Mining Future Skills

MINING QUALIFICATIONS AUTHORITY

FINAL REPORT

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FOR

CONDUCTING RESEARCH STUDIES ON SKILLS DEVELOPMENT AND RELATED MATTERS WITHIN THE SUBSECTORS OF THE MINING AND MINERALS SECTOR (MMS): A CASE STUDY OF FREE STATE PROVINCE

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EXECUTIVE SUMMARY

This study was commissioned to provide a comprehensive assessment of the skills landscape within the Mining and Minerals Sector (MMS) in the Free State Province, with a specific focus on informing strategic skills planning within the mandate of the MQA. The purpose of the study was to identify current and emerging skills demand, assess the alignment between skills supply and labour-market needs, examine systemic constraints affecting skills development outcomes, and derive evidence-based recommendations to strengthen skills planning, funding and partnerships at provincial level. Particular emphasis was placed on understanding how skills development can support both the operational requirements of the mining sector and broader economic diversification and transition pathways.

The study adopted a mixed-methods approach, combining secondary data analysis with primary qualitative data collection. The methodology included a structured review of national and provincial policy frameworks, sector strategies and academic literature; analysis of Workplace Skills Plans (WSPs) and Sector Skills Plans (SSPs); and a comparative skills-provider-occupation nexus analysis. Primary data were collected through stakeholder engagements, interviews, surveys and consultations across the skills development ecosystem. Participation was obtained from all district municipalities within the Free State. Although representation from some districts was relatively limited, the study achieved particularly strong participation from Lejweleputswa District Municipality, which is appropriate given that it contains the largest concentration of mining activities in the province.

The findings indicate that the Free State has a relatively extensive skills provision landscape, supported by MQA programmes, other Sector Education and Training Authorities (SETAs), government initiatives and selected private-sector partnerships. However, this supply of training has not consistently translated into sustainable employment outcomes. Skills demand within the MMS is largely replacement-driven, reflecting a mature and contracting mining sector with limited employment growth. Persistent shortages were identified in artisanal trades, engineering, machine operation and technical supervisory roles, alongside emerging demand for digital skills, green skills, environmental management and occupational health and safety.

Skills provision is unevenly distributed across the province, with access to training infrastructure, workplace learning and accredited assessment opportunities concentrated in more economically active areas. Rural and sparsely populated districts experience significantly reduced access, constraining participation and progression. A critical gap exists between theoretical training and recognised trade certification, particularly within N1-N6 pathways, limiting employability and advancement. These gaps are reinforced by limited access to workplace exposure and trade testing, especially for youth and unemployed individuals.

While WSP data generally reflect alignment with immediate operational needs, particularly within mining operations, training remains largely supply-driven and compliance-oriented, with insufficient responsiveness to spatial, sectoral and occupational realities. As a result, skills shortages and high unemployment coexist, indicating persistent labour-market mismatch.

The study concludes that the core challenge facing MMS skills development in the Free State is systemic rather than programmatic. Investment in education and training alone, as emphasised by human capital theory, does not yield returns unless enabling systems are in place to connect skills provision with labour-market demand and economic opportunity. Weak coordination between stakeholders, fragmented planning processes, uneven participation in skills intelligence mechanisms and limited geographic place-based differentiation undermine the effective functioning of the skills pipeline.

From a systems perspective, these shortcomings increase the risk of labour-market mismatch, where skills are developed without viable absorption pathways. Consequently, training interventions are less able to reduce unemployment, alleviate poverty or improve living conditions, particularly in mining-affected and rural communities. Addressing these challenges requires a coordinated, system-wide approach that integrates skills planning, funding, delivery and employment pathways.

The study proposes a set of strategic recommendations to strengthen the MMS skills system in the Free State. Key recommendations include positioning MQA as a system steward to improve coordination and demand-driven planning; enhancing the integration of WSP

evidence, cross-sectoral skills priorities, and provincial economic planning; and improving end-to-end learning pathways, especially for artisanal and technical skills.

Further recommendations focus on refining funding mechanisms to prioritise progression, workplace learning and trade certification, while expanding reskilling and upskilling opportunities that support diversification pathways into agriculture, manufacturing, construction, services and emerging green economy sectors. The study further highlights the need for stronger alignment between MQA programmes, other SETA initiatives and provincial economic development priorities to create coherent transition pathways for mining-affected communities. Digital skills, green skills, technical and artisan competencies, and business management capabilities are identified as critical enablers of occupational mobility and sectoral transition. Entrepreneurial and business-development skills were also identified as a priority for local economic empowerment, given the province's high level of informal economic activity and limited capacity of the formal labour market to absorb new entrants. Strengthening partnerships across industry, education and training institutions, government and community structures is identified as essential to improving coordination, participation and accountability across the skills development ecosystem. Collectively, these recommendations seek to reduce labour-market mismatch, enhance the impact of skills investment and support the translation of training and education into sustainable careers that contribute to employment growth, poverty reduction and improved socio-economic outcomes in the Free State.

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LIST OF ABBREVIATIONS AND ACRONYMS

Table 1: Abbreviations & Acronyms

Abbreviation/Acronym	Description
AgriSETA	Agricultural Sector Education and Training Authority
AMC	AMC Training Centre
APP	Annual Performance Plan
ATR	Annual Training Report
CATHSSETA	Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority
CBO	Community-Based Organisation
CEIC	CEIC Data (Economic Database)
CHIETA	Chemical Industries Sector Education and Training Authority
CLAS	Cement, Lime, Aggregates and Sand
COGTA	Department of Cooperative Governance and Traditional Affairs
DBE	Department of Basic Education
DDM	District Development Model
DEDT	Free State Department of Economic Development and Tourism
DEL	Department of Employment and Labour
DESTEA	Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs
DHET	Department of Higher Education and Training
DME	Department of Minerals and Energy
DMPR	Department of Minerals and Petroleum Resources
DMRE*	Department of Mineral Resources and Energy
DSI	Department of Science and Innovation
DTIC	Department of Trade, Industry and Competition
EBSCO	EBSCO Academic Database
ETI	Employment Tax Incentive
EU	European Union
EWSETA	Energy and Water Sector Education and Training Authority
FASSET	Finance and Accounting Services Sector Education and Training Authority
FDC	Free State Development Corporation
FET	Further Education and Training
FS	Free State
FSGDS	Free State Growth and Development Strategy
GDP	Gross Domestic Product

Abbreviation/Acronym	Description
GES	General Engineering Supervisor
HR	Human Resource
HRDC	Human Resource Development Council
HRDS	Human Resource Development Strategy
HTFV	Hard-to-Fill Vacancies
ICT	Information and Communication Technology
IPAP	Industrial Policy Action Plan
JET	Just Energy Transition
LGSETA	Local Government Sector Education and Training Authority
MAP-SEZ	Maluti-A-Phofung Special Economic Zone
MCSA	Minerals Council South Africa
merSETA	Manufacturing, Engineering and Related Services Sector Education and Training Authority
MMS	Mining and Minerals Sector
MQA	Mining Qualifications Authority
MRM	Mineral Resource Management
NDP	National Development Plan
NEET	Not in Employment, Education or Training
NPPSET	National Plan for Post-School Education and Training
NQF	National Qualifications Framework
NSA	National Skills Authority
NSDP	National Skills Development Plan
NSF	National Skills Fund
OECD	Organisation for Economic Co-operation and Development
OFO	Organising Framework for Occupations
OHS	Occupational Health and Safety
PCMPR	Portfolio Committee on Minerals and Petroleum Resources
PGM	Platinum Group Metals
POPIA	Protection of Personal Information Act
PSET	Post-School Education and Training
PSETA	Public Service Sector Education and Training Authority
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SABC	South African Broadcasting Corporation
SBU	Strategic Business Unit
SDA	Skills Development Act
SETA	Sector Education and Training Authority

Abbreviation/Acronym	Description
SEZ	Special Economic Zone
SHEQ	Safety, Health, Environment and Quality
SLP	Social and Labour Plans
SMART	Specific, Measurable, Achievable, Relevant, Time-bound
SMME	Small, Medium and Micro Enterprise
SMS	Short Message Service
SSP	Sector Skills Plan
STEM	Science, Technology, Engineering and Mathematics
TIPS	Trade & Industrial Policy Strategies
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
WP-PSET	White Paper for Post-School Education and Training
W&RSETA	Wholesale and Retail Sector Education and Training Authority
WIL	Work-Integrated Learning
WSP	Workplace Skills Plan

**The Department of Minerals and Energy (DME) was restructured into the Department of Mineral Resources and Energy (DMRE) in 2019. The DMRE was subsequently restructured and renamed the Department of Minerals and Petroleum Resources (DMPR) in 2024 to better reflect its expanded mandate, which now includes the oversight and regulation of both mineral and petroleum sectors. For consistency and to avoid confusion, the current naming convention of DMPR is utilised throughout the report regardless of the name of the entity at the time of publication of secondary data sources.*

1. INTRODUCTION AND STUDY CONTEXT

1.1 Background and Rationale

The Mining Qualifications Authority (MQA) commissioned this study to evaluate and analyse the skills development landscape within the mining and minerals sector (MMS) in the Free State Province. The study focused on assessing current and emerging skills demand and supply, as well as the alignment between education and training provision, labour-market needs, and provincial socio-economic development priorities.

The rationale for the study was to ensure that skills development interventions in the province were grounded in credible evidence and responsive to both sectoral requirements and broader development objectives. By examining relevant policy and legislative frameworks, sectoral and labour-market dynamics, demographic trends, institutional capacity, and stakeholder experiences, the study aimed to generate actionable insights to inform MQA planning, funding allocation, and partnership decisions. In doing so, it sought to contribute to a more coherent, responsive, and inclusive provincial skills development system capable of supporting sustainable economic growth, employment creation, and participation in the mining value chain.

1.1.1 Provincial MMS Context

The MMS has historically been a central pillar of the Free State's economy, particularly through gold mining concentrated in districts such as Lejweleputswa. Over time, the province's mining profile expanded to include coal, diamonds, and uranium as a by-product of gold extraction, shaping employment patterns, settlement structures, and local economic development in mining-affected communities (Minerals Council South Africa, 2025; Ntema, Marais, Cloete and Lenka, 2023).

In recent years, however, the provincial MMS has undergone sustained structural decline driven by resource depletion, mine closures, market pressures, and South Africa's transition toward a lower-carbon economy. As a result, mining now accounts for a relatively small share of provincial employment, despite its continued strategic importance in specific localities (Statistics South Africa, 2025a). This shift has coincided with gradual economic diversification toward agriculture, manufacturing, services, and emerging green economy activities, altering

labour demand and skills requirements across the province (Statistics South Africa, 2024a; Trade & Industrial Policy Strategies (TIPS), 2024).

This evolving provincial MMS context provides the backdrop against which skills development challenges and opportunities in the Free State must be understood, underscoring the need for responsive, district-sensitive skills planning aligned with both the realities of mining transition and emerging economic pathways.

1.1.2 Skills Development Mandate of MQA

The MQA was established in 1997 in terms of Section 41(3) of the Mine Health and Safety Act (Act 29 of 1996), and was formally registered as a Sector Education and Training Authority (SETA) under the Skills Development Act (Act 97 of 1998, as amended). Its mandate is to promote, coordinate, and support skills development across the MMS throughout South Africa, in line with the objectives of the National Skills Development Plan (NSDP). While this mandate is nationwide, its execution is carried out at the provincial level through specific planning, funding strategies, and partnerships tailored to local labour-market needs. In the Free State Province, the MQA's objective is to ensure that skills development initiatives are based on evidence, aligned with sector demands, support sustainable economic growth, enhance workforce employability, and promote inclusive participation in the mining value chain.

At the provincial level, the MQA fulfils its responsibilities by gathering and applying labour-market intelligence, distributing skills development funds, and working with employers, educational and training institutions, organised labour, and government stakeholders. These efforts seek to address occupational shortages and skills gaps, improve education and training programmes, encourage workforce transformation, and foster community and cross- sector skills development in mining-affected regions. Through this strategy, the MQA aims to build a more responsive and integrated provincial skills development system that meets both the operational needs of the MMS and broader socio-economic development goals.

1.2 Scope of Study

The scope of this study was limited to the MMS within the Free State province. The research focused on assessing skills demand, skills supply, and skills gaps relevant to the sector, with

particular emphasis on critical and scarce occupations, workforce composition, and emerging skills requirements.

The study examined the accessibility, relevance, and perceived effectiveness of skills development interventions, including education and training provision, learnerships, and other workforce development mechanisms aligned with the mandate of the MQA. It incorporated perspectives from key stakeholders across the skills ecosystem, including industry, education and training institutions, organised labour, community representatives, government entities, and skills development intermediaries.

The analysis examined the provincial socio-economic context, sectoral dynamics, and cross-sectoral linkages that shape workforce development. This included consideration of agriculture, manufacturing, and selected emerging sectors, as well as broader factors influencing workforce readiness, reskilling and upskilling requirements, economic diversification, and the implications of the energy transition for future skills planning.

The research was based on a combination of quantitative survey data, qualitative stakeholder interviews, and secondary data sources, including policy documents and literature.

1.3 Problem Statement

The Free State's mining and minerals sector (MMS), historically a major contributor to the provincial economy, has experienced a sustained decline in both economic output and employment. The sector's contribution to provincial gross domestic product fell from approximately 11% in 2021 to around 9% in 2023 (TIPS, 2024), and further to 6% in 2025 (Minerals Council South Africa - MCSA, 2025). Mining employment has followed a similar trajectory, with labour data indicating an almost 20% reduction in sector jobs in the first quarter of 2024 alone (TIPS, 2024). This sustained contraction has reduced the sector's capacity to support employment and economic stability in mining-dependent communities.

At the same time, the provincial education and training system continued to supply learners for mining-related occupations through Technical and Vocational Education and Training (TVET) colleges and higher education institutions. However, the literature indicated that outdated training infrastructure and limited access to modern industry technologies constrained the effectiveness of practical skills development and weakened the translation of

training investment into employability and productivity outcomes (Lukhele and Laseinde, 2024).

Despite the existence of national frameworks intended to anticipate future skills needs, provincial coordination to align skills planning with labour-market demand remained limited. This misalignment reflected a broader labour-market mismatch, whereby skills supply continued in areas of declining employment while emerging and transitional skills needs were insufficiently addressed (MCSA, 2025).

Viewed from a systems perspective, fragmented coordination among industry, training institutions, skills authorities, and provincial stakeholders further constrained the responsiveness of the skills development system.

Consequently, the core problem addressed by this study was that the decline of the MMS in the Free State was not accompanied by a sufficiently responsive, coordinated, and demand-led skills development system capable of supporting economic transition, workforce mobility, and sustainable employment outcomes.

1.4 Study Objectives

The aim of this research project was to conduct a thorough assessment of the MMS skills landscape in the Free State province. The study sought to identify and analyse critical occupational shortages, skills gaps, and development priorities that align with the MQA mandate and broader national and provincial policy frameworks. This included considering the province's unique economic landscape, mineral resource endowments, sectoral priorities, socio-economic advancements, and its broader development goals. Specifically, the research aimed to generate evidence-based insights that would inform targeted skills development interventions, support inclusive local economic growth, enable workforce participation, and contribute to the effective alignment of education and training supply with current and emerging industry demands in the province.

The specific objectives identified for this study included:

- Analysing the effectiveness of current legislation, policies, and strategies driving skills development in the province.

- Assessing the alignment of provincial frameworks with national strategies [including: District Development Models (DDMs)].
- Analysing the population demographics of the province (including age distribution, gender, and racial representation, educational attainment levels and skillsets of working-age population).
- Establishing a detailed profile of the MMS in the province (including main mining commodities extracted and processed; size and composition of the existing workforce; types of companies operating in the sector including national, multinationals and small-scale miners).
- Analysing the economic performance of the MMS compared to other sectors in the provincial economy.
- Assessing its contribution to Gross Domestic Product (GDP), job creation, and revenue generation.
- Identifying the existing mining-related occupational shortages (hard-to-fill vacancies) and skills gaps within the province and reasons thereof.
- Identify the mismatches between the skills required by mining companies and the skills available in the community.
- Assessing the adequacy and effectiveness of existing skills development programmes in addressing provincial needs.
- Analysing the capacity offerings of technical colleges, universities, and industry-specific training providers in addressing the skills development in the province.
- Identifying the common skills development needs of community members living near mining operations and beyond mining-specific jobs.
- Analysing the demand for skills in related sectors such as agriculture, manufacturing, tourism, and service industries.
- Assessing the need for entrepreneurial and business development skills for local economic empowerment.

- Gathering insights on the community and companies' experiences in accessing skills development offerings from the MQA.
- Exploring the potential synergies between skills development needs of the MMS for upskilling and reskilling existing workforce for diversification into other sectors.
- Identifying potential partners and stakeholders relevant to addressing skills development needs in the province.

Insights from this research support evidence-based policy recommendations and strategic interventions by the MQA and relevant stakeholders, ensuring the sustainable development of the MMS and broader socio-economic empowerment of the Free State province.

1.5 Significance of the Study

The study holds strategic significance for:

- Enhancing the MQA's strategic and operational plans by providing a comprehensive understanding of province-specific skills requirements and gaps. This knowledge will facilitate the more effective allocation of funding to address community needs and ensure better alignment with sector skills plans.
- Supporting the implementation of the DDM by providing localised data on community and industry needs.
- Empowering communities through context-specific and responsive skills development initiatives.
- Fostering economic diversification and resilience by exploring pathways to integrate skills into non-mining sectors.

This is particularly important in the Free State, where youth unemployment is above 60% (Statistics South Africa, 2025a; 2025b), and access to training is concentrated in urban nodes, leaving rural areas marginalised.

2. POLICY, LEGISLATIVE AND STRATEGIC FRAMEWORK

This section of the report addresses the effectiveness and alignment of policy, legislative and strategic frameworks relevant to skills development, where possible this is taken to provincial and district level.

Figure 1 outlines both the vertical alignment and horizontal alignment of policy, legislation and strategies. Vertical alignment cascades from national level to district municipal level and horizontal alignment indicates instruments at the same level.

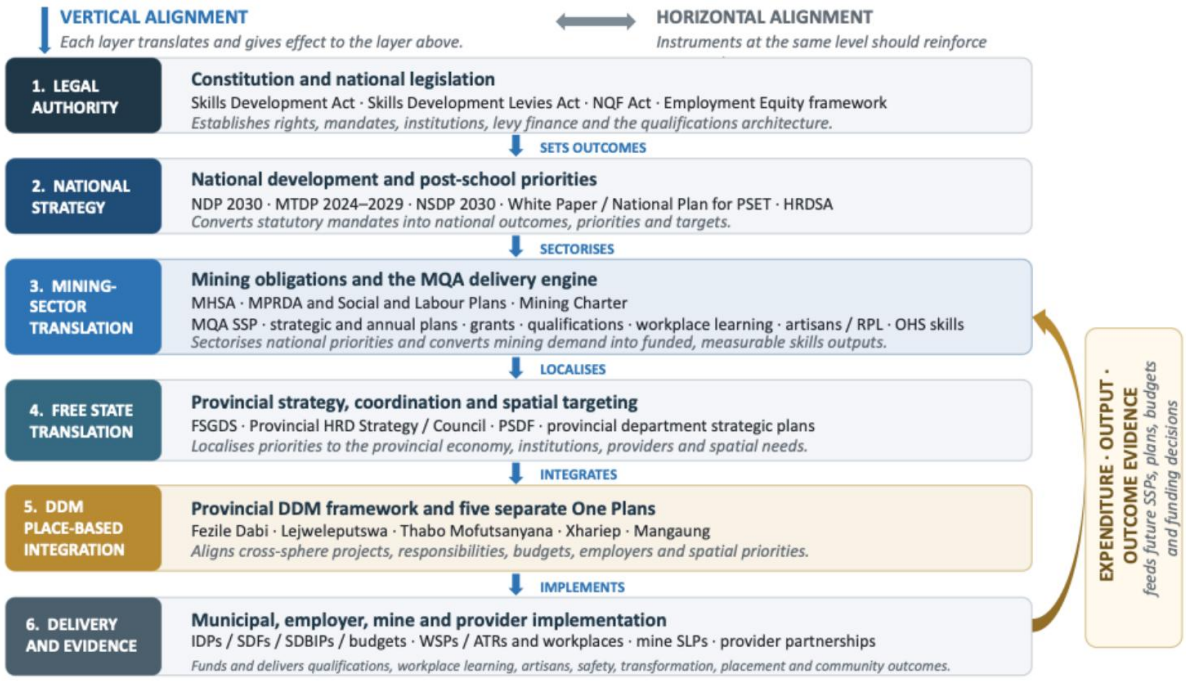


Figure 1: Policy-to-delivery architecture used for alignment assessment

Source: Authors' synthesis of the legislation, policies, strategies and implementation instruments assessed in this study

2.1 Assessment of the Alignment of Provincial Frameworks with National Strategies

The study undertook an assessment of the alignment of provincial frameworks with national strategies, including the DDM. The purpose was consequently to test whether the Free State's strategies, departmental plans, human-resource coordination arrangements, One Plans and municipal implementation instruments translate current national and mining-sector priorities into a coherent provincial and place-based skills system. The section follows the same six-layer structure (see Figure 1) that is also used for the effectiveness assessment dealt with

later in section 2, but seeks to understand whether the objectives, instruments, institutional roles and implementation mechanisms reinforce one another across levels.

Alignment and effectiveness are complementary rather than interchangeable. Alignment concerns coherence and translation; effectiveness concerns implementation and results. A framework may be well aligned on paper yet poorly implemented, while a locally successful programme may operate despite weak strategic integration. The accompanying effectiveness assessment found the overall system partially effective. The alignment section explains an important aspect: alignment is strongest upstream, but progressively less demonstrable as national and sector priorities move through provincial planning, the five One Plans and municipal or employer delivery.

Vertical alignment is tested from national law and strategy down to Free State and district delivery. Horizontal alignment is tested among instruments at the same level, including the Free State Growth and Development Strategy (FSGDS), departmental plans, the Provincial Human Resource Development Council and sector or municipal plans. Implementation alignment is tested through budgets, accountable institutions, projects, data and performance measures. The MQA mandate provides the materiality filter: an instrument is analysed only where it governs or affects sector skills planning, WSP/ATR participation, levy-grant funding, occupational qualifications, artisan development, workplace learning, health and safety competence, transformation, mine-community development, provider capacity, certification, placement or occupational progression.

2.1.1 Analytical Standard, Evidence and Limitations

The analytical standard draws on policy-coherence and policy-integration scholarship. Coherence requires objectives and instruments to be mutually supportive, while integration requires institutional and implementation arrangements that can manage cross-sector and cross-sphere dependencies (Howlett and Rayner, 2007; Cejudo and Michel, 2017). Four alignment dimensions are applied. These dimensions prevent the assessment from equating similar policy language with an operationally integrated system.

Table 2: Alignment dimensions applied to the six-layer framework

Dimension	Alignment question	Evidence required
Vertical alignment	Do provincial, district and municipal instruments translate current national and sector priorities into specific lower-order commitments?	Crosswalk of objectives, targets, occupational priorities, beneficiaries and indicators.
Horizontal alignment	Are Free State plans, MQA priorities, provider arrangements, employer plans and mine-community commitments mutually reinforcing?	Compatible priorities; shared demand evidence; coordinated projects; duplication and contradiction tests.
Institutional alignment	Are responsibilities, forums, escalation routes and partnerships defined across the three spheres, MQA, employers and providers?	Mandates; membership; terms of reference; named owners; participation records; accountability arrangements.
Resource and implementation alignment	Do budgets, grants, projects, workplaces and monitoring systems give practical effect to aligned priorities?	MTREFs, APPs, SDBIPs, grant decisions, WSPs/ATRs, SLPs, project registers and outcome dashboards.

Source: Authors' application of Howlett and Rayner (2007), Cejudo and Michel (2017), the DDM Regulations (2024) and the MQA mandate

Table 3: Alignment rating scale

Rating	Interpretation
Strong	Objectives and instruments are coherent and are translated into specific responsibilities, resources, implementation mechanisms and measures.
Moderate	Material objectives are compatible and some translation mechanisms exist, but cross-institutional targets, resourcing or evidence remain incomplete.
Partial	Alignment is visible mainly at the level of general intent; important occupational, spatial, institutional or implementation links are absent or unverified.
Not verifiable	The latest approved instrument, adoption record or implementation evidence was not available and a defensible document-level judgement cannot be made.

Source: Authors interpretation of ratings to assess alignment, not programme effectiveness or statutory compliance.

The evidence base is inclusive of all instruments presented in Figure 1.

The principal limitation is version access. Fezile Dabi and Mangaung have identifiable second-generation or revised documents in official repositories, while the only standalone Xhariep file located is a 2021 draft. The latest standalone Lejweleputswa and Thabo Mofutsanyana One Plans were not located on an official public website. Official Integrated Development

Plans (IDPs) describe One Plan processes, and a Thabo Mofutsanyana IDP states that it serves as the district's One Plan, but an IDP reference does not, by itself, establish the version, endorsement and intergovernmental commitments of the current standalone One Plan. The analysis therefore does not manufacture document-level findings where the operative record is unavailable.

2.1.2 National Legislative and Policy Environment

South Africa's skills development and employment policy environment is shaped by a comprehensive set of legislative and strategic frameworks aimed at improving workforce capability, reducing unemployment, and promoting inclusive economic growth. Collectively, these policies establish the institutional architecture, strategic direction, and implementation mechanisms through which skills development is expected to contribute to labour-market participation and poverty reduction.

2.1.2.1 Legal and Institutional Foundation

The constitutional and statutory architecture is strongly aligned internally. The Constitution establishes education, equality, lawful administration and cooperative-government foundations. The Skills Development Act 97 of 1998 creates the SETA, sector-planning and workplace-learning system; the Skills Development Levies Act 9 of 1999 finances employer and sector interventions; and the National Qualifications Framework Act 67 of 2008, together with post-school legislation, provides the qualification, articulation and quality-assurance architecture (Republic of South Africa, 1996a; 1997; 1998a; 1999; 2006; 2008). These instruments collectively enable the core MQA chain from skills intelligence and levy-grant funding to occupational learning, assessment and certification.

Employment Equity and broad-based transformation instruments are also materially aligned with skills development because they require or incentivise occupational pipelines for designated groups (Republic of South Africa, 1998b; 2003a; 2022; Department of Employment and Labour, 2025a; 2025b). The alignment test is not satisfied by enrolling beneficiaries alone. Employer employment-equity plans, WSPs, grants, qualifications and progression pathways should reinforce one another and should be measurable by occupational level, completion, certification, absorption and promotion. This is especially

important in technical, professional and management occupations where the amended employment-equity framework establishes current sectoral expectations.

2.1.2.2 National Development, Post-School and Human-Resource Strategy

The National Development Plan (NDP) 2030 supplies the long-term direction, while the Medium-Term Development Plan (MTDP) 2024-2029 is the current whole-of-government implementation framework. The MTDP priorities (i.e. inclusive growth and job creation, poverty reduction and a capable state) are consistent with the Free State study's concern with labour absorption, equitable access and institutional capability (National Planning Commission, 2012; Republic of South Africa, 2025).

The NSDP 2030, White Paper for Post-School Education and Training and National Plan for Post-School Education and Training (PSET) translate the national direction into demand responsiveness, workplace learning, institutional articulation, access and improved outcomes (Department of Higher Education and Training - DHET, 2013; 2019; 2021a). The Reconceptualised Human Resource Development (HRD) Strategy 2025-2035 and Master Skills Plan 2025-2030 add a current coordination framework, including responsiveness of the PSET system to skills demand (Human Resource Development Council - HRDC, 2025a). The national framework is therefore strongly aligned in design. Its practical dependency is that sector, provincial and district structures must use compatible occupational intelligence, planning cycles and outcome measures.

2.1.3 Mining Sector and MQA Translation

2.1.3.1 MQA Sector Skills Plan and Output Architecture

The revised MQA Sector Skills Plan 2025-2030 and the 2026/27 update are the principal mechanisms for translating national skills policy into the mining and minerals sector. The SSP identifies sector change drivers, skills mismatches and priority interventions and is intended to inform the MQA Strategic Plan, Annual Performance Plan, qualifications, partnerships, career information and levy-grant decisions (MQA, 2026a; 2026b). This produces strong upward alignment to the Skills Development Act and NSDP.

Downward alignment is less complete. A national SSP does not by itself reveal how demand, grants, providers, workplaces and beneficiaries are distributed across the Free State's five DDM spaces. The required translation product is a Free State and district annex that reconciles MQA occupational priorities with employer WSP/ATR evidence, operation and commodity profiles, provider capacity, trade-test access, catalytic projects and anticipated mine, energy or industrial transitions. Without that spatial bridge, the SSP can be nationally coherent but weakly connected to One Plan and municipal implementation.

2.1.3.2 Mining Rights, Safety, Transformation and Communities

The Mine Health and Safety Act 29 of 1996 aligns occupational competence with safe mining, while the Mineral and Petroleum Resources Development Act 28 of 2002, its regulations and the Mining Charter connect human-resource development, transformation and mine-community responsibilities to sector governance (Republic of South Africa, 1996b; 2002; Department of Mineral and Petroleum Resources, 2004; Department of Mineral and Petroleum Resources, 2018). These instruments should intersect with MQA programmes, employer WSPs and Social and Labour Plans (SLPs), particularly in Lejweleputswa and other mining-affected areas.

The alignment gap is the absence of a shared spatial register. SLP commitments, MQA projects, provincial initiatives, One Plan catalytic projects and municipal IDP priorities are planned and reported through different systems. The conclusion is therefore that the sector instruments are strongly aligned in purpose but only partially integrated with Free State place-based delivery. The national Critical Minerals and Metals Strategy strengthens the case for aligning current mining skills with beneficiation, digital, green, rehabilitation and transferable technical capabilities, but these have not yet been expressed as a quantified district pipeline (Department of Mineral and Petroleum Resources, 2025a).

2.1.4 Free State Provincial Framework Alignment

2.1.4.1 Status of the FSGDS

The FSGDS is the central long-term provincial comparator because it is intended to localise national development priorities. The public Office of the Premier repository continued to list the 2013 Free State Vision 2030 strategy at the evidence cut-off (Office of the Premier, Free

State, 2013). The strategy document is broadly aligned with the NDP through its emphasis on inclusive growth, education, skills, diversification, rural development and capable governance. It also recognises the need to respond to mining decline and strengthen alternative economic activity.

Complementing this economic focus, the Free State Department of Social Development Strategic Plan (2025-2030) reinforces the province's human capital agenda by linking social welfare, community development, and economic participation. The strategy positions skills development as a cornerstone of social transformation, with targeted interventions aimed at youth and women empowerment, entrepreneurship, cooperative development, and skills development within social services. Through this approach, the Department extends its role beyond welfare provision to act as a catalyst for employability, economic inclusion, and sustainable livelihoods among vulnerable populations (Free State Department of Social Development, 2025).

The Premier's April 2025 budget speech stated that a revised FSGDS would be presented to the Executive Council, and the economic-development budget speech of May 2026 reported that the Growth and Development Strategy had been finalised (Office of the Premier, Free State, 2025; Free State Department of Economic Development and Tourism, 2026). The approved revised document and adoption record were not located in the public repository. The correct conclusion is therefore not that the 2013 FSGDS is fully current, but that it remains the latest publicly verifiable full text and cannot support a final target-level alignment judgement for the current planning cycle.

2.1.4.2 Provincial Planning and Human-Resource Coordination

The Office of the Premier's planning and intergovernmental functions, departmental strategic plans and the Free State Provincial Human Resource Development Council provide the institutional basis for horizontal provincial alignment. The Council was launched in November 2025 and is intended to coordinate government, SETAs, employers, labour, higher-education institutions and other partners around the province's economic drivers, including mining, agriculture and manufacturing (HRDC, 2025b). This is strongly relevant to the MQA because occupational intelligence, provider supply and workplace demand span institutional mandates.

The structure is promising but still recent. Alignment will become demonstrable when the Council adopts a measurable provincial HRD implementation plan, reconciles the revised FSGDS and national Master Skills Plan, publishes common occupational and provider intelligence, assigns funded responsibilities and uses completion, certification, placement and progression results to revise investment. At the time of reporting, the institutional intention is aligned, but the operating compact and outcome dashboard are not yet publicly evidenced. Provincial coordination is therefore rated moderate rather than strong.

2.1.5 District Development Model and the Five Free State One Plans

2.1.5.1 DDM requirements

The DDM is grounded in the Intergovernmental Relations Framework Act 13 of 2005 and institutionalised through the 2024 regulations (Republic of South Africa, 2005; Department of Cooperative Governance, 2024). A One Plan is an intergovernmental long-term plan for a district or metropolitan space. It is intended to align planning, budgeting and implementation across the three spheres and participating state entities. The regulations require implementation through annual, medium- and long-term planning and budgeting and envisage common outcome indicators. A One Plan does not replace an IDP, Spatial Development Framework, budget, sector plan or statutory mandate; it should align and coordinate them.

For the MQA, the DDM's value is operational. It can connect catalytic and infrastructure projects to occupational demand; mining and transition risks to SLPs and portable skills; learners to local providers and workplaces; and MQA funding to provincial, municipal and employer commitments. Alignment should therefore be judged by the quality of the district skills pipeline, not by whether the plan contains general references to education, youth or skills.

2.1.5.2 Publicly verifiable Status of the Five One Plans

Table 4 provides a summarised view of the available DDM documents and their alignment to the instruments as per Figure 1.

Table 4: Five Free State One Plans: document status and MQA-focused alignment finding

DDM space	Latest public evidence	Observable skills alignment	Finding
Fezile Dabi	Second-generation One Plan, December 2022; final file published by the district in January 2023.	Explicit PSET, skills-development and artisan-development direction; digital hubs; green- economy, manufacturing, beneficiation and employment interventions.	Moderate documentary alignment; implementation linkage unverified.
Mangaung	Revised December 2022 One Plan in 2023 council papers, with an approval/endorsement item.	Identifies skills mismatch, technical and artisan facilities, tertiary alignment to priority sectors, SETA activity, municipal critical skills and salt-mining opportunities.	Moderate documentary alignment; version and delivery update required.
Xhariep	Standalone public file located is a first draft dated 12 August 2021.	Recognises severe access and provider constraints; proposes a skills ecosystem linked to digitalisation, 4IR, localisation, artisanal and enterprise activity.	Partial alignment in intent; current adopted plan not verifiable.
Lejweleputswa	Latest standalone adopted/reviewed One Plan not located on an official public website; IDPs describe review processes.	Mining continuity, restructuring, closure, rehabilitation, artisan demand, SLPs and affected communities should be central to the district skills annex.	Not verifiable at document level; high materiality.
Thabo Mofutsanyana	Standalone current One Plan not located publicly; an official district IDP states that it serves as the district One Plan.	Rural access, tourism, logistics, construction, agriculture and services imply cross-sector and portable technical-skills needs.	Not verifiable at standalone-plan level.

Source: Fezile Dabi District Municipality (2022); Mangaung Metropolitan Municipality (2022; 2023); Xhariep District Municipality (2021); official municipal IDPs and national One Plan status reporting (The Presidency, 2026). "Not verifiable" does not mean that a One Plan does not exist; it means that the latest operative document and endorsement record were not publicly available for document-level assessment.

There is need for these planning and coordination instruments to be updated or in some instances created, or if such does exist to be made publicly available. In the review of the available One Plans it is evident that planning and coordination across instruments is slow moving, with some becoming outdated such as the FSGDS, before others can be finalised. The result of this may be that when implementation finally takes place, it may no longer relevant.

2.1.5.3 Document-Level Observations

Fezile Dabi provides the clearest public example of substantive skills alignment. Its second-generation plan links the NDP and FSGDS to people development, expanded PSET access, technical schools for artisan development, digital and 4IR capabilities, green-economy industrialisation, manufacturing, beneficiation and youth employment. This is a meaningful alignment chain. The gap is precision: the plan does not yet operate as an MQA district annex with quantified occupations, employer demand, accredited capacity, workplaces, funding sources and certification or placement indicators.

The revised Mangaung plan similarly recognises the mismatch between qualifications and economic demand, the need for artisan and agriculture-related training facilities, alignment of tertiary skills to priority sectors and the filling of municipal critical vacancies. It also identifies salt mining and industrial revitalisation as opportunities. However, the plan's SETA and project material is not organised as one current occupational pipeline. The alignment opportunity is to connect Motheo TVET College, universities, municipal projects, employers and MQA programmes through named occupations, work-integrated learning and measurable absorption.

The Xhariep draft is strategically relevant because it identifies the province's most acute distance, provider and market constraints and proposes an innovative skills ecosystem linked to digital transformation, localisation, artisan and enterprise activity. Its public status and age are decisive limitations. A draft containing projects with responsibilities or budgets still to be determined cannot demonstrate current implementation alignment. Xhariep should therefore be treated as an explicit equity test for the provincial and MQA system: alignment must address mobile or blended delivery, transport and digital support, shared facilities, employer networks and cross-SETA partnerships.

Lejweleputswa and Thabo Mofutsanyana illustrate the distinction between process evidence and document evidence. Municipal records show that One Plan processes occurred, and national reporting confirms that all districts have developed plans, however, these plans are not always publicly available. Lejweleputswa is the highest-priority documentary gap because mining, closure and mine-community transition make the MQA linkage especially direct.

2.1.5.4 Potential MQA Skills Annex for every One Plan

The five plans should use a common annex so that district specificity does not prevent provincial comparability. The annex should be maintained through the DDM review and annual planning cycles and should draw from MQA, employer, provider, municipal and provincial records. Areas for inclusion could include:

- District demand: priority occupations by project, operation, commodity and time horizon, including replacement, closure, rehabilitation, digital and green-transition demand.
- Supply and access: qualifications, accredited providers, delivery sites, trade-test capacity, transport, digital access and rural or mine-community barriers.
- Employers and workplaces: participating operations and firms, mentors, workplace approvals, placements, SLP commitments and employer WSP/ATR evidence.
- Funded pipeline: learner cohorts, beneficiaries, programme and qualification, MQA or partner funding, responsible institution, budget, start and completion dates.
- Results: enrolment, completion, certification, placement, absorption, progression, enterprise survival, safety competence and district equity indicators.
- Governance: named DDM workstream, MQA and SETA participation, data owner, reporting cycle, escalation process and corrective actions.

2.1.6 Municipal, Employer and Provider Implementation Alignment

The Local Government: Municipal Systems Act 32 of 2000, Municipal Finance Management Act 56 of 2003 and Spatial Planning and Land Use Management Act 16 of 2013 provide the principal legal basis for municipal planning, budgeting and spatial implementation (Republic of South Africa, 2000; 2003b; 2013). Their relevance to skills development is indirect but

material. IDPs and Spatial Development Frameworks identify projects and spatial constraints; MTREF budgets and SDBIPs convert priorities into funded activities and milestones; municipal WSPs address institutional capability; and procurement or local economic- development programmes can create enterprise and workplace opportunities.

The alignment chain is incomplete when a One Plan commitment cannot be traced to a funded owner, implementation milestone and result. Generic references to training, youth or job creation are not sufficient. The same principle applies to employers and providers: WSP demand, discretionary grants, SLP commitments, provider programmes, workplace approvals and municipal or catalytic projects should form one reconciled pipeline. On the evidence reviewed, this is the weakest part of alignment. Municipal and employer instruments exist, but they are not routinely joined through a common district dataset and results framework.

2.1.7 Final Conclusion on Alignment

The Free State is not misaligned with national skills-development policy. Its principal instruments reflect the same broad priorities: inclusive growth, demand-responsive skills, workplace learning, technical and artisan capability, transformation, community development and a capable state. The deficiency lies in the specificity and traceability of translation. Current public evidence does not yet show one measurable provincial compact that carries national and MQA priorities through the revised FSGDS, Provincial HRD arrangements, all five operative One Plans, municipal budgets, employer and mine commitments and learner outcomes.

Table 5 outlines the consolidated assessment of the alignment of the national, provincial, sectoral and municipal instruments.

Table 5: Consolidated national - provincial - DDM alignment assessment

Alignment layer	**Upstream coherence**	**Downstream translation**	**Judgement**
National legal foundation	Coherent skills, levy, qualifications, equity and cooperative-government architecture.	Implemented nationally through SETAs, quality councils, employers and all spheres.	Strong

Alignment layer	Upstream coherence	Downstream translation	Judgement
National development and PSET strategy	NDP, MTDP, NSDP, PSET and HRD instruments consistently emphasise demand, inclusion, workplaces and capability.	Translation depends on compatible sector, provincial and district priorities and measures.	Strong in design
Mining-sector and MQA framework	SSP, grants, qualifications, safety, transformation, SLP and community mechanisms are mutually relevant.	Free State spatial demand, provider, workplace and grant allocation are not integrated into a single annex.	Strong upward; partial downward
FSGDS and provincial strategy	Public 2013 FSGDS broadly reflects NDP skills, inclusion and diversification priorities but it is outdated.	Revised strategy reportedly finalised, but approved text and target-level crosswalk are not public.	Moderate / provisional
Provincial HRD coordination	New Provincial HRD Council is aligned to the national HRD Strategy and relevant economic drivers.	Operating plan, shared intelligence, funded responsibilities and results dashboard remain emergent.	Moderate
DDM institutional framework	IGRFA and 2024 regulations provide a clear coordination, planning, budgeting and monitoring model.	Provincial implementation framework is lacking.	Moderate
Five One Plans	All five spaces claim to have One Plan processes; available plans contain relevant people- development and economic priorities.	Latest adopted versions are not equally verifiable and occupational pipelines are incomplete. Some Plans are not publicly available.	Partial / uneven
Municipal and delivery instruments	IDPs, SDFs, budgets, SDBIPs, WSPs, SLPs and provider plans can operationalise the chain.	Commitments are not consistently traced into named owners, budgets, workplaces and monitored outcomes.	Partial to weak

The findings on the alignment of policy frameworks and national strategies are differentiated: strong national and MQA design alignment; moderate and provisional provincial alignment; moderate DDM institutional alignment; uneven and partly unverifiable One Plan alignment; and partial to weak municipal implementation alignment.

2.2 Analysis of the Effectiveness of Legislation, Policies and Strategies Driving Skills Development in the Free State Province

The purpose of this section is to assess the effectiveness of the current legislative, policy and strategic framework guiding skills development in the Free State. The analysis is structured according to the six-layer framework presented in Figure 1.

The assessment retains the substantive headings contained in section 2.1. The analysis remains anchored in the MQA mandate: sector skills planning; employer WSP/ATR participation; levy-grant funding; artisan development, learnerships and occupational qualifications; workplace-based learning; occupational health and safety competence; bursaries, internships and work experience; provider support; mine-community and small-scale mining development; transformation; and quality assurance and certification.

Effectiveness is assessed as contribution rather than simple attribution. Provincial unemployment, poverty and inequality are influenced by economic growth, investment, infrastructure, commodity cycles, firm behaviour and wider public policy, not only by skills interventions. It would therefore be methodologically unsound to infer that a skills policy has failed solely because unemployment remains high. The defensible question is whether the policy has plausibly contributed to relevant, accessible and complete pathways from skills intelligence through learning and certification to employment, progression, enterprise development or resilient livelihoods.

2.2.1 Evaluation Standard, Evidence and Limitations

The evaluation standard draws on the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee criterion of effectiveness (e.g. whether an intervention achieves or is expected to achieve its objectives and results) and the South African National Evaluation Policy Framework, which distinguishes monitoring of activities and outputs from systematic assessment of relevance, effectiveness, efficiency, impact and sustainability (DPME, 2011; OECD, 2019). Applied to the policy-system Figure 1, a complete assessment requires evidence at four linked levels: policy design, implementation, outputs and outcomes.

Table 6: Effectiveness dimensions applied to the six-layer framework

Dimension	Evaluation question	Indicative evidence
Design relevance	Does the instrument address a demonstrated Free State and mining- sector need, with clear beneficiaries and intended results?	Policy objectives; occupational demand; study findings; provincial economic and spatial profile.
		APPs and annual reports; budgets and expenditure; grant decisions; provider and

Dimension	Evaluation question	Indicative evidence
Implementatio n fidelity	Were institutions, resources, partnerships and delivery mechanisms established and used as intended?	workplace arrangements; DDM/One Plan implementation records.
Outputs and reach	Were the planned learners, employers, qualifications, workplaces and districts reached, with acceptable completion and quality?	WSP/ATR participation; enrolment; completion; trade tests; certification; equity and district disaggregation.
Outcomes and contribution	Did participants progress into employment, safer work, occupational mobility, further learning, enterprise activity or sustainable community outcomes?	Placement and absorption; tracer studies; progression; safety and productivity indicators; enterprise and SLP outcomes.
Equity and sustainability	Are benefits accessible across gender, age, disability, rurality and mining-affected communities, and can results be sustained?	Beneficiary data; access costs and geography; provider capacity; funding continuity; transition and diversification pathways.
Coordination and learning	Do institutions share intelligence, align funding and use results to improve subsequent planning?	SSP/WSP feedback; provincial and district forums; One Plan and IDP crosswalks; joint dashboards; evaluation use.

Source: Authors' application of DPME (2011), OECD (2019) and the policy-to-delivery framework developed for this study.

Table 7: Rating scale used in this assessment

Rating	Interpretation
Substantially effective	Clear evidence that the instrument has been implemented and is materially achieving intended outputs or outcomes in the province.
Partially effective	Meaningful implementation or outputs are evident, but reach, quality, equity, coordination or outcomes remain incomplete or uneven.
Limited effectiveness	The instrument exists, but provincial implementation or translation into intended results is weak, fragmented or not demonstrated.
Not yet evaluable	The instrument is too recent, has not reached an appropriate outcome horizon, or lacks sufficient implementation and outcome evidence.

The evidence base combines the legislation and policy documents reviewed; current official strategy, performance and regulatory material; provincial labour-market information; MQA planning and programme information; WSP data supplied to the study; employer and provider profiling; and primary stakeholder evidence generated from data collection. In order to determine effectiveness as discussed in the introduction of this section, more nuanced inputs are required. This triangulation permits reasoned judgements about relevance,

implementation conditions and observable outputs. It does not provide a counterfactual impact evaluation. The coordination dimension also reflects policy-mix scholarship, which emphasises the coherence of objectives, instruments and implementation relationships (Howlett and Rayner, 2007; Cejudo and Michel, 2017).

Three limitations affect the strength of conclusions. First, national SSP and programme data are not always disaggregated sufficiently for a reliable Free State and district-level assessment. Multi-province employers may report WSP information against a head-office or principal operational location, and not all levy-paying operations submit WSP/ATRs. Second, implementation and outcome datasets for SLPs, mine-community training, the five One Plans and municipal skills projects are not consistently available in a comparable public form. Third, several current instruments, including the Critical Minerals and Metals Strategy, the amended employment-equity regime, the Reconceptualised HRD Strategy and the Free State Provincial HRD Council, are too recent for a credible outcome assessment. These are rated

'not yet evaluable' rather than ineffective.

2.2.2 National Legislative and Policy Environment

2.2.2.1 Skills-Development, Qualifications and Post-School Legislation

The Skills Development Act 97 of 1998, Skills Development Levies Act 9 of 1999, National Qualifications Framework Act 67 of 2008, Higher Education Act 101 of 1997 and Continuing Education and Training Act 16 of 2006 provide a coherent legal basis for a national skills system (Republic of South Africa, 1997; 1998a; 1999; 2006; 2008). Their effectiveness is visible institutionally: SETAs exist; employers contribute through the levy system; SSPs and WSP/ATRs structure demand information; occupational qualifications and recognised learning pathways are available; and grants finance workplace and occupational learning. This is a material achievement because it sustains the infrastructure through which the MQA can plan and deliver.

The Free State evidence nevertheless shows that institutional operation does not guarantee an effective end-to-end pathway. Employers identified shortages in artisans, engineers, technicians, machine operators, supervisors, safety, health, environment and quality roles, and emerging digital and green capabilities. The most commonly reported causes of hard-to-

fill vacancies were insufficient experience and inappropriate or insufficient qualifications. Stakeholders also identified gaps between theoretical N1-N6 learning, workplace exposure and recognised trade certification. These findings demonstrate partial effectiveness: the system creates learning and qualification opportunities, but bottlenecks at workplace placement, trade testing, certification and absorption prevent the full intended benefit from being realised.

Spatial reach is an additional weakness. Education and training provision is concentrated in urban and economically active centres, while Xhariep and parts of Fezile Dabi have substantially weaker access. Transport costs, digital exclusion, limited local provider capacity and weak programme awareness further restrict participation in rural and mining-affected communities. The legal framework is therefore effective as an enabling architecture, but only partially effective in producing equitable provincial access and complete learner journeys.

2.2.2.2 National Development Plan 2030 and Medium-Term Development Plan 2024-2029

The NDP's intent (e.g. to reduce poverty and inequality through capable institutions, economic growth, education, skills and employment) remains directly relevant. The National Planning Commission's ten-year review found, however, that implementation had been weak and that the economy had not grown sufficiently to achieve the NDP's social and employment ambitions (NPC, 2023). The Free State reflects this national implementation gap. Compared nationally the Free State has a higher percentage of unemployment as per the standard and expanded definitions 38.5% and 43.8% vs 33.2% and 42.9% respectively. The absorption rate is slightly lower than the national average at 39.4% versus 40.2% but the labour force participation rate was slightly higher at 64.1% as opposed to 60.2% (Statistics South Africa, 2025a).These indicators do not measure skills-policy performance in isolation, but they establish that the intended economy-wide outcomes have not been achieved.

The MTDP 2024-2029 appropriately narrows the implementation focus to inclusive growth and job creation, poverty reduction and a capable state (Republic of South Africa, 2025a). For the MQA, its effectiveness will depend on whether these priorities change investment and programme choices: stronger workplace and employment pathways, support for scarce technical capabilities, attention to youth and women, and links between skills funding and

productive projects. At the 2026 evidence cut-off, the MTDP is relevant and directionally coherent but too recent for a mature provincial outcome assessment.

2.2.2.3 National Skills Development Plan, PSET Policy and Human-Resource Strategy

The National Skills Development Plan 2030, the White Paper for Post-School Education and Training and the National Plan for PSET correctly reposition skills development around labour-market demand, expanded workplace learning, institutional articulation, inclusion and improved links among employers, SETAs and providers (DHET, 2013; DHET, 2019; DHET, 2021a). This orientation is strongly validated by the Free State study: stakeholders want occupationally relevant programmes, practical exposure, trade testing, recognised certification and clearer progression into work rather than disconnected training inputs.

Effectiveness is nevertheless partial because several intended system relationships remain weak. Employer-provider engagement is uneven, local demand is not consistently translated into curriculum and funding decisions, and responsibilities for the learner journey are fragmented across recruitment, training, workplace learning, assessment, certification and placement. The result is a familiar implementation paradox: policies emphasise demand responsiveness, while operational incentives and data systems often remain programme- and compliance-centred.

The Reconceptualised HRD Strategy 2025-2035 and Master Skills Plan 2025-2030 strengthen the prospect of whole-of-government and whole-of-economy coordination (HRDC, 2025a). They are current and relevant but cannot yet be judged on employment or productivity outcomes. Their early effectiveness should instead be measured by whether agencies adopt common priorities, clarify responsibilities, share disaggregated data and link funded interventions to an integrated national and provincial results framework.

2.2.2.4 Employment Equity, Transformation and Inclusion

The Employment Equity Act 55 of 1998, as amended, and the Broad-Based Black Economic Empowerment Act 53 of 2003, together with the applicable Codes and sector transformation instruments, provide important levers for access, progression and representation (Republic of South Africa, 1998b; 2003a). They are not peripheral to skills effectiveness: a programme that meets aggregate learner targets while excluding rural residents, women, persons with

disabilities or mine communities would not meet the equity intent of the system. The study records persistent youth and gender disadvantage and material geographic barriers, confirming the continued need for targeted access and progression measures.

The Employment Equity Amendment Act 4 of 2022 came into operation on 1 January 2025, while the Employment Equity Regulations, 2025 and the five-year sectoral numerical targets were published on 15 April 2025 (Republic of South Africa, 2022; Department of Employment and Labour, 2025a; 2025b). It is therefore premature to infer Free State outcomes. A defensible assessment should track not only participation in learning but occupational level, completion, certification, placement, retention and promotion by designated group. On the present evidence, transformation instruments are partially effective as enabling and compliance mechanisms, while their current outcome effect remains incomplete or not yet evaluable.

2.2.3 Sectoral Policies and Strategies

2.2.3.1 Mine Health, Safety and Occupational Competence

The Mine Health and Safety Act 29 of 1996 directly links competence to safe mining (Republic of South Africa, 1996b). It drives mandatory learning, occupational standards and ongoing skills renewal and is consequently one of the most direct legislative influences on the MQA mandate.

The evidence available to this study did not, however, permit a robust provincial outcome test. Learner participation and completion should be connected to competency verification, leading indicators, incident patterns and risk reduction at Free State operations, controlling for production, technology and mine conditions. Without this linkage, the assessment can confirm the relevance and implementation of safety learning but not its net effect on safety performance. The appropriate judgement is therefore partial effectiveness, coupled with a requirement for an operation-level training-to-safety evidence chain.

2.2.3.2 MPRDA, Mining Charter and Social and Labour Plans

The Mineral and Petroleum Resources Development Act 28 of 2002, the Mineral and Petroleum Resources Development Regulations, 2004, and the Mining Charter, 2018 create

the statutory and policy basis for Social and Labour Plans, human-resource development, transformation and mine-community obligations (Republic of South Africa, 2002; Department of Mineral and Petroleum Resources, 2004; Department of Mineral and Petroleum Resources, 2018). Together, these instruments provide a potentially powerful mechanism for linking mining rights to workforce development and local economic priorities because they operate at mine and community level and can specify commitments, beneficiaries, budgets and timeframes.

The study indicates that this potential is not yet realised consistently. Mine-community training, municipal economic planning, MQA-funded learning and transition or diversification initiatives are not integrated through a common pipeline. Community access and awareness remain uneven, and monitoring often ends at participation rather than employment, enterprise survival or sustainable livelihood outcomes. The policy apparatus is therefore relevant and partly operational, but its effectiveness is weakened by fragmented planning and the absence of comparable evidence on commitments, expenditure, completion and longer-term results. A joint SLP-One Plan-IDP-MQA register would materially improve accountability and reduce duplication.

2.2.3.3 MQA Sector Skills Plan, WSP/ATR System and Programme Outputs

The MQA's revised Sector Skills Plan 2025-2030 identifies sector change, occupational priorities and a programme response spanning artisan development, learnerships, bursaries, internships, workplace experience, occupational health and safety, mine-community development and support for small-scale mining. Its published five-year programme architecture includes substantial national participation targets, while the SSP records strong performance in artisan completion and trade-test pass rates (MQA, 2026a). This is credible evidence of operational capacity and makes the MQA the strongest direct delivery mechanism within the six-layer framework (see Figure 1).

Free State stakeholders generally regarded MQA programmes as relevant to immediate operational needs, especially core production, artisan and safety requirements. That finding supports a judgement of moderate operational effectiveness. It should nevertheless be qualified in four respects. First, national programme totals cannot demonstrate Free State or district reach. Second, WSP/ATR evidence is affected by non-submission and the allocation of

multi-province employer data, which may understate or mislocate activity. Third, smaller employers, rural communities and frontline workers reported uneven awareness and access. Fourth, monitoring remains stronger for enrolment and learner tracking than for employment, occupational mobility, retention, income, enterprise performance or mine-community impact.

The most important effectiveness gap is therefore not whether the MQA funds training, but whether the funded pathway is complete. Funding decisions should be tested against confirmed occupational demand and the availability of accredited provision, a workplace, mentorship, assessment or trade testing, certification and a plausible route into employment, progression or productive self-employment. Where any link is absent, a learner may complete a programme without realising the intended labour-market benefit. This may explain why relevant programmes can coexist with persistent hard-to-fill vacancies and unemployment.

2.2.3.4 Critical Minerals, Beneficiation, Industrial Policy and Transition

The shift towards critical minerals, beneficiation, digitalisation, automation, environmental rehabilitation and a just energy transition is appropriately reflected in current national policy (Department of Mineral and Petroleum Resources, 2025a). This direction is particularly important in the Free State because the mining base is mature and, in several localities, declining. Traditional occupational pipelines remain necessary for safe continuity and replacement demand, but they are not sufficient to create broad net employment. Skills policy must therefore serve both current operations and transition.

The study identified emerging demand for digital, green, environmental and transferable technical capabilities, but little evidence of a quantified provincial transition-skills pipeline. The Critical Minerals and Metals Strategy adopted in 2025 is too recent for an outcome assessment (Department of Mineral and Petroleum Resources, 2025a), and the broader strategy set has not yet been converted into district-specific occupational forecasts, provider plans, workplace projects and funded learner cohorts. Effectiveness is consequently best judged as not yet evaluable at outcome level and only partially translated at implementation level. The MQA can improve this position by identifying occupations adjacent to mining (i.e. engineering services, energy, rehabilitation, water, infrastructure maintenance and manufacturing) and financing portable qualifications that support mobility across sectors.

2.2.4 Provincial Policies and Strategies

2.2.4.1 Free State Growth and Development Strategy

The publicly available Free State Growth and Development Strategy, dated 2013, provides a useful long-term statement of intent. Its emphasis on human capital, economic diversification, infrastructure, inclusion and a capable developmental state remains conceptually relevant (Free State Provincial Government, 2013).

Its effectiveness cannot, however, be inferred from continuing relevance. The public document predates the DDM, the current MTDP, the just energy transition, the 2025 critical-minerals strategy and recent institutional reforms. The Free State Government indicated in 2025 that a revised FSGDS would be presented to the Executive Council, but the official public repository still displayed the 2013 strategy at the evidence cut-off (Office of the Premier, Free State, 2013; 2025).

Observed provincial outcomes also counsel against a strong effectiveness claim. The province continues to experience high unemployment, youth disadvantage, spatially uneven access to post-school provision and weak labour absorption. These conditions have multiple causes, but they show that the FSGDS's human-capital and diversification ambitions have not yet been realised at the required scale. A robust effectiveness assessment would require an approved results framework with baselines, funded interventions, annual targets, expenditure and outcome reporting. On current evidence, the strategy's design relevance is moderate, while its implementation and outcome effectiveness are limited or not fully evaluable.

2.2.4.2 Provincial Human-Resource Coordination and Departmental Implementation

The launch of the Free State Provincial Human Resource Development Council in November 2025 is a material institutional improvement (HRDC, 2025b). It creates a possible mechanism for connecting provincial economic priorities, education and training institutions, SETAs, employers, labour and community stakeholders. It also responds directly to the study's finding that coordination is frequently ad hoc, compliance-driven and unsupported by shared labour-market intelligence.

The Council cannot yet be presented as evidence of effective outcomes. Its early performance should be judged against foundational milestones: adoption of a provincial HRD implementation plan; defined institutional responsibilities; a common occupational and provider dataset; district-level skills audits; aligned SETA and departmental funding; and a public or governance-facing scorecard that follows learners through completion, certification and employment. Until these are demonstrated, the Council is best classified as promising but not yet evaluable.

Departmental plans in education, economic development, social development, public works and local government can enable skills delivery through provider support, economic projects, public employment, infrastructure and local coordination. Their effectiveness is weakened when each programme reports its own activity without a shared provincial results chain. The study's evidence of uneven provider infrastructure, most acutely in Xhariep, shows why provincial coordination must be spatial, not only sectoral. Mobile delivery, transport and digital support, shared facilities, employer-linked provision and cross-SETA partnerships are necessary if provincial policy is to improve equity rather than reproduce the existing urban concentration of opportunity.

2.2.5 Municipal Policies and Strategies

2.2.5.1 District Development Model and the Five Free State One Plans

The DDM is correctly located under provincial and municipal implementation rather than treated as a national skills programme. It is institutionalised under the Intergovernmental Relations Framework Act 13 of 2005 through the Regulations Framing the Institutionalisation of the District Development Model, 2024 (Republic of South Africa, 2005; Department of Cooperative Governance, 2024). The regulations frame the DDM as an intergovernmental planning and coordination mechanism. A One Plan is intended to align government planning, budgeting and implementation in a district or metropolitan space; it does not replace sector plans, municipal IDPs or statutory authority. Its skills-development value lies in connecting local economic and infrastructure projects to occupational demand, providers, employers, funding and community access.

Official planning information indicates that updated One Plans for Fezile Dabi, Lejweleputswa, Thabo Mofutsanyana, Xhariep and Mangaung had been submitted by February 2025 (DCoG, 2025). This is evidence of formulation progress, not of effectiveness. An effective One Plan would identify the local economic trajectory; quantify priority occupations and beneficiary groups; map training and provider capacity; identify employers and workplace opportunities; connect mine SLPs and municipal projects; specify funding, responsibilities and timeframes; and monitor completion, certification, placement, enterprise and livelihood outcomes.

The study could not produce reliable current district-specific skills lists from the existing administrative data alone. WSP information is not consistently spatially precise, participation is uneven, and stakeholder coordination is fragmented. This directly limits the DDM's intended place-based function. The evidence therefore supports a judgement of limited implementation effectiveness for skills development: institutional structures and plans exist, but the intelligence, project pipeline, funding alignment and outcome feedback required to make them operational are not yet demonstrated consistently.

The five One Plans should not be treated as interchangeable. Lejweleputswa requires particular attention to mine continuity, closure, rehabilitation, affected communities and labour transition; Fezile Dabi to industrial, energy, manufacturing and technical pathways; Thabo Mofutsanyana to rural access and links among agriculture, tourism, construction and services; Xhariep to severe provider and distance constraints and smaller economic demand; and Mangaung to its concentration of institutions, public services and metropolitan labour-market opportunities.

2.2.5.2 Municipal IDPs, Spatial Development Frameworks, Budgets and Local Delivery

Municipal IDPs, Spatial Development Frameworks, budgets and SDBIPs derive their principal statutory basis from the Local Government: Municipal Systems Act 32 of 2000, the Local Government: Municipal Finance Management Act 56 of 2003 and the Spatial Planning and Land Use Management Act 16 of 2013 (Republic of South Africa, 2000; 2003b; 2013). These instruments are relevant when they identify economic projects, local workforce requirements, community priorities, transport and digital constraints, municipal workplace opportunities and land or facilities for training. Their effectiveness depends on translation into funded budgets and SDBIPs, not on the frequency with which 'skills development' appears in an IDP.

A credible municipal contribution would specify the intervention, responsible institution, funding source, target group, training or qualification pathway, workplace or enterprise route and measurable result.

The study found limited integration between SETAs and local planning structures, centralised or aggregated data, uneven municipal capacity and weak cross-sector coordination. These conditions reduce the ability of local plans to shape skills investment. Broader municipal audit evidence also indicates governance and reporting constraints in parts of the province, although such evidence should be used as implementation context rather than as direct proof that skills projects failed (Auditor-General South Africa, 2025). Overall municipal effectiveness is therefore uneven and generally limited where plans are not connected to budgets, employers, providers and monitored learner or livelihood outcomes.

2.2.6 Final Conclusion on Effectiveness

Table 8 consolidates the findings for the effectiveness of the principal instrument clusters. It separates operational delivery from outcome effectiveness and explicitly identifies newer instruments that should not yet be judged. The ratings should be read as an evidence-based synthesis of this study, not as a statutory compliance determination or a causal impact evaluation.

Table 8: Effectiveness of principal legislation, policy and strategy clusters

Policy / strategy cluster	Principal instruments	Effectiveness judgement	Free State and MQA-focused basis for judgement
National skills-system legislation	SDA 97 of 1998; SDLA 9 of 1999; NQF Act 67 of 2008; Higher Education Act 101 of 1997; CET Act 16 of 2006; workplace-learning and grant regulations	Partially effective	The architecture supports SETA planning, levy-grant funding, occupational qualifications and workplace learning. In the Free State, uneven WSP/ATR participation, multi-province data allocation problems, restricted workplace exposure, trade-testing bottlenecks and spatially uneven provider capacity weaken the conversion of the legal framework into complete learning-to-employment pathways.
Transformation and labour-market access	Employment Equity Act 55 of 1998 and 2022 Amendment Act; 2025 EE Regulations; B-BBEE Act 53 of 2003 and Codes; youth and disability measures	Partially effective / not yet evaluable	The framework provides enforceable transformation levers and the study confirms the continued relevance of equitable access. However, persistent gender, youth and rural disparities indicate incomplete outcomes. The amended employment-equity regime is too recent for a 2026 provincial outcome judgement.
National development direction	NDP 2030; MTDP 2024-2029; economic recovery, industrial and youth-employment measures	Limited to partial effectiveness	The instruments correctly connect skills, inclusion, industrialisation and employment, but national review evidence and Free State labour-market outcomes show that implementation has not yet generated sufficient inclusive growth or labour absorption. Skills interventions cannot compensate for weak demand on their own.
Post-school and human- resource strategy	NSDP 2030; White Paper for PSET; NPPSET; HRD Strategy and Master Skills Plan	Partially effective	The demand-led and workplace-based orientation is well aligned with observed needs. Effectiveness is reduced by uneven provider access, weak employer-provider feedback, incomplete articulation and insufficient workplace-based learning. The 2025-2035 HRD strategy and 2025-2030 Master Skills Plan are not yet mature enough for outcome evaluation.
			Safety legislation creates a strong direct demand for competent workers and stakeholders generally value MQA-supported occupational health and safety learning. The present study did not receive sufficiently disaggregated

Policy / strategy cluster	Principal instruments	Effectiveness judgement	Free State and MQA-focused basis for judgement
Mining safety and occupational competence	MHSA 29 of 1996; related competency, qualification and safety frameworks	Partially effective	provincial incident, competence and training-outcome data to test whether training is reducing risk at Free State operations.
Mining rights, transformation and communities	MPRDA 28 of 2002; MPRD Regulations 2004; Mining Charter 2018; Social and Labour Plans; mine-community and small-scale mining provisions	Limited to partial effectiveness	These instruments create potentially powerful place-based obligations. Yet the study found weak integration among mine-community training, municipal economic planning, transition needs and sustainable absorption. Publicly comparable provincial evidence on SLP commitments, expenditure, completion and post-training outcomes remains inadequate.
MQA sector	MQA SSP 2025-2030; Strategic	Partially effective, with	Programmes are generally perceived as relevant to immediate mining
planning and programmes	Plan; APPs; WSP/ATR; discretionary and mandatory grants; artisan, learnership, bursary, internship and community programmes	moderate operational strength	and minerals needs, and national MQA evidence demonstrates meaningful programme volumes and completion. Effectiveness in the Free State is constrained by incomplete spatial data, uneven awareness, access and employer participation, workplace and trade- test bottlenecks, and limited evidence on placement, absorption, mobility and longer-term community outcomes.
Sector transition and diversification	Critical Minerals Strategy 2025; beneficiation, industrial, infrastructure, digital and just-transition strategies	Not yet evaluable / partially translated	The policy direction is relevant to a mature and declining provincial mining base and to demand for green, digital, rehabilitation and transferable technical skills. It has not yet been translated into a quantified Free State occupational pipeline, funded provider response or demonstrable transition outcomes.
Provincial strategy and coordination	FSGDS; provincial plans; departmental plans; Free State Provincial HRD Council	Limited effectiveness / not yet evaluable	The public 2013 FSGDS correctly prioritises human capital and diversification but is dated, lacks a current public results chain for the changing economy, and cannot be treated as a sufficient proxy for an approved revised strategy. The HRD Council launched in November 2025 is a positive institutional development, but its outcome effectiveness cannot yet be assessed.

Policy / strategy cluster	Principal instruments	Effectiveness judgement	Free State and MQA-focused basis for judgement
District and municipal implementation	IGRFA 13 of 2005; DDM Regulations 2024; five Free State One Plans; Municipal Systems Act 32 of 2000; MFMA 56 of 2003; SPLUMA 16 of 2013	Limited implementation evidence	Submission of updated One Plans indicates formulation progress. The DDM is an enabling coordination and joint-planning mechanism, not a skills programme. Its effectiveness depends on whether One Plans convert local demand into costed skills pipelines, named partners, workplaces, budgets and monitored outcomes. The study found weak district-level skills intelligence and fragmented coordination, so implementation effectiveness is not yet demonstrated.

Source: Authors' synthesis of the documentary review, official performance information, WSP evidence and primary findings of the MQA Free State study. Full Harvard references to legislation and regulatory instruments are provided below. Evidence cut-off: 31 July 2026

The evidence supports a single overarching conclusion: the Free State skills-development system is stronger at policy design and programme activity than at spatial integration and verified outcomes. The legal architecture is coherent; national and sector strategies identify relevant priorities; the MQA has functional planning and funding mechanisms; and stakeholders generally value its programmes. Effectiveness weakens where responsibilities are distributed across institutions and where success requires a sequence; e.g. reliable local demand, learner access, relevant provision, a workplace, assessment and certification, placement or enterprise support, and post-programme tracking.

This explains the coexistence of skills investment, reported occupational shortages and high unemployment. It does not imply that training has no value. Human Capital Theory remains relevant: education and skills can improve productivity and individual capability (Becker, 1964). The Free State evidence demonstrates the necessary systems qualification; e.g. returns to human capital depend on labour demand, institutional coordination, geographic accessibility, workplace opportunity and recognised completion. Where these complements are weak, the social and economic return to training is suppressed.

3. THEORETICAL FRAMEWORK

The study was guided by an integrated theoretical framework that combined Human Capital Theory as the primary analytical lens with complementary insights from Labour Market Mismatch Theory and Systems Theory. This framework provided a structured basis for analysing skills development, labour-market dynamics, and institutional coordination within the MMS in the Free State Province (Sreekumar, 2023).

Human Capital Theory, originating from Becker's work in 1964, underpinned the study's focus on education and skills development as drivers of productivity, employability, and economic growth (Becker, 1964; cited in Almendarez, 2011 and Auerbach and Green, 2024). The theory recognises both micro-level benefits, where individuals enhance their productivity and earning potential through education, and macro-level impacts, where aggregate educational attainment contributes to broader economic performance (Leoni, 2023). The literature further highlighted the role of education in promoting social participation, reducing poverty, and improving quality of life, particularly where access to education is expanded to disadvantaged groups (Leoni, 2023). However, critiques of Human Capital Theory were also acknowledged, including evidence that increased education expenditure does not automatically translate into economic growth and may reinforce existing inequalities, particularly in highly unequal contexts such as post-apartheid South Africa (Auerbach and Green, 2024; Harber and Mncube, 2011).

To address these limitations, Labour Market Mismatch Theory was incorporated to explain why education and training do not necessarily result in employment. Drawing on foundational work by Beveridge (1944) and later developments in search and matching theory by Diamond, Mortensen, and Pissarides (Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences, 2010), the theory highlights how mismatches between skills supply and labour-market demand can persist due to structural change, geographic immobility, skills obsolescence, and institutional rigidities. Structural unemployment, in particular, was relevant to this study, as shifts in sectoral demand require reskilling or relocation that many workers are unable to achieve (International Labour Organization, 2020; Rathelot, van Rens and Chan, 2023). This perspective informed the study's interrogation of misalignments

between training provision, employer needs, and employment outcomes in the Free State MMS.

Systems Theory further strengthened the analytical framework by situating skills development within a broader socio-economic system comprising interdependent actors and institutions. Originating from the work of von Bertalanffy (1950, 1968, 1972), Systems Theory emphasises the interactions, coordination mechanisms, and feedback loops among government departments, SETAs, education and training providers, employers, communities, and learners (Weilkiens, 2007; UNESCO, 2023). Within this study, a systems perspective highlighted how weak coordination, fragmented planning, and limited feedback between stakeholders constrained the effectiveness of skills development interventions. Feedback loops, such as the need for curricula to adapt to technological change and industry demand, were identified as critical mechanisms influencing system responsiveness (Khan, Edwards, Ianicelli, Ahmed, Hardey and Eremionkhale, 2025).

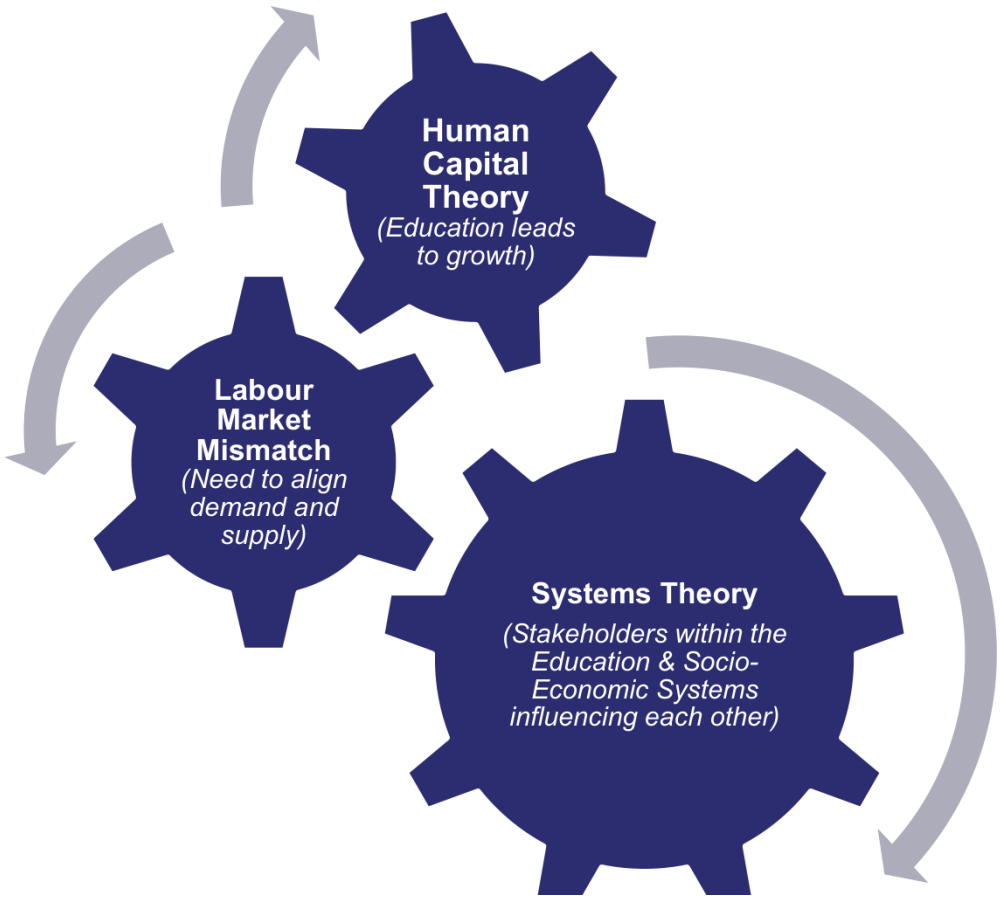


Figure 2: Theoretical Framework

Source: Authors' application of Becker, (1964); cited in Almendarez, (2011) and Auerbach and Green, 2024; Beveridge (1944); Rathelot, van Rens and Chan, 2023; von Bertalanffy (1950, 1968, 1972); and Khan, Edwards, Ianicelli, Ahmed, Hardey and Eremionkhale, (2025)

Taken together, the integrated theoretical framework illustrated in Figure 2 provided a coherent basis for the analysis. It helped explain why investments in education and skills development in the Free State MMS had not consistently resulted in improved employment outcomes or socio-economic mobility. This disconnect is reflected in the socio-economic status of the province, as discussed in Section 5.1.

Human Capital Theory justified investment in skills as a necessary foundation for development. Labour Market Mismatch Theory explained why unemployment persisted despite the provision of training. Systems Theory highlighted the institutional and coordination failures that limited the effective utilisation of skills. Collectively, these perspectives informed the study's analysis of skills demand, skills supply, and systemic alignment. They also guided the interpretation of the findings presented in the subsequent sections..

4. METHODOLOGY

4.1 Research Design

This study adopted a mixed-methods research design, integrating both qualitative (understanding experiences and non-numerical data) and quantitative (numerical data) approaches (Delaney, McCarthy and Beecham, 2017; Creswell and Creswell, 2023; Mcleod, 2024). The rationale was to gain a comprehensive and contextualised understanding of the MMS-related skills development needs and gaps in the Free State province. Quantitative methods captured statistical data on employment trends, skills shortages, and institutional outputs (including secondary data), while qualitative methods were used to explore experiences, perceptions, and implementation challenges from stakeholders.

A convergent parallel design was utilised which involves undertaking quantitative and qualitative data collection concurrently, followed by interpretation (Delaney et al., 2017; Creswell and Creswell, 2023; Mcleod, 2024; Younas, Fàbregues & Creswell, 2023).

The skills development landscape is complex and influenced by socio-economic, policy, and institutional variables that cannot be fully understood through a single methodological lens. The mixed-methods design enables triangulation, enhances both depth and breadth of insights, supports evidence-based recommendations with both statistical and contextual relevance (Mcleod, 2024; Dawadi, Shrestha and Giri, 2021).

4.2 Sampling and Target Groups

4.2.1 Target Population

During the inception phase of the study, it was determined that community sampling would be informed by census data and that all district and metropolitan municipalities would be included. The research team subsequently assessed the feasibility of this approach in consultation with internal fieldwork coordinators.

The sample included representatives from MMS employers, skills development facilitators, education and training institutions, training providers, government officials, organised labour, and Ward Councillors. Education and training providers included public TVET colleges, universities, and accredited private providers. Government officials were drawn from

provincial departments and district and local municipalities, while organised labour representatives reflected worker perspectives within the mining sector.

4.2.2 Sampling Method

The study employed a stratified purposive sampling approach to ensure relevance, representation, and meaningful engagement with stakeholders involved in, affected by, or influencing skills development within the Free State's MMS. This approach was appropriate given the multi-stakeholder nature of the study and the use of both quantitative and qualitative data collection methods (EBSCO Knowledge Avantage, 2025).

As a mitigation measure, Ward Councillors were approached as potential proxies for community perspectives, on the basis that they form a defined and contactable population, are geographically spread across all municipalities, and are elected representatives with regular exposure to constituency-level concerns. A structured, three-tier contact approach (email, SMS, and telephonic follow-up) was implemented to maximise participation within project constraints.

Response from this group was limited: 9 of 319 Ward Councillors contacted responded (2.8%), with responses concentrated in Fezile Dabi (8 of 9). Given this low and geographically uneven response, the Ward Councillor data are treated as indicative and supplementary rather than as a representative measure of community perspectives. It should also be noted that Ward Councillors are elected political office-bearers rather than neutral community informants, and their views may reflect political as well as constituency-based considerations which is a limitation of this approach relative to direct community consultation.

Notwithstanding these limitations, the responses obtained were retained and triangulated alongside the survey, key informant interview, and focus group findings, where they contribute a supplementary elected-representative perspective on community-level skills needs rather than a standalone or statistically representative one.

Where valid contact details could not be obtained, population and sample sizes were adjusted accordingly. Online surveys were distributed to all stakeholders for whom valid contact information was available, with follow-up calls conducted.

4.2.3 Sample Size

4.2.3.1 Determined Sample Size

Population estimates at district level were reviewed to determine appropriate community sample sizes (Table 9).

Table 9: District municipality population sizes

District Municipalities	Population Size	Required Sample Size
Fezile Dabi	509912	384
Lejweleputswa	679746	384
Mangaung Metro	811431	384
Thabo Mofutsanyane	831420	384
Xhariep	131901	384
	Total	**1920**

Using Cochran's formula with a 95% confidence level and a 5% margin of error, a minimum community sample of 1 920 respondents was calculated as necessary to achieve statistical representativity across the four district municipalities and one metropolitan municipality (Adhikari, 2021). However, due to budgetary and project timeline constraints, it was not feasible to undertake a direct community survey at this scale.

4.2.3.2 Combined Achieved Sample Size

A feasible sample across stakeholder categories was then calculated using a 95% confidence interval and a 5% margin of error (Adhikari, 2021). The sampling reflected the number of representatives within each stakeholder group rather than single institutional entities (Table 10). This achieved sample is inclusive of all methods of data collection, i.e. survey, key informant interviews and focus groups.

Table 10: Combined Achieved Sampling

Stakeholder Group	Determined Sample Size	Achieved Sample Size	[1]Participation rate
[1]MMS Employers	25	26	104%
[2]Skills Development	57	36	63%

Stakeholder Group	Determined Sample Size	Achieved Sample Size	[1]Participation rate
Facilitators			
[3]**Education Institutions (Uni, TVETS)**	6	15	250%
[3]**Training Providers**	35	8	23%
Government Officials	64	7	11%
SETAs & Agencies	15	8	53%
Organised Labour	11	9	82%
[4]**Ward Councillors**	40	9	23%
Total	**253**	**118**	**47%**

1 Source: 2025 WSP data received from the MQA and DMPR, 2025b.

2 Source: 2025 WSP data received from the MQA.

3 Source: 2025 Accredited Training Providers and Programme Approvals from the MQA, Department of Higher Education and Training (DHET) (2025a), Department of Basic Education (2025a), DHET (2025b).

4 Source: Electoral Commission of South Africa, 2025.

4.2.3.3 Quantitative Achieved Sample Size

The online survey captured a total of 72 responses across all stakeholder groups and municipalities (Table 11). Response was heavily concentrated in Lejweleputswa (22 of 72, 30.6%), which is the district municipality with the most mining activity in the province. By contrast, representation across the remaining district municipalities was limited and uneven: Mangaung (10, 13.9%) and Fezile Dabi (9, 12.5%) recorded modest numbers, while Thabo Mofutsanyana (3, 4.2%) and Xhariep (1, 1.4%) were minimally represented. A further 9 responses (12.5%) were classified as province-wide, and the district location of 18 responses (25%) could not be determined.

This distribution materially constrains district-level comparison. No fixed subgroup threshold, including n = 15, was used to determine whether a percentage was valid or whether a

[1] Participation Rate is calculated as individual respondents divided by unique valid contacts

per stakeholder group, rather than a response rate against named individuals. For all stakeholder groups except Ward Councillors and Skills Development Facilitators, more than one respondent from the same organisation/institution may have participated. This occurred both because contacts shared the survey internally within their organisation/institution, and because the same organisation/institution was sometimes captured under different contacts across separate stakeholder lists. Where this effect was pronounced relative to the number of unique contacts reached, it produced participation rates exceeding 100%, as seen for MMS Employers (104%) and Education Institutions (250%). This reflects broader engagement within participating organisations/institutions rather than an error in the underlying data.

subgroup was statistically robust. Counts and percentages were interpreted together with the achieved n and the concentration of responses. Results based on small or highly concentrated subgroups were treated as indicative or illustrative and not as statistically representative estimates.

The concentration was also uneven across stakeholder types. MMS Employer responses were concentrated in Lejweleputswa (14 of 17), while Skills Development Facilitator responses were predominantly of unknown district location (18 of 22). The Unknown category therefore reflects the response profile of a particular stakeholder group rather than geographically balanced coverage. Although Skills Development Facilitators provide employer-facing insight, their responses cannot be used to infer a district distribution where location was not established.

Accordingly, Lejweleputswa provides the largest body of district-specific survey evidence, but no district result is treated as statistically representative or generalisable. Findings for all districts are reported descriptively and interpreted cautiously, with particular restraint where the achieved n is small. Triangulation with key informant interviews, focus group discussions and secondary evidence broadens the province-level interpretation but does not remove the limitations created by uneven district coverage.

Table 11: Quantitative Achieved Sample Size by Stakeholder and Municipality (Survey)

Stakeholder Type	Fezile Dabi	Lejweleputswa	Mangaung	Thabo Mofutsanyana	Province-wide	Unknown	Xhariep	Grand Total
Education Institutions	3	3	2	1	0	0	0	**9**
Government Officials	0	2	2	1	1	0	1	**7**
MMS Employers	0	14	2	1	0	0	0	**17**
Organised Labour	0	0	0	0	5	0	0	**5**
SETAs & Agencies	0	0	0	0	3	0	0	**3**
Skills Development Facilitators	2	2	0	0	0	18	0	**22**
Training Providers	0	1	4	0	0	0	0	**5**
Ward Councillors	4	0	0	0	0	0	0	**4**
Grand Total	**9**	**22**	**10**	**3**	**9**	**18**	**1**	**72**

4.2.3.4 Qualitative Achieved Sample Size

Qualitative methods were used to complement the survey data and to generate deeper insights into institutional dynamics, coordination challenges, and emerging opportunities within the skills development system. Stakeholders that participated in the online survey were requested to indicate their willingness to participate in key informant interviews and focus group sessions. Stakeholders were only contacted where permission was received.

Overall, the study achieved its qualitative data-collection targets. Key informant interviews met the intended range, with 22 interviews conducted involving a total of 24 senior stakeholder representatives. Of the six focus group discussions planned, five were successfully conducted, engaging 24 stakeholder representatives in total; the sixth was cancelled after only one participant attended, who had already taken part in an earlier session. Participation by stakeholder type and district municipality for the key informant interviews and focus group discussions is presented below.

Table 12: Qualitative Participation

Data Collection Method	Stakeholder Group	Targeted Sample Size (Representatives)	Actual Sample Achieved	Purpose
Key Informant Interviews	Senior Stakeholders (e.g. MQA, TVET Heads)	20 - 25	22 interviews inclusive of a total of 24 representatives.	Gather strategic and operational insights
Focus Group Discussions (FGD)	Multi stakeholder groups	6 groups (~8 each)	A total of six focus group discussions were planned. Five were successfully conducted, while the sixth was cancelled as only one participant attended, having already participated in an earlier session. Across the five completed focus group discussions, a total of 24 stakeholder representatives participated in the data collection process.	Understand experiences and needs

Focus group participation (Table 13) followed a broadly similar pattern to the online survey, with Lejweleputswa again the most strongly represented district (9 of 24, 37.5%), consistent with its concentration of mining activity and the corresponding weighting of MMS Employer participation (6 of 7 MMS Employer representatives). Organised Labour and SETAs & Agencies participation was captured entirely at province-wide level (2 and 4 respectively), reflecting

the sectoral rather than district-based structure of these stakeholder groups. Representation from Fezile Dabi, Mangaung, and Thabo Mofutsanyana was limited (1, 5, and 1 respectively), and no focus group participants were recorded from Xhariep. Ward Councillors and Government Officials did not participate in the focus group discussions, with their perspectives instead captured through the online survey and key informant interviews.

Table 13: Focus Group Participation by Stakeholder Type & District Municipality

Stakeholder Type	Fezile Dabi	Lejweleputswa	Mangaung	Thabo Mofutsanyana	Province-wide	Unknown	Xhariep	Grand Total
Education Institutions	0	1	3	1	0	0	0	**5**
Government Officials	0	0	0	0	0	0	0	**0**
MMS Employers	0	6	1	0	0	0	0	**7**
Organised Labour	0	0	0	0	2	0	0	**2**
SETAs & Agencies	0	0	0	0	4	0	0	**4**
Skills Development Facilitators	1	1	0	0	0	2	0	**4**
Training Providers	0	1	1	0	0	0	0	**2**
Ward Councillors	0	0	0	0	0	0	0	**0**
Grand Total	**1**	**9**	**5**	**1**	**6**	**2**	**0**	**24**

Unlike the survey and focus group patterns, key informant interview participation (Table 14) was most concentrated in Fezile Dabi (4 of 23, 17.4%), driven primarily by Ward Councillor participation (4 of 5 Ward Councillor interviews), consistent with the earlier finding that Ward Councillor engagement was itself concentrated in Fezile Dabi. Lejweleputswa (3), Mangaung (2), and Thabo Mofutsanyana (1) were more modestly represented, and no key informant interviews were recorded from Xhariep. As with the survey data, Skills Development Facilitator participation was predominantly of unknown district location (10 of 11), which, as noted above, reflects their employer-facing role rather than a gap in coverage. Organised Labour and SETAs & Agencies were again captured at province-wide level (2 and 1 respectively) rather than by district, consistent with the sectoral structure of these stakeholder groups. Government Officials did not participate in the key informant interviews, with their perspectives captured instead through the online survey.

Table 14: Key Informant Interview Participation by Stakeholder Type & District Municipality

Stakeholder Type	Fezile Dabi	Lejweleputswa	Mangaung	Thabo Mofutsanyana	Province- wide	Unknown	Xhariep	Grand Total
Education Institutions	0	0	0	1	0	0	0	**1**
Government Officials	0	0	0	0	0	0	0	**0**
MMS Employers	0	2	0	0	0	0	0	**2**
Organised Labour	0	0	0	0	2	0	0	**2**
SETAs & Agencies	0	0	0	0	1	0	0	**1**
Skills Development Facilitators	0	0	0	0	0	10	0	**11**
Training Providers	0	1	0	0	0	0	0	**1**
Ward Councillors	4	0	1	0	0	0	0	**5**
Grand Total	**4**	**3**	**1**	**1**	**3**	**10**	**0**	**22**

4.3 Data Collection

4.3.1 Quantitative Data Collection

Quantitative data was collected using structured online surveys administered to key stakeholder groups within the skills demand and supply value chain of the MMS in the Free State Province as stipulated in section 4.2.

Online surveys were utilised to reach a broad and geographically dispersed stakeholder base and to maximise the volume and consistency of data collected. This method was appropriate given its cost and time efficiency, its capacity to reach large numbers of respondents, and the flexibility it afforded participants to respond at a time most suitable to them. In addition, online surveys provided a greater degree of anonymity than face-to-face methods and supported improved data accuracy through standardised question formats (Nayak and Narayan, 2019).

The survey instrument was administered on a white-labelled instance of Alchemer, integrated with supporting systems developed and configured by the research team to manage participant outreach, reminders, and response tracking specific to this study's requirements. This integration, and not the underlying survey engine, is what makes the overall data collection system study-specific and proprietary to the research design; it is not a configuration available or replicable outside the research team's own infrastructure. Participant confidentiality and data handling were governed by the terms set out in the study's participation invitation (issued 14 November 2025), which confirms that all responses remain confidential and that no personal identifiers are used in reporting, consistent with POPIA requirements. As previously confirmed, the full data collection process was piloted internally prior to launch, with refinements incorporated ahead of fieldwork.

The online survey was launched on 19 November 2025 and was closed at the end of day on 05 December 2025. From 19 November 2025 until 30 November 2025 a team of two fieldworkers were following up with potential respondents to encourage participation. Starting from 01 December 2025, an additional 6 fieldwork members were mobilised to follow up on respondents. Follow ups were undertaken using two methods: emails generated from the customised survey platform and telephone calls made by the fieldwork team. Attempts were made to reach each stakeholder 4 - 5 times, after which they were indicated as non-

responsive. The online survey was reopened as a supplementary data collection activity on 04 February 2026 and remained open until 02 July 2026. During this time the original database was continuously updated with additional stakeholders. In addition, a total of 35 stakeholders informed the fieldwork team that they did not wish to participate and that they should be removed from the database.

4.3.2 Qualitative Data Collection

Qualitative data collection complemented the survey findings and provided deeper insight into institutional dynamics, coordination challenges, and contextual factors influencing skills development in the province. Qualitative methods included semi-structured key informant interviews and focus group discussions.

Key informant interviews were conducted with selected subject matter experts and were semi-structured to allow for consistency across respondents while providing sufficient flexibility to explore emerging issues in depth. The fieldwork team contacted stakeholders to participate in interviews from 08 December 2025 - 12 December 2025 and again for supplementary data collection from 13 May 2026 - 20 May 2026. Interviews were conducted using online platforms, such as Microsoft Teams, or telephonically, depending on participant availability. Interviews were used to elicit expert perspectives on policy effectiveness, operational challenges, skills gaps, and opportunities within the MMS skills ecosystem (Mcfarlan, n.d.). In instances where interviews took place using Microsoft Teams the sessions were recorded and transcripts generated. Telephonic interviews were not recorded but the interviewer took notes of the sessions.

Focus group discussions were scheduled with multi-stakeholder groupings, including representatives from industry, education and training institutions, Ward Councillors, and government officials. Focus groups enable real-time engagement, facilitate in-depth discussion, and allow for iterative feedback among participants. This method is particularly useful for exploring shared experiences, differing perspectives, and cross-sectoral challenges related to skills development and employment pathways (Alam, Asmawi and Fatema, 2025). The first focus group was held in December 2025, the second was scheduled for January 2026, however none of the participants invited attended. The second focus group was arranged together with organised labour. Focus groups 3 and 4 took place in March 2026 and focus

groups 5 and 6 took place in May 2026, these additional sessions were to gather additional data. Focus group sessions were recorded and transcripts were generated.

Stakeholders were selected on the basis that they were either directly impacted by skills development outcomes or had a direct influence on skills planning, provision, and utilisation within the MMS and the broader Free State provincial economy (Rabinowitz, 2025) and where permission was granted to contact them.

Fieldwork implementation was supported by routine project documentation maintained by the research team. This included the approved data-collection instruments; stakeholder contact and engagement records; recordings and transcripts, or interviewer notes where recording was not used; data-collection activity records; and working versions of research outputs used during implementation and analysis. The research team used these materials to check consistency between the approved methodology and the data-collection process. Where operational adjustments were required, they were discussed within the research team and agreed changes were incorporated into implementation. These materials constituted the practical fieldwork record for the study; no separate formal protocol-deviation register or audit log is claimed.

4.4 Data Analysis

4.4.1 Quantitative Data Analysis

Quantitative data was collected through the customised online survey platform. At the close of data collection, the survey records were exported and processed in Microsoft Excel. Excel was used to prepare the analytical dataset, conduct quality checks, generate frequency distributions and cross-tabulations, calculate descriptive percentages, and produce the tables and charts used in the report. No inferential-statistical package was used because the achieved responses did not constitute a probability sample from which population parameters could defensibly be estimated.

4.4.1.1 Data Preparation and Cleaning

The final analytical dataset comprised 72 submitted survey records. Before analysis, the exported records were screened for consent, substantive response content, duplicate

submissions, invalid values and internal inconsistencies. No submitted record was excluded at questionnaire level; the final analytical dataset therefore remained at 72 records. Item-level missing responses were handled as described below. The following rules were applied consistently across the stakeholder instruments.

- Incomplete and partially completed submissions. The survey permitted voluntary item non-response; consequently, a blanket questionnaire-level completion threshold was not imposed. A submitted record was retained where it contained substantive information relevant to at least one analytical item. For each question, blank responses, questions not presented because of routing, and responses marked as not applicable were treated as item-level missing data and excluded from that question's valid denominator. No missing value was statistically imputed. The valid n therefore varies between questions and is reported or inferable from the applicable table or figure.
- Duplicate screening. Records were compared using the available platform identifier, response timestamp, respondent contact details, organisation, stakeholder category and response pattern. Where the same respondent submitted more than one materially identical record, the most complete record was retained for analysis. Responses from different individuals in the same organisation were retained because they represented separate stakeholder contributions rather than duplicate cases.
- Category standardisation and 'Other' responses. Categorical responses were standardised for spelling, capitalisation and equivalent labels before frequencies were calculated. Text entered under 'Other (please specify)' was recoded to an existing response category only where the intended category was unambiguous. Responses that introduced a distinct issue were retained as 'Other' and considered in the thematic synthesis of open-ended survey responses. The original respondent wording was retained in the source export so that recoding decisions remained traceable.
- Logic and range checks. Values were checked against the permitted response options and the routing logic of each stakeholder instrument. District and stakeholder classifications were assigned only where they could be supported by the information supplied; records for which district location could not be established were retained in

an 'Unknown' category rather than being inferred. The cleaned frequencies were reconciled to the applicable valid response totals, and table and chart values were checked against the analytical workbook before interpretation.

4.4.1.2 Descriptive Analysis and Reporting Rules

Analysis was limited to unweighted descriptive statistics. Frequencies and cross-tabulations were generated for the survey variables and, where analytically useful, were disaggregated by stakeholder category and district municipality. Percentages were calculated using the valid responses to the relevant item as the denominator and were used to describe the composition of the achieved responses; they were not treated as estimates of the wider Free State stakeholder population.

No fixed subgroup threshold was used to confer statistical robustness. In particular, n = 15 was not treated as a boundary for significance, generalisability or the validity of a percentage. Counts and percentages were instead interpreted together with the achieved n and the distribution of responses. Results based on small or highly concentrated subgroups were described as indicative or illustrative, and they were not used to make comparative or population-level claims. Because the outreach was directed to identified stakeholder lists and produced uneven non-response across stakeholder groups and districts, no sampling weights, confidence intervals, margins of error, significance tests or population projections were calculated.

4.4.1.3 Visualisation and Synthesis

Charts were used as descriptive displays of the cleaned frequencies. Each chart was interpreted with reference to the achieved n, the applicable valid denominator and the distribution of responses. Visual prominence was not treated as evidence of statistical significance, and apparent differences between small subgroups were not interpreted as reliable population differences.

Open-ended survey responses were analysed through a thematic synthesis of open-ended survey responses, rather than being described as a qualitative analysis of the quantitative dataset. Responses were reviewed for recurring issues relating to skills demand, skills supply, barriers to participation, institutional coordination and future skills needs. These observations

were used to contextualise the descriptive counts and were triangulated with the key informant interviews, focus group discussions, documentary review, WSP evidence and SSP evidence.

4.4.1.4 Interpretive Boundary

The quantitative findings therefore describe the stakeholders who responded to the study and should not be interpreted as statistically representative estimates for all employers, institutions or districts in the Free State. Province-level patterns were considered alongside the qualitative and secondary evidence, while district- and stakeholder-level findings were qualified according to the achieved coverage and concentration of responses. This evidence-bounded approach permits transparent use of the survey material without overstating the precision or generalisability of the results.

4.4.2 Qualitative Data Analysis

Qualitative data obtained from the semi-structured interviews and focus group discussions were analysed using a general inductive thematic analysis approach, broadly consistent with Braun and Clarke's six-phase framework. Interview and focus group sessions were recorded and transcribed, with AI-assisted transcription used to generate first-draft summaries; these were reviewed by the research team against the original recordings to verify accuracy before coding began. Coding was conducted manually by the research team and no CAQDAS software (e.g., ATLAS.ti, NVivo) was used. Transcripts were reviewed systematically to identify recurring patterns, points of convergence, and areas of divergence across stakeholder perspectives. An initial coding process was undertaken to categorise responses related to skills demand, skills supply, labour-market alignment, institutional coordination, and implementation challenges, with codes subsequently grouped into higher-order themes aligned with the study's theoretical framework, particularly Human Capital Theory, Labour Market Mismatch Theory, and Systems Theory. Comparative analysis was applied to assess consistency between stakeholders in the focus group discussions. This process enabled the triangulation of qualitative findings with literature review evidence and quantitative survey results, strengthening the robustness and interpretive validity of the analysis.

The initial codebook was developed through a combination of deductive and inductive coding. Preliminary codes were informed by the study objectives, research questions and theoretical framework, while additional codes were developed iteratively as recurring concepts and patterns emerged from the qualitative data. The codebook was progressively refined through discussion among members of the research team, including clarification and consolidation of overlapping or ambiguous codes. To promote consistency in the application and interpretation of codes, members of the research team reviewed and discussed coded material and resolved differences in coding through consensus. This process established a shared interpretation of the coding framework and supported consistency across the qualitative dataset.

4.5 Reliability, Validity and Ethical Considerations

4.5.1 Quantitative Reliability and Validity

Reliability was supported by actions taken before and during fieldwork. The research team used structured stakeholder survey instruments with standardised response formats and documented routing. Before launch, the online survey and associated data-collection process were piloted internally to test functionality, question interpretation, data capture and user experience; identified refinements were incorporated before the survey opened. The survey was administered during the periods stated in Section 4.3.1, and potential respondents were followed up by email and telephone using the fieldwork procedure recorded there.

At the close of the survey data collection, 72 submitted survey records were exported to Microsoft Excel and screened for consent, substantive response content, duplicate submissions, invalid values and internal inconsistencies. Item-level non-response was excluded from the valid denominator for the applicable question, no missing values were statistically imputed, and the valid n was allowed to vary between items. Category labels were standardised, 'Other' responses were recoded only where the intended category was unambiguous, and the original wording was retained in the source export so that recoding decisions remained traceable. Logic and range checks were completed before the cleaned frequencies were reconciled to the applicable valid totals.

The analysis then applied the reporting rules set out in Section 4.4.1.2. It was limited to unweighted descriptive frequencies and cross-tabulations, with percentages calculated from the valid responses to each item. No fixed subgroup threshold, including n = 15, was used to confer statistical robustness or determine whether a percentage could be reported. Counts, percentages, achieved n and response concentration were interpreted together; results from small or highly concentrated subgroups were described as indicative or illustrative. No sampling weights, confidence intervals, margins of error, significance tests or population projections were calculated.

Validity was strengthened through the inclusion of stakeholder categories from across the skills demand and supply system and through systematic triangulation. Survey patterns were compared with WSP and SSP evidence, policy and planning documents, key informant interviews and focus group discussions rather than being interpreted in isolation. Tables and charts were checked against the analytical workbook, and interpretations were retained only where they were consistent with the strength and coverage of the supporting evidence.

Dependability was supported by the routine project documentation maintained by the research team, as described in Section 4.3.2. Approved instruments, stakeholder-engagement records, recordings, transcripts or notes where applicable, data-collection activity records and working versions of research outputs were used to check consistency between the approved methodology and implementation. Operational adjustments were discussed within the research team and agreed changes were incorporated into the fieldwork process. The study does not claim that a separate formal protocol-deviation register or audit log was maintained.

Non-response and incomplete coverage were explicitly incorporated into interpretation. District and stakeholder distributions were presented with their achieved n, records with an undetermined district were retained in an Unknown category rather than assigned by inference, and findings from small or unevenly represented groups were not treated as population estimates. The quantitative findings therefore describe the stakeholders who responded to the study and are not statistically generalisable to all employers, institutions or districts in the Free State. Triangulation broadened and strengthened the province-level

interpretation, but it did not remove the limitations created by uneven participation and coverage.

4.5.2 Qualitative Trustworthiness

Trustworthiness in the qualitative component was ensured through systematic and transparent analytical procedures designed to enhance credibility, dependability, and confirmability. Data from key informant interviews and focus group discussions were analysed using thematic analysis, with attention given to identifying recurring patterns, convergences, and divergences across stakeholder perspectives.

To strengthen credibility, themes were developed iteratively and grounded in the data, with particular attention to core analytical domains such as skills demand, skills supply, labour-market alignment, institutional coordination, and implementation challenges. The consistency of emerging themes was assessed through comparison across stakeholder groups and data sources, thereby enhancing dependability of the findings.

Confirmability was strengthened through triangulation of qualitative insights with quantitative survey results, policy and planning documents, Workplace Skills Plans, Sector Skills Plans, and relevant literature. This multi-source validation reduced the influence of individual researcher interpretation and ensured that findings were anchored in multiple lines of evidence.

Transferability was supported by providing sufficient contextual detail regarding participating stakeholder groups, geographic coverage, achieved sample composition, and fieldwork constraints. This allows readers to assess the extent to which findings may be applicable to other contexts with similar institutional and labour market characteristics.

Overall, the qualitative component prioritised analytical transparency and cross-source validation to ensure that findings are credible, consistent, and appropriately contextualised.

4.5.3 Ethical Considerations

Ethical conduct throughout the study was guided by the research ethics principles applied by Enterprises UP and articulated in the University of Pretoria's Code of Ethics for Scholarly Activities (University of Pretoria, n.d.). These principles were operationalised through

voluntary participation, informed consent, respect for participant autonomy, confidentiality, privacy, fair treatment, and protection from harm.

The introductory section of each online survey provided respondents with information about the study and served as the informed-consent statement. Respondents were informed that the raw data collected through the study would be provided to the MQA in accordance with the contractual agreement between Enterprises University of Pretoria and the MQA. Respondents retained the choice of whether to participate, and their decision to proceed with the survey indicated their consent. Participation was voluntary, and respondents were not required to complete the survey.

Each key informant interview and focus group discussion began with an overview of the research and an explanation of participants' rights. This included information about the purpose of the research, the contractual provision of raw study data to the MQA, and the intended use of the findings. Participants were informed that they could refuse to participate, decline to answer individual questions, or withdraw from the research at any time without penalty. Interviews and focus group discussions proceeded only after informed consent had been obtained.

Survey respondents were also asked whether they were willing to participate in subsequent interviews or focus group discussions. Only respondents who granted permission were contacted for these activities. Stakeholders who declined further participation were not contacted, while those who requested removal from the stakeholder database were removed. All primary and secondary data were processed in accordance with the Protection of Personal Information Act, 4 of 2013. Raw study data were provided to the MQA in accordance with the contractual agreement and the data-transfer arrangements communicated to participants during the consent process. Personal, institutional, and stakeholder information presented in the report was anonymised and aggregated to reduce the possibility of identifying individual respondents. Confidential handling of participant information protected participants' privacy and supported open and accurate disclosure.

4.6 Limitations and Delimitations

4.6.1 Limitations

Limitations in a research study refer to practical or theoretical constraints that are beyond the control of the researcher and cannot be fully mitigated, even where corrective measures are considered (Taherdoost, 2022; Viera, 2023). In this study, several limitations were identified that influenced the scope, depth, and interpretation of the findings.

Although the study obtained 72 completed survey responses and substantially achieved its qualitative data-collection targets, participation was uneven across stakeholder categories and districts. The district distribution was Lejweleputswa (n = 22), Mangaung (n = 10), Fezile Dabi (n = 9), Thabo Mofutsanyana (n = 3), Xhariep (n = 1), province-wide (n = 9), and unknown district (n = 18). This coverage was not sufficient for statistically representative district-level analysis. No fixed threshold, including n = 15, was used to determine whether a percentage was valid or whether a subgroup was statistically robust.

District findings were therefore reported descriptively, using counts and percentages together with the achieved n, and were interpreted cautiously where subgroups were small or concentrated. They should be regarded as indicative rather than statistically generalisable. The uneven distribution also limits direct comparison between districts. Triangulation with the literature review, WSPs, SSPs, key informant interviews and focus group discussions broadened and strengthened the province-level interpretation, but it did not remove the limitations associated with uneven participation, non-response and insufficient district-level coverage.

Participation was highest in Lejweleputswa, which contains the province's principal concentration of mining activity. The second-highest response was recorded in Mangaung, largely reflecting its concentration of government, education, and training institutions rather than mining operations. The geographical distribution of responses should therefore be understood as reflecting both sectoral concentration and stakeholder accessibility and should not be interpreted as representative of the relative intensity of mining activity across districts. The study was subject to potential non-response bias in the quantitative survey data, as participation depended on stakeholders' willingness and availability to respond. While

multiple follow-up attempts were made using different communication channels (i.e. phone calls and text messages), uneven response rates across stakeholder groups and regions remained a limitation.

While the participation patterns represent a limitation, they are not uncommon in applied policy and sectoral research, where competing operational priorities, stakeholder availability, and organisational capacity constraints can affect participation. The uneven representation may also reflect broader systemic challenges within the Free State skills development ecosystem, including varying levels of stakeholder engagement and coordination. These limitations were considered during the interpretation of the findings, with conclusions informed through triangulation of the literature review, quantitative survey results, and the qualitative evidence obtained from the interviews and focus group discussions.

Sampling constraints emerged following the shift to district-level sampling, as confirmed during the inception meeting. Within these constraints, Ward Councillors were used as proxies for broader community perspectives. While this provided a practical means of obtaining supplementary community-level insights, Ward Councillors are elected political office-bearers and cannot be regarded as neutral representatives of community views. The use of councillors as proxies therefore materially limited the extent of direct community-level evidence available, and the resulting data are treated throughout the report as indicative and supplementary rather than representative.

Data quality constraints were noted in relation to the availability and accuracy of stakeholder contact details. These details were sourced from publicly available databases or provided by partner institutions, and systematic verification fell outside the scope and resources of the study. In some cases, incomplete or outdated contact information reduced the effective sample size.

4.6.2 Delimitations

Delimitations define the intentional boundaries of a study, enabling analytical focus while acknowledging contextual constraints (Coker, 2022). In this instance, the study was deliberately limited to the Free State Province and focused on skills development within the mining and minerals sector and its provincially relevant value chains. While the analysis

considered linkages to adjacent sectors such as agriculture and manufacturing, the study did not constitute a comprehensive skills demand and supply analysis for all sectors within the provincial economy. The findings should therefore be interpreted within the specific context of the MMS and related transition pathways.

5. RESULTS AND DISCUSSION

5.1 Socio-Economic Landscape of the Province

This chapter presents a consolidated socio-economic profile of the Free State province, situating demographic, educational and labour market characteristics within established human capital and labour market mismatch theories. Human Capital Theory posits that investments in education and skills enhance individual productivity and broader economic growth (Almendarez, 2011; Leoni, 2023). However, persistent unemployment, particularly among youth and women, suggests the presence of structural mismatches between skills supply and labour market demand (Auerbach and Green, 2024). These dynamics are particularly salient in the Free State, a predominantly rural province undergoing a gradual transition from mining towards services, trade and manufacturing (Statistics South Africa, 2023b; TIPS, 2024).

5.1.1 Locality

The Free State is centrally located within South Africa and comprises one metropolitan municipality and four district municipalities, subdivided into eighteen local municipalities (Municipalities.co.za, 2025), as illustrated in Figure 3. The province has a population of almost 2 964 412 people which is an increase of 8% from the 2011 census (Statistics South Africa, 2023b).

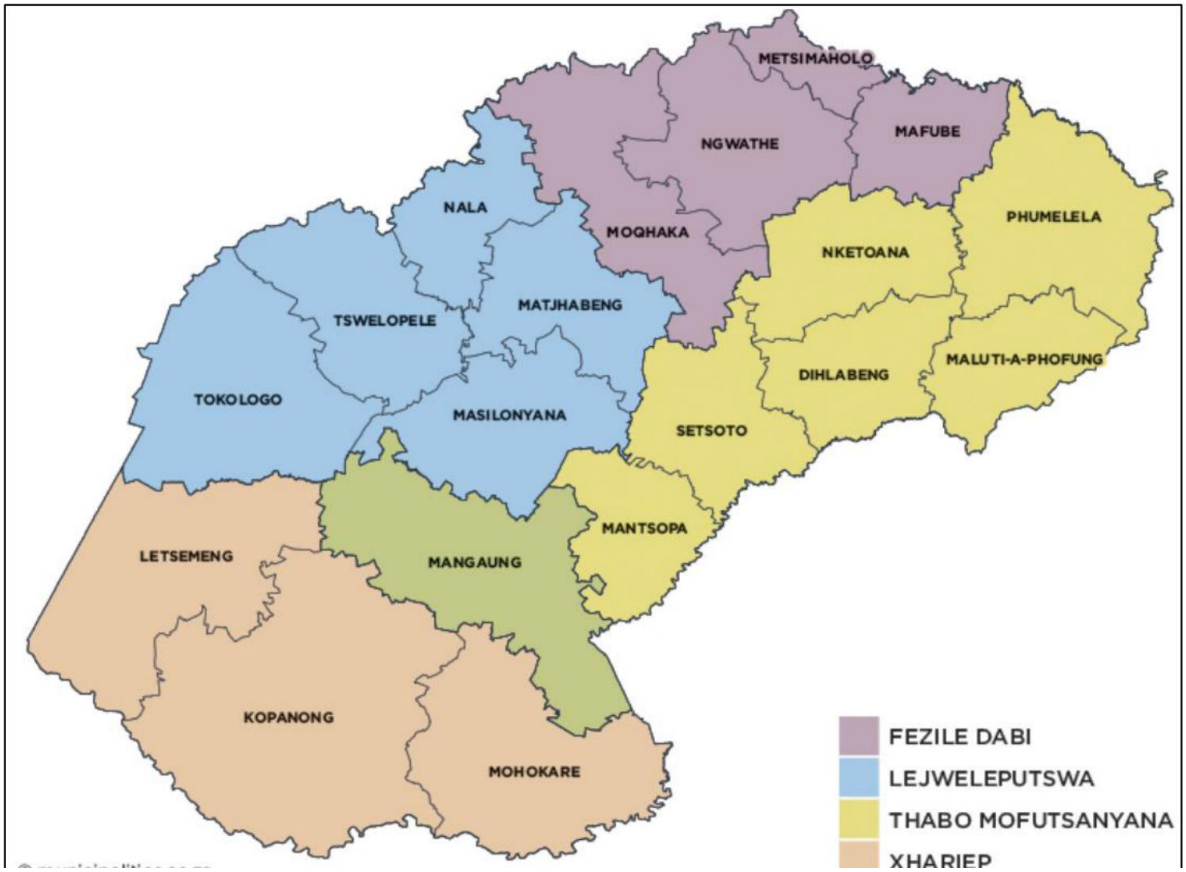


Figure 3: Free State Municipalities

Source: Municipalities.co.za, 2025

The Free State Province is characterised by expansive farmlands, mountainous terrain, and a strong mining presence. Despite being the third largest province in South Africa geographically, it has the second lowest population density and second smallest population (Municipalities.co.za, 2025).

Bloemfontein serves as the provincial and judicial capital, while Welkom, Kroonstad, Sasolburg and Bethlehem function as key secondary urban centres (Municipalities.co.za, 2025). The province's dispersed settlement patterns and extensive rural areas have direct implications for service delivery, access to education and labour market participation.

5.1.2 Demographic profile

The Free State province has the second lowest percentage distribution of population within South Africa with a consistent decline over the period of 1996 - 2022 (Statistics South Africa, 2023bb). The Free State has experienced a modest population increase of 8% since 2011,

reaching approximately 2.96 million people in 2022 (Statistics South Africa, 2023). Population trends by gender and census year are presented in Table 15.

Table 15: Free State Population 1996 - 2022

Census year	Male	Female	Total
1996	1 298 348	1 335 156	2 633 504
2001	1 297 605	1 409 170	2 706 775
2011	1 328 967	1 416 623	2 745 590
2022	1 407 824	1 556 588	2 964 412

Source: Statistics South Africa, 2023b

Females consistently constitute the majority of the population (Statistics South Africa, 2023b). Spatially, population growth has occurred across all districts, with Thabo Mofutsanyane District Municipality now exceeding Mangaung Metro in population size as seen in Figure 4 (Statistics South Africa, 2023a).

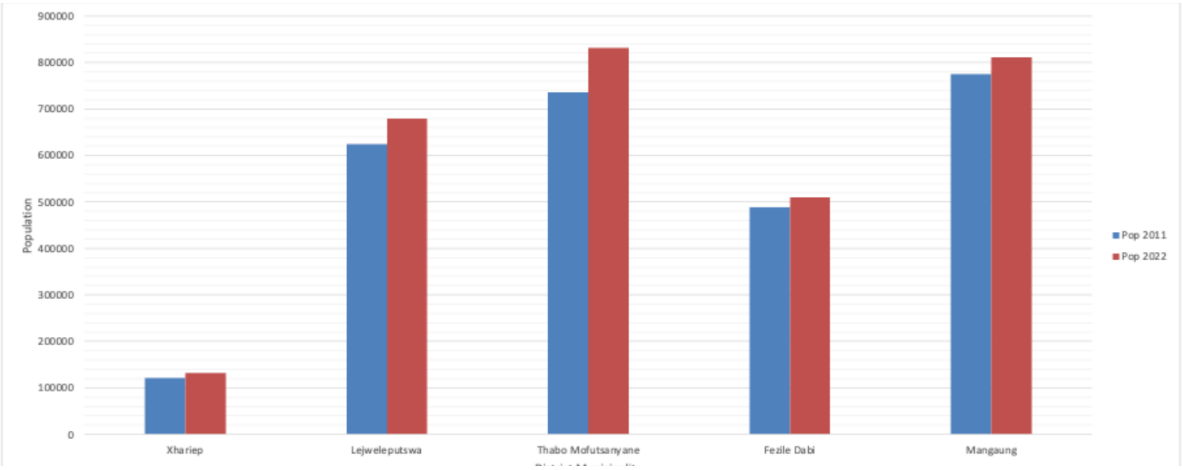


Figure 4: Population by district municipality

Source: Statistics South Africa, 2023a

The racial composition of the province remains predominantly Black African (88.81%), with all other population groups showing proportional declines since 1996 (Table 16).

Table 16: Distribution by population group

Census year	Black African	Coloured	Indian/Asian	White	Other
1996	84.81%	3.01%	0.11%	12.07%	0.00%

Census year	Black African	Coloured	Indian/Asian	White	Other
2001	87.97%	3.07%	0.14%	8.82%	0.00%
2011	87.61%	3.05%	0.38%	8.71%	0.25%
2022	88.81%	2.64%	0.44%	7.97%	0.14%

Source: Statistics South Africa, 2023b

Age distribution data indicate a pronounced youth bulge, with the largest cohort falling between 15 and 34 years, particularly concentrated in Mangaung Metro (Figure 5). This demographic structure intensifies pressure on education systems and labour markets to absorb new entrants.

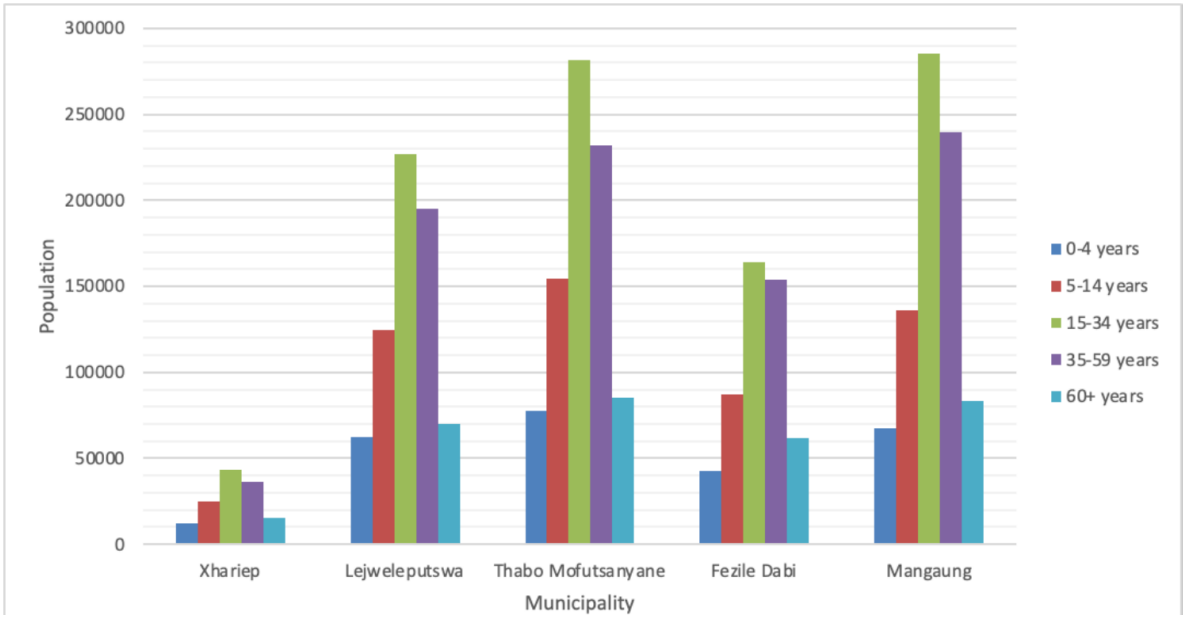


Figure 5: Distribution by age

Source: Statistics South Africa, 2023a

5.1.3 Education profile

Educational attainment levels indicate that 36% of individuals aged 20 years and above have completed secondary education, while a further 34% have incomplete secondary schooling. Only 10% have attained post-secondary qualifications (Figure 6) (Statistics South Africa, 2023b). These patterns reflect a narrow skills base and underscore the limited availability of intermediate and advanced technical skills within the province.

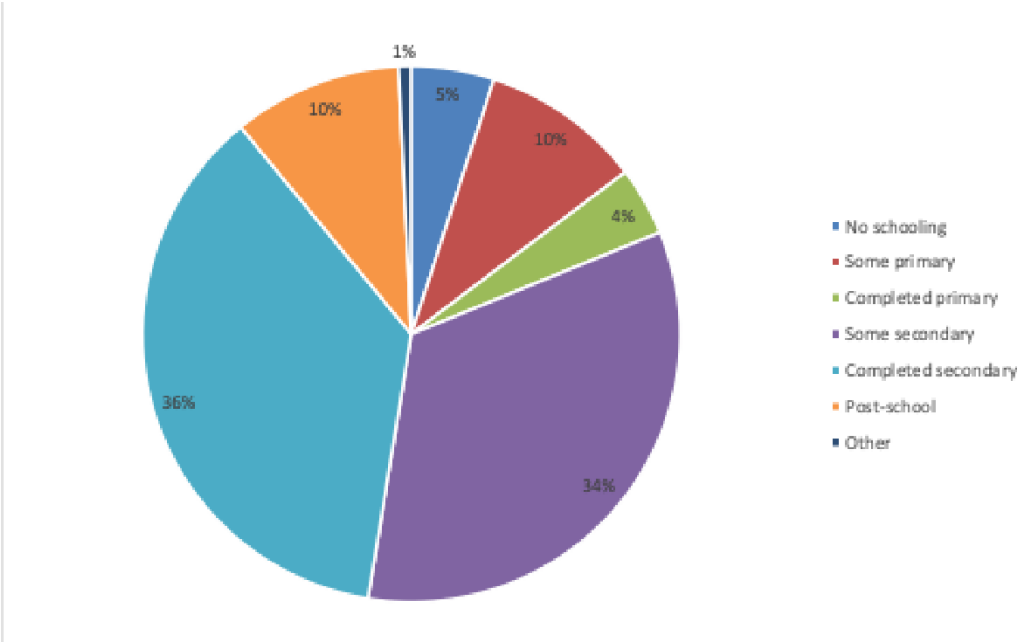


Figure 6: Educational levels attained

Source: Statistics South Africa, 2023b

5.1.4 Type of households

Household trends show mixed patterns across municipalities. While Xhariep and Mangaung experienced a decline in the number of households, average household size increased across most municipalities as illustrated by Table 17.

Table 17: Total households and household size

Municipality	2011		2022	
	Total Households	Average Household Size	Total Households	Average Household Size
Xhariep	37 678	3.2	36 064	3.7
Lejweleputswa	182 247	3.4	189 807	3.6
Thabo Mofutsanyane	217 689	3.4	244 415	3.4
Fezile Dabi	144 971	3.4	145 539	3.5
Mangaung	240 700	3.2	229 426	3.5

Source: Statistics South Africa, 2023a

In terms of dwelling type, the number of formal dwellings has increased across all district municipalities except Xhariep District Municipality. Thabo Mofutsanyane District Municipality

has had a large increase in formal dwellings and a large decrease in traditional and informal dwellings. Figure 7 indicates the changes between 2011 and 2022 as discussed.

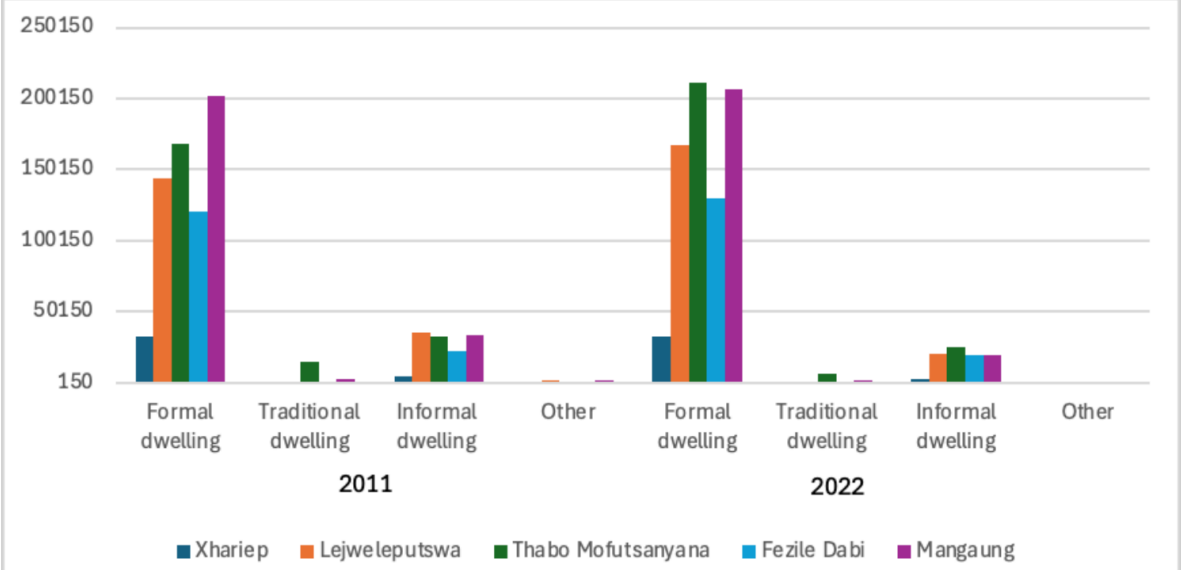


Figure 7: Dwelling type

Source: Statistics South Africa, 2023a

The number of households with access to regional/local water scheme has increased since 2011 and the same change is noted in access to flush toilet facilities. Energy usage patterns indicate declining reliance on electricity for cooking and increased uptake of gas, reflecting both affordability constraints and energy supply instability (Statistics South Africa, 2023a).

5.1.5 Economic landscape

Globally and nationally, economic growth remains subdued, with South Africa's growth forecast ranging between 1% and 1.8% (Free State Provincial Treasury, 2025; OECD, 2025). National labour market data for Q2 2025 indicate an expanded unemployment rate of 42.9%, with weak employment absorption (Table 18) (Statistics South Africa, 2025a).

Table 18: National Employment Figures 2025:Q2

	Apr-Jun	Jan-Mar	Apr-Jun	Qtr-to-	Year-on-year chan	Qtr-to-	Year-on-
Population 15-64 years	**41 296**	**41 691**	**41 822**	**131**	**526**	**0.3**	**1.3**
Labour force	**25 036**	**25 015**	**25 174**	**159**	**138**	**0.6**	**0.6**
Employed	**16 652**	**16 787**	**16 807**	**19**	**154**	**0.1**	**0.9**

	Apr-Jun	Jan-Mar	Apr-Jun	Qtr-to-	Year-on-year chan	Qtr-to-	Year-on-
Formal sector (non-agricultural)	11 467	11 434	11 468	34	2	0.3	0
Informal sector (non-agricultural)	3 129	3 345	3 326	-19	197	-0.6	6.3
Agriculture	896	930	906	-24	10	-2.6	1.1
Private households	1 160	1 078	1 106	28	-54	2.6	-4.7
Unemployed	**8 384**	**8 228**	**8 367**	**140**	**-16**	**1.7**	**-0.2**
Not economically active	**16 260**	**16 676**	**16 648**	**-28**	**388**	**-0.2**	**2.4**
Discouraged work- seekers	3 195	3 473	3 445	-28	250	-0.8	7.8
Other (not economically active)	13 065	13 203	13 203	0	138	0	1.1
Unemployment rate (%)	**33.5**	**32.9**	**33.2**	**0.3**	**-0.3**	**0.3**	**-0.3**
Employed/population ratio (absorption) (%)	40.3	40.3	40.2	-0.1	-0.1	-0.1	-0.1
Labour force participation rate (%)	**60.6**	**60**	**60.2**	**0.2**	**-0.4**	**0.2**	**-0.4**

Source: Statistics South Africa, 2025a

Provincially, the Free State has been experiencing increases in employment levels since April 2024, with the increase in the last quarter being 12000 (Statistics South Africa, 2025a). This contrasts with national figures (Table 19).

Table 19: Provincial Employment Figures 2025:Q2

Province	Apr-Jun 2024	Jan-Mar 2025	Apr-Jun 2025	Qtr-to-qtr change (Thousand)	Year-on-year change (Thousand)	Qtr-to-qtr change (%)	Year-on-year change (%)
South Africa	**16 652**	**16 787**	**16 807**	**19**	**154**	**0.1**	**0.9**
Western Cape	2 675	2 861	2 744	-117	69	-4.1	2.6
Eastern Cape	1 369	1 373	1 462	89	93	6.5	6.8
Northern Cape	314	343	314	-28	0	-8.3	0.1
Free State	**745**	**754**	**766**	**12**	**21**	**1.6**	**2.8**
KwaZulu-Natal	2 842	2 788	2 702	-86	-140	-3.1	-4.9
North West	887	879	895	16	8	1.8	0.9
Gauteng	5 103	5 091	5 186	95	83	1.9	1.6
Mpumalanga	1 192	1 212	1 223	11	31	0.9	2.6
Limpopo	1 526	1 488	1 515	27	-11	1.8	-0.7

Source: Statistics South Africa, 2025a

Provincially, the Free State recorded modest employment growth between April and June 2025, contrasting with national stagnation (Table 19). However, the official unemployment rate increased to 38.5%, while the expanded unemployment rate declined to 43.8% (Table 20). This paradox suggests reduced discouragement among work-seekers but insufficient job creation to absorb labour market entrants.

Table 20: Provincial Unemployment Figures 2025:Q2

Province	Offi	Offi	Offi	Qtr-	Yea	Exp	Exp	Exp	Qtr-	Yea
South Africa	**33.5**	**32.9**	**33.2**	**0.3**	**-0.3**	**42.6**	**43.1**	**42.9**	**-0.2**	**0.3**
Western Cape	22.2	19.6	21.1	1.5	-1.1	27.3	24.7	27	2.3	-0.3
Eastern Cape	41	39.3	39.5	0.2	-1.5	49.7	49	47.6	-1.4	-2.1
Northern Cape	32	29.5	32.7	3.2	0.7	44.9	43	46.9	3.9	2
Free State	**37.6**	**37.9**	**38.5**	**0.6**	**0.9**	**45.1**	**44.8**	**43.8**	**-1**	**-1.3**
KwaZulu-Natal	31.1	32.3	33.4	1.1	2.3	44.9	46.9	47.9	1	3
North West	41.3	40.4	40.1	-0.3	-1.2	54.2	56	54.7	-1.3	0.5
Gauteng	35.1	34.7	33.8	-0.9	-1.3	39.2	40	39.2	-0.8	0
Mpumalanga	37.4	35.4	34	-1.4	-3.4	48.7	43.9	48.4	-0.9	-0.3
Limpopo	31.4	33.3	35	1.7	3.6	47.1	48.6	47.7	-0.9	0.6

Source: Statistics South Africa, 2025a

Figure 8 below provides a summary of key employment figures by province, compared nationally the Free State has a higher percentage of unemployment as per the standard and expanded definitions. The absorption rate is slightly lower than the national average at 39.4% versus 40.2% but the labour force participation rate was slightly higher at 64.1% as opposed to 60.2% (Statistics South Africa, 2025a).

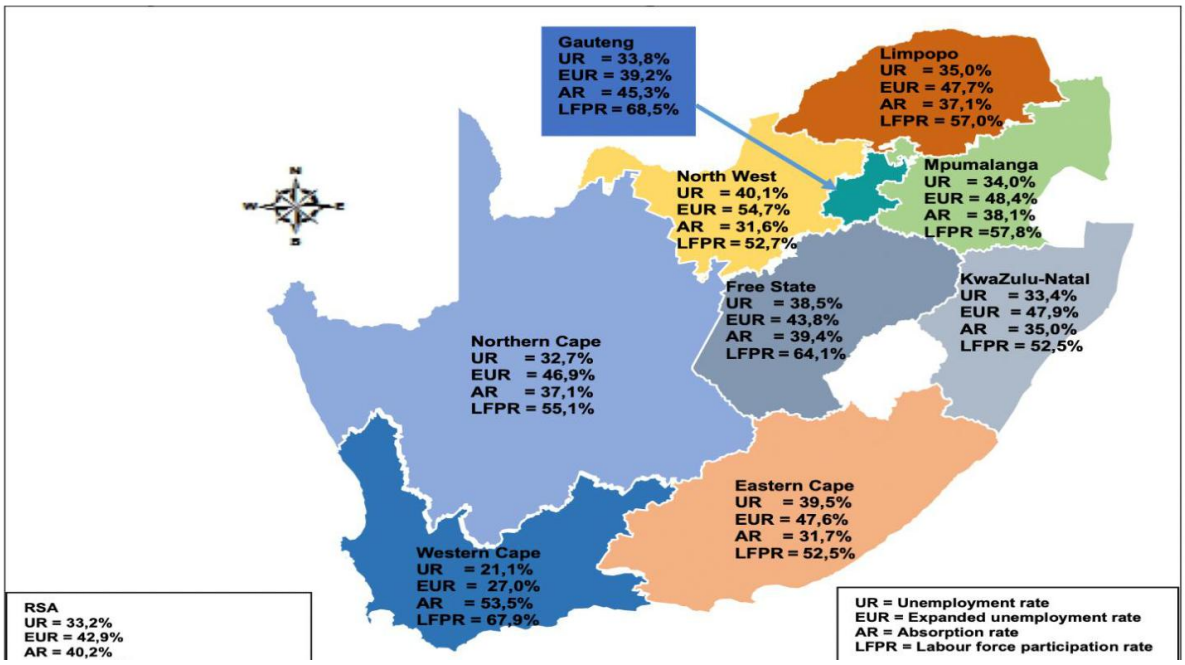


Figure 8: Summary of employment figures by province

Source: Statistics South Africa, 2025a

Youth unemployment remains critically high, at approximately 46% for individuals aged 15-34 and exceeding 60% for those aged 15-24 (Figure 9) (Statistics South Africa, 2025a; 2025b). Another important indicator is Not in Education, Employment or Training (NEET), with 49.2% of these individuals being youth and 50.8% adults (Free State Provincial Treasury, 2025). In a 2019 study that examined the impact of basic education on households it was found that the most common reason given by 16 - 18-year-olds for non-attendance at an educational institution was the lack of funding for fees (Department of Basic Education, 2025b).

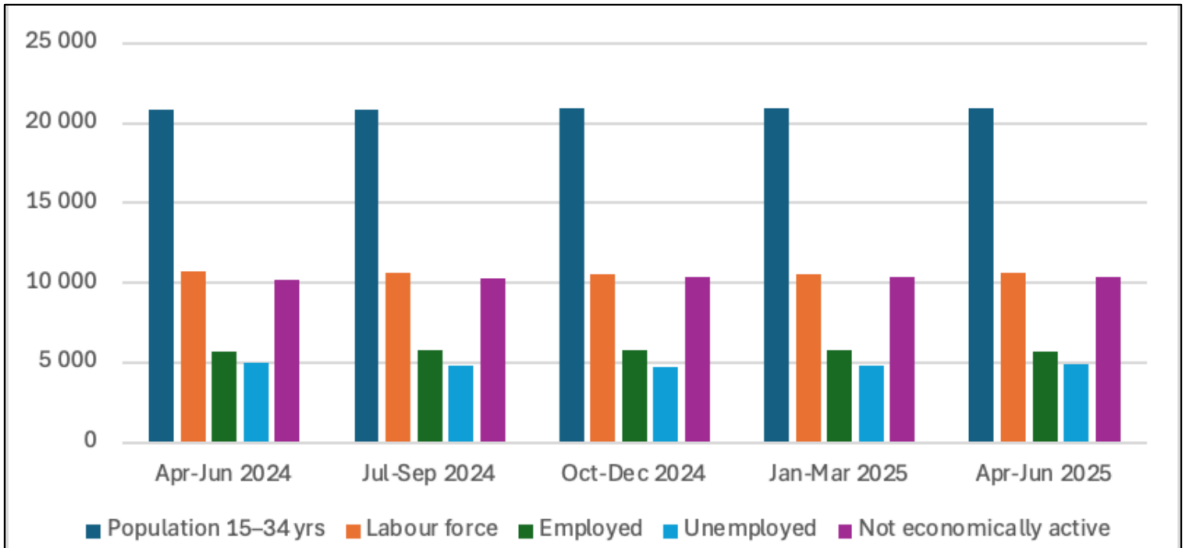


Figure 9: Youth (aged 15 - 34) unemployment in the Free State

Source: Statistics South Africa, 2025a

In terms of gender, it was observed that the unemployment rate of women in the Free State increased from 38.3% in 2014 to 41.9% in 2024. Conversely, the unemployment rates for men during the same period were 32.3% and 33.8%, respectively (Statistics South Africa, 2024b).

In 2023, the Free State contributed 5% to the national GDP (Statistics South Africa, 2024a). According to the MCSA, mining contribution to provincial GDP has declined to 6% (MCSA, 2025) and the five largest industries within the Free State province, in terms of contribution to provincial GDP, as of July 2025 were Finance (23%), Community Services (20%), Trade (12%), and Government (10%) and Manufacturing (10%) (MCSA, 2025) as shown in Figure 10.

It is important to note that an industry's contribution to provincial GDP does not necessarily correspond to its share of employment, as sectors differ considerably in labour intensity. Figure 10 reflects each industry's relative contribution to GDP, while Figure 11 reflects the number of people employed within each industry; a capital-intensive sector such as Finance can generate significant economic output with comparatively fewer jobs, whereas a labour-intensive sector such as Community and Social Services or Agriculture may employ a larger share of the workforce relative to its GDP contribution. The two figures should therefore be read as complementary rather than directly comparable measures.

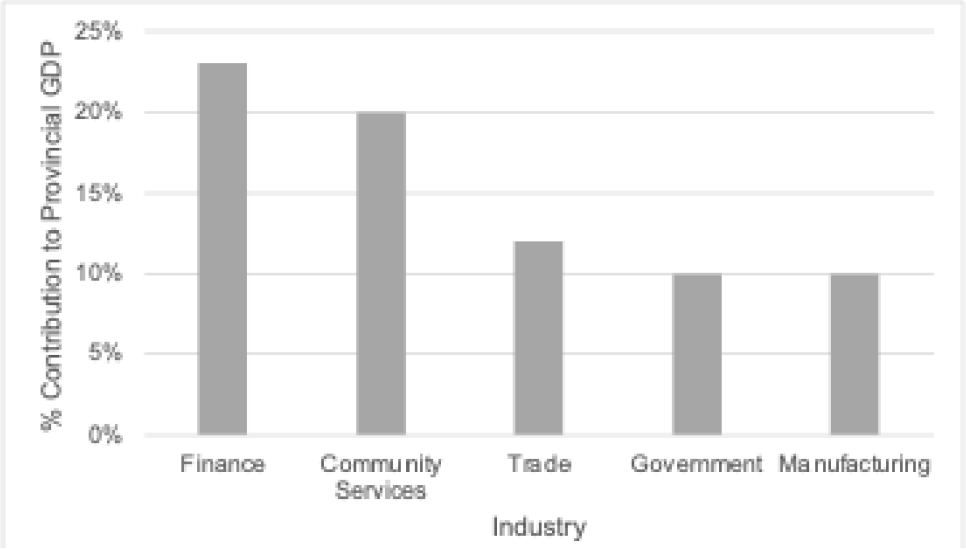


Figure 10: 5 largest industries in Free State Province (% contribution to provincial GDP)

Source: MCSA 2025

Figure 11 illustrates that as of Q2:2025 the top four largest employing industries in the Free State province were Community and Social Services (30.8%), Trade (20.7%), Finance (14.2%) and Agriculture (12.2%) (Statistics South Africa, 2025a). Mining was the second smallest employer at 3.6%.

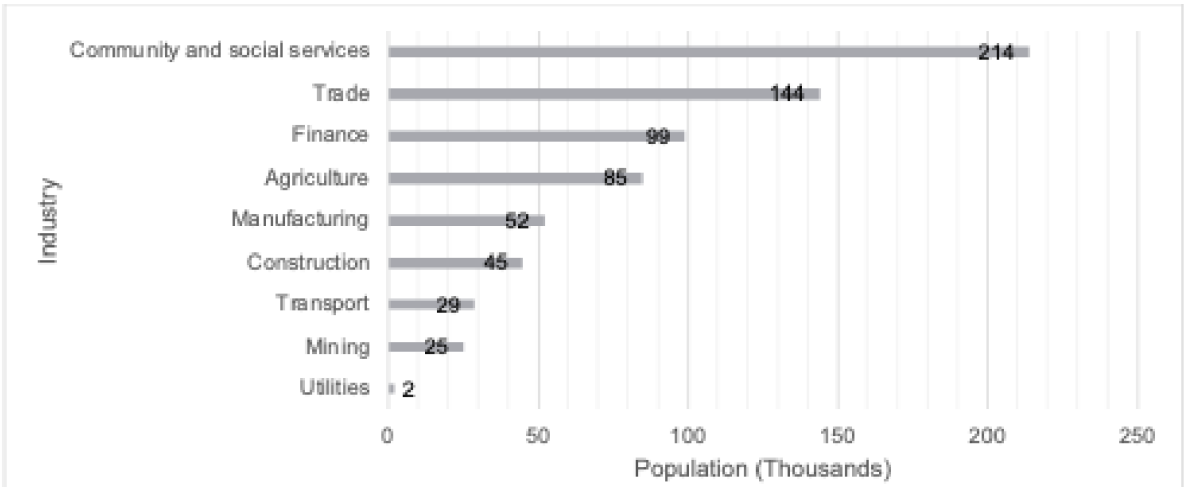


Figure 11: Free State Employment Figures by Industry (thousands) April - June 2025 Q2

Source: Statistics South Africa 2025b

A comparable district-level analysis could not be undertaken due to the absence of sufficiently disaggregated and current official employment data by industry at district municipality level.

The provincial-level Statistics South Africa data therefore provides the most consistent basis for positioning the MMS relative to other industries in the Free State.

5.1.6 Primary Data Collection Findings

Primary data collected through qualitative engagements and quantitative surveys reinforces and contextualises the literature-based socio-economic profile of the Free State. Qualitative findings highlight persistent socio-economic pressures, including declining formal employment, limited labour absorption capacity and constrained access to skills development, particularly in rural and mining-affected areas. These observations align closely with the labour market mismatch identified in the literature, where education and training outcomes are not translating into sustainable employment.

Participants consistently described livelihoods characterised by informality and economic precarity, with youth unemployment emerging as a dominant concern. Many young people were reported to hold theoretical qualifications but lack practical experience, artisan certification or workplace exposure, thus echoing the critique that education alone is insufficient in contexts of weak labour demand (Leoni, 2023).

Spatial inequality in access to training infrastructure was a recurring theme, with opportunities concentrated in urban centres. Transport costs, digital exclusion and limited municipal capacity further restricted participation for rural communities. These findings corroborate the demographic and spatial patterns outlined earlier (see Section 5.1), reinforcing the systemic nature of skills and employment mismatches within the province.

Quantitative findings further support this profile, indicating that the main economic activities within surveyed communities are government and community services, agriculture and retail, highlighting the need for skills interventions that support local employment beyond mining-related activities alone. This mirrors provincial employment data showing dominance of community services and trade, and limited absorption by mining and manufacturing. Together, the primary data and secondary statistics confirm that the Free State economy remains oriented towards low- to medium-skill sectors, with limited pathways for upward mobility without targeted skills alignment and economic diversification.

The socio-economic profile of the Free State province reveals a complex interplay between demographic pressures, educational attainment and labour market performance. While incremental improvements in living conditions and employment participation suggest resilience, persistently high unemployment (particularly among youth and women) underscores deep structural inefficiencies. The convergence of literature and primary data highlights that skills development initiatives, in isolation, are insufficient to address unemployment without parallel interventions to stimulate labour demand and improve system coordination.

An integrated, system-wide approach is required that aligns education and training provision with realistic employment opportunities, strengthens institutional feedback loops, and supports economic diversification beyond traditional mining activities. Without such alignment, continued investment in human capital risks reinforcing existing inequalities rather than enabling sustainable livelihoods and inclusive growth within the Free State province.

5.2 MMS Profile

The MMS has historically played a defining role in shaping the economic and social landscape of the Free State province. Anchored in the extraction of gold, coal and diamonds, the province once stood as one of South Africa's most significant mining contributors, particularly within the gold industry. However, despite this historical prominence, recent trends indicate a sustained decline in mining activity marked by falling production tonnages, the closure of once-thriving mines, and a corresponding reduction in employment opportunities (MCSA, 2025). These developments highlight a structural shift in the provincial mining landscape, driven by resource depletion, market volatility, environmental imperatives, and the national transition toward a low-carbon economy. Understanding these dynamics is essential for assessing the broader economic and human capital implications for the Free State.

The MMS in the Free State consists of 83 employers as per the list of operating mines as published by the DMPR in 2025 (DMPR, 2025b) and according to the 2025 WSP data received from the MQA. The available employer data enables the MMS profile to be differentiated by operation size, as reflected in Table 21, but does not provide a sufficiently consistent basis for classifying employers according to national or multinational ownership. Accordingly, an ownership-type disaggregation has not been presented, as doing so would require

assumptions regarding ownership structures that could not be consistently verified across the identified employers.

Small-scale activity is represented, where identifiable, within the small-employer category used in the analysis. Artisanal mining could not be separately quantified from the available employer data. This reflects an important data limitation, as artisanal mining may overlap with small-scale mining and can include informal or unregistered activities that are not systematically captured in formal employer and administrative datasets. The absence of a separate artisanal category should therefore not be interpreted as evidence that artisanal mining does not occur in the Free State, but rather that its scale and distribution could not be reliably established from the data available to the study.

Within these limitations, the analysis provides the most reliable available differentiation of the provincial MMS landscape based on identifiable and verifiable employer and operational characteristics.

Table 21: Number of operations by size and subsector

Commodity	Total employers	Large	Medium	Small	Closed / inactive	Size not confirmed	Non-operation / service employer
Cement, Lime, Aggregates and Sand (CLAS)	44	0	12	29	0	1	2
Coal mining	2	2	0	0	0	0	0
Diamond mining	7	0	1	4	2	0	0
Gold mining	7	6	0	0	0	0	1
Jewellery Manufacturing	0	0	0	0	0	0	0
Other mining	7	0	5	1	0	1	0
PGM mining	0	0	0	0	0	0	0
Services Incidental to Mining	16	0	0	0	0	1	15
Total	**83**	**8**	**18**	**34**	**2**	**3**	**18**

`

Mining operations in the Free State are unevenly distributed across district municipalities, reflecting the geographic concentration of mineral deposits and historical development patterns. Current distributions indicate the largest number of active mines in Lejweleputswa District Municipality (31), followed by Fezile Dabi (20), Thabo Mofutsanyane (15), Mangaung Metropolitan Municipality (12) and Xhariep District Municipality (5). This spatial pattern has direct implications for local labour markets, infrastructure demand and community livelihoods, particularly in historically mining-dependent localities.

In terms of commodities, the MCSA (2025) indicated that the key minerals within the Free State are currently:

- Gold
- Coal
- Diamonds
- Uranium (by-product of gold)

5.2.1 Gold

Gold mining in the Free State forms part of the southern extent of the Witwatersrand Basin, which also underlies Gauteng and the North West province, as illustrated in Figure 12.

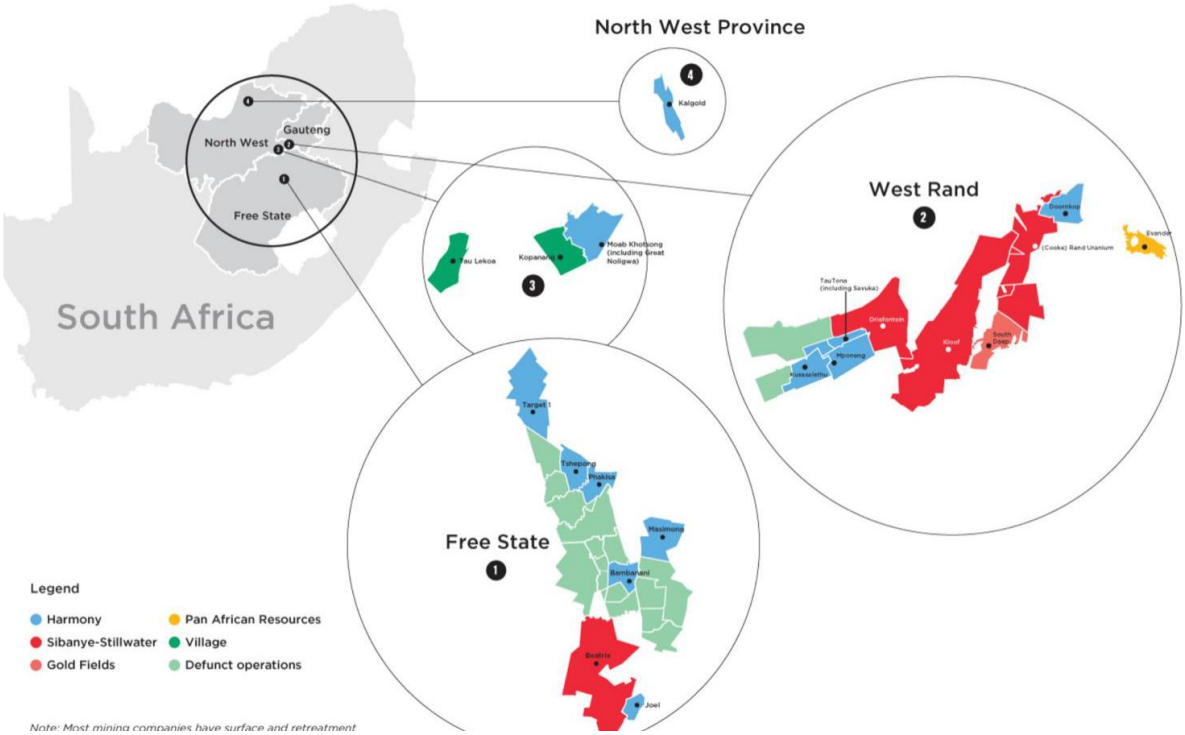


Figure 12: Gold mining in South Africa

Source: MCSA, 2022

National gold production declined from 104 tonnes in 2023 to 100 tonnes in 2024 (CEIC, 2024). Despite this decline, the Free State remains a significant contributor, accounting for approximately 29.9% of national gold output (DMPR, 2025c). Long-term contraction is evident in areas such as Matjhabeng Local Municipality, where the number of active mines declined from 44 in 1991 to 10 by 2023 (Ntema *et al.*, 2023). These trends underscore the maturity of the gold sector and its diminishing capacity to sustain large-scale employment.

5.2.2 Coal

Coal mining in South Africa is concentrated in Gauteng, Mpumalanga, Limpopo and the Free State, with the latter hosting the Vereeniging/Sasolburg and Free State coalfields (DMPR, 2024), as shown in Figure 13.

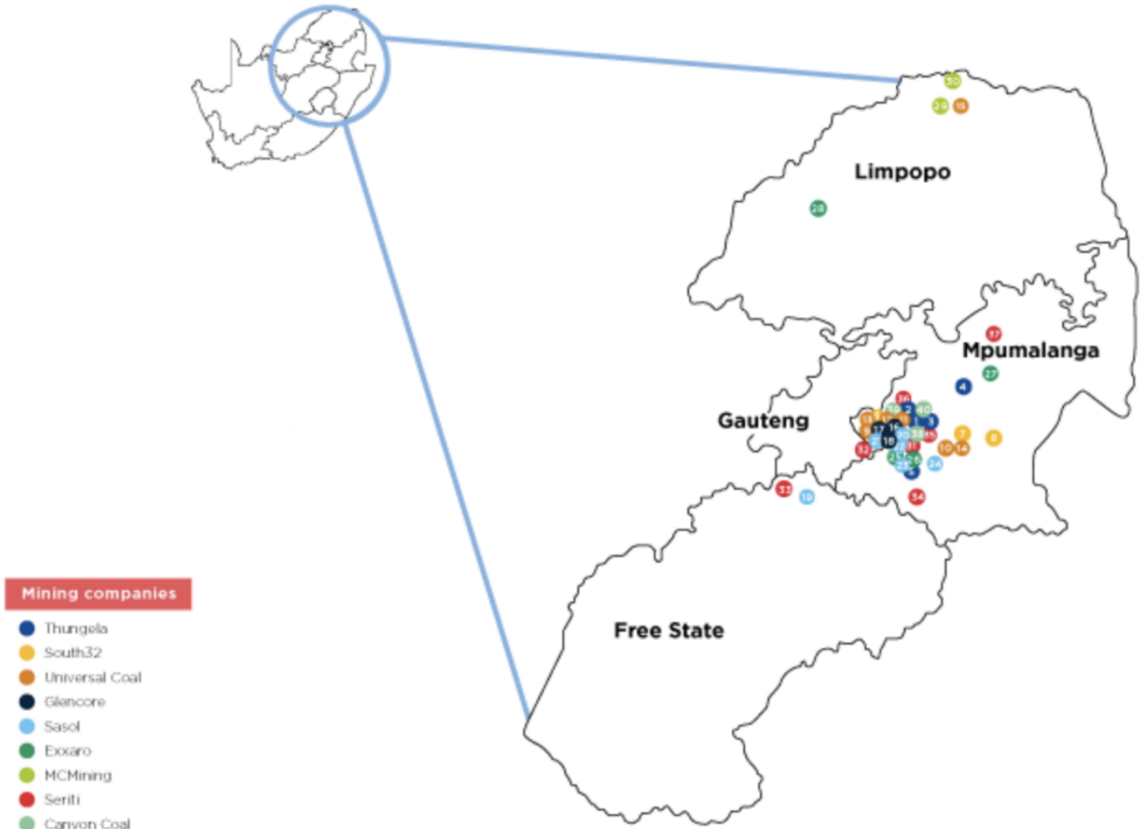


Figure 13: Coal mining in South Africa

Source: MCSA South Africa, 2022

National coal production declined marginally from 229.9 million tonnes in 2022 to 228.5 million tonnes in 2023 (CEIC, 2024). Although disaggregated provincial data are limited, the Free State is estimated to contribute approximately 6-7% of national output, equivalent to roughly 13.8 million tonnes per annum (DMPR, 2024).

Coal mining is increasingly shaped by climate change imperatives and the Just Energy Transition (JET). South Africa remains highly dependent on coal for energy generation, with coal accounting for approximately 74-77% of energy supply, while renewables contribute around 12% (Ukoba, Jen and Yusuf, 2025; Inglesi-Lotz and Bohlmann, 2025). National targets aim to increase renewable energy to approximately 40% by 2030 and achieve net-zero emissions by 2050 (Ukoba et al., 2025; Eskom, n.d.). Projections indicate that by 2030, five coal-fired power stations and 15 coal mines will close, with further closures anticipated by 2040, affecting an estimated 2.5 million people across 69 host communities (Cole, Mthenjane

& van Zyl, 2023). These developments have profound implications for coal-dependent regions within the Free State.

5.2.3 Diamonds

Diamond mining occurs across Limpopo, Gauteng, Northern Cape and the Free State (MCSA, 2022) as illustrated in Figure 14.



Figure 14: Diamond mining in South Africa

Source: MCSA, 2022

National diamond production declined sharply from 9.68 million carats in 2022 to 5.90 million carats in 2023, with a further decline to 5.34 million carats in 2024 (DMPR, 2025c; The Global Economy, 2025). While provincial production data for the Free State are limited, the sector faces structural challenges linked to synthetic diamond substitution and depressed international prices (Creamer, 2024).

5.2.4 Uranium (by-product of gold)

Uranium as a product of gold mining is largely produced in South Africa within the Witwatersrand Basin (World Nuclear Association, 2025) as shown in Figure 15.

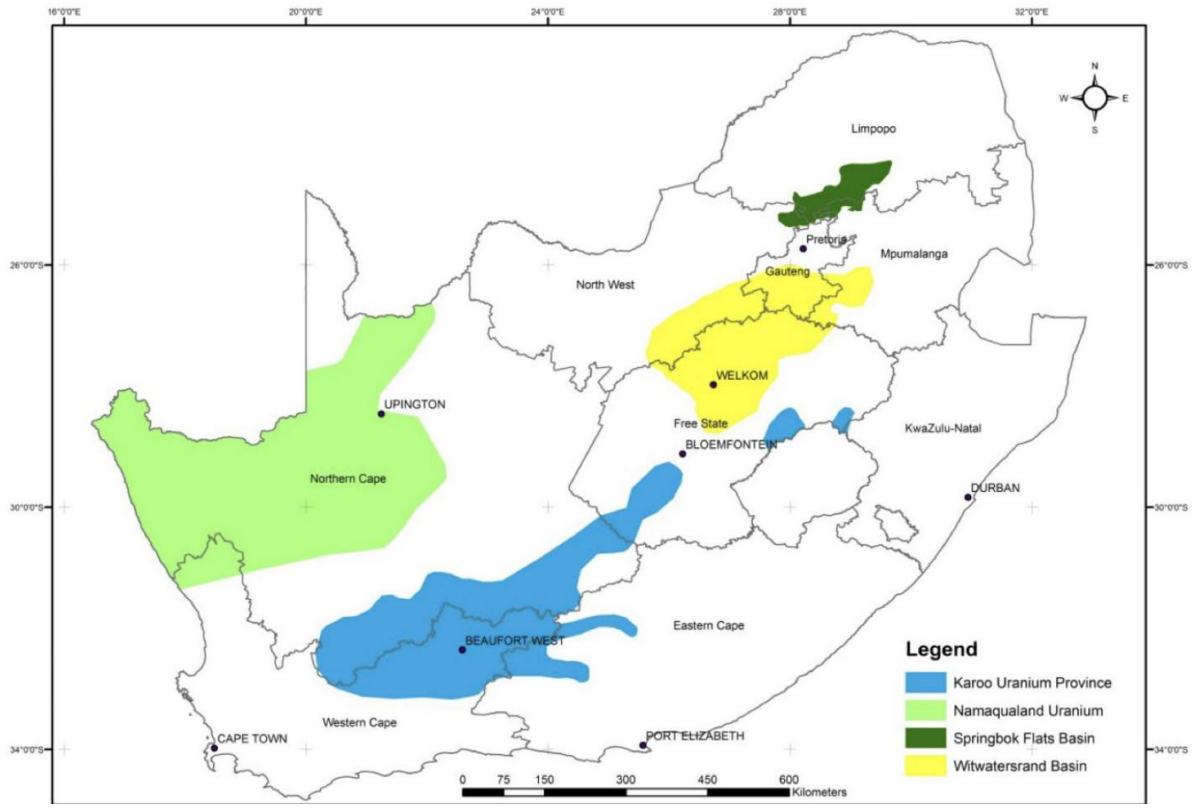


Figure 15: Uranium deposits in South Africa

Source: Kenan and Chirenje, 2016

In 2011, uranium production in the Vaal River area was 582 tonnes U, in 2022 production declined to approximately 200 tonnes. (World Nuclear Association, 2025). Previous scoping studies concluded that uranium recovery in the Southern Free State Goldfield was economically unfeasible due to low ore grades (WISE Uranium Project, 2025). Consequently, uranium does not currently represent a viable growth opportunity for the provincial mining economy.

The evidence presented indicates that the Free State mining sector is firmly in a transition phase. Declining production across gold, coal and diamonds, coupled with the limited viability of uranium recovery, reflects both the maturity of existing resources and broader shifts in national and global energy and industrial priorities. While mining continues to play a

stabilising role in certain local economies, its capacity to function as a primary driver of employment growth has diminished substantially. These trends underscore the need for economic diversification, workforce transition planning and the development of complementary activities such as mine rehabilitation, infrastructure maintenance and selected downstream services.

5.2.5 Data Collection Findings

Findings from stakeholder engagements and survey data reinforce the literature-based assessment of the Free State MMS as a mature and declining sector. Stakeholders consistently described mining employment as largely replacement-driven, with minimal expansion demand. This aligns with labour market mismatch perspectives, which emphasise that declining sectors may continue to require skills for operational continuity but generate limited net employment growth.

From a human capital perspective, the findings suggest that traditional mining skills pipelines no longer guarantee employment outcomes, placing pressure on training institutions and affected communities. Systems-level constraints were also evident, including weak integration between mining operations, skills development initiatives and broader local economic development strategies. While opportunities in upstream and downstream activities, such as engineering services, environmental rehabilitation and infrastructure maintenance, were acknowledged, these remain underdeveloped and insufficiently coordinated.

Taken together, the convergence of secondary data and primary evidence confirms that the MMS in the Free State no longer functions as a primary engine of employment growth. Instead, it requires carefully managed transition strategies that balance ongoing operational needs with reskilling, economic diversification and alignment with JET objectives. These insights provide a critical foundation for the subsequent analysis of skills gaps, occupational shortages and workforce planning priorities within the province.

5.3 Skills Demand, Supply and Gaps

Skills are defined as “the ability to perform a task adeptly, using experience and professional knowledge” (DHET, 2021b) and competence is “a combination of knowledge, skills and attitudes” (EU Science Hub, n.d.).

SSPs generally have a national scope and do not focus specifically on provincial needs. In contrast, WSPs include provincial data within their submissions. The WSP data has sometimes enabled a provincial focus. However, for certain data categories, employers operating in multiple provinces struggle to specify data for individual provinces, often reporting data for only one province (e.g., usually the province where the head office is situated or the largest of their operations), or for the incorrect province.

5.3.1 Provincial Data and Findings (WSP Analysis)

The Free State mining and minerals workforce, totalling 24,193 employees, is heavily concentrated in a small number of sub-sectors. Gold mining dominates the sector, accounting for 17,626 employees (72.9%) of the entire provincial mining workforce. Coal mining is a distant second at 3,473 employees (14.4%), meaning these two sub-sectors together employ more than 87% of all workers in the province, leaving the remaining six sub-sectors to share just 13% of the workforce.

The remaining sub-sectors form a steep long tail: Other mining (1,381 employees, 5.7%) and Services Incidental to Mining (1,230 employees, 5.1%) represent the next tier, followed by much smaller concentrations in Diamond mining (352), Cement, Lime, Aggregates and Sand (96), Jewellery Manufacturing (32), and PGM mining, which employs just 3 people provincially (Figure 16).

This concentration has direct implications for skills planning: a workforce this skewed toward two sub-sectors means that skills development interventions, training pipelines, and employer engagement strategies calibrated to Gold and Coal mining will reach the overwhelming majority of the province's workers, while sub-sectors like PGM mining, Jewellery Manufacturing, and CLAS require deliberately tailored, small-scale approaches rather than a one-size-fits-all provincial strategy, their scale simply does not support the same kind of standardised intervention.

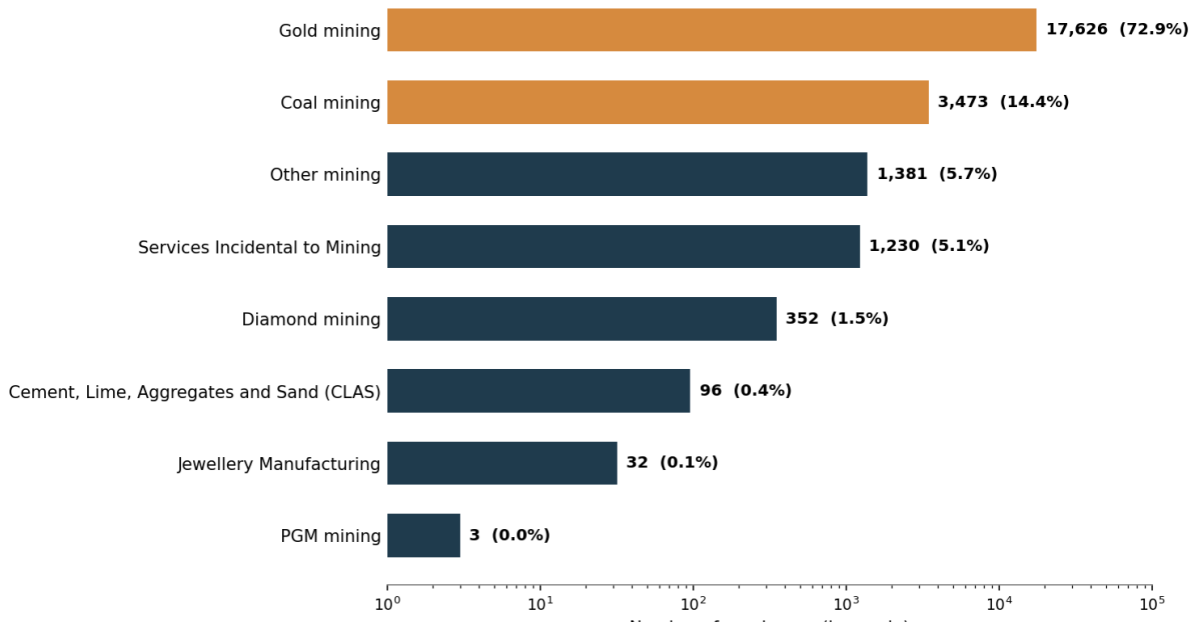


Figure 16: Workforce by Mining Sub-Sector

Source: MQA 2025 WSP Data (Based on biographical data by province)

Male employees dominate every mining sub-sector in the province, but the degree of imbalance varies considerably by sub-sector size. In Figure 17 gold mining, the largest employer, shows 14,030 Male employees against 3596 Female (a ratio of roughly 4:1), while Coal mining shows a similar pattern at 2,660 Male versus 813 Female. Smaller sub-sectors show more variation: Jewellery Manufacturing is the only sub-sector where Female employment slightly exceeds Male (17 versus 15), and PGM mining, with only 3 employees in total, offers too small a sample to draw meaningful gender conclusions. Overall, Female representation sits at roughly 20% of the total mining workforce, with the imbalance most pronounced in the largest sub-sectors.

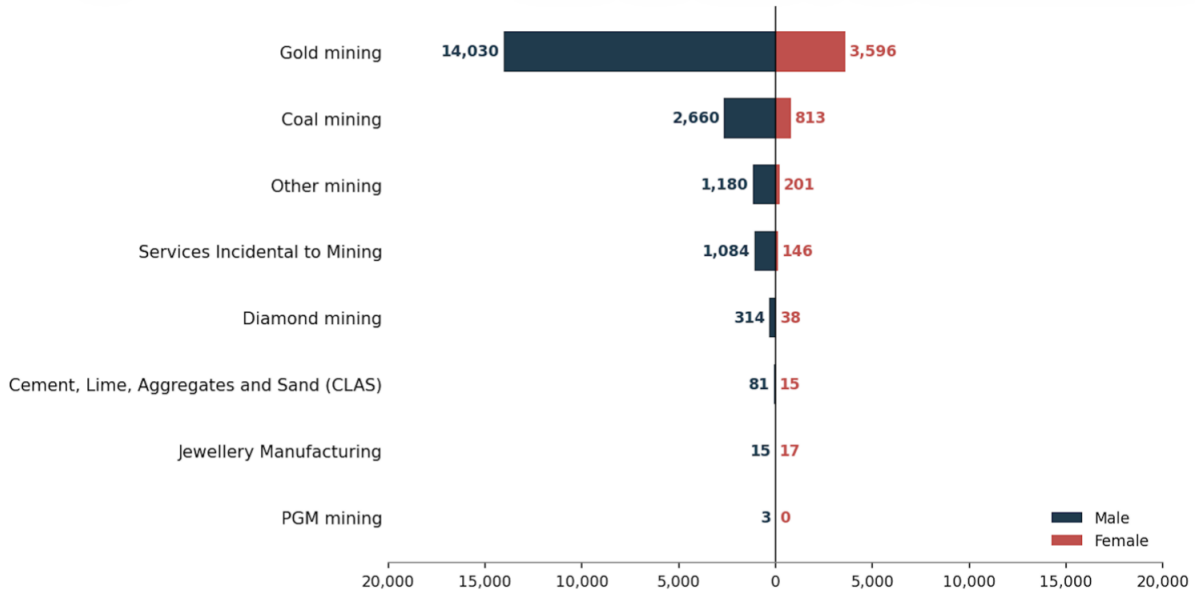


Figure 17: Gender composition by mining sub-sector

African employees form the overwhelming majority of the workforce across every mining sub-sector, ranging from 66.7% in Cement, Lime, Aggregates and Sand (CLAS) to 95.3% in Gold mining. White employees make up the largest minority share in most sub-sectors, most notably in CLAS (32.3%) and Diamond mining (15.1%). Coloured and Indian employees represent a small fraction of the workforce throughout, appearing at meaningful levels only in Jewellery Manufacturing (6% Coloured) and Diamond mining (6.2% Coloured), with Indian representation negligible or entirely absent in most sub-sectors. This pattern suggests that racial transformation in the province's mining workforce has progressed furthest in its largest sub-sectors (Gold and Coal) (Figure 18).

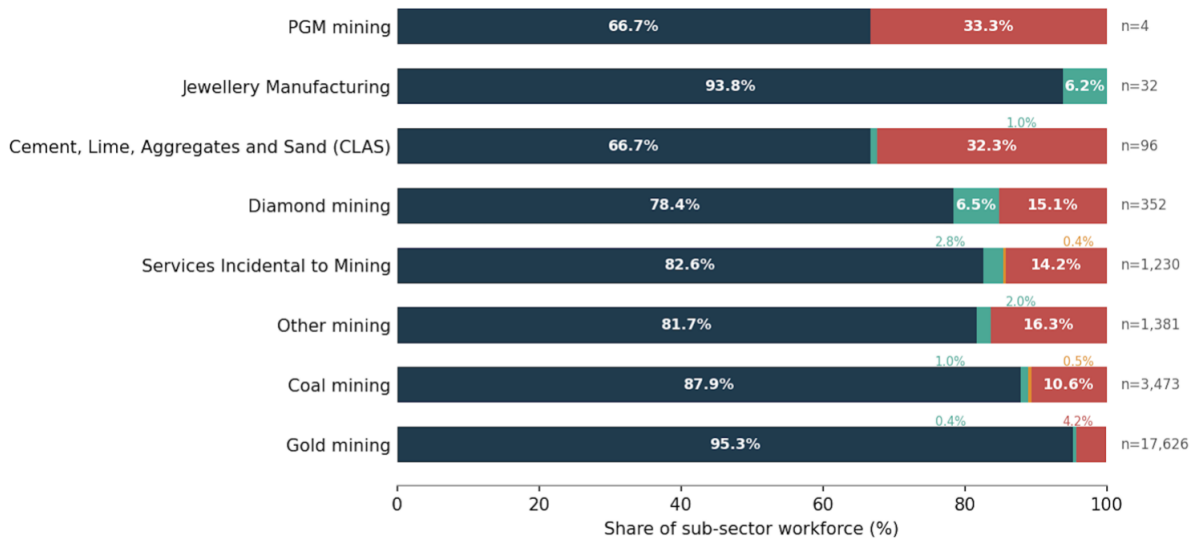


Figure 18: Race composition by sub-sector

Figure 19 shows that the Free State mining workforce is predominantly concentrated in the middle age groups, particularly employees aged 35-44 and 45-54 years. This pattern is especially evident in the larger sub-sectors. In gold mining, which accounts for the largest number of active employees (n=17,626), 38.0% of employees are aged 35-44 and a further 33.7% are aged 45-54. Similarly, in coal mining, 39.9% of employees fall within the 35-44 age group and 28.8% within the 45-54 age group.

The age profile varies across the smaller sub-sectors. Services Incidental to Mining has a comparatively younger workforce, with 31.5% of employees aged 25-34 and 40.6% aged 35-44. Other mining also has relatively strong representation among employees aged 25-

34 (24.7%). By contrast, diamond mining has a more dispersed age profile, including 25.0% of employees aged 45-54 and 17.0% aged 55-64.

Employees aged 55-64 constitute 14.4% of the gold-mining workforce, while the corresponding proportions are 9.8% in coal mining, 11.4% in other mining and 17.0% in diamond mining. The presence of employees approaching retirement age, particularly within these sub-sectors, highlights the importance of succession planning, knowledge transfer and the development of younger employees to support the longer-term sustainability of critical occupational skills.

Results for Jewellery Manufacturing (n=32) and PGM mining (n=3) should be interpreted cautiously because of their small employee populations, particularly PGM mining where percentages are based on only three active employees.

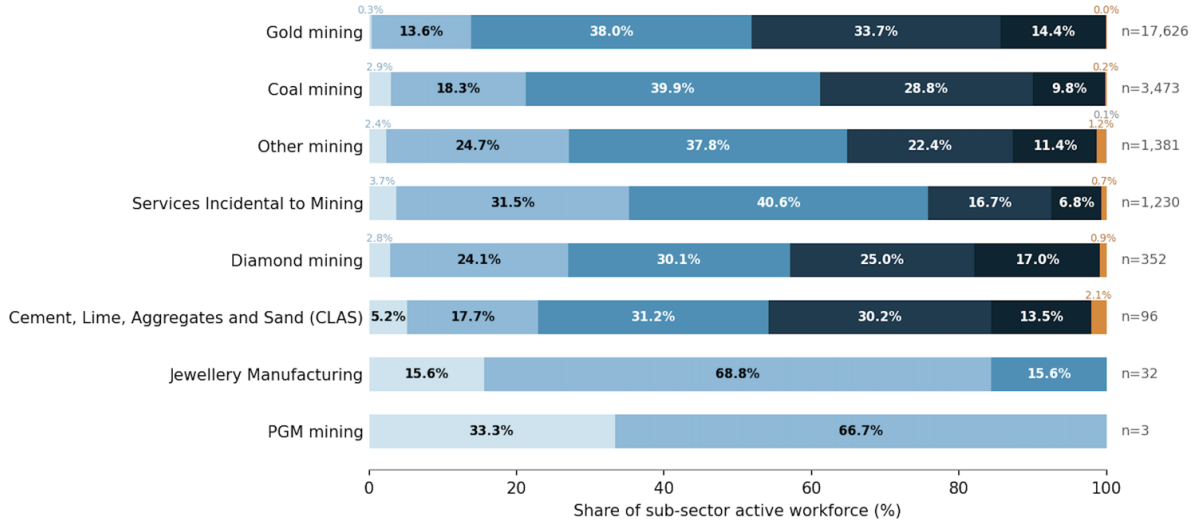


Figure 19: Age distribution by sub-sector

Comparing qualification-band composition between Male and Female employees within each sub-sector reveals (Figure 20) gender-based differences. In Gold mining, Male employees show a notably higher share in the Foundational band (27% versus 17% for Female), while Female employees show a correspondingly higher share in Secondary/NCV (66% versus 58%).

Coal mining shows the starkest gender disparity in the entire dataset: 67% of Female employees fall into the "Unknown/None" band, compared with 58% of Male employees, both are concerning from a data-completeness standpoint, but the gap indicates Female records are disproportionately affected. Services Incidental to Mining shows the opposite pattern to most other sub-sectors: Female employees have a substantially higher Tertiary qualification share (21%) than Male employees (3%), suggesting Female employees in this sub-sector are concentrated in more specialised, higher-qualification roles rather than operational ones.

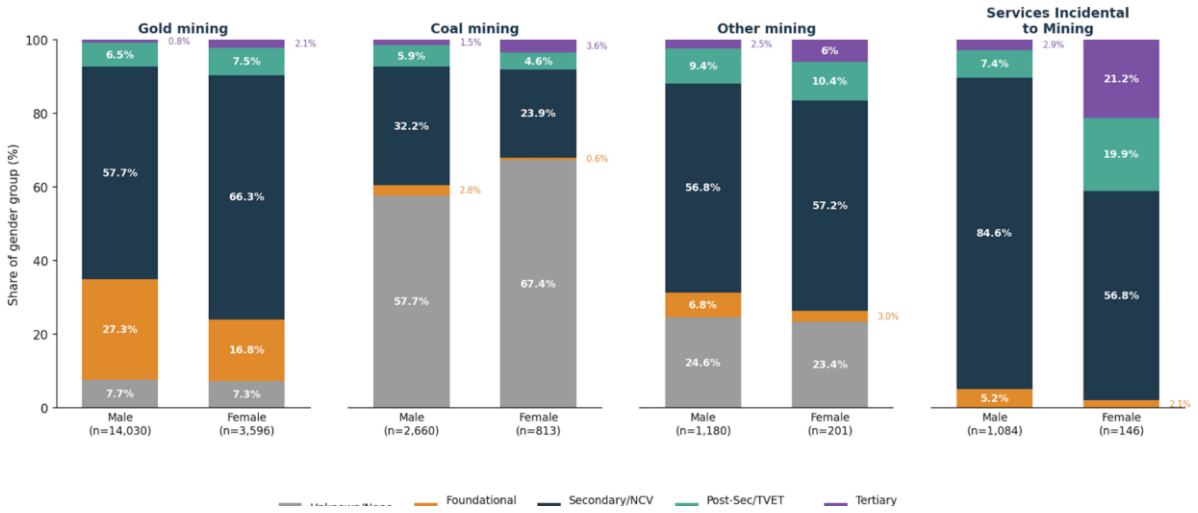


Figure 20: Qualification level by gender and mining sub-sector

Figure 21 shows that within Gold, Coal, and Other mining, White employees consistently show a higher combined Post- Secondary/TVET and Tertiary share than African employees in the same sub-sector. For example, in Gold mining, White employees hold 11% Post-Sec/TVET and 3% Tertiary share, compared with African employees' 7% and 1% Tertiary share respectively. Coloured employees in Other mining stand out with the highest Post-Sec/TVET concentration of any race group in any sub-sector (32%). Indian employees appear in only three of the four largest sub-sectors and in very small numbers throughout (19 in Coal mining, 1 in Gold mining, 5 in Services Incidental to Mining and none in Other mining).

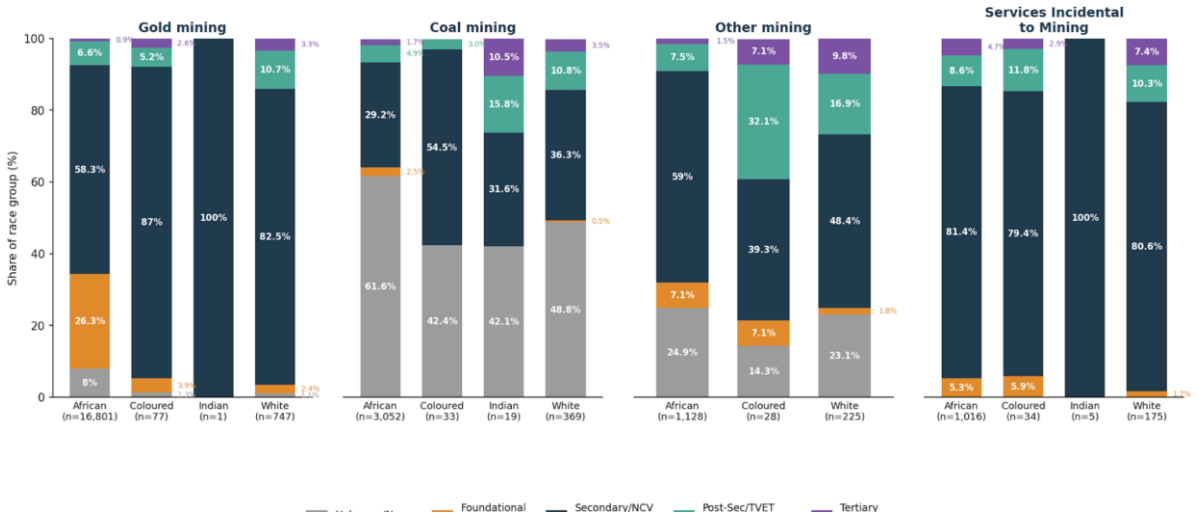


Figure 21: Qualification level by race and mining sub-sector

Across the province's four largest mining sub-sectors, workforce qualification profiles show a consistent skew toward basic and mid-level schooling, though the composition varies meaningfully between sub-sectors.

As seen in Figure 22, Gold mining is anchored by Grade 12/Matric (5,522 employees), followed by Grade 11 (2,985) and Grade 9 (2,677) this shows a workforce profile weighted toward secondary schooling, with a notable 1,175 employees reporting no schooling at all, the only sub-sector where this appears among the top five categories.

Coal mining presents the most significant data-quality concern in the workforce dataset: "Do Not Know" is by far the single largest category at 2,083 employees which is more than double the next-highest category (Grade 12 = 737) and well over half the sub-sector's total workforce. This suggests a substantial data-capture gap in Coal mining's qualification records rather than a genuine skills profile and should be flagged for follow-up verification before being used for planning purposes.

Other mining and Services Incidental to Mining both show Grade 12/Matric as the clear leading category (575 and 867 employees respectively), with considerably smaller numbers at every other level, indicating comparatively better data completeness in these two sub-sectors, though "Do Not Know" still ranks second in Other Mining (328 employees).

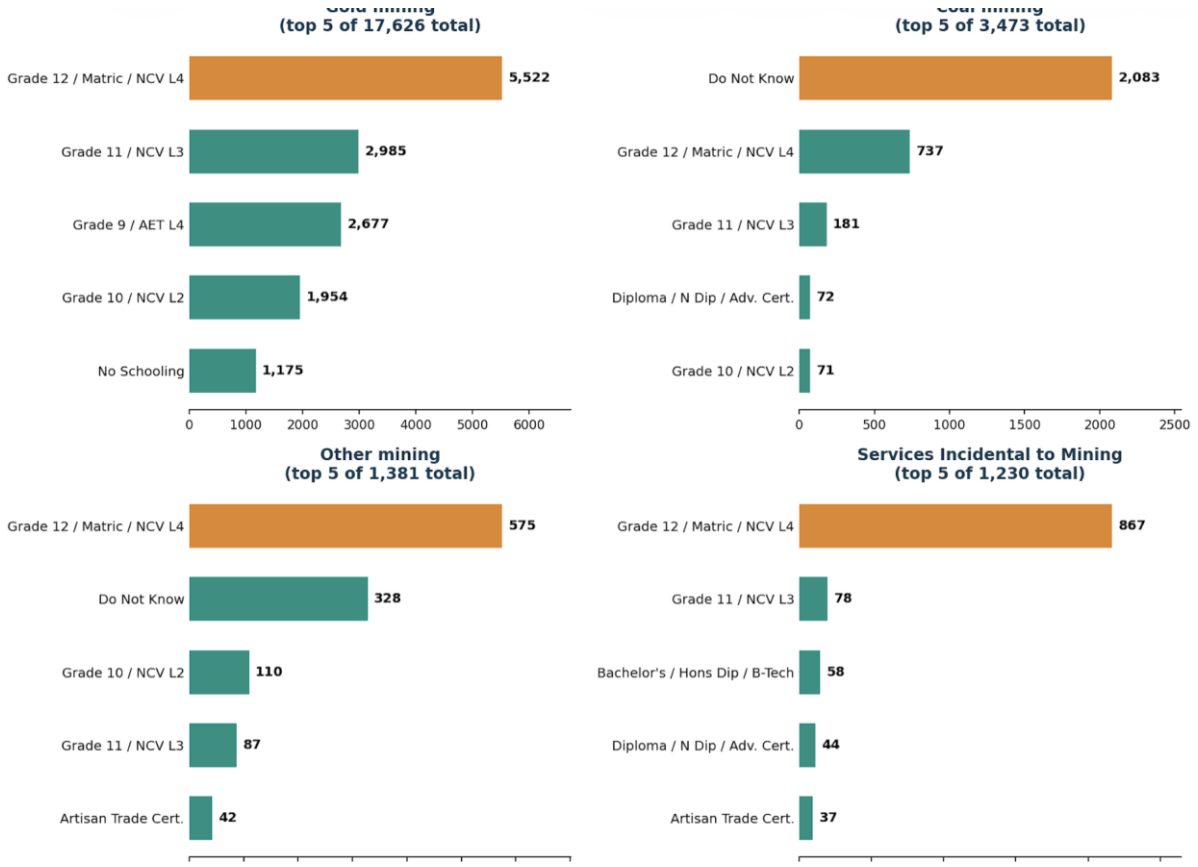


Figure 22: Leading qualification levels in the 4 largest subsectors

The occupational composition of the 24,193 active employees in the Free State MMS is heavily concentrated in operational and lower-skilled occupational groups (Figure 23). Plant and machine operators and assemblers constitute the largest category, accounting for 10,289 employees (42.5%), followed by elementary occupations with 6,039 employees (25.0%).

Together, these two groups represent approximately two-thirds (67.5%) of the active workforce, highlighting the predominantly operational nature of employment within the sector. Technicians and associate professionals form the third-largest group at 13.6%, while skilled agricultural, forestry, fishery, craft and related trades workers account for a further 7.7%. By comparison, professional, clerical, managerial, and service and sales occupations each represent relatively small proportions of the workforce. Professionals account for 3.0% and managers for only 1.7%, indicating a comparatively narrow concentration of employees in higher-level professional and managerial occupations.

A further 527 employees (2.2%) are recorded under the Learner/special code (2021-

900000) and have been retained as a separate category. Overall, the distribution demonstrates a workforce structure strongly weighted towards plant and machine operation, elementary occupations, and technical roles, which together account for more than four-fifths of active employment.

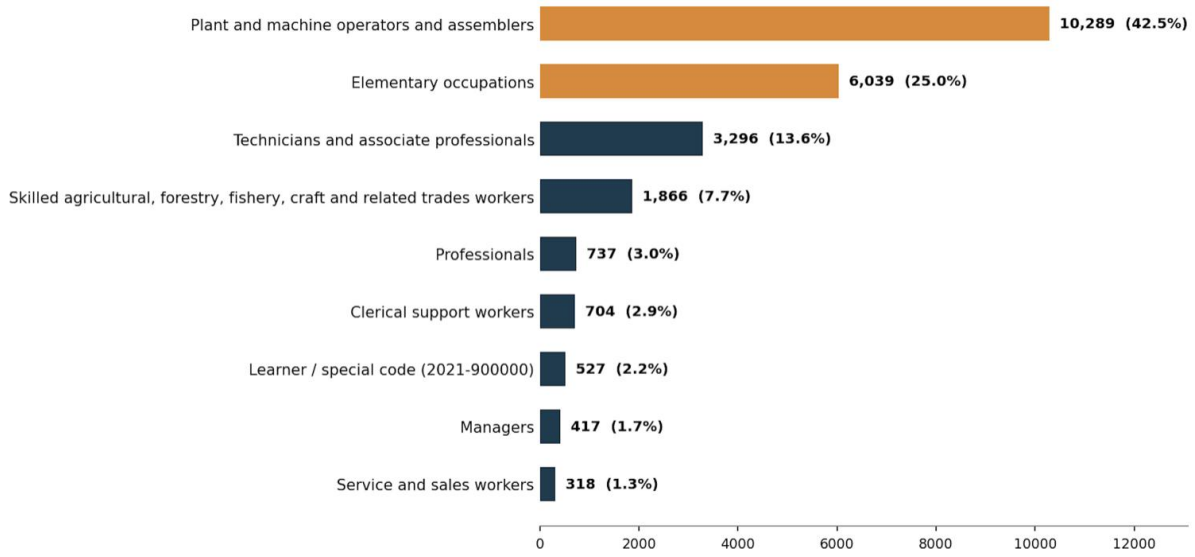


Figure 23: Free State MMS Active-Employee Occupational Composition - OFO

The workforce is strongly concentrated in the lower occupational levels. Semi-skilled and discretionary decision-making employees represent the largest group, accounting for 41.6% (10,062 employees), followed by unskilled and defined decision makers at 36.9% (8,924 employees). Together, these two categories comprise 78.5% of the active workforce.

Skilled technical and academically qualified employees, including junior management, supervisors, foremen and superintendents, account for a further 18.4% (4,447 employees). In contrast, professionally qualified specialists and management levels collectively represent a relatively small proportion of the workforce, with top and senior management together accounting for less than 1% (Figure 24). This distribution reflects the predominantly operational and production-oriented nature of employment within the sector.

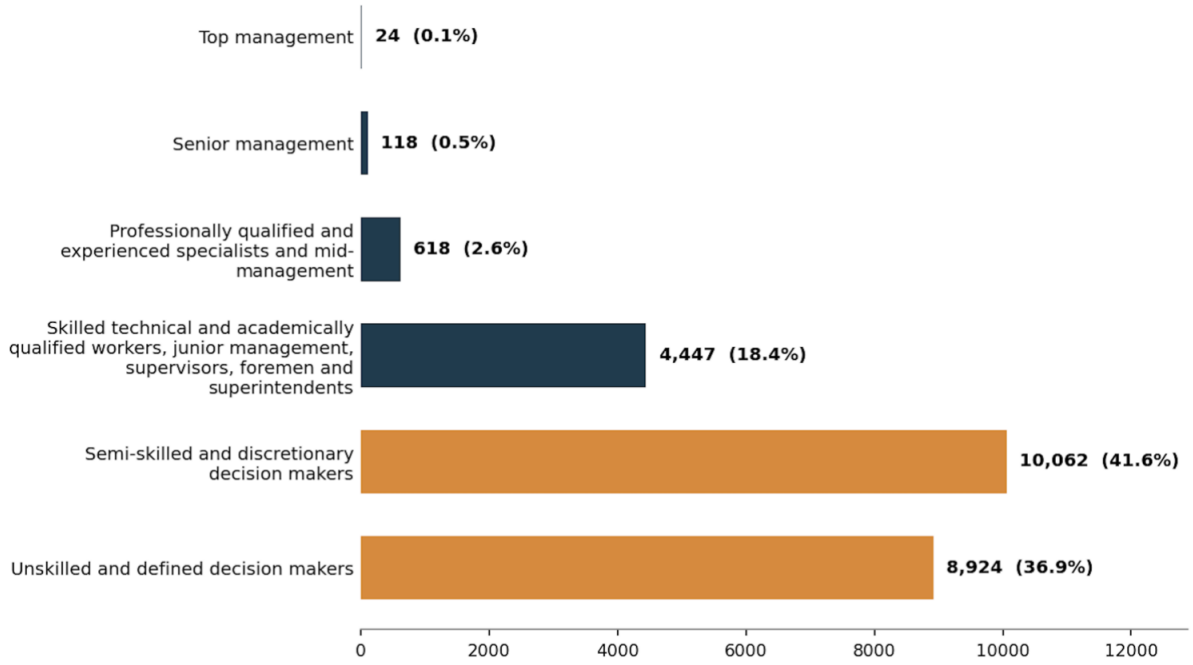


Figure 24: Free State MMS Active-Employee Occupational Composition - EE Level

Figure 25 indicates that short courses were the most common development activity undertaken at 61% with the next highest being job specific development programmes at 18%.

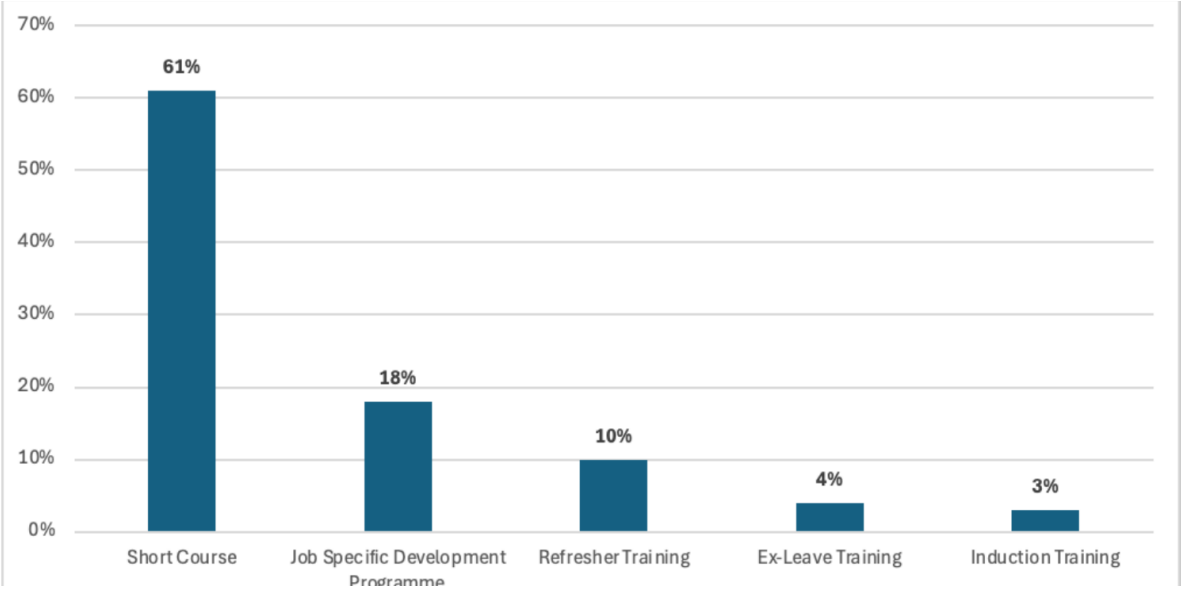


Figure 25: Top 5 development activities undertaken

Source: MQA 2025 WSP Data (Based on data indicated by province)

The planned training interventions as contained in Table 22, are mostly focused on Operator Licence/Renewal (5069) and Induction Training (2411). The majority of training planned is within the Gold mining sub-sector.

Table 22: Planned training

Intervention Type	CLAS	Gold mining	Other mining	Services Incidental to Mining	Grand Total
Adult Education and Training	1	48	4		53
Bachelor Degree	1		2		3
Bursary		1			1
Certificate		30	560	205	795
Induction Training		2200	202	9	2411
Internship		1			1
Learnership		3		8	11
National Diploma			2		2
Operator Licence/Renewal		4560	509		5069
Refresher Training			10	24	34
Short Course	2	684	13	27	726
Skills Programme		83			83
Trade		1			1
Work Placement			1		1
Grand Total	**4**	**7611**	**1303**	**273**	**9191**

Source: MQA 2025 WSP Data (Data are based on organisational province and may not fully reflect provincial activity, as not all mining operations submit WSP-ATRs despite levy payments to the MQA, which may result in underrepresentation.)

Hard-to-fill vacancies (HTFVs) in Table 23 included:

Table 23: Hard-to-Fill Vacancies

Organising Framework for Occupations (OFO) Code	Specialisation/Occupation
2021-832901	Boilermaker Aide
2021-226302	Chief Safety Officer Mining
2021-133103	Data Management Manager
2021-711203	Diamond Cutter and Polisher
2021-653306	Diesel Mechanic
2021-671207	Electrician Armature Winder
2021-312103	Engineering Foreman

Organising Framework for Occupations (OFO) Code	Specialisation/Occupation
2021-312103	Engineering Supervisor
2021-734204	Excavator Operator
2021-713101	Explosive Products Machine Operator
2021-312103	General Engineering Supervisor (GES)
2021-734204	Hydraulic Rock Breaker Operator
2021-311401	Instrumentation Technician
2021-242211	Internal auditor
2021-671202	Millwright
2021-671202	Millwright (Electro mechanician)
2021-312101	Mine Environmental Control Supervisor
2021-325707	Mine Health and Safety Inspector
2021-132201	Mine Manager
2021-312101	Mine Overseer (Production)
2021-312102	Miner
2021-132104	Mining Engineering Manager
2021-312101	Mining Production Supervisor
2021-242208	Organisational Risk Coordinator
2021-651202	Plate Layer
2021-332302	Procurement Administrator / Coordinator / Officer
2021-651501	Rigger
2021-651501	Rigger Ropesman
2021-312102	Shaft Timberman
2021-312101	Shift Foreman/ Boss (Mining)
2021-311701	Strata Control Practitioner
2021-313301	Synthetic Fibre Control Room Operator
2021-242401	Training Coordinator
2021-121202	Training Manager
2021-734301	Winding Engine Driver
2021-132102	Works / Workshop Manager (Manufacturing)

Source: MQA 2025 WSP Data (Based on data indicated as Free State province)

The most common reason for these positions being hard-to-fill was a lack of relevant experience. The second most common reason was '*Lack of relevant qualifications (desired level of study not attained or inappropriate field of study or inappropriate subject specialisation)'.*

The hard-to-fill vacancy profile should be considered alongside the province's educational-attainment baseline. Census evidence indicates that 36% of people aged 20 years and older had completed secondary education, 34% had incomplete secondary schooling and only 10% had attained a post-secondary qualification. This does not establish that educational attainment directly causes every hard-to-fill vacancy. It does, however, indicate a comparatively narrow formal qualification pipeline relative to the trade, technical, supervisory and specialist requirements reported by employers.

In particular, many of the occupations identified in Table 23 require more than general secondary education. Artisan occupations require trade qualifications, occupational certification and workplace experience; technical and supervisory occupations generally require specialised qualifications and sector experience; and managerial or professional occupations require tertiary or specialist preparation combined with substantial occupational experience. Operational occupations may require shorter training or licensing, but employers' responses indicate that practical experience and demonstrated workplace competence remain important constraints (Table 24).

Table 24: Alignment between Occupational Demand and Skills Pipeline Requirements

Occupational demand in Table 23	**Typical pipeline requirement**	**Interpretation**
Artisan and trade occupations	Trade qualification, certification and workplace experience	The limited post-secondary baseline suggests a relatively narrow pool from which trade-qualified workers can be developed.
Technical and supervisory occupations	Technical qualification plus sector and supervisory experience	Incomplete secondary education and limited post- secondary attainment may constrain progression into these pathways.
Managerial and specialist occupations	Tertiary or specialist preparation and substantial experience	The small post-secondary base is consistent with a limited local pipeline for higher-level roles.
Licensed operational occupations	Role-specific training, licensing and workplace competence	Training or licensing alone may not resolve vacancies where candidates lack practical experience.

Top-up skills identified*,* were mostly occupational health and safety skills and technical (job specific) skills. The technical skills were applicable to the following specialisations:

- Crushing Plant Operator (2021-711201)
- Earthmoving Plant Operator (General) (2021-734201)
- Mining Plant Operator (2021-711101)
- Moderators (2021-235102)
- Training and Development Professional (2021-242401)
- Audit and Assurance Manager (2021-241104)

**(Data are based on organisational province and may not fully reflect provincial activity, as not all mining operations submit WSP-ATRs despite levy payments to the MQA, which may result in underrepresentation.)*

Figure 26 shows that a variety of development initiatives were completed within communities with the majority being short courses (102). The training undertaken was targeted at unemployed youth.

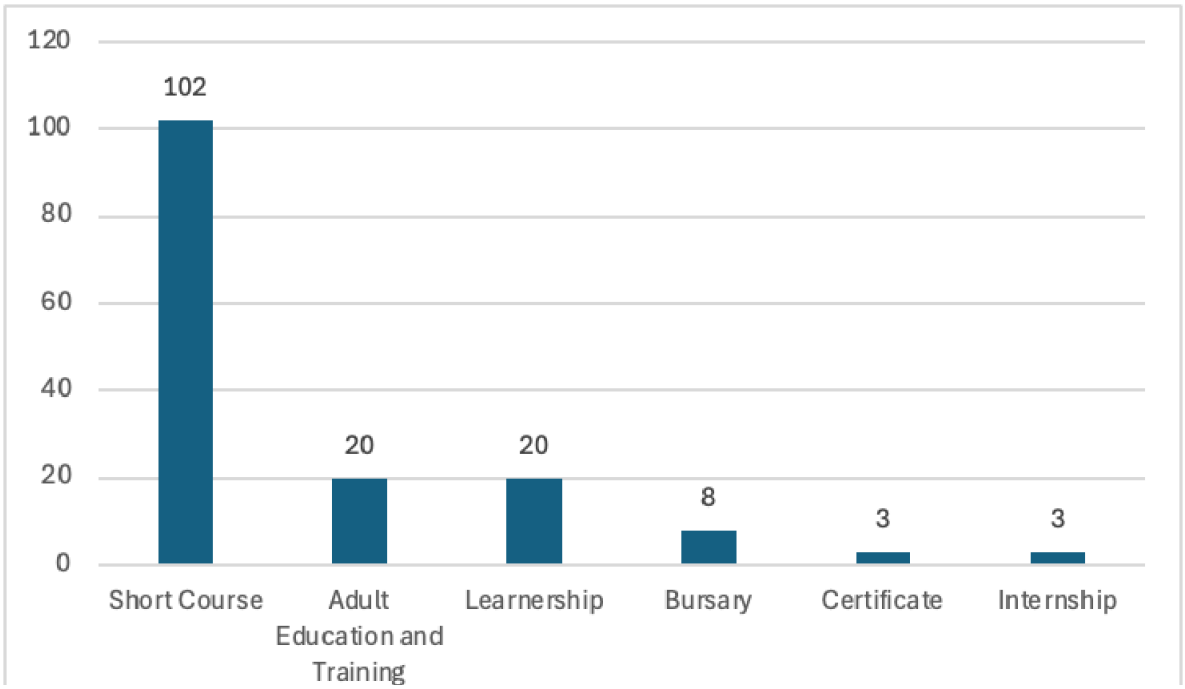


Figure 26: Community training programmes undertaken

Source: MQA 2025 WSP Data (Data are based on organisational province and may not fully reflect provincial activity, as not all mining operations submit WSP-ATRs despite levy payments to the MQA, which may result in underrepresentation.)

The planned training interventions for communities, as shown in Figure 27, will also be focused on unemployed youth with a focus on short courses (65), followed by Adult Education and Training initiatives (15).

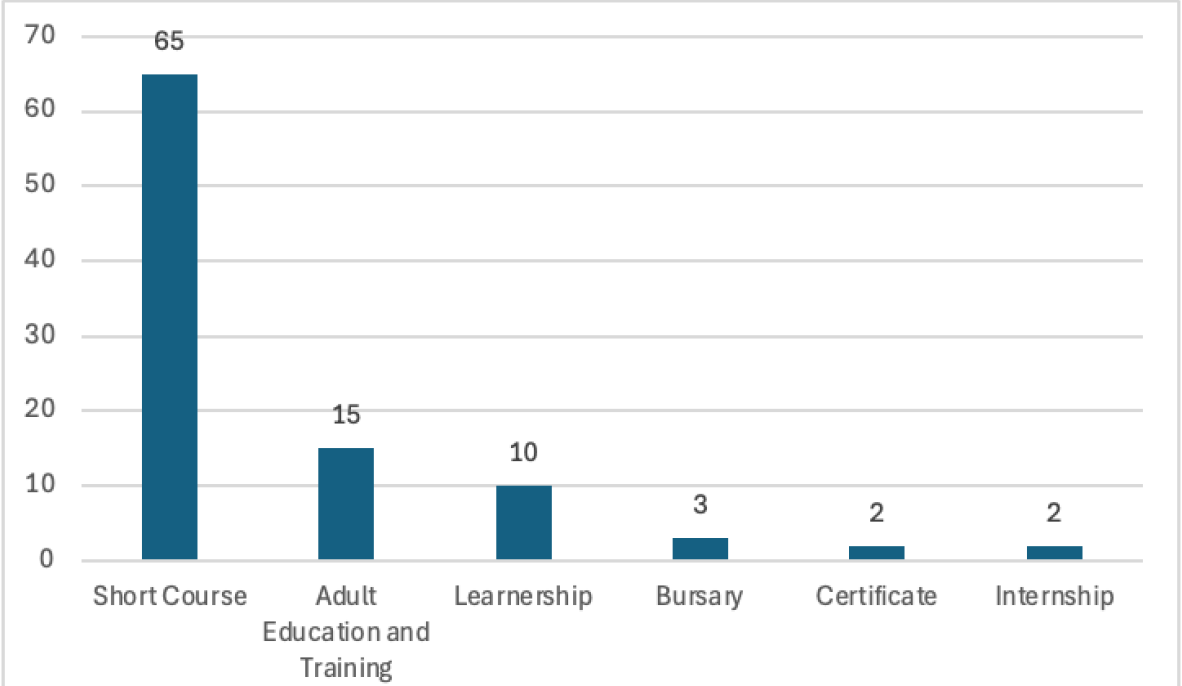


Figure 27: Community training programmes planned

Source: MQA 2025 WSP Data (Data are based on organisational province and may not fully reflect provincial activity, as not all mining operations submit WSP-ATRs despite levy payments to the MQA, which may result in underrepresentation.)

Contractors that were trained were primarily trained on refresher training; this is also the biggest focus for future training. Another intervention type that was of significance was induction training and operator licence/renewal as shown in Table 25. This primary focus on the aforementioned types of training for contractors is understandable due to there being a compliance risk if induction, licensing and refresher training is not done.

Table 25: Contractor intervention types

Intervention type	**Total Trained**	**Total Planned**
Adult Education and Training	9	0
Certificate	2	0
Induction Training	330	12
Job Specific Development Programme	1	0

Intervention type	Total Trained	Total Planned
Operator Licence/Renewal	165	36
Refresher Training	693	72
Short Course	6	28
Grand Total	**1206**	**148**

Source: MQA 2025 WSP Data (Data are based on organisational province and may not fully reflect provincial activity, as not all mining operations submit WSP-ATRs despite levy payments to the MQA, which may result in underrepresentation).

A wide range of skills development initiatives have been implemented in the Free State province through funding from the National Skills Fund (NSF), multiple SETAs, and selected private-sector partnerships. These initiatives were primarily oriented towards learnerships, apprenticeships, internships, work-integrated learning, community-based training, and public employment programmes, with a strong focus on youth, unemployed individuals and vulnerable groups (Free State Online, n.d.; Mosia, 2024; Taylor, 2024).

NSF-funded learnerships were largely concentrated in sectors such as agriculture, construction, engineering and information technology, enrolling substantial numbers of young people across both urban and rural districts. Complementary SETA-supported interventions implemented during 2024 included internships, apprenticeships, TVET-linked work-integrated learning and occupational skills programmes spanning wholesale and retail, services, construction, engineering, finance and local government (Mosia, 2024). In parallel, national initiatives such as the Labour Activation Programme and the Expanded Public Works Programme expanded access to work experience and short-term employment, thereby enhancing opportunities for skills exposure and employability development within the province (Taylor, 2024; Lekhafola, 2024; Bulbulia, 2024).

Within the mining and minerals sector specifically, the MQA reported substantial national investment during 2023/24 in artisan development, learnerships, internships, workplace experience, occupational health and safety training, foundational learning and community-based skills programmes. These interventions targeted both employed and unemployed beneficiaries, including mine communities, small-scale mining operations, entrepreneurship initiatives and skills development for historically disadvantaged South Africans (Mining Qualifications Authority, 2025). In addition, private-sector initiatives such as Sasol's Re-

skilling Lab introduced renewable energy training programmes within selected TVET colleges, signalling emerging skills demand associated with the energy transition (Res4Africa Foundation, 2025).

Collectively, these initiatives reflected a strong supply-side response to skills development and demonstrated the translation of national and provincial policy priorities into implementation. However, the literature also consistently highlighted concerns regarding the alignment between training provision and labour-market absorption capacity. Despite the scale and diversity of programmes, persistently high unemployment and ongoing occupational shortages suggested the presence of labour-market mismatches, where skills were developed in areas characterised by limited employment opportunities or weak progression pathways (MCSA, 2025).

It was also found that many identified skills needs cut across multiple sectors, with recurring demand for transferable and enabling competencies such as management, leadership, communication, computer literacy and occupational health and safety. From a systems perspective, these cross-cutting competencies represented critical leverage points within the provincial skills ecosystem, supporting labour mobility across mining, agriculture, manufacturing, services and emerging green-economy sectors. Such portability was particularly important for mining-dependent communities experiencing structural decline, as it enabled reskilling, economic diversification and entrepreneurship rather than long-term exclusion from the labour market.

Complementing this body of work, a 2022 study focusing on poverty, inequality and unemployment in the Free State concluded that improvements in the education system at both national and provincial levels could contribute significantly to reducing unemployment and inequality (Mosala, 2022). The study identified several strategic priorities, including reducing skills mismatches, retaining skilled workers, addressing racial inequalities in access to skills, employment and public services, improving learner retention through completion of secondary education, and strengthening coordination among key stakeholders.

Within the Free State province, several education and training institutions offer a range of programmes and services, varying in accreditation level.

- 1 provider that is part of the MQA Programme Approval (2025 Accredited Training Providers and Programme Approvals from the MQA*)*.
- 5 MQA accredited providers (2025 Accredited Training Providers and Programme Approvals from the MQA).
- 4 Technical and Vocational Education and Training (TVET) Colleges (DHET, 2025a); and
- 2 Universities (Free State Provincial Government, 2025); and
- 7 Private Colleges (DHET, 2025b).

The provided list underscores the dual nature of the post-school education and training landscape in the Free State, exhibiting both diversity and limitations. While education is provided across universities, TVET colleges, private institutions, and sector-specific accredited providers, the limited number of institutions (i.e., primarily two universities and only four TVET colleges) restricts access and capacity. This situation raises concerns regarding the province's capacity to generate a sufficiently skilled workforce locally, particularly in sectors such as mining, where there are only a handful of MQA-accredited providers, and manufacturing. Consequently, to bolster workforce readiness, it may be necessary to augment institutional capacity, enhance the quality and relevance of programmes, and strengthen partnerships between training providers, the industry, and the government.

The particular technical programmes relevant to mining on offer from these institutions, are illustrated in Table 26. For the purposes of this study, the assessment of education and training capacity focuses on the programme offerings available across education and training institutions, including the range and nature of programmes relevant to the skills requirements of the MMS. Accordingly, Table 26 provides an overview of the programmes and fields of study offered by the institutions included in the assessment. The analysis does not assess the production capacity of these institutions in terms of enrolment volumes, learner throughput, staffing levels, equipment capacity or the number of learners that institutions are able to accommodate or produce within specific occupational or skills areas, as this data was not readily available. The findings should therefore be interpreted as an assessment of the availability and breadth of programme offerings, rather than the quantitative capacity of institutions to supply particular volumes of skilled graduates to the labour market.

Table 26: Education and training providers in the Free State

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
MQA Programme Approval	Xtream Safety	Lejweleputswa District Municipality	• Skills Programme: Competent Person A: The examination and Declaring Safe of a Workplace in Underground Hard Rock Operations (V4(MQA/SP/0063/07) • Skills Programme: Emergency Based Care (First Aid) MQA/SP/0170/17 • Skills Programme: Blasting Assistant within Underground Hard Rock V4 (MQA/SP/0064/07) • Skills Programme: Rock Drill Operator in Underground Hardrock Mines (MQA/SP/0069/08) • Skills Programme: Competent Person B: The Installation and Maintenance of any Support Unit and the Removal of a Temporary Support Unit in Underground Hard Rock operations (V() (MQA/SP/0162/16) • Skills Programme: Occupational Health and Safety activities for: Part Time/Workplace Representatives and Shop Stewards in the Mining and Minerals (MQA/SP/0120/10)
MQA Accredited	AMC Training Centre	Mangaung Metro Municipality	• General Education and Training Certificate: Mining and Minerals Processes 58267 L1 • National certificate: Rockbreaking Surface Excavation 62869 L3 • National Certificate: Mineral Processing 62769 L3 • Skills Programme: Transportation of persons, material and minerals to and from the underground working by leans of a shaft onsetter MQA/SP/0128/10
MQA Accredited	Caddis Trading CC	Fezile Dabi District Municipality	• National Certificate: Mining Technical Support 60349 L2

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
			• National Certificate: Mining Technical Support 65549 L3
MQA Accredited	Harmony Gold Mining	Lejweleputswa District Municipality	• National Certificate: Winding Engine Driving 21814 L3 • National Certificate: Mining Operations for Underground Hard Rock 58739 L2 • National Certificate: Rock Breaking Underground Hard Rock (Version 3) 58760 L3 • Further Education and Training Certificate: Mining Operations 74490 L4 • Skills Programme: Operation of Medium Voltage Switchgear and Distribution Networks (V2) MQA/SP/0163/16 • Skills Programme: Occupational Health and Safety activities for: Part time/Workplace Representatives and Shop Stewards in the Mining and Minerals MQA/SP/0120/10 • National Certificate: Mineral Processing 59305 L2
MQA Accredited	Safety Training Practitioner	Lejweleputswa District Municipality	• National Certificate: Mining Operations for Underground Hard Rock 58739 L2 • National Certificate: Minerals Processing 59305 L2 • National Certificate: Rock Breaking Underground Hard Rock (Version 3) 58760 L3 • National Certificate: Rockbreaking: Surface Excavations 62869 L3 • Skills Programme: Competent person A: The examination and Declaring safe of a Workplace in Underground Hard Rock Operations (V4) MQA/SP/0063/07 • Skills Programme: Blasting Assistant within Underground Hard Rock V4 MQA/SP/0064/07

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
			• Skills Programme: Competent person B: The Installation and Maintenance of any Support Unit and the removal of a Temporary Support Unit in Underground Hard Rock Operations (V5) MQA/SP/0162/16 • Competent Person A - The examination, making safe and declaring safe of surface mines, quarries, dumps and stockpiles (non - blasted) MQA/SP/0175/18 A • Competent Person A - The examination, making safe and declaring safe of surface mines, quarries, dumps and stockpiles (Blasted) MQA/SP/0175/18 B • Skills Programme: Operate Mobile Machinery for Surface Excavation Operations MQA/SP/0177/19 (A-E) • Skills Programme: Occupational Health and Safety activities for: Part Time/Workplace Representatives and Shop Stewards in the Mining and Minerals MQA/SP/0120/10
MQA Accredited	Ulynn Mining Training and Projects	Fezile Dabi District Municipality	• Skills Programme: Occupational Health and Safety activities for: Part Time/Workplace Representatives and Shop Stewards in the Mining and Minerals MQA/SP/0120/10 • Skills Programme: Operate Mobile Machinery for Surface Excavation Operations: Dozing V2 MQA/SP/0177/19 (A-F)
TVET	Flavius Mareka TVET College	Fezile Dabi District Municipality	• National Certificate Vocational: Engineering & Related Design NQF Levels 2-4 • Report 191 Engineering N1 - N6 • Special Programme in Co-Operation with Industry Business Partners: Electrical • Special Programme in Co-Operation with Industry Business Partners: Welding

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
TVET	Goldfields TVET College	Lejweleputswa District Municipality	• Electrical Infrastructure Construction L2-L4 • Engineering & Related Design L2-L4 • Mechanical Engineering N4 - N6 • Electrical Engineering N4-N6
TVET	Maluti TVET College	Thabo Mofutsanyane District Municipality	• Welding • Electrical Engineering • Digital Electronics • Electrician • Instrumentation • Mining Metallurgy • Geology • Chemical Engineering • Engineering & Related Design • Motor Mechanic • Engineering Science • Electrotechnics • Industrial Electronics/ Fault Findings
TVET	Motheo TVET College	Mangaung Metro Municipality	• Engineering NC(V) (NQF Levels 2-4) • Report 19 Engineering programmes (N1-N6) including electrical and mechanical • Metal, Civil, Motor, Mechanical, Electrical (Heavy & Light) Engineering
University	University of the Free State	Mangaung Metro Municipality	• BSc Geology • BSc Geography and Environmental Management

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
			• BSc Geohydrology (via Institute for Groundwater Studies) • BSc Engineering Sciences (EnSci) • BSc Computer Science / Information Technology • BSc Physics and Chemistry • MSc Mineral Resource Management (MRM) • MSc / PhD Geology • MSc / PhD Geohydrology • MSc Environmental Management
University	Central University of Technology	Mangaung Metro Municipality	• Bachelor of Engineering Technology (BEngTech) in Mining Engineering • Bachelor of Engineering Technology (BEngTech) in Civil Engineering • Bachelor of Engineering Technology (BEngTech) in Mechanical Engineering • Bachelor of Engineering Technology (BEngTech) in Electrical Engineering • Bachelor of Engineering Technology (BEngTech) in Industrial Engineering • Bachelor of Engineering Technology (BEngTech) in Engineering: Metallurgical Engineering • Postgraduate Diploma in Engineering Technology (Mining, Mechanical, Civil, Electrical, Industrial, Metallurgical) • Master of Engineering (MEng) • Doctor of Engineering (DEng) • National Diploma in Engineering

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
			• Advanced Diploma in Engineering
Private College	Bells Technical College (Pty) Ltd	Thabo Mofutsanyane District Municipality	• National Certificate: Engineering Studies (N1- N3) • National Certificate: Building and Civil Technology (N1- N3) • National Certificate: Building Science(N1- N3) • National Certificate: Diesel Trade Theory (N1- N3) • National Certificate: Electrical Trade Theory (N1- N3) • National Certificate: ElectroTechnology (N1- N3) • National Certificate: Engineering Drawing (N1- N3) • National Certificate: Engineering Science (N1- N3) • National Certificate: Industrial Electronics (N1- N3) • National Certificate: Mechanotechnology (N1- N3) • National Certificate: Motor Trade Theory(N1- N3)
Private College	Bolton Business College and Computer Studies (Pty) Ltd	Mangaung Metro Municipality	• National Certificate: Engineering Studies (N1-N3) • National Certificate: Building and Civil Technology (N1-N3) • National Certificate: Diesel Trade Theory (N1-N3) • National Certificate: Supervision in Industry (N1-N3) • National Certificate: Electro-Technology (N1-N3 • National Certificate: Engineering Drawing (N1-N3) • National Certificate: Engineering Science (N1-N3) • National Certificate: Industrial Electronics (N1-N3) • National Certificate: Industrial Organisation and Planning (N1-N3) • National Certificate: Industrial Orientation (N1-N3) • National Certificate: Mechanotechnology (N1-N3)

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
Private College	Damelin (Pty) Ltd	Mangaung Metro Municipality	• National Certificate: Engineering Studies (N1, N2 & N3) • National Certificate: Engineering Drawing (N1-N3) • National Certificate: Engineering Science (N1-N3) • National Certificate: Mechanotechnology (N1-N3)
Institution Type	**Name of Institution**	**District Municipality**	**Relevant Qualifications**
			• National Certificate: Plant Operation Theory (N1-N3) • National Certificate: Industrial Electronics (N1-N3) • National Certificate: Building and Civil Technology (N1-N3) • National Certificate: Electro Technology (N1-N3
Private College	iCalc Training Academy (Pty) Ltd	Lejweleputswa District Municipality	• National Certificate: Engineering Studies (N1-N3) • National Certificate: Engineering Drawing (N1-N3) • National Certificate: Engineering Science (N1-N3) • National Certificate: Electrical Trade Theory (N1-N3) • National Certificate: Electro-Technology (N1-N3) • National Certificate: Fitting and Machinery Theory (N1-N3) • National Certificate: Industrial Electronics (N1-N3) • National Certificate: Mechanotechnology (N1-N3) • National Certificate: Motor Trade Theory (N1-N3) • National Certificate: Plant Operation Theory (N1-N3)
Private College	Jeppe College of Commerce and Computer Studies (Pty) Ltd	Mangaung Metro Municipality	• National Certificate: Engineering Studies (N1-N3)
Private College	Qualitas Career Academy (Pty) Ltd	Mangaung Metro Municipality	• National Certificate: Engineering Studies (N1-N3)

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
Private College	Rostec Technical FET College (Pty) Ltd	Mangaung Metro Municipality	• National Certificate: Diesel Trade Theory (N1- N3) • National Certificate: Electrical Trade Theory (N1- N3) • National Certificate: Electro-Technology (N1- N3) • National Certificate: Engineering Science (N1- N3) • National Certificate: Fitting and Machinery Theory (N1- N3) • National Certificate: Industrial Electronics (N1- N3) • National Certificate: Industrial Orientation (N1- N3) • National Certificate: Instrument Organization and Planning (N1- N3) • National Certificate (Vocational): Electrical Infrastructure (Level 2)
Private College	Whitestone College (Pty) Ltd	Mangaung Metro Municipality	• National Certificate: Engineering Studies (N1- N3)
Private College	School of IT	Mangaung Metro Municipality	• Coding and development • Python • Cybersecurity • Data & analytics • Cloud & DevOps • Microsoft
Private Supplier of Drones	SkyFarmer	Thabo Mofutsanyane District Municipality	• Pilot Training • PCO Development
Public Institution	Glen College of Agriculture	Mangaung Metro Municipality	• Diploma: Crop Production • Diploma: Animal Production • Non-formal short courses for farm workers and emerging farmers
Economic Development Agency	Free State Development Corporation (FDC)'s Training	Mangaung Metro Municipality but serve all districts within the Free State province	• Plumbing

Institution Type	Name of Institution	District Municipality	Relevant Qualifications
	and Skills Development Strategic Business Unit (SBU)		• Environmental Practice • Construction Road Works • Assistant Chef Soon to be included: • Potholes & Construction Management • Renewable Energy • Digital Transformation • New Venture Creation • Environmental Management • Information Technology • System Development • Quality Management System • Water & Wastewater Reticulation

A specific progression gap was identified at supervisory level. Stakeholders noted the absence of a dedicated mining supervisory qualification that bridges operator and management levels and covers legal liability, Mine Health and Safety Act literacy, communication and applicable technical competence. This gap limits career progression and contributes to inconsistent supervisory capability across operations.

Many providers offer administrative courses including general management, human resources and administration.

Key observations from this list of training providers are:

- Xhariep District has little to no educational institutions serving 131,901 residents. This indicates a significant spatial and equity gap in access to post-school education and training. Residents face substantial barriers to acquiring technical and vocational skills resulting in underdevelopment of human capital and limited economic mobility.
- Mangaung Metro has ten institutions despite a similar population size to Thabo Mofutsanyane. This suggests an urban concentration of education infrastructure. This urban bias promotes centralised human capital formation, leaving rural and peripheral regions under-skilled.
- Thabo Mofutsanyane and Lejweleputswa (mining and agriculture hubs) have a limited number of institutions relative to their population size. This shortage undermines regional capacity to meet sectoral skill requirements (e.g. mining, agriculture and manufacturing) and reflects a skills-supply mismatch that constrains local economic productivity.
- Fezile Dabi and Xhariep show the lowest access levels, suggesting a systemic imbalance that perpetuates regional inequality and weakens inclusive growth. This limits the Free State's ability to align its workforce with emerging labour market needs.

A key point is that the only SETA included in the list above is the MQA as this study is focused on the MMS. Other SETAs that may play a key role in the Free State due to the provincial impact of the industries they serve include AgriSETA, CHIETA, merSETA, Services SETA, CATHSSETA, FASSET, W&RSETA, LGSETA, PSETA and EWSETA.

According to Human Capital Theory (Leoni, 2023), education and training are critical investments in human capital that directly influence productivity, employability, and regional economic growth. The absence of accessible post-school education and training infrastructure in Xhariep represents a structural barrier to skills acquisition, contributing to a persistent underdevelopment of human capital in rural areas. In contrast, Mangaung Metro, with a comparable population size, hosts ten institutions. This illustrates the urban concentration of educational opportunities, which reinforces regional inequality and promotes labour migration to metropolitan centres. This uneven distribution weakens the province's overall capacity for inclusive economic development, as under-served districts are unable to supply adequately skilled labour to support local industries. The observed imbalance supports the premises of both Human Capital Theory and Labour Market Mismatch Theory, highlighting inefficiencies in education investment and the resulting misalignment between skills supply and regional labour demand (Auerbach and Green, 2024; Almendarez, 2011).

High levels of unemployment indicate high levels of poverty, particularly in rural areas, which restricts access to education and training, showcasing that economic deprivation thus directly suppresses human capital accumulation. The positive impact of education on employability is noticeable when considering the unemployment rate by educational level, with 'Graduates' experiencing the lowest levels of unemployment, followed by 'Other Tertiary', whilst the higher levels of unemployment being experienced by those with 'Less than a Matric', followed by those with a 'Matric' (Statistics South Africa, 2025a)

5.3.2 Primary Data Collection Findings

Across the qualitative data, a persistent mismatch between skills supply and labour-market demand was evident, reflecting well-documented limitations in the translation of human capital investment into employment outcomes. The lack of trade certification and practical experience significantly constrains employability, occupational progression, and participation in both formal employment and enterprise development, with the limited availability of accessible, accredited trade testing facilities and work-based learning opportunities emerging as binding constraints, particularly for youth and NEET populations who experience the greatest barriers to accessing training. From a labour-market mismatch perspective, this

disconnect illustrates how skills accumulation alone is insufficient where qualifications do not align with employer requirements or viable occupational pathways.

Training provision was widely perceived as fragmented and, in some instances, compliance-driven rather than demand-led, with programmes not always informed by systematic skills audits or workforce skills analyses capable of identifying priority occupations, transferable competencies or reskilling opportunities at district and sectoral level. Weak feedback loops between employers, training providers and skills authorities contribute to limited curriculum responsiveness to changing technological, environmental and sectoral needs. These challenges point to systemic, rather than programmatic, weaknesses in the skills ecosystem, where planning, provision and labour-market absorption are insufficiently coordinated. While WSPs were generally regarded as well aligned with immediate operational needs, the high cost of training and constrained funding were identified as the primary barriers to implementation, notwithstanding perceptions that MQA programmes were largely effective in meeting employer requirements.

Within the MMS, the triangulated evidence consistently identified artisan and technical trades, engineering occupations, machine operators, instrumentation and technical support, and supervisory roles as the province's most critical occupational shortages. These findings were corroborated by the quantitative survey results, which ranked engineers, artisans, technicians, machine operators, and safety, health, environment and quality (SHEQ) practitioners among the highest-priority scarce skills. The convergence of findings across the literature review, survey data, key informant interviews, and focus group discussions provides strong evidence that these occupations represent the most pressing workforce needs within the Free State MMS.

The evidence further indicates that these occupational shortages are compounded by foundational deficits in literacy, numeracy, mathematics and science, which constrain entry into and progression through technical training pathways. In addition, digital literacy, occupational health and safety, leadership, communication, and supervisory capabilities emerged as critical cross-cutting competencies required to support technological advancement, workplace productivity, and career progression. Emerging demand for green and renewable energy-related skills, together with opportunities in agriculture and other

adjacent sectors, further highlights the need for transferable skills that support workforce mobility and economic diversification.

Despite continued investment in education and training programmes, the responsiveness of the skills development system remains constrained by limited workplace-based learning opportunities, outdated training infrastructure and equipment, and uneven programme review and update cycles. Collectively, these findings demonstrate that the coexistence of high unemployment and persistent skills shortages is primarily a consequence of misalignment between skills supply and labour-market demand, rather than an absence of skills development initiatives.

The following section builds on this analysis by presenting a skills-provider-occupation nexus that systematically maps identified skills and occupational needs against institutional provision to assess alignment, gaps, and opportunities for targeted intervention.

5.3.3 Institution-Skills-Occupations Nexus Matrix

The matrix in Table 27 compares training institutions operating within the Free State against identified skills and occupational needs in the MMS. It is intended to support skills planning, provider coordination and gap identification by illustrating where existing provision aligns with occupational demand, and where gaps or limited coverage remain.

The mapping was undertaken through researcher coding using a two-stage process. Qualification and course titles were first matched to the identified skills and occupational needs. Where the title alone was insufficient to establish alignment, available programme descriptions, curriculum or content summaries, fields of specialisation and stated learning outcomes were reviewed to determine whether the content had a clear or sufficiently close substantive relationship to the identified need. The source column records the evidence used for each mapping. The resulting matrix represents an indicative alignment of provision rather than confirmation of full curriculum equivalence or accreditation for a particular occupation. The mapping utilises the WSP results and provider mapping outlined earlier in this section, along with the data-collection findings. The matrix includes all identified skills and occupational categories identified, recognising that while mining remains the central focus of

analysis, alternative and adjacent industries are essential for labour absorption, transition planning, and inclusive growth in the Free State.

Table 27: Institution-Skills-Occupations-Nexus-Matrix

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
Underground Mining Operations (Hard Rock)	Miner; Mine Overseer (Production); Mining Production Supervisor; Shift Foreman/Boss (Mining); Shaft Timberman; Strata Control Practitioner	Hard to fill vacancies from WSP Data	**Xtream Safety** *(MQA Programme Approval)* • Skills Programme: Competent Person A - Examination and Declaring Safe of a Workplace in Underground Hard Rock Operations (MQA/SP/0063/07) • Skills Programme: Competent Person B - Installation and Maintenance of Support Unit, Underground Hard Rock (MQA/SP/0162/16) **Harmony Gold Mining** *(MQA Accredited)* • National Certificate: Mining Operations for Underground Hard Rock 58739 L2 • Further Education and Training Certificate: Mining Operations 74490 L4 **Safety Training Practitioner** *(MQA Accredited)* • National Certificate: Mining Operations for Underground Hard Rock 58739 L2
Rock Drill Operator / Rockbreaking	Hydraulic Rock Breaker Operator	Hard to fill vacancies from WSP Data	**Xtream Safety** *(MQA Programme Approval)* • Skills Programme: Rock Drill Operator in Underground Hardrock Mines (MQA/SP/0069/08) **AMC Training Centre** *(MQA Accredited)* • National Certificate: Rockbreaking Surface Excavation 62869 L3 **Harmony Gold Mining** *(MQA Accredited)* • National Certificate: Rock Breaking Underground Hard Rock (Version 3) 58760 L3 **Safety Training Practitioner** *(MQA Accredited)* • National Certificate: Rock Breaking Underground Hard Rock (Version 3) 58760 L3 • National Certificate: Rockbreaking: Surface Excavations 62869 L3
Blasting Assistant	Explosive Products Machine Operator	Hard to fill vacancies from WSP Data	**Xtream Safety** *(MQA Programme Approval)* • Skills Programme: Blasting Assistant within Underground Hard Rock V4

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			(MQA/SP/0064/07) **Safety Training Practitioner** *(MQA Accredited)* • Skills Programme: Blasting Assistant within Underground Hard Rock V4 (MQA/SP/0064/07) • Competent Person A - Examination, Making Safe and Declaring Safe of Surface Mines, Quarries, Dumps and Stockpiles (Blasted) (MQA/SP/0175/18 B)
Mine Safety & Occupational Health and Safety (OHS) Representatives	Chief Safety Officer Mining; Mine Health and Safety Inspector; OHS Practitioners	Hard to fill vacancies from WSP Data / Data collection	**Xtream Safety** *(MQA Programme Approval)* • Skills Programme: Emergency Based Care (First Aid) (MQA/SP/0170/17) • Skills Programme: OHS Activities for Part Time/Workplace Representatives and Shop Stewards in Mining and Minerals (MQA/SP/0120/10) **Harmony Gold Mining** *(MQA Accredited)* • Skills Programme: OHS Activities for Part Time/Workplace Representatives and Shop Stewards in Mining and Minerals (MQA/SP/0120/10) **Safety Training Practitioner** *(MQA Accredited)* • Skills Programme: OHS Activities for Part Time/Workplace Representatives and Shop Stewards in Mining and Minerals (MQA/SP/0120/10) **Ulynn Mining Training and Projects** *(MQA Accredited)* • Skills Programme: OHS Activities for Part Time/Workplace Representatives and Shop Stewards in Mining and Minerals (MQA/SP/0120/10)
Winding Engine Driver	Winding Engine Driver	Hard to fill vacancies from WSP Data	**Harmony Gold Mining** *(MQA Accredited)* • National Certificate: Winding Engine Driving 21814 L3
Mineral Processing Operators	Crushing Plant Operator; Mining Plant Operator; Synthetic Fibre Control Room Operator	Top-up Skills / Hard to fill vacancies from WSP Data	**AMC Training Centre** *(MQA Accredited)* • National Certificate: Mineral Processing 62769 L3 **Harmony Gold Mining** *(MQA Accredited)*

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			• National Certificate: Mineral Processing 59305 L2 **Safety Training Practitioner** *(MQA Accredited)* • National Certificate: Minerals Processing 59305 L2
Mobile Machinery Operators (Surface)	Excavator Operator; Earthmoving Plant Operator (General); Machine Operators	Hard to fill vacancies from WSP Data / Top-up Skills	**Safety Training Practitioner** *(MQA Accredited)* • Skills Programme: Operate Mobile Machinery for Surface Excavation Operations (MQA/SP/0177/19 A-E) **Ulynn Mining Training and Projects** *(MQA Accredited)* • Skills Programme: Operate Mobile Machinery for Surface Excavation Operations: Dozing V2 (MQA/SP/0177/19 A-F)
Engineering Trades (Electrical / Mechanical / Welding)	Artisans; Boilermaker Aide; Electrical; Electrician Armature Winder; Millwright; Millwright (Electro mechanician); Plumbing	Data collection / Hard to fill vacancies from WSP Data	**Flavius Mareka TVET College** *(TVET College)* • National Certificate Vocational: Engineering & Related Design NQF Levels 2-4 • Report 191 Engineering N1-N6 • Special Programme: Electrical • Special Programme: Welding **Goldfields TVET College** *(TVET College)* • Electrical Infrastructure Construction L2-L4 • Engineering & Related Design L2-L4 • Mechanical Engineering N4-N6 • Electrical Engineering N4-N6 **Maluti TVET College** *(TVET College)* • Welding • Electrical Engineering • Electrician • Engineering & Related Design

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			• Electrotechnics **Motheo TVET College** *(TVET College)* • Engineering NC(V) (NQF Levels 2-4) • Report 191 Engineering programmes N1-N6 (electrical and mechanical) • Metal, Civil, Motor, Mechanical, Electrical (Heavy & Light) Engineering **Central University of Technology** *(University)* • Bachelor of Engineering Technology (BEngTech) in Electrical Engineering • Bachelor of Engineering Technology (BEngTech) in Mechanical Engineering **Bells Technical College** *(Private College)* • National Certificate: Electrical Trade Theory (N1-N3) • National Certificate: Engineering Science (N1-N3) **Bolton Business College and Computer Studies** *(Private College)* • National Certificate: Electro-Technology (N1-N3) **iCalc Training Academy** *(Private College)* • National Certificate: Electrical Trade Theory (N1-N3) **Rostec Technical FET College** *(Private College)* • National Certificate: Electrical Trade Theory (N1-N3) • National Certificate (Vocational): Electrical Infrastructure (Level 2)
Diesel Mechanics / Motor Trade	Diesel Mechanic	Hard to fill vacancies from WSP Data	**Maluti TVET College** *(TVET College)* • Motor Mechanic **Bells Technical College** *(Private College)* • National Certificate: Diesel Trade Theory (N1-N3) • National Certificate: Motor Trade Theory (N1-N3) **Bolton Business College and Computer Studies** *(Private College)*

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			• National Certificate: Diesel Trade Theory (N1-N3) **iCalc Training Academy** *(Private College)* • National Certificate: Motor Trade Theory (N1-N3) **Rostec Technical FET College** *(Private College)* • National Certificate: Diesel Trade Theory (N1-N3)
Instrumentation & Industrial Electronics	Instrumentation Technician; Automation	Hard to fill vacancies from WSP Data / Data collection	**Maluti TVET College** *(TVET College)* • Instrumentation • Digital Electronics • Industrial Electronics/Fault Findings **Bells Technical College** *(Private College)* • National Certificate: Industrial Electronics (N1-N3) **Bolton Business College and Computer Studies** *(Private College)* • National Certificate: Industrial Electronics (N1-N3) **Damelin (Pty) Ltd** *(Private College)* • National Certificate: Industrial Electronics (N1-N3) **iCalc Training Academy** *(Private College)* • National Certificate: Industrial Electronics (N1-N3) **Rostec Technical FET College** *(Private College)* • National Certificate: Industrial Electronics (N1-N3) • National Certificate: Instrument Organization and Planning (N1-N3)
Mining Engineering (Professional / Technologist)	Engineers; Mining Engineering Manager; Mine Manager	Hard to fill vacancies from WSP Data / Data collection	**Central University of Technology** *(University)* • Bachelor of Engineering Technology (BEngTech) in Mining Engineering • Postgraduate Diploma in Engineering Technology (Mining) • Master of Engineering (MEng)

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			• Doctor of Engineering (DEng)
Metallurgy / Mineral Resource Management	Mining: Metallurgy & Resources	Expanded learning areas identified through triangulation of data collection findings and WSP evidence	**University of the Free State** *(University)* • MSc Mineral Resource Management (MRM) **Central University of Technology** *(University)* • Bachelor of Engineering Technology (BEngTech) in Engineering: Metallurgical Engineering **Maluti TVET College** *(TVET College)* • Mining Metallurgy
Geology / Geohydrology	Mining: Geological Sciences	Expanded learning areas identified through triangulation of data collection findings and WSP evidence	**Maluti TVET College** *(TVET College)* • Geology **University of the Free State** *(University)* • BSc Geology • BSc Geohydrology (via Institute for Groundwater Studies) • MSc/PhD Geology • MSc/PhD Geohydrology
Environmental Management / Rehabilitation	Environmental rehabilitation; Environmental Sustainability/Compliance; Mine Environmental Control Supervisor; Green skills	Data collection / Hard to fill vacancies from WSP Data	**University of the Free State** *(University)* • BSc Geography and Environmental Management • MSc Environmental Management **Free State Development Corporation (FDC) Training and Skills Development SBU** *(Economic Development Agency)* • Environmental Practice • Soon to be included: Environmental Management
Construction & Civil Infrastructure	Construction; Infrastructure maintenance; Plate Layer	Data collection / Hard to fill	**Central University of Technology** *(University)* • Bachelor of Engineering Technology (BEngTech) in Civil Engineering

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
		vacancies from WSP Data	**Bells Technical College** *(Private College)* • National Certificate: Building and Civil Technology (N1-N3) • National Certificate: Building Science (N1-N3) **Bolton Business College and Computer Studies** *(Private College)* • National Certificate: Building and Civil Technology (N1-N3) **Damelin (Pty) Ltd** *(Private College)* • National Certificate: Building and Civil Technology (N1-N3) **Free State Development Corporation (FDC) Training and Skills Development SBU** *(Economic Development Agency)* • Construction Road Works • Plumbing • Soon to be included: Potholes & Construction Management
Renewable Energy (Solar, Wind, Electrical)	Renewable Energy; Green skills	Data collection	**Free State Development Corporation (FDC) Training and Skills Development SBU** *(Economic Development Agency)* • Soon to be included: Renewable Energy **Central University of Technology (CUT)** *(Bloemfontein Campus)* • Higher Certificate in Renewable Energy Technologies (NQF Level 5) - technician-level training with a focus on photovoltaic/solar energy systems
Digital & ICT Skills (IT Support, Systems, Data)	Computer skills; Digital Literacy; Digital Skills; IT Skills; Data Management Manager	Data collection / Hard to fill vacancies from WSP Data	**University of the Free State** *(University)* • BSc Computer Science / Information Technology **Free State Development Corporation (FDC) Training and Skills Development SBU** *(Economic Development Agency)* • Soon to be included: Digital Transformation • Soon to be included: Information Technology

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			• Soon to be included: System Development **Goldfields TVET College** *(TVET College)* • Basic Computer Skills and Micro Imagine Academy - IC3 (short course; non-formal digital literacy training) **Flavius Mareka TVET College** *(TVET College)* • Basic Computer Training (short course) • International Computer Driving Licence (ICDL)
Entrepreneurship / New Venture Creation	Entrepreneurial	Data collection	**Free State Development Corporation (FDC) Training and Skills Development SBU** *(Economic Development Agency)* • Soon to be included: New Venture Creation **University of the Free State (UFS)** *(University)* • New Venture Creation (short learning programme) - equips participants to identify and assess an entrepreneurial opportunity, design a business model, and write a business plan **Central University of Technology (CUT) - Entrepreneurship Development Unit (CUT-EDU)** *(University, Faculty of Management Sciences, Bloemfontein)* • Entrepreneurship short course (non-credit-bearing, NQF Level 6), open to students and the general public; SETA-registered short courses at lower NQF levels planned • Postgraduate Diploma in Entrepreneurial Management (part-time, blended/modular) • MPhil and PhD in Management Sciences (Entrepreneurial Management specialisation) **Flavius Mareka TVET College** *(TVET College)*

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			• Entrepreneurship module within Report 191 (NATED) Business Management N4-N6
Agriculture & Agro-processing	Agriculture/Farming	Data collection	**Glen College of Agriculture** *(Free State Dept. of Agriculture & Rural Development, Bloemfontein)* • Diploma: Crop Production • Diploma: Animal Production • Non-formal short courses for farm workers and emerging farmers
Agricultural Machinery Operators	Agriculture: Machinery Operations	Expanded learning areas identified through triangulation of data collection findings and WSP evidence	**Glen College of Agriculture** *(Free State Dept. of Agriculture & Rural Development, Bloemfontein)* • Diploma: Crop Production • Diploma: Animal Production • Non-formal short courses for farm workers and emerging farmers
Irrigation, Water & Environmental Technicians	Agriculture: Water & Irrigation	Expanded learning areas identified through triangulation of data collection findings and WSP evidence	**University of the Free State** *(University)* • BSc Geohydrology (via Institute for Groundwater Studies) **Free State Development Corporation (FDC) Training and Skills Development SBU** *(Economic Development Agency)* • Soon to be included: Water & Wastewater Reticulation
Food Processing & Quality Control	Agriculture: Food Processing	Expanded learning areas identified through triangulation of data collection findings and WSP evidence	**University of the Free State (UFS)** *(Dept. of Consumer Science, Faculty of Natural & Agricultural Sciences, Bloemfontein)* • Bachelor of Consumer Sciences (Food) • Sustainable Food Systems and Development programme area

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
Logistics, Transport & Supply Chain	Procurement Administrator / Coordinator / Officer	Hard to fill vacancies from WSP Data	**Central University of Technology (CUT)** *(Bloemfontein)* • Advanced Diploma in Logistics and Transportation Management (NQF 7)
Community Services & Public Works	Office Administration; Moderators; Training Coordinator; Training Manager; Training and Development Professional; Audit and Assurance Manager; Internal Auditor; Organisational Risk Coordinator	Data collection / Top-up Skills / Hard to fill vacancies from WSP Data	**Motheo TVET College** *(TVET College)* • National Certificate Vocational: Office Administration NQF Levels 2-4 • Report 191 (NATED): Management Assistant N4-N6 **Flavius Mareka TVET College** *(TVET College)* • National Certificate Vocational: Office Administration NQF Levels 2-4 (Sasolburg Business Studies Campus, Kroonstad Campus) • Report 191 (NATED): Management Assistant N4-N6 **Goldfields TVET College** *(TVET College)* • National Certificate Vocational: Office Administration NQF Levels 2-4 • Report 191 (NATED): Business Studies / Management Assistant N4-N6 **Maluti TVET College** *(TVET College)* • National Certificate Vocational: Office Administration NQF Levels 2-4 (Harrismith Campus and others) **Central University of Technology (CUT)** *(University - Faculty of Management Sciences, Bloemfontein)* • Bachelor of Management Sciences in Internal Auditing (CUT, Bloemfontein Campus) - IIA Global-aligned professional qualification

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			• Diploma: Human Resource Management (NQF 6) and Advanced Diploma: Human Resources Management (NQF 7, Bloemfontein & Welkom Campuses) - includes Advanced Human Capital Development: ETD Environment and ETD Interventions modules; career outcomes include Training Specialist **Institute of Internal Auditors South Africa (IIA SA) / Leadership Academy for Guardians of Governance** *(Professional Body - national provider, accessible to Free State practitioners)* • Occupational Certificate: Internal Auditor (QCTO-registered, NQF Levels 7-8) • Certified Internal Auditor (CIA) Professional Training Programme and exam preparation • Continuing Professional Development (CPD) short courses, incl. Global Internal Audit Standards **Damelin (Pty) Ltd** *(Private College)* • Risk Management (online short learning programme; Certificate of Competence) - covers risk frameworks, risk maturity, risk culture, corporate governance and enterprise risk management **ETDP SETA-Accredited Skills Development Facilitator (SDF) Training** *(National Provider(s) - accessible to Free State practitioners (online/national delivery))* • Skills Development Facilitator training (NQF Levels 5-6), contributing credits toward National Certificate: Occupationally Directed Education, Training and Development Practices (SAQA Qualification 50334, NQF Level 5) • Part-qualification modules toward the QCTO Occupational Certificate: Training and Development Practitioner (Qualification 101321) • Note: Coverage is indirect for Free State - these are ETDP SETA-accredited courses delivered nationally/online (e.g. Leadership Institute, Turnstone Training, SEIFSA, Imsimbi

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			Training); no Free State-headquartered provider of this specific training was identified.
Digital Mining Technologies	Data Analyst (Mining); Mining Data Technician; Digital Systems Technician	Data collection	**University of the Free State** *(University)* • BSc Computer Science / Information Technology
Cybersecurity & Industrial Control Systems	Cybersecurity Technician; Industrial Systems Security Practitioner	Data collection	**Central University of Technology (CUT)** *(Dept. of Information Technology, Bloemfontein)* • Advanced Diploma in Information Technology (includes an Information Security module: risk management, firewalls, VPNs, access control, cryptography) • Advanced Diploma in Computer Networking • Cisco Certified Network Associate (CCNA) short course (covers network security principles) **School of IT** *(Private Training Provider - Bloemfontein)* • CompTIA Security+ (entry-level cybersecurity certification course; career paths include Network Specialist, IT Technician, IT Engineer, IT Support) • Broader CompTIA pathway (IT Fundamentals, A+, Network+, Linux+, Cloud+, PenTest+, CySA+) plus Ethical Hacking Associate (E|HA) and Cyber Forensics Associate (C|FA) certifications
Drone Operations & Surveying	Drone Operator; Mine Survey Support; Remote Inspection Operator	Data collection	**SkyFarmers** *(Private training with product purchase)* • Pilot Training • PCO Development
Battery-Powered & Automated Mining Equipment	Battery-powered Equipment Technician; Automation Technician	Data collection	**Central University of Technology (CUT)** *(Dept. of Mechanical & Mechatronic Engineering / Electrical Engineering, Bloemfontein)* • Diploma / Bachelor's in Mechanical Engineering • Diploma / Bachelor's in Electrical Engineering • Renewable Energy Technologies Higher Certificate

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			ElectroMechanica (EM) - Mechatronics Academy & Industrial Automation Training *(Private Provider, joint venture with PolytechAfrica Institute of Technology - national delivery)* • Mechatronics Academy - merSETA-accredited blended learnership, 4-year full-time programme culminating in a red-sealed, trade-tested Mechatronic Technician certification (NQF 5); part-time module options also available • Industrial Automation short courses: PLC Level 1 & 2, Servo Level 1 & 2, VFD Level 1 & 2 (automation/control systems training) **NobleProg** *(Private Training Provider - national delivery, online or onsite)* • EV Powertrains and Battery Technology (14-hour instructor-led course) - covers EV powertrain architecture, battery chemistry, Battery Management Systems (BMS), thermal management, and powertrain efficiency; aimed at electrical engineers and automotive technicians working on EV/battery systems Note: EM's Mechatronics Academy and NobleProg's EV Powertrains and Battery Technology course provide the first confirmed training specific to battery-powered and automated equipment, though both are nationally delivered rather than Free State-based. No Free State-specific provider or mining-sector-specific course was identified.
Supervisory Mining Competencies	Mine Supervisor; Shift Supervisor; Foreman (Legal Liability & MHSA Compliance)	Data collection	**Xtream Safety** *(MQA Programme Approval)* • Shiftboss Course (supervisory and operational management training for shift leaders) • Mine Overseer Course - Part A (compliance and legal-liability preparation) • Mine Overseer Course - Part B (advanced operational, safety and management training) **Bolton Business College and Computer Studies** *(Private College)*

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			• National Certificate: Supervision in Industry (N1-N3) *Note: Xtream Safety's Shiftboss and Mine Overseer courses directly address mine supervisor/shift boss/foreman legal-liability and MHSA-compliance competencies, closing the gap left by Bolton's general supervision course.*
Foundational Skills Development	Adult Literacy; Numeracy; Mathematics & Science Bridging	Data collection	**Motheo, Goldfields, Maluti and Flavius Mareka TVET Colleges** *(Public TVET Colleges, Free State)* • Adult Education and Training (AET) - foundational literacy, numeracy and adult basic education, offered as a standard programme alongside NCV and NATED offerings at all four Free State public TVET colleges *Note: AET/ABET provision is standard across all four Free State public TVET colleges, directly addressing adult literacy, numeracy and bridging needs.*
Leadership & Employability Skills	Team Leader; First-Line Supervisor; Communication & Workplace Readiness	Data collection	**University of the Free State (UFS) Business School** *(Executive Education Unit, Bloemfontein)* • Short learning programmes mainly focused on management and leadership • Bachelor of Management Leadership (BML) degree
Renewable Energy Equipment Maintenance	Solar PV Technician; Renewable Energy Maintenance Technician	Data collection	**Central University of Technology (CUT)** *(Bloemfontein)* • Renewable Energy Technologies Higher Certificate **Free State Development Corporation (FDC)** *(Training and Skills Development SBU (Economic Development Agency))* • Soon to be included: Renewable Energy
Agro-processing & Aquaponics	Agro-processing Technician; Aquaponics Operator	Data collection	**Glen College of Agriculture** *(Free State Dept. of Agriculture & Rural Development, Bloemfontein)* • Diploma: Crop Production • Diploma: Animal Production • Non-formal short courses for farm workers and emerging farmers

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
			Aquaculture Technology Demonstration Centre (ATDC) *(Free State Dept. of Agriculture, Rural Development and Environmental Affairs - Gariep, Free State)* • Freshwater aquaculture training and technology centre offering hands-on training in fish production, hatchery and breeding techniques (catfish and common carp), fish agro-processing, water quality management, and aquaponic practice **Two-line Training Skills for Africa** *(Accredited Training Provider - Provinces incl. Free State)* • Occupational Certificate: Aquaculture Farmer (NQF Level 4) • Occupational Certificate: Aquaculture Farm Worker (NQF Level 2) - covers production systems, water quality management, juvenile rearing, breeding, nutrition, health management, and harvesting **INMED Aquaponics Social Enterprise (IASE)** *(Accredited Training Provider - Provinces incl. Free State)* • Two-Day Course: Basics of Aquaponics (fish and plant care, water quality, system maintenance) • Five-Day Course: Aquaponics Enterprise (hybrid, technical and business management) • Agri-Aquaculture Learnership - climate-smart agriculture and aquaponics system development **Mk Enterprise** *(Non-Accredited Training Provider - Provinces incl. Free State)* • Aquaculture training covering introduction to aquaculture systems and operations, fish biology, water quality and fish health, production systems, marketing and processing, and aquaponics (certificate of attendance; not SETA-accredited)
Entrepreneurship & SME Development	Small Business Owner; Mining Supplier	Data collection	**Central University of Technology (CUT)** *(Centre for Enterprise and Entrepreneurship Studies, Faculty of Management Sciences, Bloemfontein)*

Skills / Operational Area	Positions Linked to the Gap	Source	Institutions & Courses Mapped to This Gap
	Development; Enterprise Development		• Entrepreneurship Development Unit programmes **Free State Development Corporation (FDC)** *(Training and Skills Development SBU (Economic Development Agency))* • Soon to be included: New Venture Creation

The matrix demonstrates a strong alignment between MQA-accredited providers and core mining operational skills, particularly in underground hard-rock mining, safety compliance, and production-critical roles. This suggests that replacement demand within the MMS can largely be supported through existing accredited provision. However, these findings should be interpreted alongside the primary research, which identified concerns regarding the practical responsiveness of some education and training programmes to current industry needs. Although formal accreditation and provider mapping indicate broad alignment with occupational demand, stakeholders reported that curriculum content, the availability of workplace-based learning opportunities, and the pace at which programmes adapt to evolving industry requirements do not always adequately reflect the changing skills needs of the sector. This suggests that formal provider alignment may not fully capture the extent to which training provision meets employer expectations or prepares learners for employment in practice.

TVET colleges and private colleges provide broad technical and artisan pipelines, especially in electrical, mechanical, welding and diesel trades, which are critical both for mining support functions and for skills portability into non-mining sectors. This portability extends further than trades alone: the Free State public TVET colleges also offer Office Administration, basic digital literacy, and entrepreneurship-related modules, positioning them as a broader administrative and small-business skills pipeline alongside their technical offerings. Universities uniquely address advanced and professional skills (engineering, geology, metallurgy, environmental science), but their outputs may be limited in volume relative to provincial absorption capacity. Notably, the province's universities also extend beyond science, technology, engineering and mathematics (STEM) disciplines into governance and business-support functions relevant to the sector's administrative and supervisory layer, CUT offers accredited qualifications in Internal Auditing, Human Resources/ETD, and Renewable Energy Technologies, alongside dedicated entrepreneurship development programming, while UFS Business School provides leadership-focused short learning programmes and a New Venture Creation qualification. This indicates that the professional and managerial skills pipeline for the MMS and adjacent sectors is more diversified than a purely technical/engineering reading of university provision would suggest.

Development-oriented institutions, particularly the Free State Development Corporation (FDC), play an increasingly important role in addressing transition-oriented skills such as environmental practice, construction, renewable energy and entrepreneurship, areas aligned with economic diversification rather than core mining expansion. It is notable, however, that FDC's contribution in several of these transition areas such as renewable energy, digital transformation, information technology, remains at a "soon to be included" or planned stage rather than confirmed current provision. In practice, confirmed transition-skills training in these specific areas is currently being carried more by mainstream higher education (CUT's Renewable Energy Technologies Higher Certificate, CUT-EDU and UFS's entrepreneurship offerings) than by FDC alone, suggesting the development-agency pipeline is still maturing relative to its intended role.

It was found that the results from the data collection suggested that the existence of providers does not automatically translate into perceived relevance. Employers and education/training institutions reported mixed views on the alignment of local qualifications and curricula with current MMS needs, particularly in the broader view, reinforcing the need for structured employer-provider curriculum review, equipment sharing and workplace placement agreements. This is illustrated by several of the confirmed local matches identified in the matrix: coverage for areas such as aquaculture/aquaponics (via the Free State's Aquaculture Technology Demonstration Centre and accredited providers such as Two-line Training Skills for Africa and INMED), basic digital literacy (via TVET short courses), and cybersecurity (via a Bloemfontein-based private provider) exists, but is often delivered through short, non-formal, or standalone courses rather than integrated qualification pathways recognised or systematically drawn on by employers.

Limited provision exists for integrated mine rehabilitation, closure and environmental restoration pathways, despite growing relevance under JET. Digital, automation and data-related skills relevant to modern mining and adjacent industries are fragmented and not systematically linked to MMS needs, a pattern reinforced by the mapping, where confirmed provision for cybersecurity, mechatronics/industrial automation, and battery/electric vehicle powertrain technology exists only through private specialist providers (e.g. School of IT, ElectroMechanica's Mechatronics Academy, NobleProg), several of which deliver nationally, rather than locally through institutions like the province's TVET colleges, universities, or MQA-

accredited system. Strong vertical silos persist between different types of training providers, with universities, TVET colleges, private institutions, professional bodies (such as the Institute of Internal Auditors South Africa) and MQA-accredited providers operating largely in isolation rather than as part of an integrated skills development system. This fragmentation points to a systems-level coordination gap where pathways, sequencing and articulation are weak, rather than just a fundamental lack of skills provision within the province and the presence of scattered but genuine capacity across these disconnected provider types, rather than its complete absence, is itself part of the coordination problem.

5.4 Community and Cross-Sectoral Skills Needs

This section examines cross-sectoral skills demand, community-level skills needs in mining-affected areas, and the role of entrepreneurship in supporting local economic resilience. The analysis draws on a comparative review of relevant SSPs, secondary literature, and primary data collected through stakeholder engagements. Particular attention is given to sectors with stronger employment potential in the Free State, as well as to transferable and enabling skills that support labour mobility across sectors.

Although the study was designed to generate district-specific skills profiles aligned to the DDM, it was not possible to compile reliable, current lists of skills or occupations for each district municipality in the Free State. A review of publicly available secondary sources confirmed that no up-to-date datasets provide skills or occupational demand disaggregated at district level. Primary data collection similarly did not yield consistent district-level insights due to uneven participation, particularly from employers and local stakeholders. This limitation reflects a broader systemic gap in the skills planning environment, where existing instruments (e.g. such as WSPs, SETA SSPs and national labour-market surveys) are sectoral or provincial in nature and not designed to produce geographic place-based skills intelligence. Addressing this gap will require the institutionalisation of district-level skills audits embedded within planning and implementation processes, supported by mandatory stakeholder participation, shared labour-market intelligence, and clear accountability for translating analysis into coordinated skills development interventions. Without such a system, expectations for district-specific skills lists will remain difficult to meet, limiting the

effectiveness of geographic place-based planning, funding allocation and skills development responses.

Community-level evidence suggested a demand for practical, portable skills. The data collection initiatives identified agriculture/farming, computer and office administration, and construction/plumbing/electrical skills as potentially relevant for local employability. This aligns with qualitative findings that agriculture and related machinery, agro-processing and maintenance skills offer realistic transition opportunities for mining-affected communities.

The latest available SSPs as listed below were reviewed alongside the most recent MQA SSP (Mining Qualifications Authority, 2025):

- Agriculture Sector Education and Training Authority (AgriSETA) (Agriculture Sector Education and Training Authority, 2025).
- Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority (CATHSSETA) (Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority, 2024).
- Chemical Industries Sector Education and Training Authority (CHIETA) (Chemical Industries Sector Education and Training Authority, 2024).
- Energy & Water Sector Education Training Authority (EWSETA) (Energy & Water Sector Education Training Authority, 2023).
- Finance and Accounting Services Sector Education and Training Authority (FASSET) (Finance and Accounting Services Sector Education and Training Authority, 2025).
- Local Government Sector Education and Training Authority (LGSETA) (Local Government Sector Education and Training Authority, 2024).
- Public Service Education and Training Authority (PSETA) (Public Service Education and Training Authority, 2024).
- Services Sector Education and Training Authority (Services SETA) (Services Sector Education and Training Authority, 2025).

- Wholesale & Retail Sector Education and Training Authority (W&R SETA) (Wholesale & Retail Sector Education and Training Authority, 2024).

It is important to note that data was only utilised where the OFO codes were available to ensure a correct comparison.

5.4.1 Cross-Sectoral Skills Commonality and Occupational Gaps

The cross-SETA analysis revealed a consistent set of skills that recur across mining and non-mining sectors, indicating strong cross-sectoral demand. In descending order of frequency, these included management, communication, leadership, computer literacy, supervisory competence and office administration. The prevalence of these skills across SSPs underscores their importance as transferable capabilities that enable mobility between mining, agriculture, manufacturing, services and emerging green-economy sectors.

At an occupational level, several skills gaps were found to be common across the MQA and other SETAs. These included:

- 2021-132104 - Maintenance/Engineering Manager is common for the MQA and CHIETA.
- 2021-226302 - Safety, Health, Environment and Quality (SHEQ) Practitioner is common for the MQA and W&RSETA.
- 2021-312201 - Production / Operations Manager (Manufacturing) is common for the MQA as well as AgriSETA and CHIETA.
- 2021-411101 - Administration Clerk is common for the MQA and CHIETA.
- 2021-671101 - Electrician (Engineering), Electrician is common for the MQA and EWSETA.

The recurrence of these occupations across multiple sectors reflects persistent shortages in technical supervision, safety compliance, production management and administrative support roles.

Hard-to-fill vacancies further reinforced this pattern, as shown in Table 28, which highlights critical shortages spanning engineering management, electrical and mechanical trades, safety practitioners, diesel mechanics and millwrights across multiple SETAs. These findings suggest that skills shortages in the Free State are not confined to the mining sector, but are systemic and cross-cutting, affecting a range of productive and service-oriented industries.

Table 28: Cross-sectoral Hard-to-Fill Vacancies

OFO	Occupational Title									
2021-121201	Human Resource (HR) Manager					X		X	X	
2021-132104	Engineering Manager				X		X	X		
2021-215101	Electrical Engineer				X		X	X		
2021-226302	Safety, Health, Environment and Quality (SHEQ) Practitioner				X			X		X
2021-311401	Electronic Engineering Technician		X					X		
2021-651302	Boiler Maker			X				X		
2021-653306	Diesel Mechanic	X						X		
2021-671101	Electrician		X				X	X		
2021-671202	Millwright	X			X			X		

5.4.2 Emerging and Diversifying Economic Sectors in the Free State

The structural decline of traditional mining activities in the Free State has intensified the need for economic diversification and the development of emerging sectors capable of supporting sustainable employment and inclusive growth. In line with national industrial and energy transition priorities, several emerging and transitional economies are beginning to take shape within the province, notably in renewable energy, green hydrogen, agro-processing, manufacturing, and the broader green economy. These sectors are increasingly recognised as critical to mitigating labour market disruptions associated with mining decline and advancing long-term provincial resilience (TIPS, 2024).

5.4.2.1 Renewable Energy & Green Hydrogen

Renewable energy represents one of the most prominent emerging sectors in the Free State, underpinned by the province's high solar irradiation levels and available land for utility-scale projects. South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has facilitated the development of a number of solar photovoltaic projects in the province, positioning the Free State as a contributor to the national energy transition while enabling localised economic activity and infrastructure investment (TIPS 2024). The expansion of renewable energy infrastructure also creates indirect opportunities across construction, maintenance, electrical services, and grid-related occupations (Sustainability Directory, 2025). Specialised roles may include (Sustainability Directory, 2025):

- Energy Storage Specialists
- Grid Modernisation Experts
- Data Analysts
- Environmental Impact Assessors

Closely linked to renewable energy development is the emerging green hydrogen economy. Nationally, South Africa's Hydrogen Society Roadmap identifies green hydrogen as a strategic sector capable of driving industrialisation, export growth, and employment through renewable-powered electrolysis and downstream value chains (Department of Science and Innovation, 2021). From a national perspective DHET (2024) identified the following list of occupations in high demand that would require reskilling or upskilling (DHET, 2024):

- Project Manager
- Software Developers
- Electrical Engineer
- Mechanical Engineer (Mechatronics, Fuel Cell)
- Energy Engineer
- Civil Engineer (Hydraulic)
- Industrial Engineer (Process, Safety, Chemical)

- Metallurgical Engineer (Welding)
- Environmental Engineer
- Electronics Engineer
- Supply And Distribution Manager
- Electrician
- Fitter And Turner
- Economist
- Electronic Engineering Technician
- Sales And Marketing Manager
- Geologist

5.4.2.2 Agro-processing

Agro-processing is a critical emerging and transitional economic pathway for the Free State, building on the province's established agricultural base. The launch of the Maluti-A-Phofung Special Economic Zone (MAP SEZ) creates opportunity for growth in agro-processing and agro-logistics (Global Africa Network, 2021). The MAP-SEZ attracted nine investors in the 2021/22 financial year with investments of R1,2 billion which increased to R3,2 billion from 16 investors in the following year (TIPS, 2024).

5.4.2.3 Manufacturing

Manufacturing and associated logistics and distribution activities further contribute to the province's emerging economic profile. The Free State's central geographic location offers strategic advantages for warehousing, transport, and regional distribution, supporting growth in logistics-linked services and manufacturing and the provincial government seeks to increase manufacturing's contribution to provincial GDP from 14% in 2014 to 28% by 2030 (Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA), 2022).

Collectively, these emerging and transitional sectors signal a gradual shift in the Free State's economic structure, away from heavy reliance on extractive industries toward a more

diversified and resilient provincial economy. However, the realisation of their employment and development potential depends on effective alignment between economic planning, skills development systems, and labour market demand. From a labour market mismatch and systems perspective, the expansion of renewable energy, green hydrogen, agro-processing, and logistics will only translate into inclusive growth if education and training provision is proactively aligned with sectoral needs, supported by coordinated institutional action and responsive skills pathways. These emerging economies therefore provide both an opportunity and a test case for implementing demand-led, transition-oriented skills development in the Free State.

5.4.3 Entrepreneurship

Entrepreneurship plays a critical role in the Free State's development context, where persistent unemployment, limited labour absorption capacity, and structural economic transition necessitate alternative pathways to income generation and local economic participation. In provinces such as the Free State that are characterised by a high share of youth in the population, a declining mining base, and uneven spatial development, entrepreneurship is increasingly viewed as both a livelihood strategy and a mechanism for economic diversification. There were 111 000 small businesses in the Free State province in the fourth quarter of 2023, with informal businesses outnumbering formal businesses (TIPS, 2024).

From a Human Capital Theory perspective, entrepreneurship enables individuals to apply accumulated skills, experience, and tacit knowledge productively, while Labour Market Mismatch Theory highlights self-employment as a response to weak alignment between formal employment opportunities and the available skills base. Systems Theory further emphasises that entrepreneurial outcomes are shaped not only by individual capability but also by the quality of the surrounding institutional, financial, and market ecosystem.

In 2024 the Free State Department of Economic Development and Tourism (DEDT) used National Entrepreneurship Month (November) as a strategic intervention to stimulate entrepreneurship, small, medium and micro enterprise (SMME) development, and job creation within the province. Through a series of targeted roadshows, expos, and sector-specific engagements, the initiatives aimed to address key systemic constraints faced by

entrepreneurs, including limited access to funding, mentorship, markets, and compliance support. The focus on sectors such as informal retail (spaza and tuck shops), automotive services, construction, and manufacturing reflected an emphasis on labour-absorbing and value-chain-oriented activities. Of particular relevance to this study was the recognition of the informal economy as a significant contributor to GDP and livelihoods, underscoring entrepreneurship as a critical mechanism for employment creation in contexts where formal labour markets struggled to absorb available skills. The initiatives illustrated a systems-based approach to entrepreneurship development by combining skills upskilling, compliance guidance, market access, and collaboration with private-sector partners to strengthen enterprise sustainability (South African Government, 2024).

Entrepreneurship requires a combination of technical, business management, and interpersonal competencies. While technical skills enable individuals to develop products, services, and innovative solutions, business management capabilities, such as financial management, marketing, strategic planning, operations, and regulatory compliance, are essential for establishing, sustaining, and growing successful enterprises. Equally important are soft skills, including leadership, communication, problem-solving, adaptability, negotiation, and emotional intelligence, which enable entrepreneurs to build relationships, manage uncertainty, and respond effectively to changing market conditions. Sustainable entrepreneurship therefore depends on the integration of these complementary skill sets rather than technical expertise alone (OECD, 2020).

Consistent with these principles, stakeholders emphasised that entrepreneurship support should be integrated into skills development programmes rather than treated as a standalone intervention. They highlighted the need for practical entrepreneurship education, financial literacy, digital skills, business management, regulatory compliance, mentorship, and sector-specific technical training. Participants further recommended embedding entrepreneurship within technical and transition-oriented programmes through micro-credentials, enterprise development initiatives, and mentorship opportunities linked to local market needs, thereby strengthening self-employment prospects, enterprise sustainability, and economic diversification.

The skills analysis highlights a complex and evolving skills landscape in the Free State, characterised by a strong concentration of employment in traditional mining sub-sectors alongside persistent skills shortages, hard-to-fill vacancies, and a training profile that remains heavily skewed towards compliance-driven interventions. While Workplace Skills Plan data demonstrate ongoing investment in short courses, induction, licensing, and refresher training, the prevalence of hard-to-fill technical, artisanal, supervisory, and managerial occupations points to deeper structural challenges related to experience gaps, qualification misalignment, and limited progression pathways. At the same time, cross-sectoral analysis reveals a consistent demand for transferable skills such as management, leadership, communication, computer literacy, and supervisory competence that cut across mining, manufacturing, agriculture, energy, services, and emerging green economy sectors. When viewed through the lens of labour market mismatch and systems theory, these findings underscore the need for a more integrated, demand-led approach to skills development that aligns training provision with sectoral transition, emerging economic opportunities, and entrepreneurship support. Strengthening such alignment will be critical if the Free State is to translate skills investment into improved labour market absorption, sustainable livelihoods, and inclusive economic growth in a context of ongoing structural change.

5.4.4 Synthesis of Data Collection Findings: Stakeholder and Cross-Sectoral Skills Needs

To assess skills supply against industry demand, this section drew upon Statistics South Africa Census educational attainment data (e.g. secondary data collection) alongside qualitative proxy insights gathered from Ward Councillors and local stakeholders during the primary data collection phase. Educational attainment data for the province indicates that 36% of individuals aged 20 years and above have completed secondary education, a further 34% have incomplete secondary schooling, and only 10% have attained post-secondary qualifications (Statistics South Africa, 2023b). Set against the hard-to-fill vacancies identified in Table 28, inclusive of Millwrights, Diesel Mechanics, Riggers, and Shaft Timbermen, all occupations requiring completed trade or post-secondary technical qualifications, this 10% baseline points to a structural skills gap: the community's underlying educational base is narrow relative to the qualification levels these roles demand, independent of whether appropriate training programmes exist locally. The stakeholder findings below should be read as qualitative

corroboration of this structural pattern rather than as a standalone measurement of the community-industry mismatch.

Primary data collected from stakeholders suggests that the cross-sectoral patterns identified in the literature are valid. The need for transferable skills that extend beyond mining was emphasised, with agriculture, manufacturing, infrastructure maintenance, environmental rehabilitation, renewable energy and services identified as viable alternative livelihood pathways. However, successful transition into these sectors was seen to depend on foundational and portable skills, particularly technical competence, digital literacy and basic business management.

Digital skills emerged as a pervasive cross-cutting gap, constraining productivity, safety communication, access to information and the modernisation of training delivery.

Entrepreneurship was widely recognised as necessary in a context of limited formal employment, yet participants stressed that enterprise development required coordinated support, as technical skills alone were insufficient without financial management, compliance capability and ecosystem-level assistance.

Key barriers to training participation included limited availability of programmes, lack of awareness of opportunities, operational demands and constrained provider capacity. Youth and community members identified agriculture and farming, computer skills, office administration, construction, plumbing and electrical skills as particularly valuable for improving employability. Collaboration between employers, SETAs and training providers was reported to be weak, contributing to gaps in relevance and coordination.

Stakeholders identified IT and digital skills, manufacturing, agriculture, artisanal trades, technicians, OHS practitioners and engineers as priority areas for skills diversification. Hard-to-fill vacancies were attributed primarily to insufficient experience and inadequate local training supply, while concerns about job security in the context of JET were evident. Improving access to training in rural areas, expanding reskilling opportunities for sectoral transition and strengthening cooperation between employers, unions and SETAs were identified as critical actions to enhance training effectiveness.

Collectively, these findings highlight the need for cross-sectoral, community-oriented skills strategies that move beyond narrow occupational training and support inclusive, demand-led pathways to employment, self-employment and local economic development.

5.5 MQA Programme Accessibility and Impact

Stakeholder engagement provided valuable insights into the accessibility, effectiveness and perceived impact of MQA-supported programmes within the Free State, complementing the WSP analysis and broader assessment of the provincial skills development system. Evidence from employers, SDFs, education and training institutions, organised labour, government stakeholders and Ward Councillors, together with the focus group discussions and key informant interviews, points to an important contribution by the MQA to skills development within the MMS. At the same time, perspectives across these stakeholder groups indicate that programme reach and longer-term impact are influenced by awareness and accessibility, the availability of workplace-based learning and certification opportunities, alignment between training and industry requirements, and the capacity of the broader skills development system to support progression from training into employment.

Table 29: MQA Programme Accessibility and Impact: Key Findings at a Glance

Dimension	Stakeholder perspectives	Key finding
Accessibility and awareness	Ward Councillors, SDFs and qualitative engagement participants	Awareness of and access to MQA/SETA-funded opportunities were reported to be uneven. Concerns were particularly associated with rural communities, and young people, with information, transport, accommodation and the geographic location of opportunities identified as potential barriers.
Effectiveness in meeting skills needs	Employers, SDFs, organised labour and qualitative engagement participants	MQA/SETA-funded programmes were generally recognised as important and relevant to workplace skills development, particularly where interventions were aligned with employer requirements. Stakeholders nevertheless distinguished between successful training delivery and longer-term employment impact.
Workplace learning and certification	Employers, SDFs, education and training stakeholders and qualitative engagement participants	Limited workplace exposure, experiential learning opportunities, placements and access to trade testing were identified as constraints affecting progression from training to occupational competence and employment.
Persistent occupational shortages	Employers and SDFs	Continued shortages were identified in technical occupations, including engineering, artisan, technician and machine operator roles, indicating that training

Dimension	Stakeholder perspectives	Key finding
		provision needs to be supported by functioning workplace learning, certification and employment pathways.
Youth and labour-market entrants	Ward Councillors, government stakeholders and qualitative engagement participants	Young people and NEETs were identified as facing particular challenges in accessing opportunities and progressing into employment, including information, transport and workplace exposure barriers.
Future and emerging skills	Employers, SDFs, education and training institutions, government stakeholders and qualitative engagement participants	Digital, green, technical and artisan skills were identified as increasingly important in response to technological change and evolving sector requirements. Qualitative stakeholders also emphasised supervisory and business management capabilities.
Diversification and workforce transition	Organised labour, government stakeholders and qualitative engagement participants	Reskilling pathways supporting movement into alternative occupations and sectors were considered important but insufficiently developed or coordinated. Stronger alignment with other SETAs and provincial economic development priorities was identified as important for workforce mobility.

Across the stakeholder groups, MQA-supported programmes were recognised as making an important contribution to skills development within the Free State MMS. However, the combined evidence indicates that longer-term impact depends not only on the provision of funded training, but also on equitable access to opportunities, workplace-based learning, certification, responsiveness to changing occupational requirements, and successful progression into sustainable employment.

Although MQA grants, learnerships and bursaries were generally regarded as important mechanisms for developing technical skills and supporting workforce development, Ward Councillors, SDFs and participants in the qualitative engagements raised concerns regarding uneven awareness of available opportunities. These concerns were particularly associated with rural communities, and young people. Stakeholders highlighted access to information, transport and accommodation requirements, and the geographic concentration of some opportunities as factors that may affect participation. The evidence therefore points to an important distinction between the availability of skills development programmes and their practical accessibility to intended beneficiaries.

The challenges experienced within rural communities were illustrated during the qualitative engagements, with one stakeholder explaining:

"MQA and SETA funded programmes are important and have helped some young people gain qualifications and workplace exposure. However, in many rural communities such as Vredefort, these opportunities are not reaching enough young people. Information about opportunities is often not accessible, transport and accommodation remain challenges, and many programmes are concentrated in larger towns and cities. There is also a concern that some training programmes are too theoretical and do not provide enough practical workplace experience."

SDFs similarly raised concerns regarding the extent to which information about available opportunities reaches employees. One participant reflected:

"The interventions are there. The legislations are there, the SETA frameworks are there, but the problem again will be lack of information... I was only, as an SDF, able to know that MQA can also fund me to further my studies. Then one will ask: if the SDF was not having such information, what about a poor employee underground? Our people are not even aware about the opportunities that are within their space."

Notwithstanding these accessibility concerns, employers and SDFs generally provided positive perspectives on the relevance of MQA/SETA-funded interventions to workplace skills requirements. These views were reinforced through the focus groups and key informant interviews, where employers, training stakeholders and organised labour recognised the contribution of funded programmes to technical skills development and the ability of organisations to address immediate operational skills needs. Programme effectiveness was viewed particularly positively where interventions were closely linked to employer requirements and provided opportunities for practical application (Figure 28).

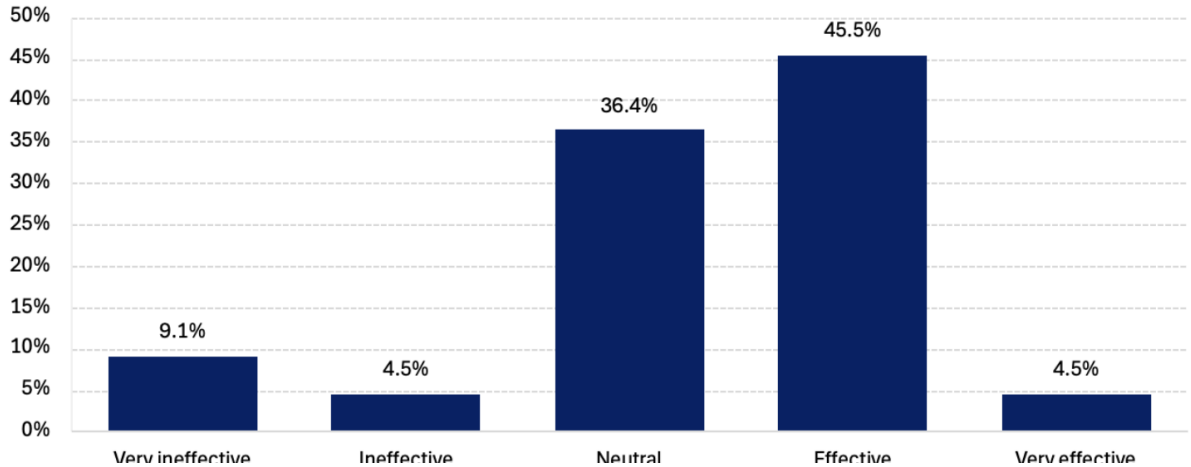


Figure 28: Effectiveness of current MQA/SETA funded programmes in meeting employer needs

However, employers, SDFs, education and training stakeholders and participants in the qualitative engagements also highlighted that the effectiveness of skills development interventions cannot be assessed solely in terms of training provision or completion. Longer-term impact depends on whether participants are able to obtain workplace experience, complete occupational certification or trade testing, and progress into sustainable employment. Persistent shortages identified by employers and SDFs in engineering, artisan, technical and machine operator occupations further indicate that challenges remain across the broader skills pipeline despite continued investment in training.

The importance of workplace experience and certification was particularly evident in the qualitative evidence. Stakeholders involved in skills development and programme implementation described instances where beneficiaries had received training but subsequently encountered difficulties accessing the workplace experience or certification required to complete their occupational pathway. One participant illustrated this challenge through the experience of an MQA programme beneficiary:

"1 participant of the MQA training programme (Boilermaker)... was appointed to assist the subcontractor where she also was able to gain some experience. But however she still hasn't had the opportunity to continue and complete her Trade Test, which is one of the important certificates to have."

These challenges have particular implications for young people and individuals not in employment, education or training (NEET). Ward Councillors, government stakeholders and qualitative engagement participants highlighted barriers affecting young people's ability to access skills development opportunities and transition successfully into employment. These included limited awareness of available opportunities, transport constraints and insufficient access to workplace exposure. The convergence of these perspectives across different components of the stakeholder engagement suggests that improving youth participation requires attention to both access to training and the conditions that enable progression after training.

Views regarding programme effectiveness were therefore broadly positive, but nuanced. Employers, SDFs, training stakeholders and organised labour recognised the relevance of MQA-supported interventions in addressing immediate skills needs, particularly where programmes were implemented in partnership with employers. At the same time, stakeholders indicated that greater emphasis could be placed on long-term employability, career progression and sustainable employment outcomes. The persistence of hard-to-fill vacancies in artisanal, engineering, technical, supervisory and machine operator occupations reinforces the need to consider workplace learning opportunities, certification pathways and labour-market absorption alongside training provision.

The findings also underscore the growing importance of reskilling and upskilling in response to technological change, automation and evolving occupational requirements. Employers, SDFs and education and training institutions identified digital, green, technical and artisan skills among the areas expected to become increasingly important. Focus group and key informant participants additionally emphasised supervisory capabilities and business management skills as important for occupational mobility and adaptation to changing workplace requirements. Taken together, these perspectives indicate a need for programme planning that addresses both existing occupational shortages and emerging and transferable skills requirements.

Diversification pathways were similarly viewed as important for sustaining employment and livelihoods in mining-affected communities, particularly in the context of changing mining activity and the transition towards a more diversified provincial economy. Organised labour

and government stakeholders, supported by perspectives emerging from the qualitative engagements, highlighted the importance of reskilling workers for opportunities beyond traditional mining occupations. However, stakeholders indicated that current training and transition pathways remain fragmented and are not always sufficiently coordinated across sectors. Government stakeholders identified opportunities associated with areas such as agriculture, digital activities and infrastructure-related development, while organised labour emphasised the need for more effective reskilling pathways for workers affected by sectoral change.

Stakeholders consequently highlighted the importance of stronger alignment between MQA programmes, other SETA initiatives and provincial economic development priorities. Such coordination would support more coherent transition pathways and enable skills development interventions to contribute not only to immediate occupational requirements, but also to longer-term workforce mobility and economic resilience.

Finally, employers, SDFs, education and training stakeholders, organised labour, government stakeholders and qualitative engagement participants identified broader system- level factors influencing the effectiveness of skills development interventions. These included uneven awareness of available opportunities, differences in provider capacity, funding and infrastructure limitations, administrative processes, gaps in stakeholder coordination, insufficient workplace-based learning opportunities, and concerns regarding some recruitment and beneficiary selection processes. The nature and emphasis of these concerns differed across stakeholder groups, highlighting the interconnected nature of the constraints affecting the provincial skills development system.

Collectively, the findings indicate that improving the long-term impact of MQA-funded interventions requires attention to the full pathway from awareness and access, through training and workplace-based learning, to certification and sustainable employment. The convergence of perspectives from employers, SDFs, education and training institutions, organised labour, government, Ward Councillors, focus groups and key informant interviews indicates that continued investment in skills development programmes should be accompanied by stronger programme awareness, employer and provider partnerships,

workplace learning and certification pathways, and coordination across the provincial skills development ecosystem.

5.6 Stakeholder Mapping and Partnerships

5.6.1 Overview of Stakeholder Landscape

The stakeholder mapping exercise identified a broad and diverse set of actors engaged in the skills development ecosystem in the Free State. These stakeholders operate across national, provincial, district and community levels and collectively influence skills planning, funding, delivery and labour-market absorption. While roles and mandates differ, the overall effectiveness of the skills system depends on the extent to which these actors are aligned, coordinated and able to collaborate around shared priorities.

Qualitative evidence indicated that, although multiple stakeholders are active, coordination remains weak and fragmented. Collaboration was generally described as ad hoc and largely compliance-driven, with limited joint planning, shared use of labour-market intelligence or pooled resourcing. Existing coordination structures at provincial and local level were perceived as procedural rather than strategic, limiting their effectiveness in driving place-based and demand-responsive skills interventions. These findings point to systemic challenges in stakeholder alignment rather than an absence of institutional participation.

5.6.2 Key Stakeholders in the Skills Development System

A range of stakeholder categories were identified as central to the functioning of the provincial skills ecosystem, spanning skills authorities, government, education and training institutions, industry, labour, community structures and enterprise support agencies, see Table 30. Each category fulfils a distinct but interdependent role, contributing to skills planning, programme implementation, labour-market access or community participation.

National-level actors provide sector skills planning, funding frameworks, programme oversight and labour-market intelligence, while provincial stakeholders play a critical role in translating national priorities into coordinated implementation aligned with provincial development objectives. District and local structures serve as the primary interface with

communities and local economies, supporting geographic place-based delivery and localisation of skills initiatives. Education and training institutions are responsible for curriculum delivery and learner support, while employers articulate skills demand, provide workplace learning opportunities and absorb trained individuals. Community and labour structures contribute critical insights into access barriers, equity considerations and local needs, while enterprise and youth-focused agencies support transitions into employment, self-employment and entrepreneurship.

Table 30: Stakeholder categories, roles and alignment

Stakeholder Category	Key Stakeholders	Primary Role in Skills System	DDM Alignment
National Skills Authorities	MQA and other relevant SETA's including but not limited to AgriSETA, CATHSSETA, CHIETA, EWSETA, FASSET, LGSETA, PSETA & W&RSETA	Sector skills planning, funding allocation, programme oversight, labour-market intelligence	National policy alignment; sector coordination
National Government	DHET; Department of Employment and Labour (DEL); Department of Trade, Industry and Competition (DTIC); DMPR; National Treasury	Policy formulation, regulation, funding frameworks	National strategic direction
Provincial Government	Free State DESTEA; Free State Department of Education; Free State Department of Employment and Labour (Provincial Office); Free State Provincial Treasury; Free State Department of Cooperative Governance and Traditional Affairs (COGTA)	Provincial planning, implementation coordination, resource alignment	Provincial One Plan coordination
District & Local Government	District and local municipalities	Local economic development, community interface, spatial planning	District One Plans; geographic place-based implementation
Education & Training Institutions	TVET colleges; universities; SETA-accredited private providers	Training delivery, curriculum development, learner support	Skills pipeline aligned to district needs
Industry & Employers	Large-scale mining companies; small- scale and emerging miners; contractors	Skills demand articulation, workplace learning, employment	Demand-side input to One Plans
Labour Representation	Organised labour unions	Worker advocacy, training needs, equitable skills access	Social partner coordination

Stakeholder Category	Key Stakeholders	Primary Role in Skills System	DDM Alignment
Communities & Local Representation	Mining-affected communities; Ward Councillors; CBOs/NGOs/NPOs	Community needs articulation, local participation	Community voice in district planning
Enterprise & Youth Agencies	Youth employment and enterprise development agencies	Employability, entrepreneurship, enterprise support	Economic inclusion objectives
Private Sector & Partners	Private firms; development partners	Co-funding, innovation, reskilling initiatives	Leveraging non-state capacity

5.6.3 Potential Partnerships across the System

The findings highlighted significant potential for strengthened partnerships across four core domains: industry, education, government and community structures. Currently, engagement between these domains is uneven, with limited evidence of sustained, structured collaboration.

Industry-education partnerships were identified as particularly weak, constraining curriculum responsiveness, access to workplace learning and alignment between training provision and occupational demand. Similarly, coordination between skills authorities and local planning structures was limited by centralised decision-making and aggregated data, reducing responsiveness to district-specific labour-market dynamics. Capacity constraints at municipal level further limited the integration of skills development into local economic development planning, particularly in rural and mining-affected areas.

Despite these constraints, comparative insights from other provincial contexts illustrate the value of embedding skills intelligence within regional economic and workforce planning structures. More systematic use of sector-focused skills analysis, employer engagement platforms and shared labour-market intelligence has supported stronger alignment between skills supply, funding decisions and priority growth sectors. While contextual differences remain, these practices provide a relevant reference point for strengthening partnerships and evidence-based planning in the Free State.

5.6.4 Stakeholder Influence, Interest and Collaboration Risks

The analysis of stakeholder influence and interest, see Table 31, indicated that actors with the greatest strategic influence also carry the highest risk if weakly engaged. Where coordination is limited, risks include misalignment between training provision and labour-market demand, fragmented implementation, outdated curricula and limited progression from training into employment or self-employment. Community-level stakeholders, while often having lower formal influence, were shown to have high levels of interest and play a critical role in programme uptake, relevance and access.

Effectiveness of collaboration across the skills system was generally perceived as neutral to weak. Inter-institutional coordination was reported to be stronger within sectors than across them, with the absence of a formal cross-sectoral coordination platform identified as a key barrier. Monitoring of impact was largely limited to learner tracking, with insufficient emphasis on employment outcomes, occupational mobility or longer-term socio-economic impact.

Community trust and recruitment fairness emerged as important implementation risks.

Stakeholders raised concerns regarding perceived nepotism, bribery, and the appointment of non-local candidates despite local unemployment. While these claims require careful handling and cannot be generalised without further investigation, they point to the need for transparent beneficiary selection, communication of criteria and local-preference safeguards where programmes target mining-affected communities.

Table 31: Stakeholder influence

Stakeholder Group	Level of Influence	Level of Interest	Key Contribution	Key Risk if Weakly Engaged
National Skills Authorities (SETAs)	High	High	Funding, skills intelligence, programme design	Misalignment between training and demand
Provincial Government	High	High	Strategic coordination, resource alignment	Fragmented implementation
District & Local Government	Medium	High	Geographic place-based delivery, community interface	Poor localisation of skills initiatives
Industry & Employers	High	Medium-High	Demand signals, workplace exposure	Skills mismatch; weak absorption

Stakeholder Group	Level of Influence	Level of Interest	Key Contribution	Key Risk if Weakly Engaged
Education & Training Institutions	Medium	High	Training supply, curriculum	Outdated or misaligned provision
Labour Representation	Medium	Medium	Worker perspectives, equity	Low buy-in; limited impact
Communities / Ward Councillors	Low-Medium	High	Local needs, access barriers	Exclusion; poor uptake
Enterprise & Youth Agencies	Medium	Medium	Transition to work/self-employment	Training without progression
Private Sector Partners	Medium	Medium	Innovation, co-investment	Missed scaling opportunities

5.6.5 Strengthening Partnerships Through Skills Intelligence and Coordination

Strengthening partnerships within the Free State skills ecosystem requires a deliberate shift from fragmented, compliance-driven interactions towards a functional system where stakeholders understand and actively fulfil their respective roles across planning, implementation, and absorption stages. While collaborative skills audits and shared labour-market intelligence are essential tools, their effectiveness is contingent on consistent participation, data-sharing, and commitment from all involved stakeholders. Without such engagement, even well-designed analytical instruments risk becoming procedural exercises with limited practical impact.

At a system level, skills authorities are responsible for providing credible labour-market intelligence, funding frameworks and coordination mechanisms that enable alignment across sectors and geographies. Government structures at provincial and local level play a critical role in integrating skills development into economic planning, spatial development and service delivery processes, ensuring that skills interventions are responsive to geographic place-based realities. Education and training institutions are responsible for maintaining curriculum relevance, updating programmes in response to changing demand and working closely with employers to secure workplace-based learning opportunities. Employers, in turn, are central to articulating demand, providing exposure and absorption opportunities, and supporting progression through workplace learning, mentorship and employment pathways. Community and labour structures contribute essential insights into access barriers, equity considerations and local priorities, supporting uptake and relevance of interventions.

Skills audits, when embedded within the overall ecosystem, function as a shared diagnostic and coordination mechanism rather than a standalone technical exercise. Their value lies not only in identifying priority occupations and skills gaps, but in enabling collective decision-making on funding allocation, programme sequencing and implementation responsibilities. However, where stakeholder participation is weak, data is withheld, or planning processes are treated as compliance obligations, audits are unlikely to translate into meaningful change.

From a systems perspective, strengthening partnerships requires clearly defined roles and responsibilities, shared accountability, and formal coordination mechanisms that align skills planning with provincial economic priorities and labour-market needs. The findings indicate a need for a structured provincial coordination platform that facilitates collaboration among SETAs, industry, education and training institutions, government, and community stakeholders, while integrating WSP and SSP evidence with district-level implementation and economic development planning.

Current barriers to effective coordination include limited data sharing, misaligned funding and planning cycles, uneven provider capacity, and the absence of a recognised mechanism to support cross-sector and cross-SETA collaboration. Addressing these challenges will require sustained leadership, strengthened institutional partnerships, and a shared commitment to translating labour-market intelligence into coordinated planning, investment, and implementation that improves the responsiveness and effectiveness of the provincial skills development system.

6. KEY FINDINGS AND IMPACT ANALYSIS

6.1 Summary of Key Findings

The study found that, although the Free State has a wide range of skills development initiatives and institutional actors, access to skills provision is unevenly distributed across the province. Skills infrastructure, training opportunities, and workplace learning are more concentrated in economically active and urbanised areas, while mainly rural districts experience limited access. Xhariep District, in particular, exemplifies this imbalance, with restricted training provision, fewer accredited providers, limited employer participation, and significant geographic and cost barriers affecting access to skills development. Consequently, individuals in such districts face fewer opportunities to participate in training and to turn education into meaningful employment or livelihood pathways.

From a theoretical perspective, the findings demonstrate that investment in education and training, as emphasised by Human Capital Theory, does not in itself guarantee improved employment outcomes. The Free State case illustrates that the value of human capital investment is realised only when supported by a well-functioning and coordinated skills development system. Weak alignment between training provision, labour-market demand, workplace learning opportunities, and local economic priorities constrains the effective functioning of the skills pipeline and contributes to persistent labour-market mismatches, despite ongoing investment in skills development.

The findings further highlight that the effectiveness of skills development is influenced not only by the availability of programmes, but also by the conditions that enable individuals to access and benefit from them. Limited awareness of training and funding opportunities, uneven local provider capacity, concerns regarding the fairness and transparency of programme selection and recruitment processes, and insufficient workplace-based learning opportunities all reduce the likelihood that training will translate into employment, career progression, or sustainable livelihoods. These findings reinforce the importance of viewing skills development as an interconnected system in which investment in human capital must be complemented by effective coordination, equitable access, strong institutional partnerships, and labour-market responsiveness to achieve sustainable employment outcomes.

Evidence from the literature review, WSP analysis, and primary data collection consistently shows that skills development in the province remains largely supply-driven and unevenly aligned with spatial and sectoral realities. While WSP submissions generally reflect immediate operational needs, particularly in mining-dominated districts, these needs are mostly replacement-driven and do not sufficiently address broader employment creation, diversification, or district-specific development priorities. In districts with limited economic activity and fewer employers, such as Xhariep, the absence of strong labour demand further weakens the ability of training interventions to translate into sustainable careers.

Overall, the findings confirm that labour-market mismatch in the Free State is not simply the result of inappropriate qualifications, but a consequence of systemic constraints that hinder skills from being absorbed effectively. In instances where training provision is uneven and the right facilities are lacking, workplace learning opportunities are limited, and local economies remain poorly connected to skills planning, education, and training, making it difficult to reduce poverty or improve living conditions. Tackling these issues requires a systems-focused approach where investment in human capital is integrated with coordinated skills planning, functional labour-market linkages, and geographic place-based economic development strategies.

6.2 Skills System Impact Analysis

6.2.1 Alignment

At a strategic level, there is broad alignment between national and provincial policy frameworks, SETA mandates and the types of skills interventions being implemented in the Free State. MQA-supported programmes, in particular, were generally perceived as relevant to the operational needs of the mining and minerals sector, especially in relation to occupational health and safety, core production roles and compliance requirements. Similarly, the analysis of SSPs across multiple SETAs showed convergence around key occupational groupings and cross-cutting skills, reinforcing the validity of identified priority areas.

However, alignment weakens at the point of implementation. Skills provision is not consistently informed by granular labour-market intelligence, and district-level

differentiation remains limited. As a result, training interventions are often insufficiently tailored to local economic conditions, employment absorption capacity or realistic progression pathways. This misalignment constrains the impact of otherwise well-designed programmes.

6.2.2 Gaps

Several substantive gaps were identified across the skills system. A critical gap exists between theoretical training and recognised trade certification, particularly for N1-N6 programmes, resulting in limited employability and progression. Access to accredited trade testing facilities and structured workplace learning remains constrained, especially for youth and rural communities.

Skills gaps were most pronounced in artisanal trades, engineering, machine operation and technical supervision, alongside emerging gaps in green skills, digital skills and environmental management. While these shortages are reflected in WSP data, they are not always prioritised consistently in training allocations or adequately supported through end-to-end learning pathways.

In addition, limited access to training, driven by cost, geographic distance and insufficient information, continues to restrict participation by unemployed individuals and mining-affected communities. Entrepreneurship and business skills, while recognised as important, are not systematically integrated into technical training programmes, limiting self-employment and local economic development outcomes.

6.2.3 Systemic Constraints

The coexistence of skills shortages and high unemployment points to systemic constraints rather than isolated programme failures. Although there might be national policy alignment (as stated in Section 6.2.1), the skills system remains fragmented, with weak coordination between SETAs, government departments, training providers, employers and community structures. Feedback mechanisms linking labour-market demand, curriculum design and funding decisions are underdeveloped, reducing system adaptability.

Stakeholder participation in planning processes, including WSP submissions and skills audits, is uneven, limiting the quality and spatial relevance of skills intelligence. Furthermore, responsibilities across planning, delivery and absorption stages are not always clearly defined or jointly owned, undermining accountability for outcomes beyond training outputs.

6.3 Implications for MQA Strategy and Planning

The findings indicate that, while MQA programmes remain broadly relevant and valued by stakeholders, their impact is constrained when implemented in isolation from the wider skills development ecosystem. This suggests that MQA's strategic focus should continue to extend beyond programme funding by strengthening the use of labour-market intelligence, supporting evidence-based planning, and fostering collaboration with key partners across the skills development system. Greater alignment between WSP evidence, provincial economic priorities, and district-level development planning will help ensure that skills development investments respond to both current and emerging workforce needs.

The study further highlights the importance of supporting integrated learning and employment pathways rather than isolated training interventions. This includes strengthening the continuum from career guidance and learner recruitment through to training, workplace-based learning, trade testing, and sustainable employment. Particular attention should be given to artisanal, engineering, technical, supervisory, digital, and green occupations, where persistent shortages were identified despite ongoing investment in skills development. Expanding transferable skills, digital capabilities, and cross-sector competencies will also strengthen workforce resilience and support labour mobility as the provincial economy diversifies.

The findings also suggest that the effectiveness of skills development interventions depends not only on programme availability, but on the conditions that enable equitable participation and successful employment outcomes. Improving awareness of funding opportunities, strengthening local training provider capacity, expanding workplace-based learning opportunities, and promoting transparent and inclusive beneficiary selection processes will enhance the reach and impact of skills development initiatives. Where appropriate, funding mechanisms could place greater emphasis on demonstrating labour-market demand,

facilitating workplace exposure or trade testing, and monitoring learner progression into employment or further learning.

Finally, the study highlights the importance of sustained collaboration among SETAs, employers, education and training institutions, government departments, organised labour, and community stakeholders to improve the responsiveness of the provincial skills development system. Within this broader ecosystem, the MQA is well positioned to contribute sector-specific labour-market intelligence, support evidence-based planning, facilitate strategic partnerships within the mining and minerals sector, and align its funding priorities with identified skills needs. Such collaborative approaches can strengthen the relevance, responsiveness, and long-term impact of skills development initiatives while supporting economic diversification and sustainable employment outcomes across the Free State.

7. CONCLUSIONS

7.1 Study Objectives Master Conclusion Matrix

Table 32 sets out how each of the sixteen study objectives (Section 1.4) has been addressed and met. For every objective, it identifies the relevant report section, the key supporting evidence, and a conclusion, providing a single point of reference for the detailed findings in Sections 2 to 6.

Table 32: Study Objectives Master Conclusion Matrix

#	Study Objective	Report Reference	Key Evidence / Findings
1.1	Analysing the effectiveness of current legislation, policies, and strategies driving skills development in the province.	Section 2.2 - Analysis of the Effectiveness of Legislation, Policies and Strategies; Tables 6-8	• Six-layer effectiveness framework (national legislation, transformation, NDP/MTDP, PSET/HRD strategy, mine safety, MPRDA/Mining Charter/SLPs, MQA SSP & programmes, critical-minerals/JET, FSGDS, DDM/One Plans) rated on a 4-point scale (substantially effective / partially effective / limited effectiveness / not yet evaluable). • National skills legislation and the MQA SSP/WSP system rated "partially effective" with "moderate operational strength" (Table 8). • FSGDS and provincial/municipal implementation rated "limited effectiveness" or "not yet evaluable". • Overarching conclusion: the system is stronger at policy design and programme activity than at spatial integration and verified outcomes.
1.2	Assessing the alignment of provincial frameworks with national strategies (including: DDMs).	Section 2.1 - Assessment of the Alignment of Provincial Frameworks with National Strategies; Figure 1; Tables 2-5	• Six-layer alignment framework (Figure 1) applied from national legal foundation through FSGDS, Provincial HRD Council, DDM/IGRFA, the five Free State One Plans, to municipal/employer/provider instruments. • Consolidated Table 5 rates: national legal foundation - "Strong"; national development/PSET strategy - "Strong in design"; FSGDS - "Moderate/provisional"; DDM institutional framework - "Moderate"; five One Plans - "Partial/uneven"; municipal/delivery instruments - "Partial to weak". • Explicit district-by-district differentiation of the five One Plans (Lejweleputswa, Fezile Dabi, Thabo Mofutsanyana, Xhariep, Mangaung).
1.3	Analysing the population demographics of the province (including age distribution, gender, and racial representation,	Sections 5.1.2-5.1.3 - Demographic and Education Profiles; Tables 15-16; Figures 4-6	• Population: 2.96 million in 2022 (8% increase since 2011); females consistently the majority (Table 15). • Racial composition: Black African 88.81% (2022), with historical trend from 1996 shown in Table 16. • Pronounced youth bulge aged 15-34, concentrated in Mangaung Metro

#	Study Objective	Report Reference	Key Evidence / Findings
	educational attainment levels and skillsets of working-age population).		(Figure 5). • Education: 36% completed secondary education, 34% incomplete secondary schooling, only 10% attained post-secondary qualifications (Figure 6) - evidencing a narrow provincial skills base.
1.4	Establishing a detailed profile of the MMS in the province (including main mining commodities extracted and processed; size and composition of the existing workforce; types of companies operating in the sector including national, multinationals and small- scale miners).	Section 5.2 - MMS Profile; Table 21; Figures 12-24	• 83 employers in the province (8 large, 18 medium, 34 small; 2 closed/inactive) across 8 sub-sectors (Table 21), spatially concentrated in Lejweleputswa (31 mines). • Note on table 21: Partially evidenced, subject to data availability. Identified MMS employers were classified by subsector and operation size (large, medium and small), with closed/inactive operations, employers of unconfirmed size and non-operation/service employers separately identified. National versus multinational ownership could not be consistently established from the available employer data and was therefore not disaggregated to avoid unsupported classification. Artisanal mining could similarly not be separately quantified because such activity may overlap with small-scale mining and may occur informally or outside formal employer registration and administrative datasets. • Commodity profiles with production trend data for gold (~29.9% of national output), coal (~6-7% of national output), diamonds and uranium (by- product of gold). • Total provincial mining workforce of 26,246 employees (2025 WSP data); gender, race and qualification-band composition by sub-sector (Figures 16- 21) - e.g. ~20% female representation overall; African employees form the majority in every sub-sector (69-95%).
1.5	Analysing the economic performance of the MMS compared to other sectors in the provincial economy.	Section 5.1.5 - Economic Landscape; Figures 10-11	• Mining contributes 6% to provincial GDP (declining) versus the five largest industries: Finance (23%), Community Services (20%), Trade (12%), Government (10%) and Manufacturing (10%) (Figure 10).

#	Study Objective	Report Reference	Key Evidence / Findings
			• Mining is the second-smallest employing industry at 3.6% of provincial employment, compared with Community and Social Services (30.8%), Trade (20.7%), Finance (14.2%) and Agriculture (12.2%) (Figure 11) • Report explicitly notes GDP contribution and employment share are complementary, not directly comparable, measures (labour intensity differs by sector).
1.6	Assessing its contribution to Gross Domestic Product (GDP), job creation, and revenue generation.	Section 5.1.5 - Economic Landscape; Section 5.2 - MMS Profile; Figures 10-11 and 16	• Free State contributes 5% to national GDP (2023); mining's share of provincial GDP is 6% and declining (MCSA, 2025). • Provincial mining workforce of 26,246 (job-creation proxy), concentrated in Gold (72.3%) and Coal (14.9%) sub-sectors. • Commodity-level production statistics (tonnes/carats) used as a revenue-generation proxy given the absence of disaggregated provincial revenue data - an evidentiary limitation the report flags explicitly.
1.7	Identifying the existing mining-related occupational shortages (hard-to-fill vacancies) and skills gaps within the province and reasons thereof.	Sections 5.3.1-5.3.2 - WSP Analysis and Primary Data Collection Findings; Table 23	• 35 hard-to-fill-vacancy occupations listed by OFO code in Table 23 (e.g. Millwright, Rigger, Diesel Mechanic, Mine Manager, Miner, Shift Foreman/Boss). • Most common reason: lack of relevant experience; second most common: lack of relevant/appropriate qualifications. • Top-up skills required identified as occupational health and safety, and technical/job-specific skills for named specialisations. • Triangulated with quantitative survey data ranking engineers, artisans, technicians, machine operators and SHEQ practitioners as the highest- priority scarce skills.
1.8	Identify the mismatches between the skills required by mining companies and the	Section 5.3.3 - Institution-Skills-Occupations Nexus Matrix; Table 27; Section 5.4.4 - Synthesis of Data Collection	• The Nexus Matrix (Table 27) maps every identified hard-to-fill occupation against available institutional provision, exposing coordination gaps and vertical silos among universities, TVET colleges, private providers and the MQA-accredited system.

#	Study Objective	Report Reference	Key Evidence / Findings
	skills available in the community.	Findings	• Synthesis finding: only 10% of the population aged 20+ holds a post- secondary qualification, against hard-to-fill roles (Millwright, Diesel Mechanic, Rigger, Shaft Timberman) that all require completed trade or post-secondary technical qualifications - a structural mismatch independent of local programme availability. • Fragmented/short-course-only provision identified for emerging areas (digital, automation, mine rehabilitation).
1.9	Assessing the adequacy and effectiveness of existing skills development programmes in addressing provincial needs.	Section 5.5 - MQA Programme Accessibility and Impact; Table 29; Figure 28	• Stakeholders regard MQA grants, learnerships and bursaries as relevant to immediate operational needs, but awareness is uneven across rural communities, smaller employers and frontline workers. • Skills Development Facilitator survey (Figure 28) indicates programmes are generally seen as effective at meeting employer needs. • Persistence of hard-to-fill vacancies despite continued investment signals structural pipeline constraints (workplace learning, trade testing, certification, absorption). • Illustrative stakeholder quotations included on access, awareness and completion barriers.
1.10	Analysing the capacity offerings of technical colleges, universities, and industry-specific training providers in addressing the skills development in the province.	Section 5.3.1 - Provincial Data and Findings; Table 26; Section 5.3.3 - Institution-Skills-Occupations Nexus Matrix; Table 27	• Provincial provider base quantified: 1 MQA Programme Approval provider, 5 MQA-accredited providers, 4 TVET colleges, 2 universities and 7 private colleges. • Nexus Matrix maps specific institutions to specific occupational gaps (e.g. CUT Renewable Energy Technologies Higher Certificate and Entrepreneurship Development Unit; UFS Business School New Venture Creation; TVET electrical, mechanical, welding and diesel trades). • Spatial access gaps identified: Xhariep District has little to no educational institutions (131,901 residents); Mangaung Metro hosts 10 institutions.

#	Study Objective	Report Reference	Key Evidence / Findings
1.11	Identifying the common skills development needs of community members living near mining operations and beyond mining-specific jobs.	Section 5.4 - Community and Cross-Sectoral Skills Needs; Sections 5.4.1 and 5.4.4	• Community-level demand identified for agriculture/farming, computer and office administration, and construction/plumbing/electrical skills. • Cross-SETA analysis (comparison with AgriSETA, CATHSSETA, CHIETA, EWSETA, FASSET, LGSETA, PSETA, W&RSETA SSPs) found management, communication, leadership, computer literacy, supervisory competence and office administration recurring across sectors as transferable skills.
1.12	Analysing the demand for skills in related sectors such as agriculture, manufacturing, tourism, and service industries.	Sections 5.4.1-5.4.2 - Cross- Sectoral Skills Commonality and Emerging/Diversifying Sectors; Table 28	• Renewable energy/green hydrogen: emerging specialist roles identified (e.g. Energy Storage Specialist, Grid Modernisation Expert) plus a national high-demand occupation list (DHET, 2024). • Agro-processing: Maluti-A-Phofung Special Economic Zone attracted R3.2 billion investment from 16 investors (2022/23), evidencing agriculture/agro-processing growth. • Manufacturing: provincial target to raise GDP contribution from 14% (2014) to 28% by 2030. • Cross-sectoral Hard-to-Fill-Vacancies table (Table 28) spans AgriSETA, CATHSSETA (tourism/hospitality), CHIETA, EWSETA and other SETAs.
1.13	Assessing the need for entrepreneurial and business development skills for local economic empowerment.	Section 5.4.3 - Entrepreneurship	• 111,000 small businesses recorded in the Free State (Q4 2023), with informal businesses outnumbering formal ones. • Free State DEDT 2024 National Entrepreneurship Month roadshows targeted funding, mentorship, market access and compliance-support gaps. • Entrepreneurship skills need identified as a combination of technical, business-management (financial management, marketing, compliance) and soft skills (leadership, negotiation, adaptability). • Stakeholders recommend embedding entrepreneurship in technical/transition programmes via micro-credentials and mentorship.

#	Study Objective	Report Reference	Key Evidence / Findings
1.14	Gathering insights on the community and companies' experiences in accessing skills development offerings from the MQA.	Section 5.5 - MQA Programme Accessibility and Impact; Table 29	• Direct stakeholder quotations describing rural access barriers (e.g. Vredefort), transport/accommodation costs, and limited awareness of MQA funding among frontline workers. • SDF quotation on the disconnect between institutional knowledge of MQA funding and awareness at underground-worker level. • Illustrative case example of a Boilermaker trainee unable to complete her Trade Test despite programme participation.
1.15	Exploring the potential synergies between skills development needs of the MMS for upskilling and reskilling existing workforce for diversification into other sectors.	Section 5.4.2 - Emerging and Diversifying Economic Sectors; Section 5.5 - MQA Programme Accessibility and Impact; Section 6.3 - Implications for MQA Strategy and Planning	• Emerging sectors (renewable energy, green hydrogen, agro-processing, manufacturing) explicitly identified as diversification/reskilling destinations for mining-affected workers. • Section 5.5 finding: digital, green, supervisory, technical/artisan and business-management skills are "key enablers of occupational mobility and successful sectoral transition". • Section 6.3 recommends the MQA extend its focus beyond programme funding to integrated learning-and-employment pathways and transferable, cross-sector competencies.
1.16	Identifying potential partners and stakeholders relevant to addressing skills development needs in the province.	Section 5.6 - Stakeholder Mapping and Partnerships; Tables 30-31	• Stakeholder mapping across 9 categories (Table 30): National Skills Authorities/SETAs, National Government, Provincial Government, District & Local Government, Education & Training Institutions, Industry & Employers, Labour Representation, Communities & Local Representation, Enterprise & Youth Agencies, and Private Sector & Partners - each with defined roles and DDM alignment. • Influence/interest matrix (Table 31) rates each stakeholder group's level of influence, interest, key contribution and key risk if weakly engaged. • Potential partnership domains identified: industry-education, skills authorities-local planning structures, and cross-SETA collaboration.

Taken together, the matrix confirms that all sixteen study objectives have been met. The overarching finding is that the skills challenge facing the MMS in the Free State is systemic rather than a result of insufficient training activity, driven by weak implementation-level alignment, fragmented stakeholder coordination and a mismatch between the skills available and those the sector requires. These conclusions inform the recommendations that follow.

8. RECOMMENDATIONS

This section translates the study's conclusions into SMART, actionable recommendations aligned to the MQA mandate and the provincial skills development context of the Free State. Recommendations are structured across four levels: strategic (MQA), provincial planning, programme and funding, and partnerships and ecosystem strengthening. Each recommendation specifies responsible actors, actions, timelines and scope.

8.1 Strategic Recommendations (MQA Level)

The strategic recommendations (Table 33) focus on actions required at the level of the MQA to strengthen system-wide coordination, improve the responsiveness of skills planning, and enhance the translation of training investment into labour-market outcomes. These recommendations emphasise MQA's role as a system steward, responsible not only for funding and oversight, but also for convening stakeholders, strengthening labour-market intelligence, and ensuring that WSP evidence informs coherent, demand-led skills interventions within the Free State.

Table 33: Strategic Recommendations (MQA Level)

Recommendat ion	Responsi ble Actor(s)	Specific Action	Timeli ne	Scope Addressed	KPI(s)	Baselin e	Target	Means of Verification	Reporting Frequency
Strengthen the role of the MQA as the provincial system expert for MMS skills, ensuring coordinated skills planning, stakeholder alignment, and oversight of skills development interventions across the Free State.	MQA (Head Office & Regional Office)	Formalise and convene a quarterly Free State MMS Skills Steering Forum with a signed ToR to coordinate SETA, provincial, and industry inputs linked to the SSP evidence	Within 12 months	System alignment; labour-market mismatch	Signed ToR in place; no. of Forum meetings/year; no. of stakeholder categories represented; % of SSP evidence items reviewed/endorse d by the Forum	0 (Forum does not currently exist)	ToR signed within 6 months; 4 meetings/ye ar thereafter; ≥80% stakeholder attendance rate	Signed ToR document; meeting minutes and attendance registers; SSP annexures referencing Forum inputs	Quarterly
Strengthen demand-led skills planning	MQA	Introduce mandatory cross-checking of WSP submissions against provincial and cross-sectoral skills priorities before funding approval	18 months (WSP cycle in 2028)	Alignment; skills relevance	Cross-checking mechanism formally adopted; % of WSP submissions screened before approval; % of approved WSPs aligned to provincial/district priorities	0% (no formal cross-check currently applied)	100% of WSPs screened from the next WSP cycle; ≥70% alignment rate within first cycle	SOP/policy document; WSP approval records; funding approval logs	Annually (per WSP cycle), with a 12-month implementati on review
Improve evidence base for spatial planning	MQA	Pilot district-level skills audits in one mining-affected and one rural district (e.g.	Pilot within 18 months	District differentiati on; access	No. of district audits completed; audit reports produced and validated; % of	0 district-level audits currently	2 completed pilot audits (Lejweleputs wa and	Audit reports; SSP revision showing incorporated findings; sign-off	Milestone-based (interim at 9 months, final at 18

Recommendation	Responsible Actor(s)	Specific Action	Timeline	Scope Addressed	KPI(s)	Baseline	Target	Means of Verification	Reporting Frequency
		Lejweleputswa and Xhariep)			findings incorporated into SSP/provincial planning documents	conducted	Xhariep) within 18 months	from district stakeholders	months)
Supervisory qualification and micro- credentials	MQA; Employers; Accredited providers	Develop or facilitate a dedicated mining supervisory qualification/micro-credential pathway covering legal liability, Mine Health and Safety Act literacy, communication, supervisory competence and relevant technical content.	Scoping within 12 months; pilot within 24 months	Addressing skills shortages	Scoping report completed; qualification/micro-credential designed and registered/accredited; no. of accredited providers offering the pathway; no. of learners/supervisors enrolled and completing; employer uptake	0 (no dedicated pathway currently exists)	Scoping complete within 12 months; pilot cohort running within 24 months; ≥1 accredited provider onboarded; defined enrolment target for pilot cohort	Scoping report; accreditation certificate/registration record; provider agreements; enrolment and completion registers; employer sign-off/MOUs	Scoping: once-off at 12 months; thereafter quarterly during pilot

8.2 Provincial Skills Planning Recommendations

The provincial skills planning recommendations (Table 34) address the need for stronger alignment between skills development initiatives and provincial economic, spatial and social development priorities. They focus on improving coordination across provincial and local government, enhancing access to skills provision in rural and under-served districts, and strengthening the integration of skills intelligence into geographic place-based planning processes, consistent with the DDM.

Table 34: Provincial Skills Planning Recommendations

Recommendation	Responsible Actor(s)	Specific Action	Timeline	Scope Addressed	KPI(s)	Baseline	Target	Means of Verification	Reporting Frequency
Integrate skills planning into provincial economic planning	Provincial economic & skills departments; MQA	Embed MMS and transition skills priorities into provincial economic and implementation plans	12-24 months	Provincial alignment	MMS/transition skills priorities documented in provincial IDPs/economic plans; % overlap between provincial plan priorities and SSP priorities; no. of provincial planning documents referencing MQA skills priorities	0 (no formal integration currently exists)	Priorities embedded in at least one key provincial economic/implementation plan within 24 months	Provincial economic development plan/IDP; SSP cross-reference; minutes of joint planning engagements	Annual review, aligned to provincial planning cycle
Strengthen rural skills access	Provincial government; municipalities; MQA	Pilot satellite or mobile training access points in under-served mining-affected and rural communities, linked to transport/data support and local awareness campaigns. Include school-level career guidance linking subject	24 months	Equity; rural access	No. of satellite/mobile access points piloted; no. of learners reached in under-served districts; no. of schools included in career guidance programme; co-funding agreement(s) signed	0 satellite/mobile access points currently operating	≥2 pilot access points established within 18 months; career guidance rolled out to a defined no. of schools; co-funding MOU(s) signed	Pilot site records; enrolment registers; school participation records/MOUs; co-funding agreements	Quarterly during pilot

Recommendation	Responsible Actor(s)	Specific Action	Timeline	Scope Addressed	KPI(s)	Baseline	Target	Means of Verification	Reporting Frequency
		choices to mining, artisan, agriculture, renewable energy and entrepreneurship pathways. A co-funding approach may be considered between responsible parties.							
Improve skills intelligence sharing	Provincial government; SETAs	Establish a shared provincial skills intelligence dashboard using existing SSP and WSP data	18 - 24 months	Coordination; evidence	Dashboard developed and launched; no. of SETAs/provincial departments contributing data; frequency of dashboard updates; no. of users/stakeholders accessing dashboard	0 (no shared dashboard currently exists)	Dashboard live within 18 months; defined no. of SETAs contributing SSP/WSP data; quarterly data refresh	Dashboard platform/access logs; data-sharing agreements; user access records	Quarterly

8.3 Programme and Funding Recommendations

The programme and funding recommendations (Table 35) are intended to improve the effectiveness, reach and outcomes of skills interventions funded or supported by MQA and partner institutions. These recommendations prioritise end-to-end learning pathways, particularly for artisanal, technical and transition-oriented skills, and seek to ensure that funding decisions are more closely linked to progression, employability and sectoral diversification outcomes rather than training outputs alone.

Table 35: Programme and Funding Recommendations

Recommendation	Responsible Actor(s)	Specific Action	Timeline	Scope Addressed	KPI(s)	Baseline	Target	Means of Verification	Reporting Frequency
Prioritise artisanal and technical pathways	MQA; training providers	Allocate increased discretionary grant funding to full artisan pipelines (training, workplace exposure, trade testing). Prioritise end-to-end pathways rather than short courses alone, including foundational support, occupational training, workplace exposure, mentorship, trade testing and post-training placement/progression tracking. Funding approval should require evidence of employer commitment or a viable self-employment/enterprise pathway.	Next funding cycle	Critical skills shortages	% of discretionary grant funding allocated to full artisan pipelines (vs short courses); no. of learners on end- to-end pathways; % of funded programmes with documented employer commitment or enterprise pathway; trade test pass rate	Current % of funding allocated to full pipelines to be confirmed; 0% of funding conditions currently require employer/enterprise commitment	Increased proportion of discretionary funding directed to full pipelines in next funding cycle; 100% of approved applications evidencing employer/enterprise commitment	Grant allocation records; funding approval documentation; trade test results; employer commitment letters/enterprise plans	Annually (per funding cycle)

Recommendation	Responsible Actor(s)	Specific Action	Timeline	Scope Addressed	KPI(s)	Baseline	Target	Means of Verification	Reporting Frequency
Expand reskilling for diversification	MQA; partner SETAs	Co-fund programmes in agriculture, renewable energy, construction and manufacturing for mining- affected communities	12-24 months	Transition pathways	No. of co-funded programmes launched; no. of learners from mining-affected communities enrolled; no. of partner SETAs engaged in co-funding agreements	0 co-funded diversification programmes currently in place	Defined no. of co-funded programmes launched within 24 months	Co-funding agreements/MOUs; programme enrolment records	Annually
Improve progression outcomes	MQA; employers	Introduce funding conditions that require placement or progression tracking beyond training completion	12 months	Employment outcomes	Funding conditions formally adopted; % of funded programmes with placement/progression tracking; placement/progression rate of programme completers	0% of funded programmes currently require progression tracking	100% of new funding agreements include progression tracking conditions within 12 months	Funding agreements/conditions documents; placement/progression tracking reports	Bi- annual (6-monthly)
Digital readiness improvement	MQA; employers	Introduce a structured digital readiness programme for the MMS workforce, covering basic digital literacy, digital safety/compliance systems, data awareness, cybersecurity awareness,	24 months	Addressing digital skills	Digital readiness programme designed and launched; no. of MMS workforce members trained; connectivity/learner-support provisions in place at rural/remote sites	0 (no structured digital readiness programme currently exists)	Programme launched within 24 months; defined no. of workers trained within 36 months; connectivity support provided at	Programme curriculum/launch documentation; training attendance/completion registers; site connectivity/support records	Quarterly during rollout

Recommendation	Responsible Actor(s)	Specific Action	Timeline	Scope Addressed	KPI(s)	Baseline	Target	Means of Verification	Reporting Frequency
		automation readiness and technology change management, paired with connectivity and learner-support requirements for rural and remote sites					pilot rural/remote sites		

8.4 Partnership and Ecosystem Recommendations

The partnership and ecosystem recommendations focus on strengthening collaboration across industry, education and training institutions, government and community structures. These recommendations in Table 36 recognise that sustainable skills development outcomes depend on functional partnerships, shared accountability and effective feedback mechanisms, and aim to address systemic fragmentation by improving coordination, participation and alignment across the skills development ecosystem.

Table 36: Partnership and Ecosystem Recommendations

Recommendation	Responsible Actor(s)	Specific Action	Timeline	Scope Addressed	KPI(s)	Baseline	Target	Means of Verification	Reporting Frequency
Strengthen industry-education linkages	Employers; training institutions; MQA	Formalise agreements for workplace learning, mentorship and equipment sharing	12 months	Work-readiness	No. of formal agreements signed; no. of learners placed in workplace learning/mentorship; no. of equipment-sharing arrangements established	0 formal agreements currently in place (or no. to be confirmed)	Defined no. of agreements signed within 12 months	Signed agreements/MOUs; workplace learning placement records	Annually
Enhance cross-SETA collaboration	MQA; other SETAs	Establish joint planning sessions for cross-cutting skills (digital, green, OHS)	Annual	Systems coordination	No. of joint planning sessions held per year; no. of SETAs participating; no. of cross- cutting priorities (digital, green, OHS) jointly addressed	0 joint planning sessions currently held	≥1 joint planning session per year with defined SETA participation	Session minutes/attendance registers; joint planning outputs	Annually
Improve community participation	Municipalities; community structures; MQA	Implement structured engagement mechanisms to improve awareness and uptake of skills programmes	Ongoing	Access; inclusion	Engagement mechanisms established (community forums, awareness campaigns); no. of community	Current awareness/uptake levels to be confirmed; no structured mechanism currently in place	Structured mechanism established; increased uptake against baseline within a defined period	Engagement session records; programme uptake/enrolment data; community feedback records	Ongoing, reviewed quarterly

Recommendation	Responsible Actor(s)	Specific Action	Timeline	Scope Addressed	KPI(s)	Baseline	Target	Means of Verification	Reporting Frequency
					engagement sessions held; awareness/uptake levels of skills programmes among target communities				
Improve community trust	Municipalities; community structures; MQA	For community-facing programmes, introduce transparent beneficiary selection and communication protocols, including publicised eligibility criteria, local application channels, beneficiary tracking, and reporting back to municipalities/community structures on uptake, completion and progression outcomes	Ongoing	Access; inclusion	Protocols developed and published; % of programmes with published eligibility criteria; no. of local application channels established; beneficiary tracking/reporting conducted	0 (no formal transparent selection/communication protocol currently in place)	Protocols in place and applied to 100% of community-facing programmes; regular reporting to municipalities/community structures	Published protocols/eligibility criteria; application records; beneficiary tracking reports; reporting-back records/minutes	Ongoing, reported quarterly

Collectively, the recommendations in this report have been developed according to SMART principles, ensuring they are specific, measurable, achievable, relevant, and time-bound, making them feasible to implement within current institutional and policy frameworks. Overall, these recommendations offer a clear and practical pathway for enhancing the responsiveness of skills systems, strengthening stakeholder coordination, and supporting sustainable workforce development aligned with provincial and national priorities.

REFERENCES

Adhikari, G.P. (2021) 'Calculating the sample size in quantitative studies', *Scholars' Journal*, 4, pp. 14-29. Available at: https://www.nepjol.info/index.php/scholars/article/download/42458/32261/123667 (Accessed: 29 July 2026).

Agriculture Sector Education and Training Authority (AgriSETA) (2025) *Agriculture Sector Skills Plan 2025/2030*. Available at: https://www.agriseta.co.za/wp-content/uploads/2025/04/AgriSETA_Sector-Skills-Plan.pdf (Accessed: 15 October 2025).

Alam, M.S., Asmawi, A. and Fatema, S. (2025) 'Focus group discussions (FGDs) for qualitative and mixed-method approaches: principles, applications, and key considerations', *Integrated Journal for Research in Arts and Humanities*, 5(4), pp. 51-56. Available at: https://doi.org/10.55544/ijrah.5.4.8 (Accessed: 29 July 2026).

Almendarez, L. (2011) *Human Capital Theory: Implications for Educational Development*. Available at: https://global.uwi.edu/sites/default/files/bnccde/belize/conference/papers2010/almendarez.html (Accessed: 04 August 2025).

Auditor-General South Africa (AGSA) (2025) *Consolidated general report on local government audit outcomes 2023-24*. Available at: https://www.agsa.co.za/reports/mfma-reports (Accessed: 25 July 2026).

Auerbach, A. and Green, F. (2024) *Reformulating the Critique of Human Capital Theory*. Available at: https://onlinelibrary.wiley.com/doi/10.1111/joes.12675 (Accessed: 04 August 2025).

Becker, G.S. (1964) *Human capital: a theoretical and empirical analysis, with special reference to education*. 1st edn. New York: National Bureau of Economic Research. Available at: https://www.nber.org/books-and-chapters/human-capital-theoretical-and-empirical-analysis-special-reference-education-first-edition (Accessed: 17 December 2025).

Beveridge, W.H. (1944) *Full Employment in a Free Society*. London: George Allen & Unwin.

Bulbulia, T. (2024) *Labour dept to launch new programme to tackle unemployment*. Available at: https://www.engineeringnews.co.za/article/labour-dept-to-launch-new-programme-to-tackle-unemployment-2024-04-04 (Accessed: 24 October 2025).

CEIC (2024) *South Africa Gold Production*. Available at: https://www.ceicdata.com/en (Accessed: 15 October 2025).

Cejudo, G.M. and Michel, C.L. (2017) 'Addressing fragmented government action: coordination, coherence, and integration', *Policy Sciences*, 50, pp. 745-767. Available at: https://doi.org/10.1007/s11077-017-9281-5 (Accessed: 28 July 2026).

Chemical Industries Sector Education and Training Authority (CHIETA) (2024) *CHIETA Sector Skills Plan 2024 (2025 - 2030)*. Available at: https://chieta.org.za/about-us/what-we-do/research-skills-planning/ssp/#36-325-2024 (Accessed: 16 October 2025).

Coker, D.C. (2022) 'A thematic analysis of the structure of delimitations in the dissertation', *International Journal of Doctoral Studies*, 17, pp. 141-159. Available at: https://doi.org/10.28945/4939 (Accessed: 29 July 2026).

Cole, M.J., Mthenjane, M. and van Zyl, A.T. (2023) 'Assessing coal mine closures and mining community profiles for the 'just transition' in South Africa', *Journal of the Southern African Institute of Mining and Metallurgy*, 123(6), pp. 329-342.

Creamer, M. (2024) *South Africa's small-end diamond producers are battling to survive, Sadpo reports*. Available at: https://www.miningweekly.com/article/south-africas-small-end-diamond-producers-are-battling-to-survive-sadpo-reports-2024-08-22 (Accessed: 16 October 2025).

Creswell, J.W. and Creswell, J.D. (2023) *Research design: qualitative, quantitative, and mixed methods approaches*. 6th edn. Thousand Oaks, CA: SAGE Publications.

Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority (CATHSSETA) (2024) *Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority (CATHSSETA) Sector Skills Plan 2025/26 - 2029/30*. Available at: https://www.cathsseta.org.za/storage/app/public/strategic_Documents/CATHSSETA_SSP_2025.pdf (Accessed: 10 October 2025).

Dawadi, S., Shrestha, S. and Giri, R.A. (2021) 'Mixed-methods research: a discussion on its types, challenges, and criticisms', *Journal of Practical Studies in Education*, 2(2), pp. 25-36. Available at: https://doi.org/10.46809/jpse.v2i2.20 (Accessed: 29 July 2026).

Delaney, Y., McCarthy, J. and Beecham, S. (2017) 'Convergent parallel design mixed methods case study in problem-based learning', in *ECRM 2017: 16th European Conference on Research Methods in Business and Management*. Reading: Academic Conferences and Publishing Limited, p. 408.

Department of Basic Education (DBE) (2025a) *List of South African Universities*. Available at: https://www.education.gov.za/FurtherStudies/Universities.aspx (Accessed: 28 August 2025).

Department of Basic Education (DBE) (2025b) *The Impact of Basic Education on South Africans: Report on the 2023 General Household Survey*. Available at: https://www.education.gov.za/Portals/0/Documents/Reports/2025/General%20Household%20Survey%202023.pdf?ver=2025-06-13-155216-727 (Accessed: 10 October 2025).

Department of Cooperative Governance (2024) *Regulations Framing the Institutionalisation of the District Development Model*. Government Notice 2486, Government Gazette 50645, 10 May. Pretoria: Government Printer. Available at: https://www.cogta.gov.za/wp-content/uploads/2024/11/REGULATIONS-FRAMING-INSTITUTIONALISATION-OF-DISTRICT-DEVELOPMENT-MODEL.pdf (Accessed: 27 July 2026).

Department of Cooperative Governance (DCoG) (2025) *Annual Performance Plan 2025/26*. Available at: https://www.cogta.gov.za/cgta_2016/wp-content/uploads/2025/04/DCoG-2025-26-APP.pdf (Accessed: 27 July 2026).

Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA) (2022) *Research document on key factors impacting the provincial economy*. Available at: https://www.destea.gov.za/wp-content/uploads/2023/09/Key-sectors-driving-the-FS-economy-1.pdf (Accessed: 19 December 2025).

Department of Employment and Labour (2025a) *Employment Equity Regulations, 2025*. Government Notice 6125, Government Gazette 52515, 15 April. Pretoria: Government Printer. Available at: https://www.labour.gov.za/DocumentCenter/Regulations%20and%20Notices/Regulations/Employment%20Equity/Administrative%20Regulations%20Gazette.pdf (Accessed: 26 July 2026).

Department of Employment and Labour (2025b) *Determination of Sectoral Numerical Targets*. Government Notice 6124, Government Gazette 52514, 15 April. Pretoria: Government Printer. Available at: https://www.gov.za/documents/notices/employment-equity-act-determination-sectoral-numerical-targets-14-apr-2025 (Accessed: 25 July 2026).

Department of Higher Education and Training (DHET) (2013) *White Paper for Post-School Education and Training*. Available at: https://www.gov.za/documents/white-

papers/white-paper-post-school-education-and-training-20-nov-2013 (Accessed: 25 July 2026).

Department of Higher Education and Training (DHET) (2019) *National Skills Development Plan 2030*. Government Notice 375, Government Gazette 42290, 7 March. Available at: https://www.gov.za/sites/default/files/gcis_document/201903/42290gon375.pdf (Accessed: 30 July 2026).

Department of Higher Education and Training (DHET) (2021a) *National Plan for Post- School Education and Training*. Available at: https://www.dhet.gov.za/SiteAssets/Plans/National%20Plan%20for%20Post-School%20Education%20and%20Training.pdf (Accessed: 31 July 2026).

Department of Higher Education and Training (DHET) (2021b) *Dictionary of Terms and Concepts for Post-School Education and Training 2021*. Available at: https://www.dhet.gov.za/REGISTER%20OF%20INFORMATION%20STANDARDS%20%20POLICY/DHET%20017%20Dictionary%20of%20Terms%20and%20Concepts%20for%20Post-School%20Education%20and%20Training,%202021.pdf (Accessed: 07 October 2025).

Department of Higher Education and Training (DHET) (2024) *Identification of Skills Needed for the Hydrogen Economy*. Available at: https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Identification%20of%20Skills%20Needed%20for%20the%20Hydrogen%20Economy-Report-April-2024.pdf (Accessed: 19 December 2025).

Department of Higher Education and Training (DHET) (2025a) *Technical Vocational Education and Training Colleges (TVET Colleges)*. Available at: https://www.dhet.gov.za/RegionalOffices/educational-institutions/technical-vocational-education-and-training-colleges-tvet-colleges.html (Accessed: 28 August 2025).

Department of Higher Education and Training (DHET) (2025b) *The Register of Private Colleges*. Available at: https://www.dhet.gov.za/Registers_DocLib/Register%20of%20Private%20Colleges%20%2028%20July%202025.pdf (Accessed: 28 August 2025).

Department of Mineral and Petroleum Resources (2004) *Mineral and Petroleum Resources Development Regulations, 2004*. Government Notice R527, Regulation Gazette 7949, Government Gazette 26275, 23 April. Pretoria: Government Printer. Available at: https://www.gov.za/documents/mineral-and-petroleum-resources-development-act-regulations (Accessed: 31 July 2026).

Department of Mineral and Petroleum Resources (2018) *Broad-Based Socio-Economic Empowerment Charter for the Mining and Minerals Industry, 2018*. Government Notice 1002, Government Gazette 41934, 27 September. Pretoria: Government Printer. Available at: https://www.gov.za/ts/node/782896 (Accessed: 31 July 2026).

Department of Mineral and Petroleum Resources (DMPR) (2024) *Operating and Developing Coal Mines in the Republic of South Africa, 2024*. Available at: https://www.dmre.gov.za/Portals/0/Resources/Publications/Mineral%20Economics/Directories/D2-2024%20Operating%20and%20Developing%20Coal%20Mines%20in%20the%20RSA.pdf?ver=3NANJnZytbeaZvZ3ccAgxw%3D%3D (Accessed: 15 October 2025).

Department of Mineral and Petroleum Resources (DMPR) (2025a) *Critical Minerals and Metals Strategy South Africa*. Available at: https://www.gov.za/sites/default/files/gcis_document/202505/critical-minerals-and-metals-strategy-south-africa-2025.pdf (Accessed: 23 October 2025).

Department of Mineral and Petroleum Resources (DMPR) (2025b) *Operating Mines, Quarries, And Mineral Processing Plants In The Republic Of South Africa 2025*. Available at: https://www.dmpr.gov.za/Services/Mining-Minerals-Petroleum-Policy-Development/Operating-Mines (Accessed: 21 July 2025).

Department of Mineral and Petroleum Resources (DMPR) (2025c) *South Africa's Mineral Industry 2022/2023 SAMI*. Available at: https://www.dmre.gov.za/Portals/0/Resources/SAMI-%20South%20Africa%27s%20Mineral%20Industry%28SAMI%29/SAMI%202022-2023.pdf?ver=XqIh4yct7nURxVROKBzBqA%3D%3D (Accessed: 15 October 2025).

Department of Minerals and Energy (DME) (1998) *White Paper: A Minerals and Mining Policy for South Africa*. Available at: https://www.gov.za/sites/default/files/gcis_document/201409/whitepaperminingmineralspolicy2.pdf (Accessed: 23 October 2025).

Department of Planning, Monitoring and Evaluation (DPME) (2011) *National Evaluation Policy Framework*. Available at: https://www.dpme.gov.za/keyfocusareas/evaluationsSite/Evaluations/National%20Evaluation%20Policy%20Framework%2011%2011%2025.pdf (Accessed: 24 July 2026).

Department of Science and Innovation (DSI) (2021) *Hydrogen Society Roadmap for South Africa 2021*. Available at: https://www.dsti.gov.za/images/South_African_Hydrogen_Society_RoadmapV1.pdf (Accessed: 19 December 2025).

EBSCO Knowledge Avantage (2025) *Purposive sampling*. Available at: https://www.ebsco.com/research-starters/social-sciences-and-humanities/purposive-sampling (Accessed: 28 August 2025).

Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences (2010) *Markets with search frictions*. Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2010. Available at: https://www.nobelprize.org/uploads/2018/06/advanced-economicsciences2010.pdf (Accessed: 18 December 2025).

Electoral Commission of South Africa (2025) *Ward Councillors Statistics*. Available at: https://www.elections.org.za/pw/StatsData/List-Of-Current-Ward-Councillors (Accessed: 28 August 2025).

Energy & Water Sector Education Training Authority (EWSETA) (2023) *EWSETA Sector Skills Plan 2023/24*. Available at: https://ewseta.org.za/wp-content/uploads/2021/02/EWSETA-Sector-Skills-Plan-202324.pdf (Accessed: 16 October 2025).

Eskom (n.d.) *Just Energy Transition (JET)*. Available at: https://www.eskom.co.za/about-eskom/just-energy-transition-jet/ (Accessed: 16 October 2025).

EU Science Hub (n.d.) *Defining 'Skill' and 'Competence'*. Available at: https://joint-research-centre.ec.europa.eu/scientific-activities-z/skills-and-competences/defining-skill-and-competence_en (Accessed: 07 October 2025).

Fezile Dabi District Municipality (2022) *Second-Generation District Development Model One Plan*. Final, December. Available at: https://feziledabi.gov.za/wp-content/uploads/2023/01/fezile-dabi-dm-2nd-generation-ddm-one-plan-final-1.pdf (Accessed: 24 July 2026).

Finance and Accounting Services Sector Education and Training Authority (FASSET) (2025) *FASSET Sector Skills Plan 2026/27*. Available at: https://www.fasset.org.za/research (Accessed: 07 October 2025).

Free State Department of Economic Development and Tourism (2026) *Budget Vote Speech, May 2026*. Available at: https://www.fsonline.fs.gov.za/wp-content/uploads/2026/05/DEDT-1.pdf (Accessed: 25 July 2026).

Free State Department of Social Development (2025) *Strategic Plan 2025 - 2030*. Available at: https://www.socdev.fs.gov.za/wp-content/uploads/2025/06/DSD-Strategic-Plan-Free-State-2025-2030.pdf (Accessed: 23 October 2025).

Free State Online (n.d.) *National Skills Fund*. Available at: https://www.fsonline.fs.gov.za/?page_id=132 (Accessed: 24 October 2025).

Free State Provincial Government (2013) *Free State Growth and Development Strategy - Free State Vision 2030 - The Future We Want*. Available at: https://www.freestateonline.fs.gov.za/education-2/ (Accessed: 10 September 2025).

Free State Provincial Government (2025) *Education*. Available at: https://www.freestateonline.fs.gov.za/wp-content/uploads/2013/03/FinalFSGDSUpdatedFeb2013PDF.pdf (Accessed: 23 October 2025).

Free State Provincial Treasury (2025) *Quarterly Labour Market Review Quarter 1 2025*. Available at: https://www.treasury.fs.gov.za/wp-content/uploads/2025/06/FS-QLMR-Q1-2025-Final.pdf (Accessed: 05 September 2025).

Global Africa Network (2021) *Free State agriculture sector plans and developments*. Available at: https://www.globalafricanetwork.com/company-news/free-state-agriculture-sector-plans-and-developments/ (Accessed: 19 December 2025).

Harber, C. and Mncube, V. (2011) *Is schooling good for the development of society?* Available at: https://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0256-01002011000200007 (Accessed: 07 August 2025).

Howlett, M. and Rayner, J. (2007) 'Design principles for policy mixes: cohesion and coherence in new governance arrangements', *Policy and Society*, 26(4), pp. 1-18. Available at: https://doi.org/10.1016/S1449-4035(07)70118-2 (Accessed: 27 July 2026).

Human Resource Development Council (2022) *The Human Resource Development Strategy Towards 2030*. Available at: https://hrdcsa.org.za/wp-content/uploads/HRDC-Strategy-Document.pdf (Accessed: 23 October 2025).

Human Resource Development Council of South Africa (HRDC) (2025a) *Reconceptualised Human Resource Development Strategy 2025-2035 and Master Skills Plan 2025-2030*. Available at: https://hrdcsa.org.za/strategy-document/ (Accessed: 27 July 2026).

Human Resource Development Council of South Africa (HRDC) (2025b) *Launch of the Free State Provincial Human Resource Development Council*. Available at: https://hrdcsa.org.za/2025/11/25/launch-of-the-free-state-provincial-human-resource-development-council-fsphrdc/ (Accessed: 24 July 2026).

Inglesi-Lotz, R. and Bohlmann, J. (2025) *South Africa's new climate targets: balancing ambition with the realities of coal and climate finance*. Available at: https://theconversation.com/south-africas-new-climate-targets-balancing-ambition-with-the-realities-of-coal-and-climate-finance-263731 (Accessed: 16 October 2025).

International Labour Organization (2020) *What is skills mismatch and why should we care?* Available at: https://www.ilo.org/resource/article/what-skills-mismatch-and-why-should-we-care (Accessed: 07 August 2025).

Kenan, A.O. and Chirenje, E. (2016) *Uranium in South Africa: Exploration and Supply Capacity*. Available at: https://www.hrpub.org/download/20160830/NRC1-14206635.pdf (Accessed: 16 October 2025).

Khan, I.M., Edwards, E., Ianicelli, B.M., Ahmed, W., Hardey, M. and Eremionkhale, G. (2025) 'University-industry collaboration for academic success and employability: a connectivist perspective', *Studies in Higher Education*, pp. 1-21.

Lekhafola, K. (2024) *Nxesi launches Labour Activation Programme in Free State*. Available at: https://www.sabcnews.com/sabcnews/jobs-free-state/ (Accessed: 23 October 2025).

Leoni, S. (2023) *A Historical Review of the Role of Education: From Human Capital to Human Capabilities*. Available at: https://www.tandfonline.com/doi/full/10.1080/09538259.2023.2245233#abstract (Accessed: 04 August 2025).

Local Government Sector Education and Training Authority (LGSETA) (2024) *Local Government Sector Education and Training Authority Sector Skills Plan 2024/25*. Available at: https://lgseta.org.za/wp-content/uploads/2024/06/SSP-24_25.pdf (Accessed: 16 October 2025).

Lukhele, B.N. and Laseinde, O.T. (2024) *Exploring Mechanical Engineering Equipment at TVET Colleges in South Africa, Towards Integrating Virtual and Cyber-Physical Learning*. Available at: https://pure.uj.ac.za/en/publications/exploring-mechanical-engineering-equipment-at-tvet-colleges-in-so/ (Accessed: 16 October 2025).

Mangaung Metropolitan Municipality (2022) *Revised District Development Model One Plan*. December. Available at: https://www.mangaung.co.za/wp-content/uploads/2023/07/112.1-Revised-MMM-Draft-DDM-One-Plan-version-December-2022.docx (Accessed: 27 July 2026).

Mangaung Metropolitan Municipality (2023) *Approval of District Development Model One Plan: Council item 112.1, July*. Available at: https://www.mangaung.co.za/wp-

content/uploads/2023/07/112.1-Approval-of-District-Development-Model-DDM-One-Plan.pdf (Accessed: 30 July 2026).

Mcfarlan, A. (n.d.) *Key informant interviews*. BetterEvaluation. Available at: https://www.betterevaluation.org/methods-approaches/methods/key-informant-interviews (Accessed: 17 July 2025).

Mcleod, S. (2024) *Mixed Methods Research Guide With Examples*. Research Gate. Available at: https://doi.org/10.13140/RG.2.2.31329.93286 (Accessed: 17 July 2025).

Minerals Council South Africa (2022) *Mining for Schools*. Available at: https://miningforschools.co.za (Accessed: 03 October 2025).

Minerals Council South Africa (2025) *State of Mining in South Africa*. Portfolio Committee on Minerals and Petroleum Resource (PCMPR). Available at: https://www.mineralscouncil.org.za/component/jdownloads/?task=download.send&id=2505&catid=7&m=0 (Accessed: 12 September 2025).

Mining Qualifications Authority (2025) *Revised 2025-2030 Sector Skills Plan for the Mining and Minerals Sector*. Unpublished.

Mining Qualifications Authority (MQA) (2026a) *Revised Sector Skills Plan 2025-2030*. Available at: https://mqa.org.za/wp-content/uploads/2026/05/MQA-2025-2030-Sector-Skills-Plan.pdf (Accessed: 27 July 2026).

Mining Qualifications Authority (MQA) (2026b) *Sector Skills Planning*. Available at: https://mqa.org.za/sector-skills-planning/ (Accessed: 31 July 2026).

Mining Qualifications Authority (MQA) (2026c) *Workplace Skills Plan and Annual Training Report*. Available at: https://mqa.org.za/wsp-atr/ (Accessed: 28 July 2026).

Mosala, S. (2022) *Addressing the triple challenge of poverty, inequality and unemployment: The case of the Free State province*. Available at: http://www.dspace.fs.gov.za/xmlui/handle/123456789/207 (Accessed: 09 September 2025).

Mosia, T. (2024) *Skills Development Programmes Empower Over 1,000 Free State Students*. Available at: https://centralnews.co.za/skills-development-programmes-empower-over-1000-free-state-students/#google_vignette (Accessed: 24 October 2025).

municipalities.co.za (2025) *Free State Municipalities*. Available at: https://municipalities.co.za/provinces/view/2/free-state (Accessed: 07 August 2025).

National Planning Commission (2012) *National Development Plan 2030: Our future - make it work*. Available at:

https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf (Accessed: 21 October 2025).

National Planning Commission (NPC) (2023) *Ten-Year Review of the National Development Plan 2012-2022*. Available at: https://www.nationalplanningcommission.org.za/assets/Documents/Ten%20Year%20Review%20of%20the%20National%20Development%20Plan_26%20September%202023.pdf (Accessed: 26 July 2026).

Nayak, M.S.D.P. and Narayan, K.A. (2019) 'Strengths and weaknesses of online surveys', *IOSR Journal of Humanities and Social Science*, 24(5), pp. 31-38. Available at: https://doi.org/10.9790/0837-2405053138 (Accessed: 29 July 2026).

Ntema, J., Marais, L., Cloete, J. and Lenka, M. (2023) *Mine closure in Matjhabeng in the Free State goldfields, South Africa: Implications for households*. Available at: https://www.sciencedirect.com/science/article/pii/S2214790X23000485 (Accessed: 15 October 2025).

Office of the Premier, Free State (2013) *Free State Growth and Development Strategy: Free State Vision 2030*. Available at: https://www.freestateonline.fs.gov.za/wp-content/uploads/2013/03/FinalFSGDSUpdatedFeb2013PDF.pdf (Accessed: 30 July 2026).

Office of the Premier, Free State (2025) *Budget Vote Speech, 15 April 2025*. Available at: https://www.freestateonline.fs.gov.za/wp-content/uploads/2025/04/Premier-15-April-Budget-Speech.pdf (Accessed: 29 July 2026).

Organisation for Economic Co-operation and Development (OECD) (2019) *Better Criteria for Better Evaluation: Revised Evaluation Criteria Definitions and Principles for Use*. Available at: https://www.oecd.org/en/publications/2019/12/better-criteria-for-better-evaluation_f7a307eb.html (Accessed: 28 July 2026).

Organisation for Economic Co-operation and Development (OECD) (2020) *Policy brief on recent developments in youth entrepreneurship*. Available at: https://www.oecd.org/content/dam/oecd/en/publications/reports/2020/03/policy-brief-on-recent-developments-in-youth-entrepreneurship_bf53d760/5f5c9b4e-en.pdf (Accessed: 19 December 2025).

Organisation for Economic Co-operation and Development (OECD) (2025) *OECD Economic Outlook, Volume 2025 Issue 1: Tackling Uncertainty, Reviving Growth*. OECD Publishing, Paris. Available at: https://doi.org/10.1787/83363382-en (Accessed: 05 September 2025).

Public Service Education and Training Authority (PSETA) (2024) *Sector Skills Plan (SSP) Update 2026/27*. Available at: https://pseta.org.za/wp-content/uploads/2025/09/PSETA-Sector-Skills-Plan-Update-2026-2027.pdf (Accessed: 15 October 2025).

Rabinowitz, P. (2025) *Communications to promote interest and participation*. University of Kansas. Available at: https://ctb.ku.edu/en/table-of-contents/participation/encouraging-involvement/identify-stakeholders/main (Accessed: 29 September 2025).

Rathelot, R., van Rens, T. and Chan, S.Y. (2023) *Rethinking the skills gap*. Available at: https://doi.org/10.15185/izawol.391.v2 (Accessed: 07 August 2025).

Republic of South Africa (1996a) *Constitution of the Republic of South Africa, 1996*. Pretoria: Government Printer. Available at: https://www.gov.za/constitution (Accessed: 26 July 2026).

Republic of South Africa (1996b) *Mine Health and Safety Act 29 of 1996*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/mine-health-and-safety-act (Accessed: 27 July 2026).

Republic of South Africa (1997) *Higher Education Act 101 of 1997*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/higher-education-act (Accessed: 29 July 2026).

Republic of South Africa (1998a) *Skills Development Act 97 of 1998*. Government Gazette 19420, 2 November. Pretoria: Government Printer.

Republic of South Africa (1998b) *Employment Equity Act 55 of 1998*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/employment-equity-act (Accessed: 25 July 2026).

Republic of South Africa (1999) *Skills Development Levies Act 9 of 1999*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/skills-development-levies-act (Accessed: 30 July 2026).

Republic of South Africa (2000) *Local Government: Municipal Systems Act 32 of 2000*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/local-government-municipal-systems-act (Accessed: 25 July 2026).

Republic of South Africa (2002) *Mineral and Petroleum Resources Development Act 28 of 2002*. Pretoria: Government Printer. Available at:

https://www.gov.za/documents/mineral-and-petroleum-resources-development-act (Accessed: 29 July 2026).

Republic of South Africa (2003a) *Broad-Based Black Economic Empowerment Act 53 of 2003*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/broad-based-black-economic-empowerment-act (Accessed: 29 July 2026).

Republic of South Africa (2003b) *Local Government: Municipal Finance Management Act 56 of 2003*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/local-government-municipal-finance-management-act-0 (Accessed: 28 July 2026).

Republic of South Africa (2005) *Intergovernmental Relations Framework Act 13 of 2005*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/intergovernmental-relations-framework-act (Accessed: 24 July 2026).

Republic of South Africa (2006) *Continuing Education and Training Act 16 of 2006*. Government Notice 1274, Government Gazette 29469, 11 December. Pretoria: Government Printer. Available at: https://www.gov.za/documents/acts?order=field_gcisdoc_document_date&order=title&page=85&sort=desc (Accessed: 31 July 2026).

Republic of South Africa (2008) *National Qualifications Framework Act 67 of 2008*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/national-qualifications-framework-act (Accessed: 25 July 2026).

Republic of South Africa (2013) *Spatial Planning and Land Use Management Act 16 of 2013*. Pretoria: Government Printer. Available at: https://www.gov.za/documents/spatial-planning-and-land-use-management-act (Accessed: 30 July 2026).

Republic of South Africa (2022) *Employment Equity Amendment Act 4 of 2022*. Government Gazette 48418, 14 April 2023. Pretoria: Government Printer. Available at: https://www.gov.za/documents/acts/employment-equity-amendment-act-4-2022-english-xitsonga-14-apr-2023 (Accessed: 25 July 2026).

Republic of South Africa (2025a) *Medium-Term Development Plan 2024-2029*. Available at: https://www.gov.za/documents/other/medium-term-development-plan-2024-2029-26-mar-2025 (Accessed: 28 July 2026).

Res4Africa Foundation (2025) *SASOL Foundation and RES4Africa begin Partnership to Support Renewable Energy Skills Development in Mpumalanga, Gauteng and Free State, South Africa*. Available at: https://res4africa.org/news/2025/sasol-foundation-

and-res4africa-begin-partnership-to-support-renewable-energy-skills-development-in-mpumalanga-gauteng-and-free-state-south-africa/ (Accessed: 24 October 2025).

Services Sector Education and Training Authority (Services SETA) (2025) *Services SETA Sector Skills Plan 2025-2030*. Available at: https://servicessetawebsite.blob.core.windows.net/wordpresslivesite/2025/09/Services_SETA_Sector_Skill_Plan_2025_2030.pdf (Accessed: 15 October 2025).

South African Government (2024) *Free State Economic, Small Business Development, Tourism and Environmental Affairs celebrates entrepreneurship month, 13 Nov*. Available at: https://www.gov.za/news/media-advisories/government-activities/free-state-economic-small-business-development-33 (Accessed: 19 December 2025).

Sreekumar, D. (2023) *What is a Theoretical Framework? How to Write It*. Available at: https://researcher.life/blog/article/what-is-a-theoretical-framework-how-to-write-it/ (Accessed: 04 August 2025).

Statistics South Africa (2023a) *Census 2022 Provinces at a glance*. Available at: https://census.statssa.gov.za/assets/documents/2022/Provinces_at_a_Glance.pdf (Accessed: 07 August 2025).

Statistics South Africa (2023b) *Census 2022 Statistical Release P0301.4*. Available at: https://census.statssa.gov.za/assets/documents/2022/P03014_Census_2022_Statistical_Release.pdf (Accessed: 07 August 2025).

Statistics South Africa (2024a) *Sequencing the DNA of provincial economies*. Available at: https://www.statssa.gov.za/?p=17731 (Accessed: 05 September 2025).

Statistics South Africa (2024b) *Gender Series Volume XI: Women Empowerment, 2014-2024*. Available at: https://www.statssa.gov.za/publications/Report-03-10-26/Report-03-10-26.pdf (Accessed: 12 September 2025).

Statistics South Africa (2025a) *Quarterly Labour Force Survey Quarter 2: 2025*. Available at: https://www.statssa.gov.za/publications/P0211/P02112ndQuarter2025.pdf (Accessed: 05 September 2025).

Statistics South Africa (2025b) *The Social Profile of South African Youth: A Decade in Review*. Available at: https://www.statssa.gov.za/?p=18083 (Accessed: 05 September 2025).

Statistics South Africa (2026) *Quarterly Labour Force Survey, Quarter 1: 2026, Statistical release P0211*. Available at: https://www.statssa.gov.za/publications/P0211/P02111stQuarter2026.pdf (Accessed: 29 July 2026).

Sustainability Directory (2025) *How Does Renewable Energy Create Jobs?* Available at: https://energy.sustainability-directory.com/question/how-does-renewable-energy-create-jobs/ (Accessed: 18 December 2025).

Taherdoost, H. (2022) 'What are different research approaches? Comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limitations', *Journal of Management Science & Engineering Research*, 5(1), pp. 53-63.

Taylor, J. (2024) *Changing Lives Through Training and Employment*. Available at: https://issuu.com/topcomedia/docs/issue_39_may2024/s/48913826 (Accessed: 23 October 2025).

The Global Economy (2025) *South Africa: Diamond production, carats*. Available at: https://www.theglobaleconomy.com/South-Africa/diamond_production_carats/ (Accessed: 16 October 2025).

The Presidency (2026) *Responses by Deputy President Paul Mashatile to Questions for Oral Reply in the National Council of Provinces: District Development Model One Plans, 18 June*. Available at: https://www.presidency.gov.za/node/10156 (Accessed: 27 July 2026).

Trade and Industrial Policy Strategies (TIPS) (2024) *The Real Economy Bulletin: Provincial Review 2024*. Available at: https://www.tips.org.za/manufacturing-data/green-economy-bulletin/provincial-review (Accessed: 25 August 2025).

Ukoba, K., Jen, T.-C. and Yusuf, A.A. (2025) 'Transformation of South Africa's energy landscape: policy implications, opportunities, and technological innovations in the Fourth Industrial Revolution', *Energy Strategy Reviews*, 59, 101752. Available at: https://www.sciencedirect.com/science/article/pii/S2211467X25001154 (Accessed: 16 October 2025).

UNESCO (2023) *Making education systems more inclusive: Ministry actors in Southern Africa apply a 'systems thinking approach'*. Available at: https://www.unesco.org/en/articles/making-education-systems-more-inclusive-ministry-actors-southern-africa-apply-systems-thinking (Accessed: 07 August 2025).

University of Pretoria (n.d.) *University Code of Ethics for Scholarly Activities*. Available at: https://www.up.ac.za/eece/article/2507858/ethics-clearance (Accessed: 17 July 2025).

Viera, C. (2023) *How to write limitations of the study (with examples)*. Available at: https://www.aje.com/arc/how-to-write-limitations-of-the-study (Accessed: 17 July 2025).

Von Bertalanffy, L. (1950) 'An outline of general system theory', *The British Journal for the Philosophy of Science*, 1(2), pp. 134-165.

Von Bertalanffy, L. (1968) *General system theory: foundations, development, applications*. New York: George Braziller.

Von Bertalanffy, L. (1972) 'The history and status of general systems theory', *Academy of Management Journal*, 15(4), pp. 407-426.

Weilkiens, T. (2007) *Systems engineering with SysML/UML: modeling, analysis, design*. Burlington, MA: Morgan Kaufmann.

Wholesale & Retail Sector Education and Training Authority (W&R SETA) (2024) *W&RSETA Sectors Skills Plan (SSP) 2025-2030*. Available at: https://www.wrseta.org.za/sites/default/files/2024-08/W%26RSETA%20SSP%20-%202025%20-%2020230.pdf (Accessed: 16 October 2025).

WISE Uranium Project (2025) *New Uranium Mining Projects - South Africa*. Available at: https://www.wise-uranium.org/upza.html#:~:text=Positive%20scoping%20study%20completed%20on,Gold%20Mine%2C%20south%20of%20Welkom (Accessed: 16 October 2025).

World Nuclear Association (2025) *Nuclear Power in South Africa*. Available at: https://world-nuclear.org/information-library/country-profiles/countries-o-s/south-africa (Accessed: 16 October 2025).

Xhariep District Municipality (2021) *Draft District Development Model One Plan*. First draft, 12 August. Available at: https://www.xhariep.fs.gov.za/wp-content/uploads/2021/08/Xhariep-DDM-One-Plan_Draft-12-August-2021.pdf (Accessed: 25 July 2026).

Younas, A., Fàbregues, S. and Creswell, J.W. (2023) 'Generating metainferences in mixed methods research: a worked example in convergent mixed methods designs', *Methodological Innovations*, 16(3), pp. 276-291.