation tools are central to improving the quality of the work the CETA produces. Secondly, effectively deployed, M&E tools will lead to greater levels of public accountability and public confidence in the work of the CETA. As a public entity and given its own recent brushes with maladministration and malfeasance, the CETA has a moral obligation to embrace M&E, if only to open itself up to greater public scrutiny and accountability.

The South African government's Department of Planning, Monitoring and Evaluation (DPME,2019), published a draft policy framework on M&E in 2019. The framework is meant to be a government wide M&E system (GWM&E), that guides policy implementation and evaluation throughout the system. The central focus of the framework is the credibility of the policy process, improved quality of implementation and the evolution of a common set of standards across the system. The CETA, like all state entities, is expected to use this framework as guide, customise it to the unique realities of its own mandate – skills development in the construction sector. The GWM&E was introduced to "provide an integrated, encompassing framework of M&E principles, practices and standards to be used throughout Government, and function as an apex-level information system which draws from the component systems in the framework to deliver useful M&E products for its users." In line with the GWM&E system, CETA is in the process developing a Monitoring & Evaluations (M&E) framework. The framework is aimed at instilling results-based management approaches in the CETA. However, this does not mean that there has been no M&E function at the CETA to date, quite the contrary.

5.2 Current M&E Approaches

Given its role in dispensing large sums of money to a variety of training providers, institutions and employer organisations, the CETA has always had an M&E element in its functioning and standard operating procedures. There are, however, important questions as regards the effectiveness and utility of the current instruments. The use of these instruments at the CETA can be succinctly summarised as follows:

- The M & E Department ensures that the **quality of provision** through monitoring & auditing of providers within its scope of provision is at an effective level.
- The M & E Department ensures the **credibility of learner achievements** through its monitoring of providers, validated programmes and the attainment of national standards.
- The M & E Department recognizes **provider's quality assurance** as the main engine of quality improvement and monitors its effectiveness in maintaining and improving the quality of programmes.
- An annual monitoring plan or quarterly M & E site visit schedule is produced which identifies priorities for monitoring in terms of provider types, **validated programmes and learning achievements**.
- In order to assure itself of the **quality of programmes**, the M&E Department also visits training delivery and or assessment sites to monitor the current practice.

- The information generated by monitoring processes is used by the M&E Department to recognize and disseminate good practice and to recommend quality improvements where necessary.
- The M & E department **coordinates project monitoring visits** for CETA funded projects
- The M & E department **coordinates external moderation visits** for CETA funded projects inclusive of RPL programmes or non CETA funded programmes where required for the purpose of certification

Quite clearly a great deal of energy and resources go into the above exertions, and no doubt these efforts go some way in keeping the various parties honest and accountable. Nevertheless, there is a mountain of evidence showing that these efforts are far from sufficient and nor have they helped in improving efficiency and impact. One of the main culprits is that the information gathered from these sojourns is not well documented and not used appropriately to fight corruption, wastage and improve the impact of the CETA in the production of appropriate skills. The information is utilised chiefly for gathering statistical information for annual reports.

In addition to the monitoring function, the CETA conducts evaluations and tracer studies. Again, information obtained from this exercise is used to inform the Annual Performance Plan and the Strategic Plan, with the focus overwhelmingly on numbers as opposed to impact. A fatal flaw in the current system is that it documents the number (quantity) of learners who are funded by the CETA in any given financial year. What these numbers do not tell us is:

- How many actually completed the programme
- How many went on to positively affect the labour market
- Which specific sub-sectors benefited from these interventions
- To what extent are these interventions denting the "skills gap" in the labour market (including scarce skills areas).
- All of the above speak to the inability to measure impact, using current M&E instruments.

To summarise, the CETA does a great deal of monitoring and far less evaluation and even less impact assessment. To underline the point, a brief discussion of what constitutes an effective monitoring and evaluation exercise follows.

5.2.1 Defining Monitoring and Evaluation

The CETA understands **Monitoring** to be the systematic collection, recording and reporting of information in order to *track progress* towards the achievement of objectives, and to identify the need for corrective action. It is a *managerial instrument* that provides managers, decision-makers and stakeholders with regular feedback and early warning indications of progress or lack thereof, in the achievement of intended results. Ideally, the raw material emanating from monitoring exercises should trigger managers into undertaking *corrective measures*. It provides precise information of the status of a policy, project or programme, relative to set targets and outcomes. Monitoring focuses on description rather than judgement and analysis, it does not endeavour to explain or justify phenomena. The utility and effectiveness of the monitoring exercise has improved over the years. Monitoring is usually linked to *programme outputs*. Once a system has been crafted and customised, there are a variety of very sophisticated desktop applications that can used to improve reliability, early warning mechanisms and the accountability of the project managers to the higher-ups.

Evaluation judges the performance of planned, ongoing or completed interventions, through systematic analysis and examination. The evaluation phase gives evidence of both whether and why

targets, impact and outcomes are or are not being achieved. It also underlines success and weaknesses and pave the way for recommendations for improvement and enhancement. Evaluations are done at specific points within the lifespan of a project, most often mid-term and at the project's completion. Evaluation is usually linked to intended *outcomes and impact* in terms of evaluation criteria, which includes items such as relevance, effectiveness, efficiency and sustainability.

5.2.2 Monitoring and Evaluation Cycle

An effective monitoring tool should take into consideration the various activities required to make it work for the organisation, including planning, implementation, and assessment and reporting. The graphic below illustrates the elements an integrated and multi-faceted approach that the CETA is currently in the early stages of exploring and pursuing towards developing an all-encompassing M&E framework along these lines.

Figure 18: Planning, monitoring and evaluation cycle

In strengthening its evaluation approach, the CETA is adopting the OECD evaluation measures complimented by the Kirkpatrick model. Whilst the measures such as relevance, effectiveness, efficiency, impact and sustainability would be central, the Kirkpatrick model will be used to further measure effectiveness. This model has four levels of measuring effectiveness of training interventions and will enable the CETA to better understand how implementation and results interact. The CETA is developing an evaluation planning approach which identifies on a yearly basis programme evaluation to measure the components as outlined in the table below. The measurement of impact is going to be vital for the CETA, moving forward.

Table 20: Key components to consider in strengthening actions to meet identified priorities

Key components to consider for Skills Interventions	Meaning
Relevance	Extent of alignment to strategic outcomes and national priorities
Effectiveness	A measure of the extent to which interventions/projects/programmes and partnerships achieve the specific objectives it set

Key components to consider for Skills Interventions	Meaning
Efficiency	An indication of whether the input (in terms of required resources, time, equipment etc.) is appropriate in terms of the output
Impact	Whether the interventions/projects/programmes made a difference in terms of the situation it was intended to address
Equity	Does the interventions/projects/programmes address demographic inequalities (contributing to the transformation of the economy)
Sustainability	The benefits of the interventions/projects/programmes will likely continue beyond the lifespan of the interventions/projects/programmes

5.2.3 Reflections on implementation of Strategic Priorities

The table below provides a breakdown of the strategic priorities identified in the previous SSP and whether these have been captured in the CETA's strategic plans. Furthermore, it underlines which strategic priorities have been achieved or not and the related reasons.

Table 21: Strategic Priorities from previous SSP

Strategic priorities from previous SSP	Captured in Strategic Plan and Annual Performance Plan	Progress	Reason for not achieving
1 Work-integrated learning	Yes	Achieved	-
2 Addressing the needs at lower occupational levels	Yes	Achieved	-
3 SMME Support	Yes	Achieved	-
4 Developing coherent sub-sector skills plans	No	Not achieved	See 5.2 below
5 Developments in the Green Economy and Technology	No	Not achieved	See 5.2 below

5.3 Plan of action

The strategic priorities identified in the previous SSP that have not been achieved remain relevant to the sector. The achievement of these strategic priorities can make a significant difference to the built environment and the CETA recommends the following actions to be taken in order to achieve them:

5.3.1 Developing coherent sub-sector skills plans

The CETA continues to recognise the diversity of its sub-sectors and the need to address their specific requirements in ways that are unique to the relevant sub-sector. In this regard, the CETA has taken a firm decision to explore the feasibility and desirability of initiating an **Industry Chamber** system as soon as possible. Guided by engagement with the sector, Chambers will be established representing all the sub-sectors. Initial research suggest that this is the best way to effectively service all our diverse sub-sectors in ways that are focused and responsive the unique requirements of each sub-sector.

5.3.2 Developments in the Green Economy and Technology

It is now common cause that environmental considerations should be at the heart of any growth and development plan. The construction sector is immune to this responsibility of doing development in a sustainable way (in ways that do not imperil the future of later generations). In this regard, the CETA is intent on focusing evermore attention on the green economy. This means that more resources will be invested in training interventions that will enhance the sector's exploration and utilisation of sustainable construction methods. This will include lesson drawing and skills transfer from those countries that are ahead in this endeavour. Partnerships will also be strengthened with

institutions of higher learning and research entities in order to support research and development initiatives focusing on the green economy.

Similarly, more investment will be focused on helping the sector to take full advantage in the technological changes taking root in the sector. These include technological advances in building materials (wood and timber technology) and other innovations across the built value chain and road construction. At any rate, one of the lessons forcefully thrust upon our sector is the increasing need for reduce reliance on exports and to invest in local manufacturing and localisation.

Whilst there is firm commitment to more aggressively pursue the above strategic priorities, more precision and clarity in terms of the mechanics and modalities will emerge as we engage with the sector and the relevant sub-sectors. Internally, efforts are underway to explore the desirability of technology-based monitoring and project management approaches.

5.3.3 Measures achieve strategic skills priorities

To ensure that the next planning cycle is effective and is grounded in the information provided through M&E, the CETA will firstly ensure that there is a drastic improvement in the quality of the data received through entities and on audit site visits. This will include a standardisation of templates and thorough analysis of data.

Secondly, a key lesson learnt through the implementation of the SMME Summit, which culminated in the CETA SMME Strategy, was the importance of stakeholder engagement. Skills development interventions proposed by the CETA, such as skills required for the green economy, require an integrated approach. In this regard, CETA inputs from its stakeholders will be vital for the success of these initiatives.

Thirdly, the CETA is on course in finessing and sophisticating its M&E framework, in ways that will ensure that it pervades all aspects of the organisation's functioning. This includes the provision of specific M&E training to staff members in the related fields. Plans are afoot to train staff in the workings and language of M&E (as per the government's 2019 framework).

Lastly, the CETA aims to engage with its stakeholders more directly for work placement and work-based learning. Closing the gap from post-school education to training provider to workplace forms a part of the CETA's strategy going forward. Increased access to work-based learning allows for real time on-the-job training and in turn, for improved responsiveness of programmes and curricula to the world of work. Employers are encouraged to utilise work-based learning for quality skills development for the learners, assist the learner in gaining workplace related knowledge, skills, competencies and experience.

5.4 Conclusion

There is an intimate appreciation of the weaknesses of the current monitoring and evaluation practices in the CETA. In this regard, the CETA is in the process of re-imagining how M&E is practiced, this will include the training of staff and overhauling the system in ways that will ensure that M&E pervades all aspects of the organisation's operations. It is hoped that once the M&E framework is adopted and results-based management is instilled, the CETA management would be in a position to can align processes, products and services which would contribute to the achievement of clearly stated results.

6 Strategic Skills Priority Actions

6.1 Introduction

The research findings that informed this SSP report have revealed contrasting trends for skills development in the construction sector. An overriding insight, unfortunately, remains the fact that the disjuncture between skills production in training institutions and by private training providers remain largely at odds with what the economy and labour market is calling for. A second insight relates to the weak partnerships between training providers and employers, thereby accounting for the inability of the training to keep up with changing needs in the workplace. Finally, investment and research into new technology and innovations remains weak, as does focus on local manufacturing and skills transfer with global partners. It is now common cause that the notion of a skills mismatch denotes the types of imbalances that occur between the types of skills produced and those needed in the world of work. Analysis of the imbalances and mismatches provides signals to inform an appropriate skills policy response and necessary interventions. This chapter underscores some innovative and creative ways that the CETA (and sector) could explore, in an endeavour to turn the current COVID-19 crisis into an opportunity to reform the sector and the CETA. In what follows, a set of strategic action points are set out, that will respond to current and pressing skills needs, whilst also helping to navigate the big conundrum that is COVID-19.

6.2 Key Skills Findings

The aim of the research undertaken prior to compiling this SSP was to prepare the construction sector skills plan to ensure that public investments in skills development resonate with the needs of the sector and the government's key economic and social priorities. With this in mind, this section briefly summarises the key skills findings uncovered in the foregoing chapters.

6.2.1 Chapter 1

This chapter delved into the precarious nature of the global economy and by extension, the South African economy (which is deeply embedded in the global trading system), as a consequence of the COVID-19 pandemic. The pandemic was shown to have hit South Africa particularly hard, given that the country was already going through a recession, when COVID-19 arrived. The construction sector in South Africa, which has itself been reeling from chronic decline because of lack of investment and economic decline, has felt the sharp-end of the pandemic, with devastating consequences for jobs, growth, skills and innovation in the sector. Internally, the CETA is compelled to quickly adapt in order to ensure that ongoing training programmes are not completely compromised. At the same time, some internal re-oganisation and reform is taking place, to improve performance, accountability and efficiency. On the up-side, there has been recognition for a desperate need of "social compacting" in the sector, a growth coalition/partnership whose central objective will be to help the sector back into recovery, navigate the current crisis and the post-COVID-19 economic and social environment. In this regard, the infrastructure stimulus package was identified as a key moment for such coalition and partnership. Overall, the chapter provides a thoroughgoing analysis of the state of play in the South African construction sector – sector profile.

6.2.2 Chapter 2

The analysis in this chapter underline changes in occupational patterns and the need for a flexible skills base, entrepreneurship, technology, green economy, transformation and localisation. Hard to fill vacancies were investigated, defined and the key causes highlighted. Essentially, the major skills shortage that fuel HTFV were identified to include management skills, financial management and soft

skills including problem solving and creative thinking. The chapter also determined the need for further research into the CETA's local government partnerships and value add. At a glance, these partnerships seem arbitrary and devoid of any economic, strategic or labour market imperatives, they are also disproportionately centred in the Free State. OIHD were investigated using the OIHD index score, which represents the sim of final weighted scores of ten indicators, covering the following dimensions: wage pressure, vacancy pressure, employment pressure and strategic demand. Future versions of the SSP will simplify this index, to make more accessible.

5.1.1 Chapter 3

Hard to fill vacancies (HTFV) and skills gaps are identified and the reasons for their persistence from both the supply and demand sides. Furthermore, there is recognition that the COVID-19 pandemic has imposed a "new normal", which in itself will colour the sector's supply and demand dynamic. For instance, technology is set to play a greater role in how the sector conducts its business, including training. Management training, financial skills, problem-solving and other soft skills stood out as key HTFV requiring urgent attention.

6.2.3 Chapter 4

State of existing partnerships and their nature were investigated, particular attention was focused on the value add of partnerships. Several factors drove the analysis of relevance and desirability of current partnerships and the evolution of new partnerships that more accurately reflect the social and economic moment. These include, COVID-19 and its impact on the budgetary/financial position of the CETA; how our various partners are impacted by the pandemic (several had to fold or are hanging on precariously); various whistle-blower reports and forensic investigations that implicate some partnerships; leadership changes at the CETA and the new mandate to reform and overhaul the CETA means that new partnerships are inevitable. A preliminary list of partnerships has been generated, this is subject to change.

6.2.4 Chapter 5

The research determined that the CETA does practice some form of M&E and has some personnel devoted to doing this work. However, given some of the performance and governance deficiencies identified, a lot points to the need for a far more comprehensive deployment of M&E principles throughout the workings and operations of the CETA. Essentially, the current system points to strengths in monitoring and a desperate weakness in evaluation and impact management. Institutionalisation will cover this gaping hole. This will include a more effective use of now widely available technologically driven M&E instruments, that can allow the CETA to be more efficient in a number of areas. These include tracking learners post training (creating an alumni of CETA graduates) and doing more to connect our graduates with potential employers or entrepreneurial opportunities.

6.3 Key Action Points

The chapter summaries point to the need for specific actions that the CETA should embark on, in order to attend to the deficiencies identified in the chapters, these are set out succinctly hereunder:

Chapter summary	Action points
Sector Profile: Global and local economy will be sluggish in the short to medium term. COVID-19 will colour future growth prospects, with implications for the construction sector	• Facilitate sector-wide partnership and social compacting (growth coalition). • Use coalition to set new growth and skills agenda for the sector. • Identify skills for post-COVID-19 period. • Adapt the sector to "new normal" • Integrate these into curriculum

Chapter summary	Action points
Skills change drivers: There are endogenous and exogenous factors that drive the supply and demand of supply of skills in the construction sector.	• Reprioritise spending in light of COVID-19 impact on CETA budget and financial capacity. • Refocus investment into skills of the future: green construction, 4IR, local manufacturing, transformation and curriculum changes
Occupational shortages and skills gaps: Hard to fill vacancies (HTFV) are particularly pronounced in management, financial management, problem-solving and other soft skills areas.	• Review agreements with TVETs HEI, so they more accurately reflect the skills needs and gaps in the sector. • Re-visit SLA's with HEI and training providers to include focused attention to soft skills. • Future agreements to pay special attention to current HTFV: management, financial management and problem-solving skills.
CETA partnerships: Whilst some of the current partnership still have some way to go, there is an urgent and pressing need to review all CETA partnerships, to ensure they reflect the current social and economic moment. These include our country's transformation imperatives.	• Review all partnerships based on CETA financial constraints (occasioned by COVID-19). • Review partnerships based on impact of pandemic on partners. • Review partnerships based on forensic and other investigations (some may be tainted). • Generate a new partnerships list based on new CETA mandate and post-pandemic priorities. • Review partnerships with transformation, skills development and professionalisation in mind.
Monitoring & Evaluation: In line with the reform and overhaul of the CETA operations, the M&E function needs to be strengthened. There are important weaknesses in the current structures and functioning of M&E.	• Review Organisational structure in order to pace M&E and project management at the centre of organisational operations. • Introduce technology driven M&E applications to improve efficiency and impact. • Introduce M&E instruments that strengthen current evaluation and post-investment tracing and tracking of CETA funded learners (CETA graduate alumni).

6.4 Strategic Skills Priorities

This section succinctly distils the key strategic skills priorities and the CETA's proposed plan of action, in driving change of each strategic priority. These are forward looking strategic areas that are also designed to catapult the sector out of the doldrums created by both a recessionary environment and later on, the COVID-19 pandemic. The table below summarises these issues succinctly:

Strategic priority	Actions Points
COVID-19	A detailed plan is set out to counter the worst effects of the pandemic on the CETA and the sector. This include the immediate conversion of much of our operations and interactions into virtual platforms (where permissible),supporting training providers and employers to adapt to training in COVID-19 and post-COVID-19 realities.
Technology and innovation	The pandemic is imposing a "new normal", the CETA is embracing the challenge for innovation and technological changes – internally and externally. Internally, the systems are being adapted in accordance with the demands of the new normal. Externally, A project has been adopted to distil all new and emerging construction methods and components. The results will be shared with employers, training providers and learning institutions, so that these are factored into the training, further explored for improvements, indigenisation and possible local manufacturing.
Green construction agenda	A comprehensive research project is in motion, to better understand green construction methods, and to integrate these techniques into skills training and the labour market. In the immediate term, skills transfer and integration into local curricula and eventually, the local manufacturing pipe-lines.

Strategic priority	Actions Points
Transformation	Plans are afoot to address the ongoing exclusion of blacks, women and rural folks from the mainstream construction economy. Concrete measures include a project to re-author the role and place of women in the sector, with concrete measures in respect of recruitment, support, retention and placement. In addition, a Transformation Colloquium is planned in order to take stalk and to device new and creative ways of advancing transformation in the sector.
Local manufacturing	A research project is in place to understand new technology available in the sector and to what extent components and innovative methods can be used to strengthen local manufacturing in the sector. The results will be used to recalibrate curricula and training tools, so that they are constantly up to date, innovative and future focused.
SMMEs and Entrepreneurship	Several projects are in place to actively support small players in the sector, including creating a data base of all small entrepreneurs and sharing this with big players for regular contractor opportunities. Research results focusing on the 'informal sector' will be used to formalise training and skills (certification) through an RPL process. Once certificated, the plan is get them into cooperative and to put them on the CETA national data base so they can be considered for future opportunities.
TA (internal organisational capacity)	For all the plans set out above to materialise, the CETA must have adequate internal capacity to drive these complex undertakings. Accordingly, a comprehensive Organisational Development and M&E exercise will be implemented to improve performance, quality and impact. The end goal is to institutionalise M&E across the working and operations of the entire CETA, so there is more accountability, improved efficiencies and impact management. The OD process will commence shortly.

6.5 Measures to support National Strategic Plans

The table below depicts key national strategies and plans that impact the CETA's skills development drive and the various measures designed support these plans.

National Strategy and Plan	Support measures
National Skills Development Plan 2030	• Research to identify scarce skills and hard to fill vacancies is ongoing and constantly improving and so too, is the accuracy. • The drive to consolidate the working relationship with employer organisations is the main preoccupation of the new leadership at CETA, this will lead to better feed-back from employers, regarding skills supply and demand.
Infrastructure Development Programme	• CETA engaging with the new Minister of Public Works and Infrastructure to explore the possibility of building a skills partnership around the proposed Infrastructure stimulus package. • CETA engaging with the new Head of Infrastructure at the Presidency, to ensure that skills development is at the centre of all national infrastructure programmes and projects. • In our engagement with the private sector, we are pushing for a sector-wide coalition/partnership, so that the stimulus intervention benefits all sub-sectors and create training opportunities throughout the pipe-line.
Labour Market Intelligence Partnership	• The CETA leadership is determined to ensure that its data, analysis and research output is of the highest standard. For this reason, regular engagements are scheduled with the LMIP to ensure that the construction sector features prominently in its work. • Given the significance of the sector in the overall economy of South Africa, CETA intends sharing our research insights and internal work with the LMIP to improve their capacity of producing rigorous and quality research products, that will benefit the CETA and its future SSPs.

National Strategy and Plan	Support measures
Construction Sector BBBEE Code	• CETA driving Economically Active Population targets, which is an instrument to address the unequal representation of race sub-groups in the construction sector. • The Women in construction partnership is being revised to more accurately reflect the urgency and depth of this national imperative. • The projects on disability are being revised, in order attend to poor performance and impact. • The end goal is for a 50-50 push on gender participation and at least 2% disability participation in all future projects.

6.5 Conclusion

The data analyses undertaken in this research revealed some important insights about the significance of the construction sector to the South African economy. Investment in human capital development, knowledge and skills has been shown to have great economic value. The impact of education and training on individual company performance, and the construction sector as a whole has been shown to be an important issue. The influence of education and skills on productivity and innovation are enormous. With the above noted, the CETA has a critical role to play in navigating the current COVID-19 and post pandemic environment. Some of the challenges are internal, requiring re-organisation, re-prioritisation and a refocused CETA in light of both the Administration order and the onset of the pandemic. Externally, there is quite clearly a need for the forging of better and stronger partnerships in the sector (locally and globally).

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