LABOUR MARKET ASSESSMENT

IN BALOCHISTAN

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Acronyms

BTEVTA	**Balochistan Technical Education and Vocational Training Authority**
BSDP	**Balochistan Skills Development Programme**
CoEs	**Centres of Excellence**
CPEC	**China-Pakistan Economic Corridor**
CBT&A	**Competency-Based Training and Assessment**
GIS	**Geographic Information System**
GIZ	**Deutsche Gesellschaft für Internationale Zusammenarbeit**
HCPL	**HIMAT Consulting Private Limited**
ICT	**Information and Communication Technologies**
IMCs	**Institute Management Committees**
LMIS	**Labour Market Intelligence System**
LHV	**Lady Health Visitors**
MSMEs	**Micro Small and Medium Enterprises**
M&E	**Monitoring and Evaluation**
NAVTTC	**National Vocational and Technical Training Commission**
NSIS	**National Skills Information System**
PVTC	**Punjab Vocational Training Council**
PWDs	**Persons with Disability**
QAB	**Qualification Awarding Bodies**
RPL	**Recognition of Prior Learning**
SCADA	**Supervisory Control and Data Acquisition**
SDGs	**Sustainable Development Goals**
TEVTA	**Technical and Vocation Education and Training Authority**
TVET	**Technical and Vocational Education and Training**
TVET SSP	**TVET Sector Support Programme**

EXECUTIVE SUMMARY

This report provides a detailed analysis of Balochistan's Labour market, identifying critical skill gaps, workforce demands, and the alignment of Technical and Vocational Education and Training (TVET) programmes with industry requirements. The study was conducted under the Team Europe-funded TVET Sector Support Programme (SSP) in partnership with the National Vocational & Technical Training Commission (NAVTTC).

Balochistan's economy is primarily driven by small and micro-enterprises, which account for 87% of all establishments. The largest employment sectors include Agriculture (40%), Manufacturing (14%), Allied Health (13%), and Construction (12%). The province faces a severe shortage of skilled workers, with an annual demand for 95,465 workers met only by 23,163, resulting in a 75.7% gap.

There is an urgent need for skilled labour in high-demand sectors, such as manufacturing (20,421 workers needed), allied health (15,018), renewable energy (13,052), and Construction (11,213). Critical trades like electricians, welders, machine operators, civil technicians, and nurses face acute shortage. Conversely, oversupply in trades like tailoring, stitching, and basic ICT skills indicates a misalignment between training programmes and market needs.

Only 18.5% of skilled jobs are designated for women, primarily in allied health, handicrafts, and hospitality. Cultural and structural barriers continue to restrict female participation in high-growth sectors such as mining and energy, limiting overall economic opportunities for them.

The quality of TVET graduates' has been observed to be low, as 75% of employers opine that TVET graduates lack practical skills and up-to-date training. Limited industry collaboration was found, as only 12% of firms offer in-house training, and 56% are not involved in curriculum development. Additionally, training centers, especially in rural areas, have outdated infrastructure and very little modern equipment.

Digital and green skills are gaining acceptance, with 49% of employers prioritizing Information and Communication Technology (ICT) competencies and sustainable practices like renewable energy and waste management. District-specific needs vary, with urban centres like Quetta and Gwadar requiring advanced technical skills, while rural districts have more training needs in agritech and water management.

Recommendations

1. Establish Sector-Specific Centres of Excellence (CoEs) in Priority Industries

Develop fully-equipped, industry-aligned training centres in key growth sectors such as mining, construction, renewable energy, and agriculture. These CoEs should offer advanced curricula and foster linkages with employers to serve as regional hubs of practical skill development.

2. Improve TVET Governance through Institutional Reforms and Industry Representation

Introduce structured governance mechanisms at institute and provincial levels, such as employer-led advisory committees, to ensure TVET institutions are responsive to market needs. Institutional autonomy and performance-based management should be strengthened.

3. Expand Training Supply in Critical Occupations with Identified Skill Shortages

Immediately scale up training programs for occupations facing acute demand-supply mismatches, such as electricians, welders, civil engineers, machinery operators, and solar technicians, based on current and forecasted sectoral demands.

4. Align Training Curricula and Enrollments with Sector-Wise Labour Demand

Systematically update training curricula and adjust enrollment quotas in coordination with sector growth projections. Focus on mid-level and technician-level occupations to address gaps in operational and supervisory skills.

5. Increase Female Participation in High-Growth, Non-Traditional Sectors

Design targeted strategies (such as stipends, community mobilization, and safe campuses) to increase women's access to TVET, particularly in ICT, health care, food processing, and solar energy sectors where gender inclusion remains low but demand is rising.

6. Phase Out Oversupplied Trades and Reallocate Resources to High-Potential Areas

Review and gradually discontinue training programs in occupations with persistent unemployment or saturation. Resources should be redirected towards training for trades aligned with provincial development priorities and employer feedback.

7. Embed Digital Skills and ICT Literacy Across All Trades

Integrate foundational and sector-specific digital competencies across TVET programs to prepare youth for increasingly tech-driven workplaces. Expand offerings in computer-aided design, digital marketing, and software applications relevant to target sectors.

8. Promote Green Skills for Climate-Resilient and Environmentally Sustainable Sectors

Mainstream environmental awareness and sustainable practices within existing curricula, particularly in sectors like construction, mining, and energy, to support the transition to a green economy and meet climate adaptation goals.

9. Formalize TVET-Industry Partnerships for Apprenticeships and Curriculum Co-Design

Institutionalize collaboration with private sector firms through formal agreements for apprenticeships, internships, guest lectures, and curriculum development. This will ensure training remains relevant and directly linked to employment opportunities.

10. Enhance Inclusion of Disadvantaged Groups through Equitable Access Policies

Develop targeted interventions, such as mobile training units, special access schemes, and region-specific quotas, to increase TVET access for rural youth, minorities, persons with disabilities, and other underserved populations in remote areas.

11. Upgrade TVET Image through Branding, Career Counseling, and Community Engagement
Invest in a public communication strategy to improve perceptions of vocational training and skilled trades. Establish career counseling services at institutes to guide students on pathways to employment, entrepreneurship, or further education.

12. Implement Robust Monitoring, Labour Market Information, and Quality Assurance Systems
Develop an integrated Labour Market Information System (LMIS) for real-time tracking of job trends, training outcomes, and employer feedback. Establish provincial and institutional-level quality assurance frameworks to ensure training relevance and effectiveness.

The labour market assessment of Balochistan highlights a profound mismatch between the province's evolving workforce demands and the capacity of its TVET system to deliver market-relevant skills. With over 95,000 skilled workers needed annually and a supply of just 23,000, the scale of the challenge is both urgent and structural. The economic geography of the province, marked by region-specific demand in sectors such as manufacturing, energy, construction, healthcare, and agriculture, necessitates a localized, sector-responsive skills development strategy. Current training programs are often misaligned with labour market needs, oversupplying low-demand trades while neglecting high-growth occupations like electricians, welders, and solar technicians. Moreover, persistent gender disparities and weak industry linkages further erode the effectiveness of the TVET ecosystem. Addressing these gaps requires a strategic shift toward inclusive, digitally integrated, and demand-driven vocational education. Only through district-level planning, strengthened employer engagement, and modernized curricula can Balochistan develop a resilient and future-ready workforce that contributes meaningfully to its socio-economic transformation.

1. INTRODUCTION

This report "Labour Market Assessment in Balochistan" was generated as an outcome of a study conducted under the Team Europe's TVET Sector Support Programme (TVET SSP) funded by EU and implemented by GIZ. The programme is designed to bring strategic reforms in the sector to, inter alia, deliver demand-driven training courses, broaden vocational training opportunities, and promote gender equality, in collaboration with the National Vocational & Technical Training Commission (NAVTTC).

To achieve the study's objectives, extensive consultations were carried out with key stakeholders across the public and private sectors. The findings and results of the report are hoped to support policymakers and implementers in advancing evidence-based decision-making for designing and implementation of informed Technical and Vocational Education and Training (TVET) initiatives in the region.

1.1 Background

The TVET sector plays a pivotal role in addressing the country's skilled workforce demand and fostering economic development. However, in Pakistan, it faces many challenges that hinder its effectiveness and limit its potential impact. According to a report by UNESCO (2006), Pakistan has one of the lowest enrollment rates in TVET programmes amongst developing countries, with only 5.5% of secondary-level students participating in such initiatives. A major challenge is the lack of coordination, clear demarcation of roles and standard practices among the key governing bodies and institutions of the sector. With more than one authorities operating at the federal and provincial levels, the sector remains fragmented, resulting in inconsistencies in policies, curricula, and quality assurance mechanisms. Furthermore, the TVET sector struggles with insufficient funding, outdated curricula, and weak quality assurance processes, particularly in areas such as emerging technologies and industries.

Another significant challenge facing TVET education in Pakistan is the pervasive social stigma associated with it as any perceive TVET programmes to be inferior to conventional academic pathways. This perception leads to lower enrollment rates and minimal interest among potential students and their families. Additionally, the sector is characterized by gender disparities, as women were found to face socio-cultural barriers and limited access to TVET institutions, in some regions more than others.

Similarly, persons with disabilities and transgender individuals face more pronounced issues and limitations in accessing vocational skills training. Even where opportunities exist, they are often restricted to outdated courses with little relevance to current labour market demands, further marginalizing these groups.

In recent years, concerted efforts have been made to revitalize Pakistan's TVET sector. The Government of Pakistan has taken key institutional and programmatic initiatives, including establishment and strengthening of NAVTTC and the Prime Minister's Youth Skills Development Programme that play a pivotal role in policy development, curriculum standardization, accreditation, and stakeholder engagement to align TVET programmes with industry needs. NAVTTC's initiatives include improving training quality and equipping individuals with market-relevant skills.

On the other hand, the Prime Minister's Youth Skills Development Programme empowers young Pakistanis by offering accessible training in diverse trades, bridging the skills gap and enhancing employability. Together, these programmes aim to cultivate a skilled workforce, drive economic growth, and strengthen Pakistan's global competitiveness in critical sectors through critical mass of skilled and highly skilled individuals in line with global standards.

The Balochistan Technical Education and Vocational Training Authority (BTEVTA) and the Balochistan Skills Development Programme (BSDP) have been instrumental in advancing TVET education and skill development in the province. BTEVTA oversees the regulation and delivery of technical and vocational training across the province, ensuring accessibility and quality. BSDP complements these efforts by offering free, high-demand technical and Information Technology (IT) courses to equip youth with industry-relevant skills. Together, they aim to build a skilled workforce aligned with market needs and drive inclusive economic growth in the province.

Despite these efforts, the TVET sector in Balochistan continues to face challenges related to socio-

cultural barriers, limited accessibility in rural areas, limited resources, quality assurance, and industry engagement. There is a need for sustained efforts to improve the relevance and accessibility of training programmes, enhance institutional capacity, and strengthen collaboration with employers to ensure that skills development aligns with the evolving needs of the provincial labour market and supports inclusive economic growth. While targeted initiatives are underway to tackle these issues, significant gaps remain in aligning TVET programmes with the shifting demands of emerging sectors.

1.2 Purpose and Scope

Purpose

The purpose of this Labour Market study is to present a comprehensive picture of labour market in Balochistan, Pakistan. This assessment report identifies skill gaps and mismatches in sectors with higher growth potential, and other key information that can guide TVET institutes for aligning their programmes and qualifications with the actual job market needs.

Scope of the Study

The scope of this study is a thorough examination of the current labour market conditions, employment situation, occupational demand and supply, skills gaps, and emerging industry needs. The study spanned from April 20, 2024 to April 30, 2025, drew sample from all districts of Balochistan. The methodological framework later further expands on the sample population. The following key aspects are covered under the scope:

Labour Market Analysis

Conducted a thorough examination of current labour market conditions, employment trends, occupational demand and supply, skills gaps, and emerging industries. The study also identified sectors with the highest job growth potential and assessed the relevance of existing TVET programmes.

Skills Demand Assessment

Engagement with employers and industry representatives to understand their workforce needs, preferred qualifications, and desired skill sets. This evidence enables TVET-qualification alignment with labour market/industry needs useful for addressing graduates' employability and integration into industry.

Employment Projections and Future Trends

Demographic trends, technological advancements, and economic forecasts shaping future employment landscapes. This analysis helps identified emerging job roles and industries to tailor TVET programmes accordingly.

District-Level Mapping

Skilled workforce demand and supply mapping for each district of Balochistan helped identify trades with a shortage or surplus of skilled workforce and provided basis for skill forecasting and projections for identified growth sectors.

Gender and Disadvantaged Groups

High-demand occupations for disadvantaged groups (women, transgender, elderly, minorities) were identified that need to be reflected in TVET institutes' curricula and programmes to promote inclusiveness and equal opportunities

Recommendations

Findings under the aforementioned study aspects helped generate key practical and actionable recommendations for TVET policymakers and implementers for addressing the identified challenges for overall improvement of TVET sector.

The study employed quantitative research methods, starting with the literature review, drawing a representative sample, developing tools from employer surveys, data analysis, and employment projections. This report is based on the output of these methods and consolidates them to provide recommendations for enhancing the effectiveness of the TVET sector in meeting the skill demands of the labour market.

2. METHODOLOGICAL FRAMEWORK

This chapter outlines the methodological framework used to conduct the comprehensive labour market assessment in Balochistan, aligned with the study's aim to identify skill gaps, assess occupational demand and supply, and align TVET programmes with evolving labour market needs. The methodological design integrates quantitative and qualitative approaches, ensuring a holistic understanding of the labour market dynamics across the region. As such, this framework provided a systematic approach to data collection and analysis and enabled district-level mapping of workforce imbalances and mismatches, leading to evidence-based recommendations for informed TVET policy making and programmatic interventions.

The selection of methods, data sources, sampling strategy, and analytical tools was guided by the study's objectives and the unique socio-economic characteristics of Balochistan, ensuring relevant, reliable, and actionable findings.

2.1 Research Design

This Labour Market Assessment in Balochistan adopts a mixed-methods approach, strategically combining quantitative and qualitative techniques to achieve three primary objectives:

(1) identifying critical skill gaps,

(2) analyzing occupational demand and supply dynamics, and

(3) aligning TVET programmes with evolving labour market requirements and imperatives.

The analysis in this report also relies on secondary data sources, including the Labour Force Survey (LFS), as well as economic and employment reports. A distinctive element of the research design is the inclusion of a detailed district-level analysis, presented as a separate chapter. This profiling draws on literature, government reports, LFS data, and relevant academic studies to map workforce demand and supply across districts, helping uncover regional disparities, highlight high-potential trades, and provide targeted insights. This affords policy makers and readers in general district-level lens and adds to the study's applicability, ensuring that recommendations and proposed interventions are based on knowledge not only of the sectoral needs but also the local labour market conditions.

2.2 Data Collection and Analysis

The study employed secondary and primary data collection methods to ensure a comprehensive and evidence-based assessment of the labour market in Balochistan. This mixed approach enabled the triangulation of data sources, enhanced the reliability of findings, and allowed for a deeper exploration of skill gaps and labour market dynamics across the province.

Secondary data helped provide a foundational understanding of the existing broader narratives on employment trends, sectoral growth, and demographic patterns. Key sources included the Pakistan Labour Force Survey, provincial and national-level economic reports, census data, and relevant publications from government departments and development partners.

Findings from academic journal articles and previous labour market studies helped contextualize the activity for district-level profiling. These sources provided valuable insights into historical trends and prevalent macroeconomic indicators affecting labour market outcomes.

Structured surveys were conducted with employers to gather primary data on workforce development needs. The survey was instrumental in:

- Identification of critical skills gaps
- Assessment of training programme alignment with industry requirements
- Evaluation of current employment challenges
- Projection of future competency needs

Particular emphasis was placed on surveying employers in high-growth sectors to understand present and emerging skill demands. All data collected underwent quantitative analysis using SPSS 27.

The survey findings are useful for developing employment projections and gives actionable recommendations to inform policy planning and enhance the effectiveness of TVET programmes for meeting the skill demands of the labour market of Balochistan.

2.3 Literature Review

Balochistan is at a pivotal point, experiencing a rapid demographic event marked by a predominantly young population, whose potential, if not effectively utilized, could lead to a rise in unemployment and social instability. The study emphasizes that TVET is essential in transforming this demographic challenge into a demographic dividend by equipping youth with technical and soft skills based on market pull. As noted by NAVTTC (2018) and supported by the findings of Ahmed and Baloch (2015), the current TVET system in Balochistan is severely underdeveloped, marked by outdated curricula that fail to address the evolving needs of the regional industries such as mining, water management, and renewable energy. Moreover, a significant portion of the youth labour force lacks the necessary skills to engage in productive employment, which hampers economic growth, ignites social disenfranchisement and potential conflict.

The above confirms findings from earlier studies (e.g., OECD, 2009; ADB, 2008; ILO, 2008) that emphasize the importance of quality vocational education in increasing employability and social cohesion. The focus here is more specific in assessing the impact of the financial and economic crises, the extent to which vocational education is strongly identified with enterprises and the introduction of new business practices. Balochistan could benefit from modern technologies and strategies to enhance the availability of a skilled workforce for the local market needs and support overall development.

In the context of Pakistan, ILO (2017) emphasizes the urgency of integrating green skills into national development strategies. Embedding green skills within an efficient green economy framework is considered vital while simultaneously acknowledging structural challenges in the labour market, challenges that this assessment also seeks to address. Further elaborating on these insights, ILO (2018) explores the potential for job creation through the transition to green technologies. It discusses the implications of this transition for future employment and the need to equip workers with the skills necessary for emerging green jobs. This forward-looking perspective is essential for identifying sectors with high potential for job creation and evaluating whether existing TVET programmes align with evolving labour market demands.

ILO (2019) also comprehensively explores the critical components required for greening the workforce. It examines the range of skills relevant to green jobs and their applicability to current TVET systems. These findings are closely aligned with the evolving skill needs of businesses and emerging sectoral trends. Consequently, it becomes imperative to engage employers and other key stakeholders to understand their workforce requirements, educational preferences, and expectations for qualifications. This engagement is key to aligning TVET qualifications with labour market realities.

According to ILO (2021a), lifelong learning is essential to foster economic growth and social cohesion, particularly in a rapidly evolving labour market influenced by technological and environmental change. The report provides a framework for integrating current skill demands into the TVET system. Moreover, ILO (2021b) stresses the importance of human capital development and advocates for lifelong learning to ensure continued workforce relevance. It also offers sector-specific guidance, focusing on the textile and garment industry, demonstrating how green skills and sustainable practices can be integrated into training and skills development. Such resources are valuable in identifying skill needs and trends in sectoral employment.

Moreover, understanding future employment trends requires careful analysis of demographic shifts, technological innovations, and economic forecasts. In this regard, ILO (2022a, 2022b) guides integrating green skills into TVET systems, supporting a just transition toward a greener economy. These resources help TVET institutions in identifying emerging occupations and sectors, thereby enhancing the future relevance of their programmes.

ADB (2023) complements these findings by providing a global perspective on integrating green skills across different sectors, highlighting how demographic and technological transitions reshape employment

and skill needs. It emphasizes the need to embed green skills into all industries, as the emergence of new economic activities calls for structural changes and worker mobility across sectors. In scenarios involving a transition to a low-carbon economy, the capacity of the workforce to reskill and shift across industries becomes critical. These findings align with the OECD (2014), which asserts the centrality of skills and education policy in facilitating ecological modernization.

While green construction and manufacturing are discussed, few studies provide practical, actionable guidance for implementation. Despite their need for sustainable practices, the tourism and hospitality sectors have received limited attention regarding green skill requirements. Similarly, the textile and garments sector lacks an in-depth analysis of essential green skills that could drive environmental innovation and sustainability.

Furthermore, there is not enough literature exploring green skill needs in agriculture, livestock, and fisheries, which are sectors integral to Pakistan's economy. Although job creation potential in renewable energy is well-documented, deeper exploration is needed into the precise technical skills required for various technologies and occupations. Likewise, sectors such as printing and packaging, health, and sports goods remain understudied concerning green skill integration.

The other issue is gender disparity in Balochistan's labour market. The gender gap in Balochistan's labour market is particularly pronounced, with significantly fewer women employed compared to men. This disparity widens income inequalities and limits women's economic participation and access. Studies within the brief indicate that in Pakistan generally the overall gender pay gap is about 25%, where women earn PKR 750 for every PKR 1,000 earned by men, notwithstanding that the gender pay gap in Pakistan is even higher in Balochistan because of deeply entrenched cultural and structural barriers to women enter formal wage employment (ILO, 2025). This issue is compounded by the limited availability of gender-sensitive TVET programmes, as there are few such programmes in the training arena, especially regarding the unique requirements of women, such as flexible hours, safe spaces, and female role models in leadership positions.

Another driving factor in Balochistan's labour market is the youth migration from rural areas to urban centres in pursuit of better employment opportunities. It has key implications for rural labour markets where the main sectors, namely agriculture and construction, face labour shortages. Of course, the out-migration of youth contributes to the underdevelopment of rural areas since the labour force is unable to satisfy the needs of sectors which have much to do with agriculture and continue to rely heavily on manual labour. Addressing this issue requires creating more local employment opportunities in rural areas by promoting rural-based industries, improving access to vocational training, and enhancing the quality of education and skills development programmes. TVET programmes focused on agricultural techniques, rural construction skills, and other locally relevant skills could help reverse the trend of youth migration by offering viable employment alternatives within rural communities.

Empowering women, youth, and marginalized or disadvantaged groups as critical agents for an inclusive and gender-sensitive environment requires a thorough training framework on green skills, green careers, ecotourism, and other green opportunities to ensure livelihood resilience and sustainable development (UNDP, 2024). As such, the alignment of TVET programmes with the specific needs of Balochistan's labour market is critical for addressing challenges. TVET programmes should concentrate on skills development relevant to the high-demand areas of agriculture, mining and construction, as well as addressing gender imbalance by training women.

Addressing these challenges necessitates a multidimensional approach in which TVET programmes are made to meet the specific demands of Balochistan's labour market. However, TVET interventions can improve the province's Labour market outcomes by targeting sector-specific skills gaps through gender-sensitive training programmes and coping with rural and urban migration patterns. In the long term, a more skilled and inclusive workforce can unlock the economic potential of Balochistan and pave the way for sustainable development.

According to the ILO (2022), the transition to sustainable energy sources and a circular economy scenario can create 100 million jobs. However, some existing jobs are expected to become obsolete, and the benefits of this transition are unlikely to be distributed evenly across geographies and demographics unless young people are provided with the necessary training and support systems.

The study builds upon existing work and advances the collective understanding of the subject matter by critically analyzing and synthesizing it with new findings.

2.4 Survey Method

For a comprehensive labour market assessment in Balochistan, a representative sample of employers from the districts with significant industrial concentration has been surveyed (Figure 01). The sample size was calculated using datasets of health facilities available with health departments, respective chambers of Commerce and Industries, mining departments, industries departments, NSIS and other government departments.

A questionnaire was developed for data collection (See appendix) covering different aspects of the labour market, such as employment trends, employee turnover, and the type of business. The field data was collected using the CS Pro application, which was deployed on smartphones and tablets for efficient mobile data capture. A dedicated Monitoring and Evaluation (M&E) team validated the dataset through regular spot checks and comprehensive audits. This helped ensure the reliability and validity of the data gathered during the survey process and credibility of the findings.

A thorough data cleaning was done to rectify any errors, inconsistencies, or missing information.

2.5 Sampling Technique

A representative sample is critical to ensure that the characteristics of the population are accurately reflected in the survey findings. While no sample can perfectly capture all aspects of a population, employing rigorous sampling methodologies and selecting an appropriate sample size can significantly minimize sampling and non-sampling errors. Stratified random sampling (SRS), in particular, is a robust approach that enhances representativeness by dividing the population into homogeneous subgroups or strata. This method ensures the proportional inclusion of these subgroups in the sample, thereby improving the reliability and precision of inferential conclusions about the overall population based on the sampled data.

SRS is widely regarded as one of the most effective techniques for labour market assessment studies, as it enhances the sample's representativeness and provides more accurate insights into workforce dynamics. This method divides the target population into distinct strata or subgroups based on shared characteristics such as industry, occupation, region, or demographic attributes (e.g., gender, age). A random sample is then drawn from each district (stratum in proportion) to its size in the overall population.

On the other hand, Respondent Driven Sampling (RDS) with a mix of Network Sampling is appropriate where sampling "hard-to-reach" populations presents unique challenges, as standard statistical methods require a sampling frame, a comprehensive list of population members, from which the sample can be drawn. Constructing such a frame through methods like household surveys becomes impractical when the target population is small compared to the general population and widely dispersed geographically.

Moreover, snowball sampling, a commonly used method in such cases, involves identifying an initial set of participants who meet the study criteria. These participants then refer to others within their network who are also part of the target population. This process continues iteratively, creating a "chain" of referrals that expands the sample size. While this method is useful for accessing hidden or hard-to-reach groups, it carries certain limitations, such as potential biases arising from the overrepresentation of tightly connected individuals or the underrepresentation of isolated subgroups.

Therefore, RDS is also employed to address challenges in accessing or identifying target populations, particularly when their size or composition is unknown (Table 03). This method is especially effective for sectors encompassing both formal and informal populations, where traditional sampling techniques are impractical due to the absence of comprehensive records or sampling frames.

RDS, a chain-referral sampling technique, begins with selecting a small group of initial participants, known as "seeds," chosen for their strong community connections and willingness to participate. These seeds recruit additional participants from their networks, with the recruitment process continuing iteratively. To ensure systematic and controlled recruitment, each participant is given limited recruitment coupons to invite others from their social circle.

This approach is particularly well-suited to the unique context of Balochistan. In this province, formal sectors, such as registered labourers in mining and manufacturing industries, and informal sectors, including unregistered workers, self-employed individuals, and subsistence-level activities, are often difficult to access through conventional methods. RDS enables the collection of representative data by statistically addressing network biases and generating reliable population estimates that reflect the actual characteristics of these groups.

Furthermore, RDS ensures inclusivity by reaching marginalized and underrepresented populations, making it a powerful tool for data collection in areas where logistical and infrastructural constraints hinder the application of traditional methods. By facilitating the inclusion of diverse and often overlooked groups, RDS provides critical insights for policymaking, resource allocation, and programme interventions tailored to the socio-economic realities of Balochistan.

Table 01 summarizes the advantages of both sampling methods.

Table 01: Summary of Advantages of Stratified Random Sampling and Respondent-Driven Sampling

Sampling Method	Advantage	Description
Stratified Random Sampling	Improved Representativeness	Ensures proportional representation of each subgroup, capturing labour force diversity and reducing bias.
	Increased Precision	Reduces variability within strata, enabling more accurate estimates of employment trends, skill gaps, and workforce composition.
	Focused Analysis	Facilitates targeted examination of specific subgroups, revealing nuanced patterns and trends.
	Efficiency in Data Collection	Maximizes data value by allocating resources to critical strata without requiring large sample sizes.
	Applicability Across Heterogeneous Populations	Accommodates diverse sectors and demographics, systematically organizing and sampling subgroups.
Respondent-Driven Sampling (RDS)	Access to Hidden Populations	Reaches marginalized or hard-to-reach groups, such as informal workers and unregistered labourers.
	Cost-Effectiveness	Reduces extensive field operations by relying on peer recruitment.
	Representativeness	Uses statistical adjustments to correct biases, ensuring estimates reflect true population distribution.
	Efficient Recruitment	Leverages participants' social networks to recruit others, minimizing outreach efforts.
	Inclusivity	Captures diverse labour market segments, including those excluded from formal databases.
	Network Data Collection	Provides insights into social networks and connections within the labour force.
	Adaptability	Effective in environments with limited data or incomplete population registries, such as informal labour markets.
	Rapid Data Gathering	Enables structured and timely data collection, even in challenging contexts.

The combined use of Stratified Random Sampling and Respondent-driven Sampling afforded this study a comprehensive approach which is not always available for certain sectors.

2.6 Sample Size

It is widely accepted that no sample can perfectly represent an entire population. Although this "sampling error" is inevitable, it can be minimized by ensuring the sample size is sufficiently large and employing appropriate sampling techniques. The determination of sample sizes is influenced by factors such as a 95% level of significance, variability within the target population (based on secondary data), and constraints related to available resources and time limits for the study.

The list of industries, which serves as the sampling framework or population, is available from official and private sources. This framework includes sectors such as Manufacturing, Mining, Travel, Tourism & Hotel and Allied Health Services at the district level.

The sample size (n) for this survey was determined using the following formula, suitable for finite populations. The formula is applied once the total population size and desired parameters (Z, p, and E) are defined. The resulting sample size represents the number of units selected in the first sampling stage, ensuring robust representation.:

$$n = \frac{N \times Z^2 \times p \times (1-p)}{\left(E^2 \times (N-1)\right) + (Z^2 \times p \times (1-p))}$$

- 'N' represents the total population of establishments or enterprises within the selected districts of Balochistan. As many areas in these regions have small population bases, the formula ensures a sufficiently representative sample size.

- The confidence level indicates the certainty with which the survey results reflect the population. For a 95% confidence level, a Z-score of 1.96 is used.

- 'p' represents the proportion of the population expected to exhibit the characteristic of interest (e.g., alignment between training and industry demand). When this proportion is unknown, it is set at 0.5, as this value ensures the largest possible sample size by assuming maximum variability.

- 'E' is the acceptable level of error in the survey results. A smaller margin of error indicates greater accuracy but requires a larger sample size. For this survey, a margin of error below the typical 5% threshold is targeted to enhance result precision.

The calculated sample size (n) for the survey, with a total population of 4,863 establishments for specific sectors, a 95% confidence level (Z=1.96), and a 3.25% margin of error (E=0.0325), is 767 (Tables 02).

The sample size is sufficiently large to capture population characteristics comprehensively, enabling better-informed policy decisions. By balancing precision with practical constraints, the survey ensures robust and actionable insights for targeted interventions.

Proportional Allocation

In the second stage, the sample size determined in the first stage is distributed across districts using a proportional allocation method. This ensures that the sample reflects the relative size of the population of establishments or enterprises in each district.

The sample size for each district (n_d) has been calculated using the formula:

$$n_d = \left(\frac{N_d}{N}\right) \times n$$

- *Nd: Total population of establishments/enterprises in the district.*

- *N: Total population of establishments/enterprises across all districts in the region.*

- *n: Total sample size determined in the first stage.*

Adjustments for Small Districts

- For districts with very small populations, a minimum sample size threshold is set to ensure representation.
- Additional samples were also allocated to strategically important districts with unique industries or higher economic activity.

Random Sampling Within Districts

- Within each district, establishments/enterprises were selected randomly to ensure unbiased representation.
- Stratification may be applied based on key characteristics (e.g., industry type, enterprise size) to capture diversity within districts.

RDS is essential for accessing populations not covered by traditional sampling frames, such as informal workers or geographically dispersed individuals. Unlike snowball sampling, which can lead to biases from overrepresented networks, RDS uses controlled recruitment and statistical adjustments to generate reliable population estimates. This approach is particularly suited to Balochistan, where informal and unregistered labour sectors present unique challenges. By leveraging the social networks of participants, RDS ensures inclusivity and captures marginalized or underrepresented groups. Insights generated through RDS are critical for policymaking and resource allocation as they provide an understanding of populations often excluded from conventional data sources. This methodology ensures representative and reliable insights for informal sectors, having sample size 1,001 (Table 3).

This hybrid approach ensures the inclusion of both the unknown population and formally registered groups. As such, RDS is employed to access where information and location of the unit is not available, i.e., not registered anywhere, while SRS is used for structured sampling within identifiable strata. This mix allows for comprehensive data collection across all sectors. The methodology ensures representative and reliable insights despite the absence of a complete sampling frame. The total sample size is 1,764.

Figure 1: Total Sample Size at District Level
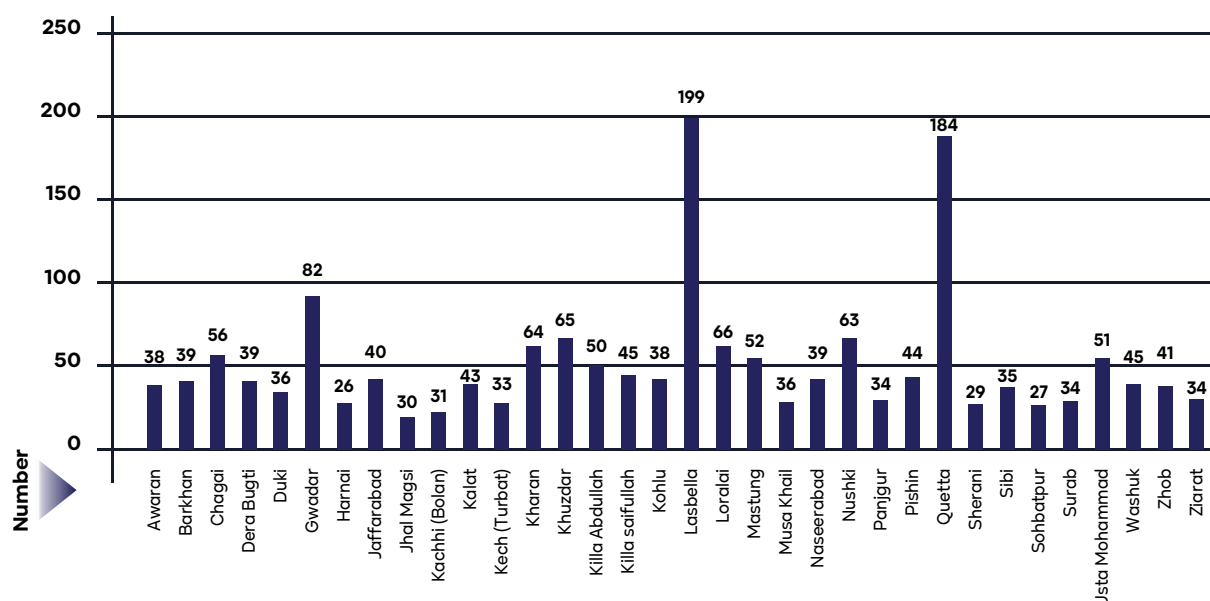
Table 02: Sample Size of Sectors with Known Population

District	Hospitality & Tourism	Manufacturing	Mining Sector	Allied Health	Total Sample
Awaran	2	2	4	4	12
Barkhan	6	1	4	3	14
Chagai	2	13	4	3	22
Dera Bugti	0	0	0	0	0
Duki	5	4	6	2	17
Gwadar	9	27	7	2	45
Harnai	2	2	3	2	9
Jaffarabad	6	6	0	2	14
Jhal Magsi	2	1	4	4	11
Kachhi (Bolan)	2	2	7	2	13
Kalat	2	3	5	4	14
Kech (Turbat)	2	2	0	2	6
Kharan	5	2	4	4	15
Khuzdar	7	5	4	13	29
Killa Abdullah	3	3	6	8	20
Killa Saifullah	3	3	5	8	19
Kohlu	3	3	5	8	19
Lasbella	12	52	60	18	142
Loralai	0	4	13	10	27
Mastung	4	2	14	5	25
Musa Khail	2	2	6	6	16
Naseerabad	2	7	2	5	16
Nushki	2	4	5	2	13
Panjgur	2	2	8	2	14
Pishin	2	3	7	3	15
Quetta	25	45	3	33	106
Sherani	2	2	0	3	7
Sibi	2	2	5	6	15
Sohbatpur	1	8	0	3	12
Surab	6	3	0	5	14
Usta Mohammad	7	4	2	13	26
Washuk	2	4	0	10	16
Zhob	3	2	3	3	11
Ziarat	2	2	4	5	13
Grand Total	**137**	**227**	**200**	**203**	**767**

Table 03: Sample Size of Sectors with Unknown Population

District	Agriculture, forestry and fishing	Construction	Handicrafts	Automobile	Printing and Packaging	Renewable energy	Water	Other services	Total Sample
Awaran	6	3	3	2	2	0	4	6	26
Barkhan	4	5	2	7	1	4	2	0	25
Chagai	4	6	3	8	2	3	3	5	34
Dera Bugti	2	36	0	0	0	0	0	1	39
Duki	6	3	2	2	1	1	2	2	19
Gwadar	12	10	3	2	3	2	3	2	37
Harnai	3	3	2	3	2	2	2	0	17
Jaffarabad	9	6	2	3	4	0	2	0	26
Jhal Magsi	3	4	2	2	2	2	3	1	19
Kachhi (Bolan)	2	3	3	2	2	4	2	0	18
Kalat	4	7	3	3	3	6	3	0	29
Kech (Turbat)	6	6	2	3	3	3	4	0	27
Kharan	10	4	17	5	4	6	3	0	49
Khuzdar	0	10	4	3	4	5	4	6	36
Killa Abdullah	5	4	5	3	4	5	4	0	30
Killa Saifullah	4	6	3	3	3	4	3	0	26
Kohlu	3	4	2	4	2	1	3	0	19
Lasbella	11	7	7	6	8	8	7	3	57
Loralai	2	7	8	5	4	0	4	9	39
Mastung	6	5	4	3	3	3	3	0	27
Musa Khail	4	4	3	2	0	4	2	1	20
Naseerabad	3	5	3	3	3	3	3	0	23
Nushki	25	8	3	4	4	1	3	2	50
Panjgur	3	3	3	2	3	3	3	0	20
Pishin	5	6	4	4	3	3	4	0	29
Quetta	5	17	10	6	9	7	9	15	78
Sherani	4	5	3	2	2	3	3	0	22
Sibi	3	3	2	3	3	3	3	0	20
Sohbatpur	6	2	0	2	0	2	2	1	15
Surab	5	3	2	4	2	2	2	0	20
Usta Mohammad	5	6	3	2	3	3	3	0	25
Washuk	12	3	0	2	3	5	3	1	29
Zhob	6	3	5	4	3	2	2	5	30
Ziarat	3	5	3	2	2	2	4	0	21
Grand Total	**191**	**212**	**121**	**111**	**97**	**102**	**107**	**60**	**1,001**

3. SECONDARY DATA ANALYSIS FOR DISTRICT PROFILING

This chapter presents the identified gaps in the required skills, sector-specific employment trends, and labour force characteristics in Balochistan. In so doing, it provides a comprehensive analysis of the province's economic activity and the impact of the workforce dynamics on developing these into profitable ventures.

This largest province in Pakistan is rich in natural resources, however, it has many socio-economic challenges that substantially influence its labour market. Among the challenges are reliance on informal employment, disparity between men and women in labour force participation and problems of youth migration. There is a need to align TVET programmes to the province's own unique labour market needs.

The labour market in Balochistan comprises a large informal economy, which is primarily sustained by the services and labour-intensive agriculture, mining and construction sectors. As per the Labour Force Survey (2020-21), agriculture and informal sectors account for more than 65% of the employment of Balochistan. Workers that depend on informal employment face job insecurity, insufficient access to social protection and low wages (Achakzai et al., 2023). A large portion of the rural workforce and the bulk of the workforce in mining are involved in agriculture and mining, respectively, including a significant number coming from informal employment.

Despite being the biggest producer of minerals, Balochistan suffers from a shortage of skilled workers (Malik, 2019). Particularly in the field of resource processing technologies, a growing shortage of skilled professionals is hindering the development of more advanced and environmentally sustainable resource extraction methods. Addressing this skills gap in the mining sector through targeted TVET programmes could improve productivity, enhance workplace safety, and support long-term economic growth.

The secondary data analysis offers a complete district-wise employment profile for Balochistan's labour market wherein changes in employment trends and sectoral demand can be analyzed along with skills gap. This profiling provides the basis for policy recommendations for directing the TVET curricula to industry needs, achieving gender inclusivity, and promoting sustainable economic development.

3.1 Regional Overview

Balochistan is Pakistan's largest province by area, covering approximately 44% of the country's total landmass but is home to only about 5% of the total population. Despite its vast natural resources, including mineral oil and gas deposits, Balochistan continues to face significant developmental challenges, positioning it among the least advanced regions of Pakistan economically and socially. Most of the province's population lives in rural areas, and a large part of its economy is based on agriculture, livestock farming, and natural resource extraction. The main economic and administrative hub is the capital city, Quetta. Other districts are burdened heavily by economic development, employment opportunities and access to basic services.

Geographical and Socio-Economic Context of Balochistan

Balochistan's geographical position provides it access to key trade routes, specifically through the port city of Gwadar that is strategically positioned along the Arabian Sea. This gives the province immense trade potential for both domestic and international markets. However, Balochistan's rugged terrain, sparse population distribution, and limited infrastructure hinder the full realization of its economic potential. The province's topography, consisting of mountains, deserts, and coastal plains, presents logistical challenges for connecting remote regions to the major economic hubs of the country. Despite many challenges, Balochistan plays a crucial role in Pakistan's overall economic landscape, accounting for a substantial share of the country's natural resources, including minerals, oil and gas, and marine resources (World Bank, 2023).

Population Demographics and Settlement Patterns

Balochistan's population is approximately 14.89 million (Population and Housing Census, 2023), with 69% living in rural areas. The province has a low urbanization rate, with most of the population engaged in agriculture, livestock farming, and informal trades. This rural-based economy implies that many people still rely on traditional methods of agriculture and face difficulties in accessing modern technologies, education, and vocational training.

The main urban center is the provincial capital, Quetta. With an estimated population of 2.59 million, the city serves as a gateway for administrative functions and economic activities. However, Quetta itself suffers, aside from the posh area of the city, from the lack of sufficient infrastructural facilities, including substandard healthcare centres and no access to proper roads and inadequate public transport facilities.

Gwadar is an increasingly important port city that could be a regional trade gateway but is constrained by a lack of infrastructure development, security and environmental issues. Despite these challenges, Gwadar is an important part of the China Pakistan Economic Corridor (CPEC), which can undergo great economic development given proper investment and infrastructural support.

Economic Activities and Major Sectors

Agriculture, mining and natural resource extraction are the main drivers of Balochistan's economy. Agriculture is still the largest means of livelihood of the rural population, with major crops including wheat, barley, dates and fruits. It also has an important role even in livestock farming, particularly in the southern and central regions where sheep, goats and cattle grow. Despite its agricultural potential, the sector is underdeveloped and remains highly vulnerable to climate change and water scarcity.

Table 04 highlights population distribution, participation rates, employment patterns, and sector-specific skill gaps

Table 04: Socio-Economic Indicators of Balochistan

Indicator	Value
Total Population (Balochistan)	14.89 million (69% Rural)
Labour Force Participation Rate	40.4% (64.3% Male; 11.9% Female)
Female Labour Force Participation	11.9%
Agriculture Employment	40.1% (1.38 million)
Non-Agriculture Employment	59.9% (16.1% formal)
Informal Employment	43.8%
Skills Gap in Key Sectors	Severe in mining, agriculture

Table 05 reveals that agriculture, forestry, and fishing dominate Balochistan's labour market with a 40.07% overall share, primarily driven by rural employment that underscores the province's reliance on subsistence and traditional farming practices. In contrast, manufacturing, construction, and wholesale and retail trade each represent a much smaller share, with notable gender imbalances; female participation remains particularly low in sectors such as mining, electricity, and information and communication.

Table 05: Percentage Distribution of Employed Persons Aged 10+ by Major Industry Divisions, Sex, and Area

(2020–21)	All Area	Urban			Rural		
Sector/Activity	Total	Total	Male	Female	Total	Male	Female
Total	100	75.85	63.51	12.34	24.15	23.09	1.06
Agriculture, Forestry and Fishing	40.07	37.93	27.99	9.94	2.14	1.85	0.29
Mining and Quarrying	1.29	1.07	1.07	–	0.22	0.21	–
Manufacturing	6.17	3.89	2.73	1.16	2.29	1.94	0.34
Electricity, Gas, Steam and Air Conditioning Supply	0.25	0.13	0.13	–	0.13	0.13	–
Water Supply; Sewerage, Waste Management and Remediation Activities	0.62	0.39	0.39	–	0.24	0.22	0.02
Construction	9.32	6.43	6.4	0.03	2.89	2.89	–
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	14.38	8.59	8.53	0.06	5.79	5.79	–
Transportation and Storage	7.52	5.23	5.22	0.01	2.29	2.29	–
Accommodation and Food Services Activities	3	2.15	2.14	0.01	0.85	0.85	–
Information and Communication	0.11	0.03	0.03	–	0.08	0.08	–
Financial and Insurance Activities	0.19	0.07	0.07	–	0.12	0.12	–
Real Estate Activities	0.51	0.26	0.26	–	0.25	0.25	–
Professional, Scientific and Technical Activities	0.22	0.07	0.07	–	0.15	0.15	–
Administrative and Support Service Activities	0.61	0.4	0.4	–	0.21	0.21	–
Public Administration and Defence; Compulsory Social Security	6.01	3.1	3.04	0.06	2.91	2.88	0.03
Education	4.48	2.84	2.11	0.73	1.64	1.35	0.29
Human Health and Social Work Activities	1.72	1.22	0.95	0.27	0.5	0.42	0.08
Arts, Entertainment and Recreation	0.09	0.04	0.04	–	0.05	0.05	–
Other Services Activities	3.04	1.76	1.73	0.03	1.28	1.28	–
Activities of households as employers; undifferentiated goods and services producing activities	0.4	0.26	0.21	0.05	0.14	0.14	–
Activities of extraterritorial organizations and bodies	–	–	–	–	–	–	–

Table 05 also highlights the activities of households as employers that account for 0.40% overall and contribute modestly, predominantly in rural areas. The activities of extraterritorial organizations and bodies are negligible. This distribution points to a predominantly rural, agriculture-based economy with significant opportunities for modernizing skills, addressing gender gaps, and diversifying employment through targeted TVET and capacity-building interventions.

Occupational distribution across various major industry divisions in Balochistan for both sexes in 2020–21 (Table 06) shows that agriculture, forestry, and fishing dominate with 40.07%, primarily through skilled agricultural and fishery workers, whereas sectors like mining, manufacturing, and construction contribute modestly to the overall employment mix. Notably, the majority of employment in sectors such as agriculture and wholesale/retail trade is concentrated in lower-skill occupational groups, with minimal representation in managerial or professional roles, highlighting a significant skill gap. In contrast, sectors including public administration, education, and health show a slightly more balanced distribution across higher and lower skill levels.

The table also indicates that the activities of households as employers have a small but notable presence, while extraterritorial organizations and bodies do not significantly contribute. These disparities suggest the need for targeted interventions, especially in traditionally low-skilled sectors, to modernize skills and enhance productivity across Balochistan.

Table 06: Percentage Distribution of Employed Persons 10 Years of Age and Above by Major Industry Division, Occupation Groups

Major Industry Divisions	Total	Managers	Professionals	Technicians and Associate Professionals	Clerical Support Workers	Service and Sales Workers	Skilled Agricultural and Fishery Workers	Craft and Related Trade Workers	Plant and Machine Operators and Assemblers	Elementary Occupations
Both Sexes (All Areas)	100	2.78	4.86	3.66	1.73	19.51	34.27	8.83	7.87	16.5
Agriculture, Forestry & Fishing	40.07	0.02	–	0.06	–	–	34.15	–	0.36	5.48
Mining and Quarrying	1.29	0.24	0.01	0.06	0.01	0.01	–	–	0.61	0.35
Manufacturing	6.17	0.12	0.06	0.02	–	0.03	–	5.28	0.4	0.26
Electricity, Gas, Steam and Air Conditioning Supply	0.25	–	0.04	0.02	0.07	0.03	–	0.08	–	0.02
Water Supply; Sewerage, Waste Management and Remediation Activities	0.62	–	–	0.14	0.02	0.03	–	0.06	0.01	0.34
Construction	9.32	0.23	0.05	0.07	0.03	0.02	–	1.24	0.06	7.61
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	14.38	0.42	0.02	0.5	0.01	11.67	–	1.49	0.01	0.26
Transportation and Storage	7.52	0.03	0.08	0.2	0.1	0.43	–	0.09	5.96	0.63
Accommodation and Food Services Activities	3	0.31	–	0.07	0.02	2.58	–	–	–	0.02
Information and Communication	0.11	–	0.06	–	0.01	0.02	–	–	–	–
Financial and Insurance Activities	0.19	0.06	–	0.07	0.06	–	–	–	–	–

Major Industry Divisions	Total	Managers	Professionals	Technicians and Associate Professionals	Clerical Support Workers	Service and Sales Workers	Skilled Agricultural and Fishery Workers	Craft and Related Trade Workers	Plant and Machine Operators and Assemblers	Elementary Occupations
Real Estate Activities	0.51	–	–	0.49	–	0.01	–	–	–	–
Professional, Scientific and Technical Activities	0.22	0.01	0.14	0.05	0.02	–	–	–	–	–
Administrative and Support Service Activities	0.61	0.25	–	0.03	0.17	0.13	–	0.01	0.01	0.01
Public Administration and Defence; Compulsory Social Security	6.01	0.44	0.33	0.82	0.92	2.77	0.05	0.06	0.14	0.48
Education	4.48	0.58	2.71	0.08	0.19	0.22	0.04	–	0.05	0.6
Human Health and Social Work Activities	1.72	0.06	0.45	0.85	0.11	0.11	–	–	0.06	0.08
Arts, Entertainment and Recreation	0.09	–	0.03	0.02	–	–	–	–	–	0.04
Other Services Activities	3.04	0.02	0.89	0.09	–	1.14	–	0.5	0.15	0.25
Activities of Households as Employers; Undifferentiated Goods & Services Producing Activities	0.4	–	–	–	–	0.3	0.02	–	0.03	0.06
Activities of Extraterritorial Organizations and Bodies	–	–	–	–	–	–	–	–	–	

Construction and infrastructure development have grown substantially, particularly in Quetta and Gwadar, owing to the significant investments under CPEC to link Gwadar Port to China's western regions to achieve economic integration. CPEC is expected to facilitate road networks, industrial zones and logistical hubs. It is helping develop the region's connectivity and improve domestic and international trade. However, construction remains dependent on informal labour and on the whole lacks skilled engineering, architecture and construction management workers.

Balochistan also has vast tourism potential in historical sites and cultural areas, natural landscapes, and coastal areas, but the sector is only developed to an indeterminate level. Overall, tourism is poorly developed because of a lack of security and the unavailability of infrastructure and marketing. Yet, a well utilised tourism sector could offer the possibility of making enough income and generating employment in areas, such as Gwadar, Ziarat and Makran Coastal Highway.

3.2 Sectoral Skill Gap Analysis

New primary data from a skill gap perspective coupled with information from the Balochistan Education Sector Plan (2020–25), the Balochistan Mining and Minerals Development Policy (2019), the Community-Led Local Governance (CLLG) Policy (2023) can enable policymakers to devise solutions based on a more comprehensive skill gap context to better deal with it.

Agriculture and Livestock

Balochistan's rural economy is based on agriculture. However, productivity is low due to traditional farming practices, limited mechanization and inadequate irrigation infrastructure. More than 70–80% of the rural households are engaged in agriculture, yet the yield per hectare is significantly lower than the national average. The most critical skill gaps involve modern agricultural techniques, mechanization, management of irrigation systems, and development of value chains (Table 07).

Table 07: Agricultural Indicators and Skills Needed

Indicator/Aspect	Observation/Value	Skills Needed	Relevant Districts
Rural Household Engagement	70–80% of rural households	Modern agronomy, sustainable farming, mechanization training	Kalat, Zhob, Lasbela
Average Yield per Hectare	0.8 – 1.2 tons (cereals)	Precision agriculture, crop management, soil testing	Zhob, Kalat, Chagai
Irrigation Coverage	40–50% of arable land	Irrigation system design, maintenance, water conservation	Lasbela, Kalat, Zhob

Water Sector

As the province expands efforts in terms of needs related to water supply, sanitation, irrigation, and wastewater management, there is an emerging demand for a skilled workforce equipped to handle traditional and modern water management systems (Table 08). Rapid urbanization, population growth, and the need for climate-resilient infrastructure call for upskilling and reskilling the workforce involved in planning, construction, operation, and maintenance of water services.

To respond to these evolving needs, TVET programmes in Balochistan can play a pivotal role by introducing specialized training for occupations, such as water pump operators, water quality testing technicians, plumbing and sanitation workers, irrigation system technicians, leak detection and repair specialists, and wastewater treatment plant operators. Additionally, short courses on water safety planning, community-based water system management, and modern technologies like Geographic Information System (GIS), Supervisory Control and Data Acquisition (SCADA) systems, and solar-powered pumps can enhance the technical capabilities of both existing and new workers.

It has been stressed that provincial water resources are affected by over-extraction, declining aquifer levels and variable water quality. It studies the rapid groundwater depletion in urban centres, such as Quetta and the uneven urban availability in rural areas. Critical Skills in this sector include groundwater modelling, water quality testing, sustainable irrigation practices, and water resource management.

By aligning TVET offerings with the growing demands of the water sector, the province can build a cadre of skilled professionals who can contribute to sustainable water resource management, infrastructure resilience, and improved service delivery across urban and rural areas of Balochistan. This could also open economic opportunities for youth and marginalized groups through targeted skilling and employment in a sector that is central to public health, agriculture, and climate adaptation.

Table 08: Water Sector Indicators and Skills Needed

Indicator/Aspect	Observation/Value	Skills Needed	Relevant Districts
Depth to Water Table (DTW)	10–91 meters (variable by district)	Groundwater monitoring, aquifer recharge modeling, GIS mapping	Quetta, Mastung, Khuzdar
Water Quality (EC & TDS)	Fresh (<1.5 dS/m) in most areas; hotspots up to 4.8 dS/m	Water quality analysis, chemical testing, environmental sampling	Quetta, Zhob, Pishin
Groundwater Recharge Rate	~10.7 MAF (comparable basins)	Hydrological modeling, irrigation planning, sustainable water use strategies	Quetta, Khuzdar, Lasbela

Energy Sector

The energy sector, particularly renewable energy, has been a primary catalyst for the economic growth of Balochistan in recent years. The region's high solar insolation and wind speed have significant solar and wind energy potential. Nevertheless, it faces constraints to achieving benefits related to renewable energy resources due to lack of local capacity to use these technologies. Empty positions of technical nature include roles for installation of solar panels and wind turbines, energy efficiency practices and turbine maintenance. To support infrastructure expansion and energy transition, investments are increasing under CPEC for which a trained workforce is required. Table 09 shows the energy sector indicators and skills needed.

Table 09: Energy Sector Indicators and Skills Needed

Indicator/Aspect	Observation/Value	Skills Needed	Relevant Districts
Renewable Energy Training Centers	<5 centers statewide in Balochistan	Technical training in solar and wind energy systems, diagnostics, maintenance	Quetta, Gwadar, Turbat
Technical Skill Level in Energy	<20% workforce with formal technical certification	Vocational training in renewable energy, energy efficiency, equipment handling	Quetta, Gwadar
Investment in Renewable Energy	Emerging; part of CPEC initiatives	Project management, energy audit, installation, troubleshooting	Gwadar, Quetta

Mines and Mineral Development

With extensive mineral reserves, Balochistan's mining sector is stifled by old regulatory laws, lack of infrastructure and skill deficits. The Sector Plan for Mines (2019) identifies the necessity to improve using modernized mining and training in mining technology, environmental management, and occupational safety. Chagai and Kharan districts especially face a dearth of specialized training required to facilitate extraction of copper, gold and other minerals safely and productively. Table 10 shows indicators of and skills needed in this sector.

Table 10: Mineral Sector Indicators and Skills Needed

Indicator/Aspect	Observation/Value	Skills Needed	Relevant Districts
Mineral Reserves (e.g., Saindak)	High (e.g., 412 million tonnes of copper/gold)	Advanced mining technology, safety management, environmental compliance	Chagai, Kharan
Production Efficiency	Low due to outdated practices	Modern extraction methods, process automation, quality control	Chagai, Loralai
Regulatory Framework	Fragmented and outdated	Regulatory compliance training, licensing management skills	Across mining clusters

Education and TVET

To minimize the human capital/skills gap in province, the Balochistan Education Sector Plan (2020–25) emphasizes that education, including TVET, needs to be strengthened. Although the enrollment rate in general education has continued to grow, the TVET sector is largely underdeveloped, and most institutions provide education that is neither market-relevant nor up-to-date in modern technical skills. By and large, there is a shortfall in vocational training programmes targeted sectors like water management, renewable energy and mining. Also, there are severe gender inequalities in TVET enrollment, especially in technical trades, accounting for widespread inequalities in employment outcomes.

Table 11: TVET Education Key Indicators and Skills Needed

Indicator/Aspect	Observation/Value	Skills Needed	Relevant Districts
Number of TVET Institutions	151 (combined public and private) in Balochistan	Curriculum reform, competency-based training, industry linkages	Quetta, Lasbela, Zhob
TVET Enrollment (Share)	<5% of national TVET enrollment	Specialized training in water, mining, renewable energy, ICT	Quetta, Gwadar, Turbat
Gender Disparity in TVET	Female participation <34% overall	Gender-sensitive curriculum, flexible scheduling, mentorship	Across districts, notably in Quetta and rural areas

The Balochistan Education Sector Plan (2020–25) emphasizes that strengthening education, including TVET, is essential to meet the province's human capital needs. Very few TVET institutes are offering market-relevant training in modern technical skills. There is a significant deficit in vocational training programmes that address the specific needs of sectors such as water management, renewable energy, and mining. Furthermore, gender disparities in TVET enrollment are stark; female participation is particularly low in technical trades, contributing to broader inequities in employment outcomes.

Health Sector

The health sector in Balochistan is one of the most important for the development of the province, although it is remarkably under-resourced and has sub-par delivery of quality healthcare services. The province is a large geographic area with low population density and largely rural settlement orientation, leading to uneven distribution of health infrastructure. Basic health services are not available to many rural districts, and urban centres like Quetta are overburdened and workforce deficient.

Health outcomes in Balochistan are below the national pace. The health system of the province has high maternal and infant mortality rates, low immunization coverage and extensive reliance mainly on out-of-pocket expenditures. In addition, there is a gap in the health workforce skills because there is a shortage of trained nurses, paramedics, laboratory technicians and public health managers. It is critical to fill these gaps to achieve the health outcomes and progress towards the sustainable development goals (SDGs) and overall human development.

Table 12: Health Sector Indicators, Skill Needs, and Relevant Districts

Indicator/Aspect	Observation/Value	Skills Needed	Relevant Districts
Health Infrastructure Coverage	Limited primary health centers; uneven distribution in rural areas	Facility management, basic clinical skills, health infrastructure planning	Rural districts (e.g., Kalat, Zhob) & Quetta
Healthcare Workforce Density	Low ratio (e.g., <1 physician per 10,000 people)	Medical, nursing, and allied health training; continuous professional development	Quetta, Turbat, Nushki
Maternal and Infant Mortality Rates	Higher than the national average	Midwifery, emergency obstetric care, community health training	Predominantly rural districts
Out-of-Pocket Health Expenditure	High, indicating weak public health financing	Health financing, health management, policy and regulatory training	Across Balochistan
Immunization and Preventive Services	Low coverage in remote areas	Public health education, community mobilization, preventive healthcare	Rural areas (e.g., Chagai, Loralai)

Many rural areas in Balochistan lack basic health infrastructure, such as primary health centers and diagnostic facilities. Despite being better served by the urban center, overcrowding and lack of maintenance of existing centers are problems. Healthcare professionals in the province have a low ratio per capita compared to the national benchmark. It is characterized by an acute shortage of trained personnel (including nurses, community health workers, and specialized technicians). Cultural and socioeconomic factors limit women's access to healthcare services. Additionally, female participation in the health workforce is low, further restricting service delivery, especially in rural communities.

Existing vocational training programmes in the health sector are often outdated and misaligned with modern medical practices and technological advancements. This misalignment affects the quality of care and contributes to poor health outcomes. To better understand the current state and needed interventions in the health sector, the following table summarizes key health indicators, the skills required to address these gaps, and the districts where challenges are most pronounced.

Cross-Sectoral Integration and Emerging Trends

District profiling must also capture emerging industries and cross-sectoral themes pivotal for future growth. Urban centers such as Gwadar are witnessing rapid development due to CPEC investments, leading to an increased demand for skills in ICT, renewable energy, and modern construction. Similarly, districts with a predominant agricultural base, such as Kalat and Zhob, require the integration of modern irrigation technologies and sustainable agriculture practices into their vocational training programmes.

The integrated approach advocated in the Sector plan and Community-led Local Governance Policy 2023 (CLLG Policy 2023) emphasizes the need for standardized curricula that can be adapted across sectors. This ensures that skills - technical, socio-behavioral, or cognitive - are aligned with the needs of traditional and emerging industries. Key performance indicators, such as labour force participation rates, enrollment figures, and yield per hectare, have been used to measure skill gaps and workforce readiness. For example, the indicator "mechanization rate in agriculture" (below 20%) directly points to the need for modern agricultural training, while "formal employment in the water sector" (ranging from 40–50% in urban areas) highlights the necessity for specialized water management courses.

3.3 Labour Market Analysis for Selected Districts

Incorporating insights from the Labour Force Survey 2020-21, this section revisits Balochistan's districts' economic and labour market overview. It categorizes economic sectors and provides detailed district-level data on sectoral employment, workforce characteristics, and industry-specific demand. To better understand local economic activity, this study draws on recent data from official surveys and census reports, ensuring relevance for policymaking for interventions on TVET alignment.

Table 13 shows significant variations in the labour market across districts in Balochistan signaling different skill requirements and training priorities. For example, Quetta exhibits a very high working-age population of 1,705,000, with a labour force of 587,300 and employment predominantly in non-agricultural sectors. This includes only 7.1% employed in agriculture, 23.8% in industry, and a dominant 69.1% in services. This suggests that urban Quetta requires advanced skills in the service sector (such as IT, finance, customer service, and administrative skills) along with technical and managerial training to support industrial activities. In contrast, districts like Kalat have a working-age population of 158,000, but have a much higher share of employment in agriculture (59.0%). This highlights a reliance on traditional economic activities necessitating modern agricultural training, mechanization, and value-added processing skills to enhance productivity and competitiveness.

Similarly, Killa Abdullah, with a working-age population of 546,000 of which about 186,900 is in the labour force. This shows a relatively balanced distribution with around 20.7% in agriculture and 18.3% in industry. Tailored TVET programmes should focus on both agricultural innovation and basic industrial skills.

District Lasbela, with a working age population of about 215,000, reflects an intermediate profile where the service sector plays a significant role, 61.1% in services for Killa Abdullah versus 40.3% for Lasbela, indicating that skill development programmes need to be diversified to cover both soft skills (for customer-facing roles in services) and specialized technical skills (for industrial and agricultural operations). Furthermore, the refined participation rates and employment-to-population ratios vary across districts, with higher ratios observed in more urbanized districts like Chagai than more rural settings, implying that the scope and design of TVET initiatives must be responsive to the local contexts, e.g., urban areas may benefit from programmes that bridge the gap between academic qualifications and industry-specific competencies, while rural areas might require capacity-building in modern agricultural techniques, sustainable resource management, and basic industrial skills.

These differences highlight the imperative for designing a district-specific TVET and skills gap approach in Balochistan aligned with the dominant sector and the peculiar economic realities of different districts, engendering inclusive growth and development.

Table 13: District-Wise Labour Market Indicators and Sectoral Employment Distribution

No.	Indicator	Quetta	Killa Abdullah	Lasbela	Gawadar	Chagai	Kalat	Zhob
1	Working Age Population (000)	1705	546	459	212	212	158	215
2	Labour Force (000)	587.3	186.9	137.1	79.3	79.3	63.4	85.8
3	Employed (000)	568.1	173	134.9	75.1	75.1	59.6	80.7
4	Unemployed (000)	19.2	13.9	2.3	4.1	4.1	3.8	5.1
5	Refined Participation Rate (%)	34.5	34.2	29.8	37.3	37.3	40.2	40
6	Unemployment Rate (%)	3.3	7.4	1.7	5.2	5.2	6	5.9
7	Employment to Population Ratio (%)	33.3	31.7	29.4	35.4	35.4	37.8	37.6
8	Employment by Sector – Agriculture (%)	7.1	20.7	19.6	36.5	36.5	59	33.8
9	Employment by Sector – Industry (%)	23.8	18.3	25.6	19	19	14.3	25.9
10	Employment by Sector – Services (%)	69.1	61.1	54.8	44.5	44.5	26.8	40.3

According to the World Bank (2019), the disconnect between higher education, training, and labour market outcome is more persistent in underserved regions. Sociocultural barriers and infrastructural problems limit access to foundational and vocational education in Balochistan. Only 2.8% of the Pakistani workforce utilizes computers at the workplace, which implies that the shortfall in digital abilities is even higher in provinces such as Balochistan (Tanaka, 2018).

The overlapping mandates of the provincial TEVTAs, boards of Technical Education and private training providers show fragmentation in the national TVET landscape in Pakistan. The result of this misalignment is that it becomes inefficient, duplicated, and confusing to the employers and the learners/qualifications seekers. On the other hand, Balochistan lacks a functional Board of Technical Education or Trade Testing Board (TTB) and therefore there is a negligible functional vocational training ecosystem that is inflexible as it is unable to leverage older curricula on the one hand or male private sector linkages on the other. Furthermore, data shows that absence of structured Recognition of Prior Learning (RPL) mechanisms denies millions of informal workers, mining, and agriculture, access to certified/transferable skills.

There is a need for shifting from supply-driven models to demand-responsive, industry-linked models that consider the needs of local industries and global value chains (Weber and Langbein, 2018). Furthermore, the Pakistan Skills Assessment for Economic Growth (2019) report notes that TVET graduates face weak labour market outcomes due to limited industry exposure despite multiple pilot programmes initiated for the purpose. Tracer studies in Punjab and Sindh revealed that only 27-39% of graduates from public training institutions found wage employment. However, programmes like the Punjab Vocational Training Council (PVTC) helped bring about better outcomes through structured industry linkages and output-focused training modules. Replicating such models in Balochistan could bridge the region's employment and productivity gaps.

Quetta - Digital Services, Urban Infrastructure, and Construction

As the provincial capital, Quetta serves as the hub of Balochistan's urban economy, with dominant contributions from the services sector, public administration, and construction. Ongoing infrastructure expansion driven by CPEC and other urban projects has created sustained demand for civil engineers, construction managers, and project supervisors. However, the city faces a notable skills shortage in construction project management, civil engineering, and architecture, with local training institutes struggling to meet market needs.

On the other hand, Quetta is experiencing a sharp rise in demand for IT professionals, driven by the

expansion of the digital economy and e-commerce platforms. Skills like computer hardware support, e-commerce operations, and English language proficiency (e.g., IELTS preparation) are in short supply. Yet, the current TVET infrastructure lacks the capacity to deliver up-to-date training in software development, data analytics, and digital marketing. To address these gaps, TVET programmes must prioritize market-aligned construction and digital skills training to ensure an effective supply of qualified professionals.

Gwadar - Port Management, Digital Logistics, and Tourism

Strategically located on the Arabian Sea, Gwadar plays a pivotal role in CPEC and regional maritime trade. While port development and related infrastructure have progressed significantly, skill shortages persist in logistics, port operations, supply chain management, and digital trade facilitation. The growing need for trained Amazon Virtual Assistants and administrative support professionals also indicates the emergence of a digital services economy around the port.

Moreover, Gwadar's coastal beauty and cultural heritage offer substantial tourism potential. However, a lack of skilled personnel in tourism management, hospitality services, and tour operations remains a major constraint in developing the tourism industry. There is a growing demand for hotel staff, travel coordinators, and tourism marketers, but training facilities have yet to meet these labour market demand. Tailored TVET programmes focusing on digital logistics, port operations, and sustainable tourism are urgently needed to unlock Gwadar's economic potential.

Lasbela - Agro-processing, Fashion, and Personal Care Services

Lasbela's economy is predominantly agricultural, supported by farming, livestock, and small-scale industries. However, limited mechanization, outdated farming practices, and poor value addition have restricted their growth. Additionally, a noticeable gap exists in trades such as fashion design, stitching, and beauty services – fields that are increasing in demand within semi-urban and peri-urban markets in the district.

TVET interventions in Lasbela should combine modern agriculture and agro-business management with skill-based programmes in garment production, stitching, and beauty care. This dual-sector approach would modernize agriculture and diversify employment opportunities, especially for youth and women.

Kalat - Livestock, Handicrafts, and Traditional Agriculture

Agriculture and livestock dominate Kalat's economy, yet both sectors rely heavily on traditional techniques. Skills gaps exist in animal health, feed management, and yield-enhancing practices. The region is known for traditional embroidery and textile work but lacks formal training support for hand embroidery, sewing, and micro-enterprise development.

To address these gaps, TVET programmes in Kalat should focus on livestock management, disease control, and modern irrigation techniques while also formalizing craft-based skills like embroidery and tailoring. These interventions can enhance rural incomes and promote value chain integration for local products.

Chagai - Mining Technology and Digital Trade

Chagai is one of Balochistan's most mineral-rich districts, known for its abundant copper, gold, and coal deposits. Despite its resource potential, the district faces a significant skills shortage in mining operations, machinery handling, safety protocols, and environmental management. Moreover, as remote regions open to digital services, skills like e-commerce and computer hardware maintenance are also in growing demand.

TVET programmes in Chagai should expand to include hands-on training in mining technology, mineral processing, and safety compliance. Parallel training in e-commerce and IT hardware can help diversify job options in this remote but economically strategic district.

Zhob - Agriculture, Livestock, and Agritech

Zhob's economy is grounded in agriculture and livestock that remains largely under-mechanized and low in productivity. Skills gaps exist in veterinary services, livestock health, and modern agricultural techniques, while demand for IT and agritech solutions is gradually increasing. There is also limited capacity for processing and packaging agricultural products.

TVET training in Zhob should prioritize modern farming, veterinary services, and agro-based enterprise development. Programmes that combine traditional agricultural practices with digital literacy and basic IT support could help bridge rural-urban workforce divides and help support inclusive growth.

Killa Abdullah - Agriculture, Livestock, and Informal Services

Killa Abdullah's economy is predominantly rural, with the agriculture and services sectors employing a significant portion of its workforce, 20.7% and 61.1%, respectively. Despite its sizeable labour force of over 186,000 individuals, the district faces a relatively high unemployment rate of 7.4%, indicating substantial underutilization of human capital. The economic structure is characterized by traditional farming practices, small-scale livestock rearing, and informal service sector activities such as retail, stitching, and beauty industry-related work, particularly among women and youth.

There is a stark need to modernize and professionalize skill development in Killa Abdullah through targeted TVET programmes. Priority areas include agricultural extension services, livestock health and management, and microenterprise skills relevant to informal services. Trades such as stitching, embroidery, retail sales, and beauty care represent immediate opportunities for self-employment and local enterprise growth. Introducing district-focused TVET interventions in these areas will help bridge the skills gap, reduce unemployment, and empower marginalized groups, particularly women, with marketable, sustainable livelihoods. Table 14 provides skill gaps and occupational demands and proposes TVET programmes based on secondary data analysis.

Table 14: District-Specific Skill Gaps and Occupational Demand

District	Skill Gap	Occupational Demand	Proposed TVET Programmes
Quetta	E-commerce, IT support, English language	E-commerce specialists, Hardware technicians, IELTS instructors	E-commerce training, IT support technician programmes, English language training
Gwadar	Virtual assistance, Logistics support	Amazon VAs, Office assistants	Amazon VA training, Digital logistics and admin support
Lasbela	Fashion design, Stitching, Beauty services	Fashion designers, Stitchers, Beauticians	Fashion design & dressmaking, Tailoring, Beauty and personal care
Kalat	Hand embroidery, Sewing & design	Embroiderers, Sewing workers	Hand embroidery, Sewing and textile crafts
Chagai	Computer hardware, E-commerce	Hardware technicians, E-commerce workers	Computer hardware repair, Online selling and marketing
Zhob	Agri-tech & IT	Agri-tech field assistants, IT support staff	Agri-tech and digital literacy combined training
Killa Abdullah	Agriculture, Livestock, Informal services (retail, stitching, beauty)	Farmers, Livestock handlers, Sales assistants, Stitchers, Beauticians	Agricultural extension, Livestock training, Retail sales, Sewing & embroidery, Beauty

3.4 Gender and Inclusion Considerations

The Labour Force Survey 2020-21 gives a clear picture of gender participation, segments of informal labour and the educational background of workers on district-level. Specific to Balochistan, the gender gap continues widen, with working women below the average national rate – around 13%, and well below among the state's rural districts. As far as the rural labour force goes, a large part of it is informal labour without proper education or training and works predominantly in districts like Zhob and Kalat. The chances of formal sector employment are mostly offered by Quetta and Gwadar in trades such as construction, port operations, and services. Skill mismatches remain a pressing issue, particularly in construction and engineering, where workers often lack formal qualifications.

Low female labour force participation is one of the biggest challenges of Balochistan, especially in rural areas. The patriarchal culture runs deep in the province with a number of gender-based constraints that limit women in terms of education, employment and skill development. According to the Labour Force Survey 2020-21 and Population and Housing Census 2023, female labour force participation in

Balochistan is significantly lower than the national average, which is below 15% in rural districts. However, this limited participation stems from society's restrictive beliefs (often, women are confined to domestic activities), limited access to education and training, and negative views on workplace safety.

Table 15: Gender Distribution in Labour Market by Sectors (%)

Sector/Activity	Total	Male	Female
Total	100	86.6	13.4
Agriculture, Forestry and Fishing	40.07	29.84	10.23
Mining and Quarrying	1.29	1.29	–
Manufacturing	6.17	4.67	1.5
Electricity, Gas, Steam and Air Conditioning Supply	0.25	0.25	–
Water Supply; Sewerage, Waste Management and Remediation Activities	0.62	0.61	0.02
Construction	9.32	9.29	0.03
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	14.38	14.32	0.06
Transportation and Storage	7.52	7.51	0.01
Accommodation and Food Services Activities	3	2.99	0.01
Information and Communication	0.11	0.11	–
Financial and Insurance Activities	0.19	0.19	–
Real Estate Activities	0.51	0.51	–
Professional, Scientific and Technical Activities	0.22	0.22	–
Administrative and Support Service Activities	0.61	0.61	–
Public Administration and Defence; Compulsory Social Security	6.01	5.92	0.09
Education	4.48	3.46	1.02
Human Health and Social Work Activities	1.72	1.37	0.34
Arts, Entertainment and Recreation	0.09	0.09	–
Other Services Activities	3.04	03	0.03
Activities of households as employers; undifferentiated goods and services producing activities	0.4	0.36	0.05
Activities of extraterritorial organizations and bodies	–	–	–

It is also important to recognize and attend to the needs of other 'marginalized' groups of workers, such as transgender people and the disabled. However, these groups suffer from multiple layers of discrimination, which do not allow them to have equal access to education, training or employment opportunities.

3.5 TVET and Skills Development Landscape

TVET is crucial to solving the Balochistan labour market challenges. Although rich in natural resources and thus having great potential for economic growth, the province faces serious problems related to skills mismatch, lack of training access, and outdated curricula. More specifically, there is a requirement for specialized training to meet the needs of growing sectors like renewable energy, mining, and construction. This section describes the current state of TVET infrastructure, the issues and opportunities in the sector, and the need to establish Centres of Excellence for skills development in key urban areas.

TVET Landscape in Balochistan

Most of the TVET sector in Balochistan is supported by government-run polytechnic colleges, vocational training centres and private technical institutes. Many existing TVET institutions are not in consonance with the present market demands in sectors such as mining, construction, tourism and IT.

BTEVTA oversees TVET institutions in the province. The quality of trainers and infrastructure is seen as a bottleneck to optimally imparting the required skills. Moreover, issues of gender disparity in TVET participation and low enrolment rates in technical fields continue to hamper development of the sector.

Challenges in the TVET Sector

The TVET sector in Balochistan faces a range of structural and operational challenges that limit its effectiveness in preparing a skilled workforce aligned with the province's evolving economic needs.

Key issues include the following:

- Many TVET programmes fail to provide skills needed in emerging sectors such as mining, renewable energy and port management. In addition, there is a dire need for trained construction managers and engineers, while the programmes to develop these generally remain lacking.

- Most existing training centres lack modern equipment and up-to-date curricula. This is especially a big challenge in rural districts, as youth have limited access to vocational training.

- Women's participation in the TVET sector, especially in rural districts where cultural norms limit female mobility and accessibility of education and training, is also disproportionately lower. There is also a shortage of gender-sensitive training facilities and programmes.

- Such a shortage of skilled trainers in specialized fields means that the quality of training is affected. For instance, mining or solar energy installation are highly demanded while many TVET institutions struggle to get qualified instructors.

- There is a poor linkage between industry and institutions. Skills training remains a challenge without strong collaboration between TVET institutions and local industries as the training provided is not always aligned with labour market needs.

Need for Centres of Excellence for Skills Development

In the light of the growing need to prepare for future skill demand for Balochistan as a logistics hub under CPEC, it is of utmost importance to establish Centres of Excellence (CoEs) for Skills Development in regional urban centers like Quetta, Gwadar, Turbat and Khuzdar. These CoEs should be designed in a Competency-Based Training and Assessment (CBT&A) framework that equips the youth with practical and demonstrable skills. Integrating the National Skills Information System (NSIS) run by NAVTTC help ensure real-time labour market matching and dynamic curriculum alignment.

Establishing CoEs in urban centres is a key solution to these challenges. The CoEs can focus on providing the latest skills and relevant qualifications in high-demand areas such as mining, renewable energy, construction and agriculture. It may perform the following key functions:

- Advanced training programmes would be offered by the CoEs that meet the benchmark of industry standards. The local mining or renewable energy CoE can cover training in mineral extraction, geology, and mining safety, as in the case of mining CoE, as well as solar panel installation, wind energy, and energy management in the context of renewable energy CoE.

- It would enhance partnerships with industries, and the curricula will be designed to meet its current and forthcoming needs. It would also make apprenticeships and internship programmes possible, where the trainees may be equipped with hands-on practical experience.

- Modern training facilities, such as state-of-the-art machinery, laboratories, and simulation tools, would be included as part of a CoE, equipped with high-quality practical training given to the students.

- In this case, the CoEs can include gender-sensitive initiatives - women-only training programmes or flexible learning schedules - to ensure that women from rural areas get equal opportunities to develop skills.

- Moreover, the training centres could become centres for innovation and research in other sectors, such as sustainable agriculture, renewable energy and mining technologies and thus contribute to economic diversification.

4. FINDINGS AND ANALYSIS OF SURVEY DATA

4.1 Size-Wise Distribution of Establishment

Figure 2 illustrates the distribution of establishments in Balochistan by size, categorized into micro (fewer than 10 persons), small (10–99 persons), medium (100–249 persons), and large (250+ persons) enterprises. The data reveals that small enterprises dominate the picture, constituting 59% of the total establishments, underscoring their pivotal role in Balochistan's economy. At 28%, micro-enterprises follow small enterprises further highlighting the prevalence of small-scale economic activity. In contrast, medium-sized enterprises constitute only 10%, while large enterprises account for only 3%. A mere 13% in total, the limited presence of medium and large enterprises indicates structural challenges, which reflect deep-rooted constraints such as limited access to finance, insufficient value chain integration, regulatory bottlenecks, and gaps in workforce skills that hinder the growth and scalability of enterprises in the province.

Figure 2: Distribution of Establishments based on their Size (%)
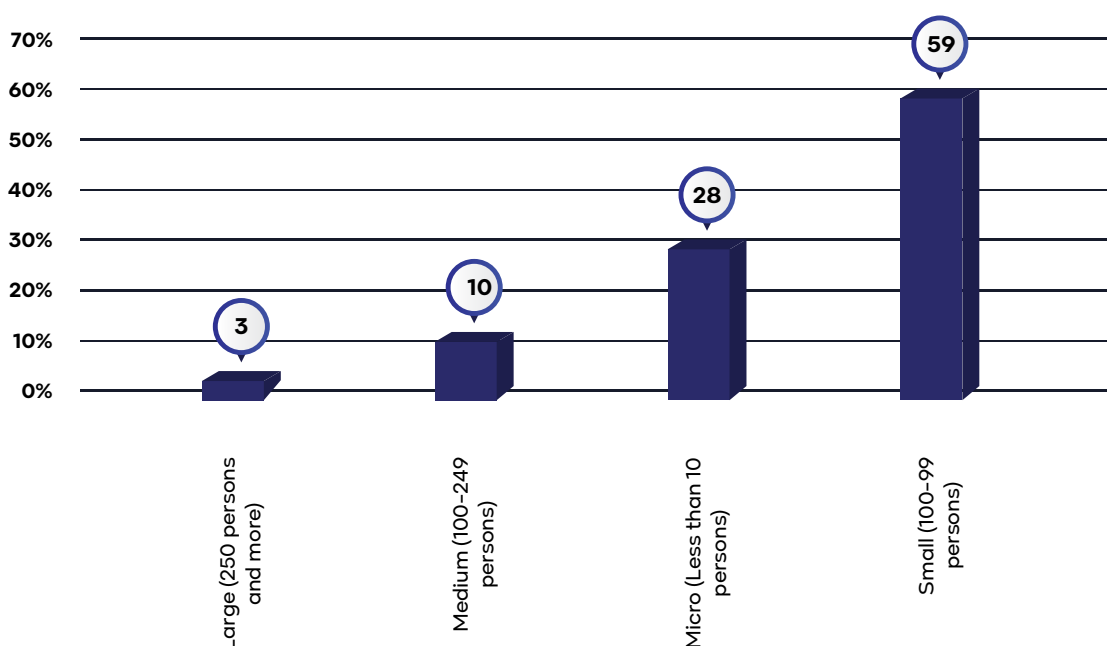
4.2 Sector-Wise Distribution of Establishments

Figure 3 presents the sector-wise distribution of industries in Balochistan, with the highest distribution in Manufacturing (14%), followed closely by Allied Health (13%), Mining (12%), and Construction (12%). These sectors collectively form the backbone of Balochistan's industrial landscape. However, despite their significance, these industries face persistent skill shortages, particularly in specialized technical roles, industrial machinery operations, and modern construction techniques.

Hospitality and Tourism (8%) and Agriculture, Forestry, and Fishing (8%) are also significant contributors, underscoring their role in employment and local livelihoods. Emerging sectors such as Renewable Energy (6%), Automobile (6%), and Water (6%) indicate a gradual shift towards diversification. However, it seems that the lack of specialized training programmes in solar and wind energy technologies, automotive maintenance, and water resource management poses a challenge to sectoral expansion. On the lower end, Printing and Packaging (5%) and other services (3%) reflect smaller contributions to industrial activity but still play an essential role in broadly supporting the economy. The handicraft sector (6%), though modest in size, remains a critical source of income for local artisans. However, it also indicates the absence of formal vocational training, limiting its potential for quality improvement, market access, and export competitiveness.

Sector-wise distribution underscores the urgent need for demand-driven skill development programmes. TVET institutions must tailor their training courses to match industry requirements, particularly in Manufacturing, Allied Health, Mining, and Construction, which have the highest industrial representation. Expanding technical education in Renewable Energy, Tourism, and Agriculture will also be crucial for equipping the workforce with the necessary skills for emerging job opportunities. Moreover, strengthening industry-academia linkages and incentivizing apprenticeships can help bridge the skill gap, ensuring that workforce development aligns with Balochistan's evolving industrial landscape.

Figure 3: Sector-wise Distribution of Establishments
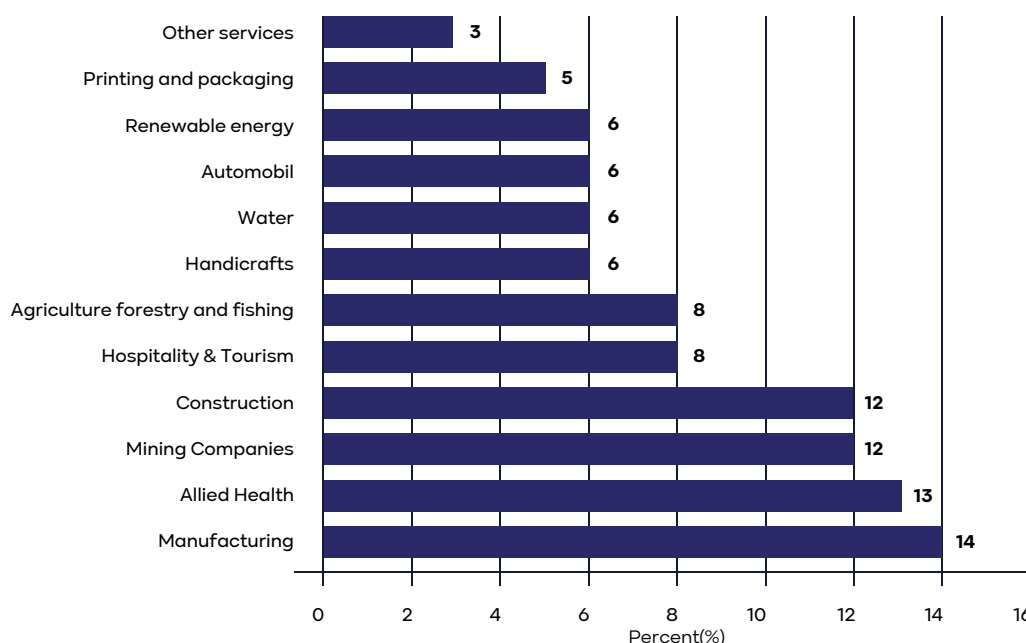
4.3 Annual Skilled Workforce Demand and Supply

Figure 4 highlights the significant disparity that exists between Balochistan's demand and supply of skilled workers. The annual demand for skilled labour stands at 95,465, while the available supply is only 23,163, leaving a substantial gap of 95,465 workers – 75.7%. This severe imbalance has immediate implications. This 3:1 demand-supply ratio underscores the critical need for strengthening vocational education and training programmes to bridge the gap and align the workforce with industry requirements. Key sectors such as renewable energy, tourism, and agriculture require specialized skills, yet the current training programmes do not adequately address these areas. This calls for a more dynamic and responsive skills development framework that focuses on market-driven training and rapid upskilling initiatives. Without necessary intervention, the province will continue to face challenges towards bridging the gap across multiple sectors, limiting its economic growth and industrial expansion.

To address the skilled labour shortage, strategic interventions should focus on three key areas:

1. modernizing TVET curricula to align with industry needs,
2. implementing accelerated certification programmes for priority skills, and
3. fostering collaborative partnerships between educational institutions and employers.

Encouraging private sector participation in workforce development through apprenticeships and on-the-job training could also facilitate bridging this gap, achieving employment sustainability and robust economic growth across Balochistan.

Figure 4: Annual Skilled Workforce Demand and Supply
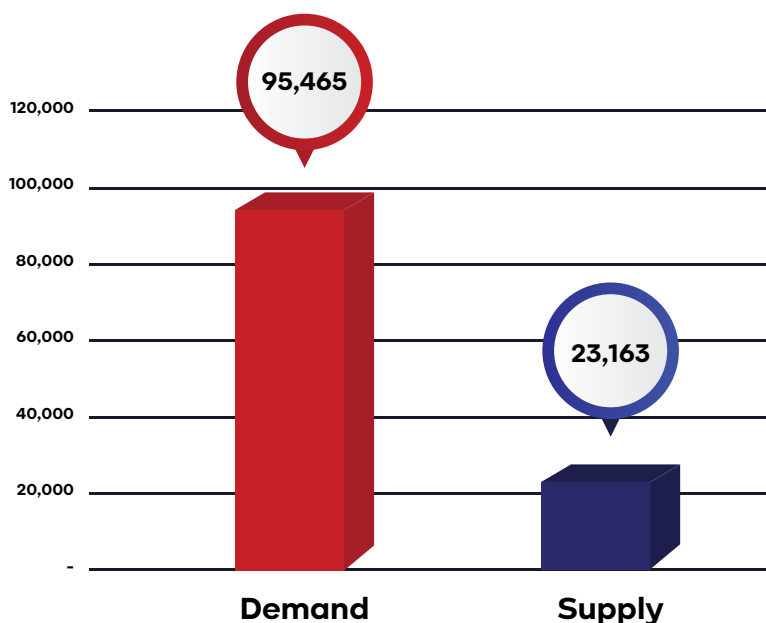
4.4 Sector-Wise Skilled Workforce Demand

As shown in Figure 5, the sector-wise skilled workforce demand highlights varying levels of labour requirements across different industries in Balochistan. The Manufacturing sector has the highest demand, requiring 20,421 skilled workers, followed by Allied Health (15,018) and Renewable Energy (13,052). This indicates that industrial production and healthcare services are among the most labour-intensive sectors, necessitating targeted vocational training in these to meet industry-specific skills needs.

Construction (11,213) and Hospitality and Tourism (9,379) also exhibit strong workforce demand, emphasizing the need for skilled labour in infrastructure development and service-oriented professions. Given Balochistan's potential for tourism, investment in hospitality training could create employment opportunities and contribute to economic diversification. Similarly, high demand in the construction sector is reflective of the development work on infrastructure projects that need a steady supply of skilled workers, such as electricians, plumbers, and masons.

Figure 5: Sector-wise Skilled Workforce Demand in Balochistan
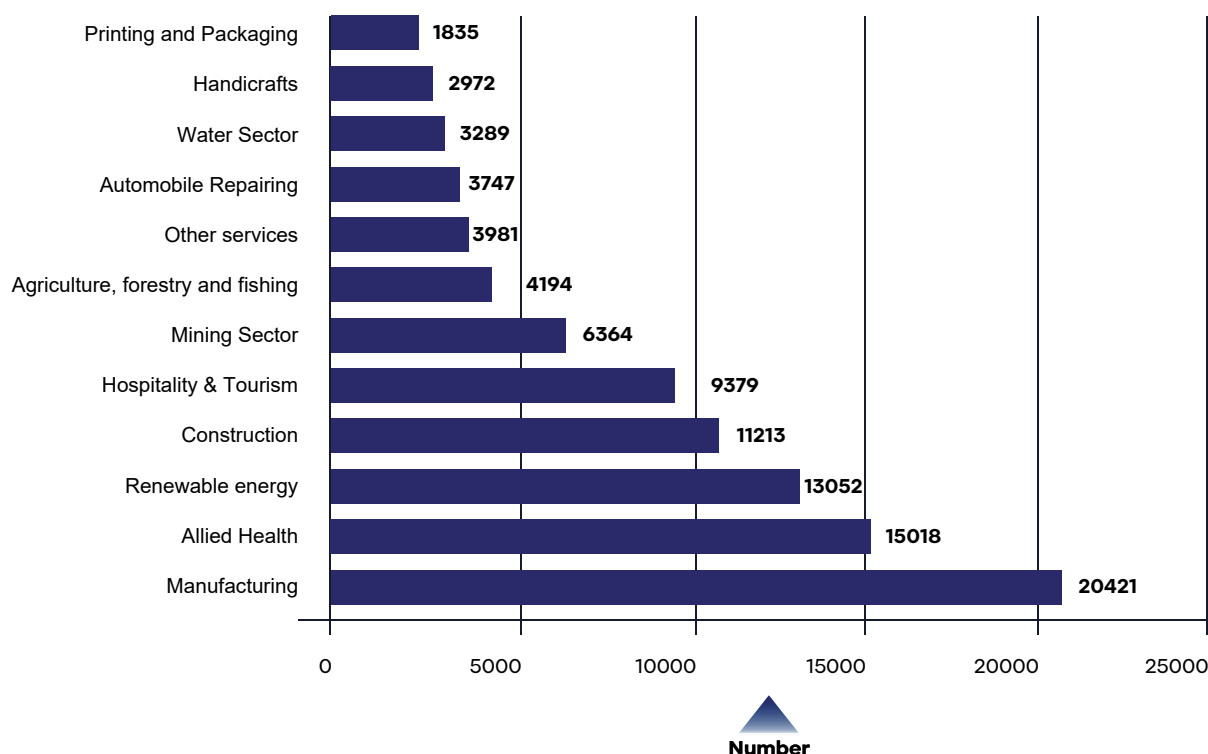
Despite their apparent moderate demand, Mining (6,364) and Agriculture, Forestry & Fishing (4,194) remain crucial to Balochistan's economic framework. The region's rich mineral resources call for specialized workforce training in extraction, processing, and safety standards. On the other hand, Agriculture consistently remains a traditional employment source but lacks due to modernization efforts and mechanization under the changing skill requirement paradigms. Relatively lower demand has been observed in sectors like Printing & Packaging (1,835), Handicrafts (2,972), and Automobile Repairing (3,747). However, these sectors offer niche employment opportunities and can benefit from targeted skill enhancement programmes. Aligning training curricula with sector-specific demands will ensure that workforce is equipped with relevant and future-ready skills, ultimately contributing to the province's socioeconomic development.

4.5 Gender-wise Skilled Workforce Demand at Sectoral Level

The figures on sector and gender-wise skilled workforce demand reveal a significant gender disparity in employment opportunities across various industries in Balochistan. Overall, male workforce demand (77,775) far exceeds that of females (17,690), highlighting the prevalent gender gap in labour market participation (Table 16). The Manufacturing sector exhibits the highest demand for skilled workers, with 20,767 positions, of which only 3,229 are allocated to females. Similarly, the construction and mining sectors remain overwhelmingly male-dominated, with minimal female representation, primarily due to the physically intensive nature of these jobs and societal norms restricting female workforce participation in these fields.

Table 16: Gender-wise Skilled Workforce Demand at Sectoral Level

Sector	Male	Female	Total
Agri-business	4,194	-	4,194
Allied Health	8,422	6,994	15,416
Automobile Repairing	3,349	-	3,349
Construction	10,553	660	11,213
Handicrafts	1,500	1,472	2,972
Hospitality & Tourism	7,400	1,979	9,379
Manufacturing	17,538	3,229	20,767
Mining Sector	6,018	-	6,018
Other services (IT and Informal Sector)	2,819	1,162	3,981
Printing and Packaging	1,559	276	1,835
Energy	11,617	1,435	13,052
Water Sector	2,806	483	3,289
Grand Total	**77,775**	**17,690**	**95,465**

Allied Health stands out as the most inclusive sector with a relatively balanced demand for both genders - 8,422 for males and 6,994 for females - reflecting the growing need for healthcare professionals, including nurses, technicians, and medical assistants. Hospitality & Tourism (9,379 total) and Handicrafts (2,972 total) also provide notable opportunities for female employment, although male demand still surpasses female demand in both cases. In contrast, sectors such as renewable energy (referred to as energy in the table, with 13,052 total demand) show a stark gender imbalance, with only 1,435 positions for women. This reflects the limited female participation in technical and engineering roles like solar panel installation and energy management. Likewise, fields such as agribusiness (4,194), automobile repairing (3,349), and mining (6,018) have no female workforce demand, reinforcing deep-rooted gender trends in the labour market.

Expanding vocational training opportunities for women in emerging sectors, particularly in renewable energy, hospitality, and allied health, can play a crucial role in bridging the skill gap and promoting economic inclusivity.

4.6 Trade-Wise Skilled Workforce Demand

The provincial labour market exhibits a high demand for skilled professionals across various trades, with notable differences in the required workforce numbers. Electricians lead the list, with a demand of 4,195 workers (Figure 6), reflecting the growing need for expertise in electronic devices repair and maintenance for residential and industrial sectors. Machine Operators follow with a demand of 3,691, and Welders rank third at 2,958, highlighting the growing industrial development and the critical role of technical trades in supporting that growth. Industrial Electricians (2,283) also feature prominently in terms of demand, emphasizing the importance of electrical and mechanical expertise in the province's labour market.

The Distributors' demand is 1929 workers suggesting the importance of logistics and supply chain roles in trade and commerce. In service-related trades, Cooks (2223) and Chefs (1,640) are in demand driven by the Hospitality and Tourism industry, which has been expanding in response to growing domestic and international tourism. Nurses (1,693) are also in high demand that shows the growing healthcare sector and the increasing need for trained medical professionals to support hospitals and clinics. Next on the demand list are Mechanics (1,690) and Accountants (1,597), indicating the demand for technical maintenance skills as well as financial management expertise. The presence of these professions in the list suggests a balanced mix of technical, industrial, and service-oriented roles, each playing a critical role in driving economic activity. To meet this demand, vocational training programmes must be aligned with these labour market needs, ensuring a steady supply of skilled workers in high-demand trades. Encouraging youth participation in technical education and apprenticeships in these fields can help bridge the gap between demand and supply, fostering a more efficient and productive labour market for the long term.

Figure 6: Demand for Leading Trades in Provincial Labour Market
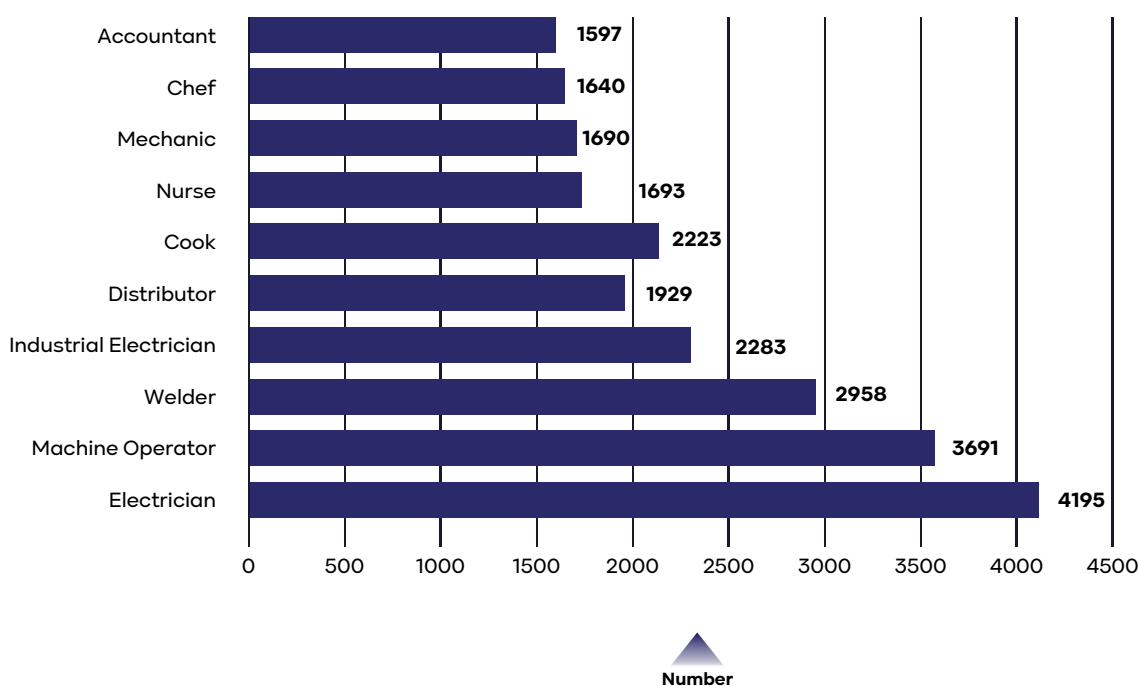
4.7 Gender-Wise Workforce Demand at Occupation Level

The nature of skilled workforce demand in the province varies across occupational levels, with a significant portion of the workforce required at mid-level positions – level 3 occupations exhibit the highest demand, with 25,932 workers needed, comprising 22,549 males and 3,383 females (Table 17). This bulk of skilled mid-tier professionals needed are likely in technical and operational roles. Similarly, Level 4 occupations also show high demand, totaling 21,854 workers (17,920 males and 3,934 female) emphasizing the need for skilled professionals in supervisory or specialized roles.

Level 1 jobs require 6,962 workers, of which 4,877 are male and 2,085 are female, suggesting that lower-skill jobs offer more opportunities for workforce participation across genders, albeit unequally. The demand increases at Level 2, where 20,350 workers are required, signifying the importance of semi-skilled roles in various industries. Levels 5 and 6 & above have a relatively lower demand, with 9,601 and 10,766 workers needed, respectively. However, at Level 6 & above (mostly cover Allied Health like Doctors, specialists and other high scale positions), the demand for female workers (3,069) is relatively higher compared to lower job-levels, indicating a greater presence of women in specialized and managerial positions, and the higher qualifications they are achieving. The notable presence of female workers in higher-level occupations indicate potential opportunities for increasing female participation in across skilled professions and skill levels.

Table 17: Gender-Wise Workforce Demand across Different Occupation Levels

Occupational Level	Male	Female	Total
Level 1	4,877	2,085	6,962
Level 2	16,766	3,584	20,350
Level 3	22,549	3,383	25,932
Level 4	17,920	3,934	21,854
Level 5	7,966	1,635	9,601
Level 6 & above	7,697	3,069	10,766
G. Total	**77,775**	**17,690**	**95,465**

4.8 Sector-Wise Leading Trades

The data highlights the importance of different sectors of Balochistan's economy, each of which relies on a skilled workforce to sustain growth.

Manufacturing Sector

The manufacturing sector exhibits a diverse demand for skilled trades, with Industrial Electricians leading the workforce need at 2,210 positions (Figure 7). Machine Operators follow closely with 1,253 positions, highlighting the sector's reliance on skilled personnel to manage and operate production machinery efficiently. Welders also constitute a significant portion of the workforce demand, with 997 positions, indicating the continuous need for metal fabrication and assembly skills in industrial settings.

Other key trades in demand include Packaging workers (858), Electricians (850), and Computer Operators (683).

Figure 7: Workforce Distribution across Different Positions in the Manufacturing Sector
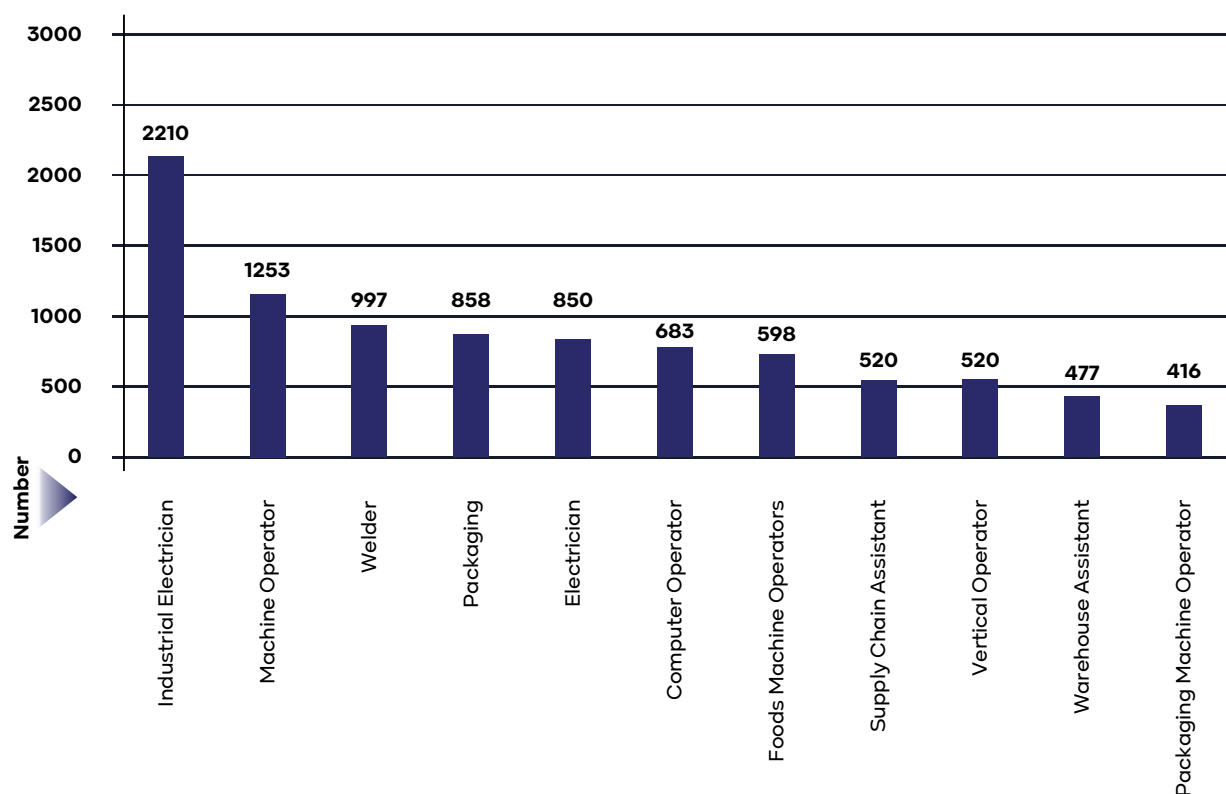
Further down the list, Food Machine Operators (598), Supply Chain Assistants (520), and Vertical Operators (520) indicate the importance of logistics and production support roles. The presence of Warehouse Assistants (477) and Packaging Machine Operators (416) underscores the need for efficient inventory management and automated packaging processes in manufacturing facilities. Overall, the sector's demand for skilled labour spans a mix of traditional technical trades and emerging digital and logistics roles, making evident the need for a workforce equipped with both hands-on expertise and technological proficiency.

Allied Health Sector

Figure 8 presents a strong demand for a diverse range of skilled professionals in the Allied Health sector, with Medical Technicians leading the workforce demand at 2,326 positions. This high demand reflects the critical role these professionals play in diagnostics, patient care, and medical procedures. Nurses follow closely behind with 1,693 positions, indicating the essential nature of nursing services in healthcare delivery. Among technical professions, Ultrasound Technicians (793) and Lab Technicians (792) are in significant demand, emphasizing the growing reliance on diagnostic services for accurate medical treatment. X-Ray Technicians (560) and Pharmacy Technicians (559) also play vital roles in medical imaging and pharmaceutical assistance, respectively.

Figure 8: Workforce Distribution across Different Positions in Allied Health Sector
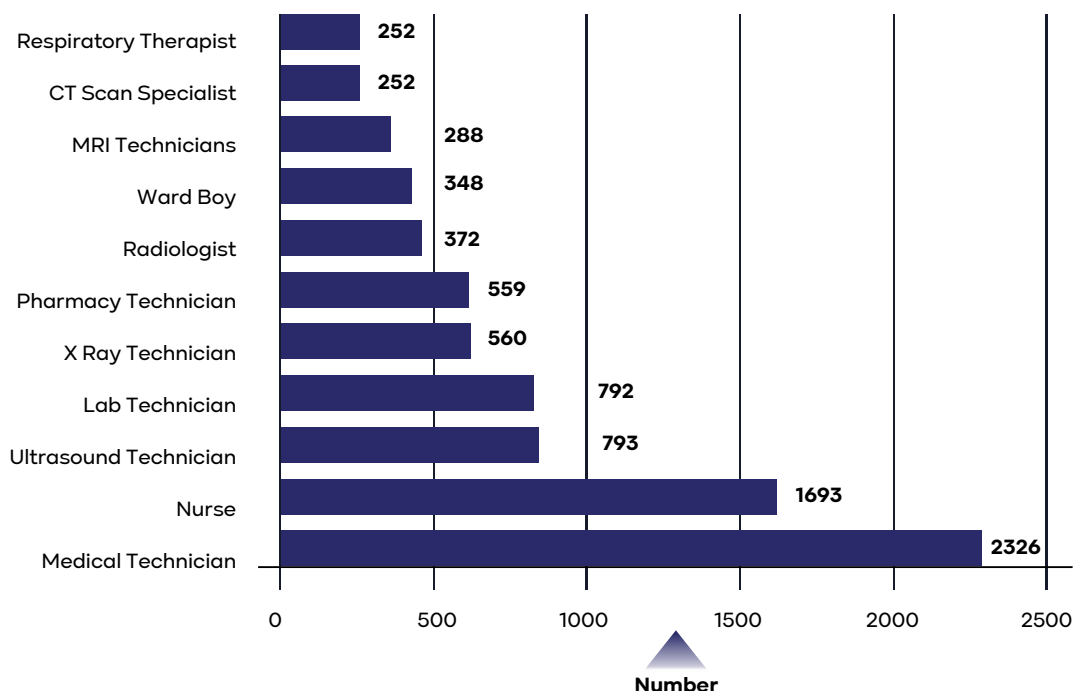
The sector requires Radiologists (372) and Ward Boys (348) that highlights the need for specialized medical professionals and support staff in hospitals and clinics. Advanced diagnostic roles such as MRI Technicians (288), CT Scan Specialists (252), and Respiratory Therapists (252) are also in demand, reflecting the increasing integration of high-tech medical diagnostics in patient care.

Overall, the sector demonstrates a balance between the needs for direct patient care providers and diagnostic support staff, and corresponding skill development in these trades to meet healthcare demands efficiently.

Agribusiness Sector

The agribusiness sector exhibits diverse demand for workforce, with Fish Packing emerging as the most in-demand occupation, requiring 330 skilled workers (Figure 9). This highlights the importance of seafood processing. Livestock Technicians are the second highest in demand, with 264 positions, reflecting the importance of animal health and management in agriculture.

Among specialized technical roles, Spray Machine Operators (186) and Kitchen Gardening Specialists (144) are in demand, indicating the sector's increasing focus on sustainable agricultural practices and food production.

Electricians (132) and Agriculture Specialists (126) are also sought after, underscoring the need for technical expertise in farm operations. Additionally, the sector requires Drip Irrigation Technicians (113), Entomologists (92), and Machine Operators (85) for efficient irrigation, pest control, and mechanization in agriculture. Veterinary Technicians (61) are reflective of demand for animal healthcare professionals to support livestock industry.

Overall, the sector's workforce demand reflects a blend of manual labour, technical expertise, and scientific knowledge, and opportunities for skill development in modern agricultural practices.

Figure 9: Workforce Distribution across Different Positions in Agribusiness
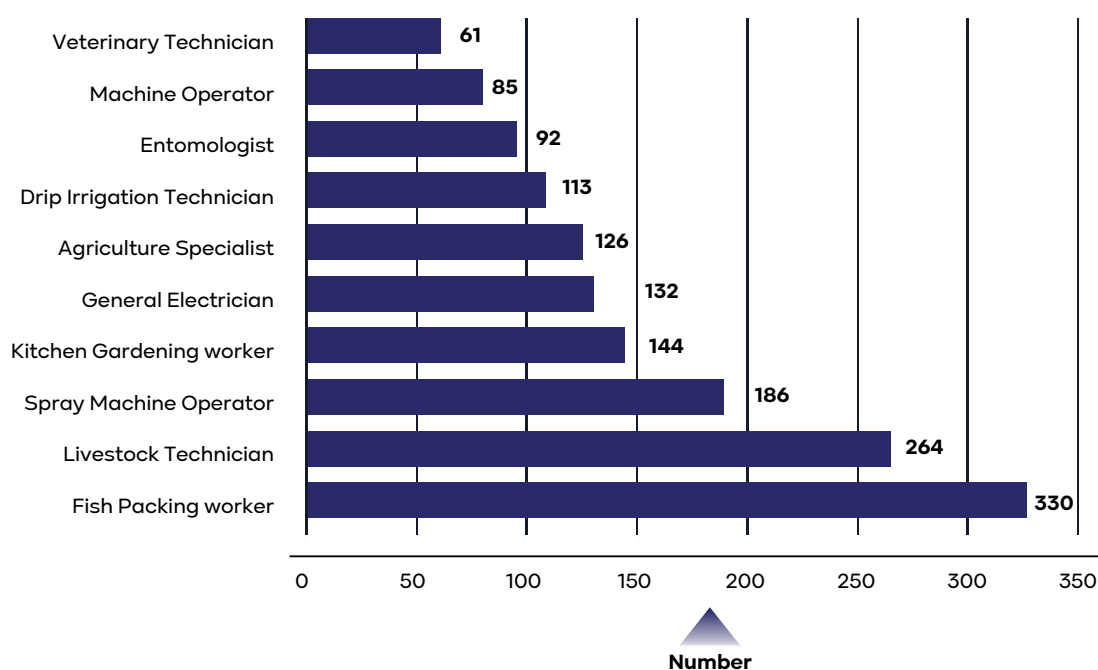
Energy Sector

The energy sector has a significant demand for skilled workers, with Distributors leading the workforce requirements at 2,223 positions (Figure 10). Grinders (1,248) and Welders (1,218) are also in high demand, highlighting the sector's need for metalworking and fabrication skills. Demand for Meter Readers (1,105) and Mechanics (1,104) indicates the importance of monitoring and maintaining energy infrastructure. The demand for Solar Technicians (962) suggests a growing focus on renewable energy and sustainable power solutions. Additionally, skilled electrical professionals, such as Electric Fitters (780), Electrical Technicians (756), and Electricians (644), are needed to maintain and repair electrical systems. Hospital-acquired condition & quality assurance (HAC & QA) roles (702) emphasize the sector's focus on quality control and safety standards. As such, the energy sector presents a broad range of opportunities, with high demand for both traditional and emerging skills, particularly in renewable energy and infrastructure maintenance.

Figure 10: Workforce Distribution across Different Positions in Energy Sector
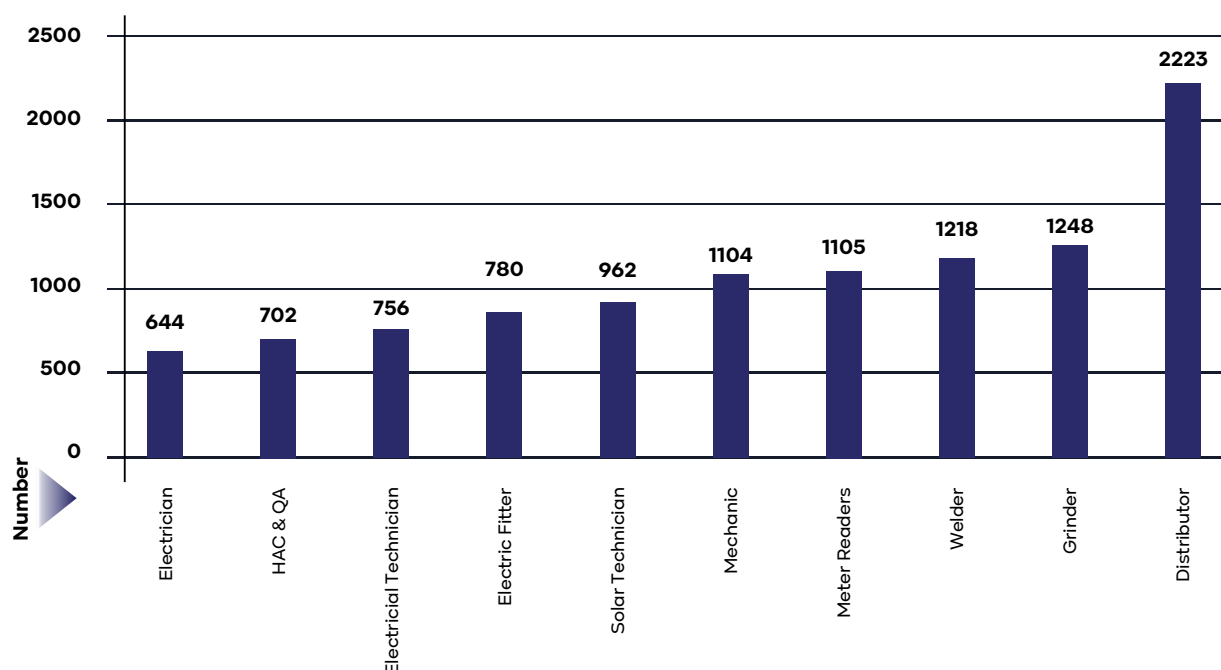
Hospitality & Tourism Sector

As evident in Figure 11, the Hospitality & Tourism sector has a strong demand for skilled workers, particularly in food services. Cooks (1,588) and Chefs (1,087) represent the highest workforce demand, highlighting the significance of culinary skills in the industry. Housekeepers (866) and Waiters (809) also play a crucial role, reflecting the demand for support staff in maintaining guest satisfaction and service efficiency. Supervisors (784) and Electricians (718) numbers are reflective of demand for managerial roles and technical expertise in hospitality infrastructure. The sector also requires professionals in guest services, with Captains (432) and Receptionists (408) playing key roles in customer interaction. Hotel Management (255) and Floor Managers (144) show a relatively lower but essential demand for skilled resources for leadership and administrative roles.

Figure 11: Workforce Distribution across Different Positions in Hospitality & Tourism Sector
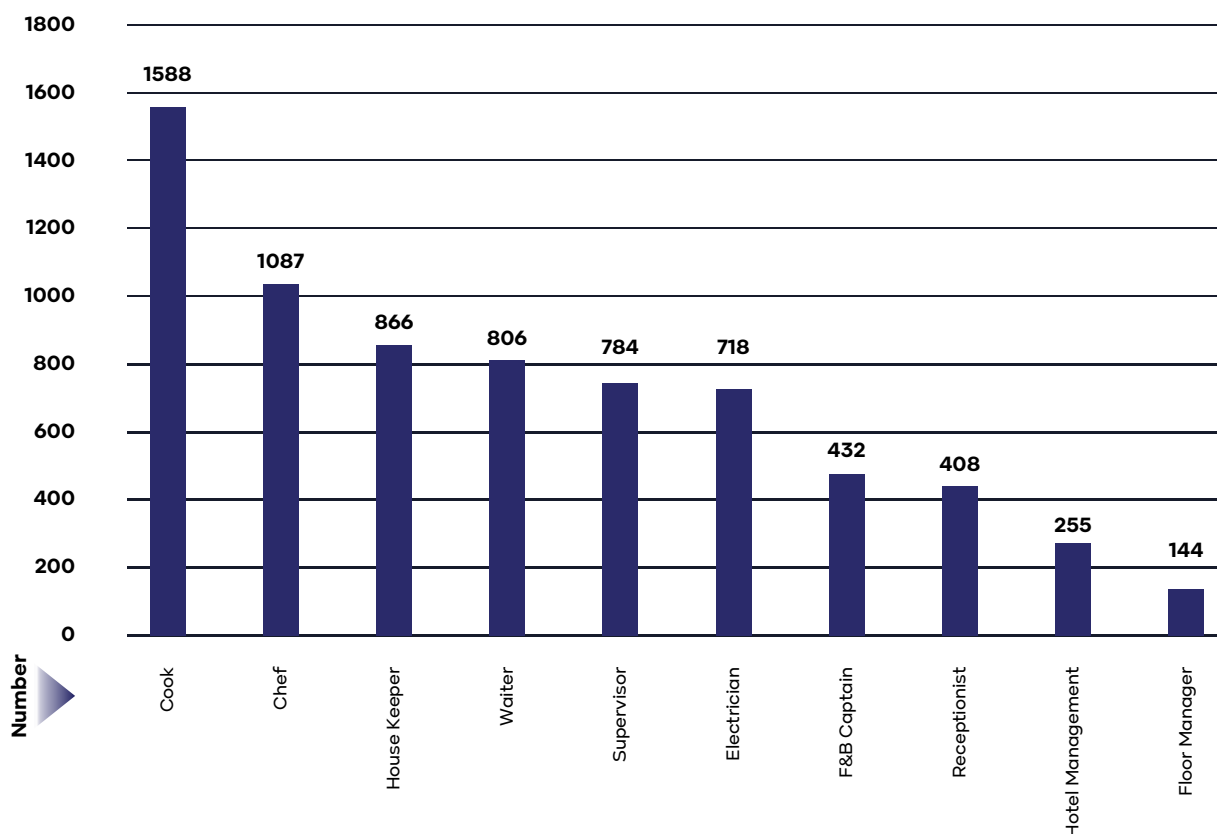
Construction Sector

Figure 12 illustrates critical skilled labour shortages in Construction, with Civil Technicians (1,391) as the highest-demand role, followed by Electricians (997) and Machine Operators (765). Similarly, the significant demand for Electricians (997) and Machine Operators (765) indicates the increasing mechanization of construction processes and the growing need for electrical installations in buildings and industrial projects. The presence of Masons (753) and Architects (660) highlights the continued necessity for traditional construction skills, particularly in residential and commercial projects.

The mid-range demand for Plumbers (656) and Heavy Machinery Operators (627) suggests a steady need for utility services and large-scale equipment operation. The Shuttering Carpenters (550) play a critical role in concrete structures, reflecting the ongoing preference for reinforced concrete construction in Pakistan and needed skills. A lower but still relevant demand for Accountants (521) and Welders (338) indicates that while financial and metal fabrication skills are required, they are not as crucial as core construction trades. The relatively lower demand for welding specialists may be attributed to prefabricated construction materials reducing on-site metalwork needs.

Figure 12: Workforce Distribution across Different Positions in Construction Sector
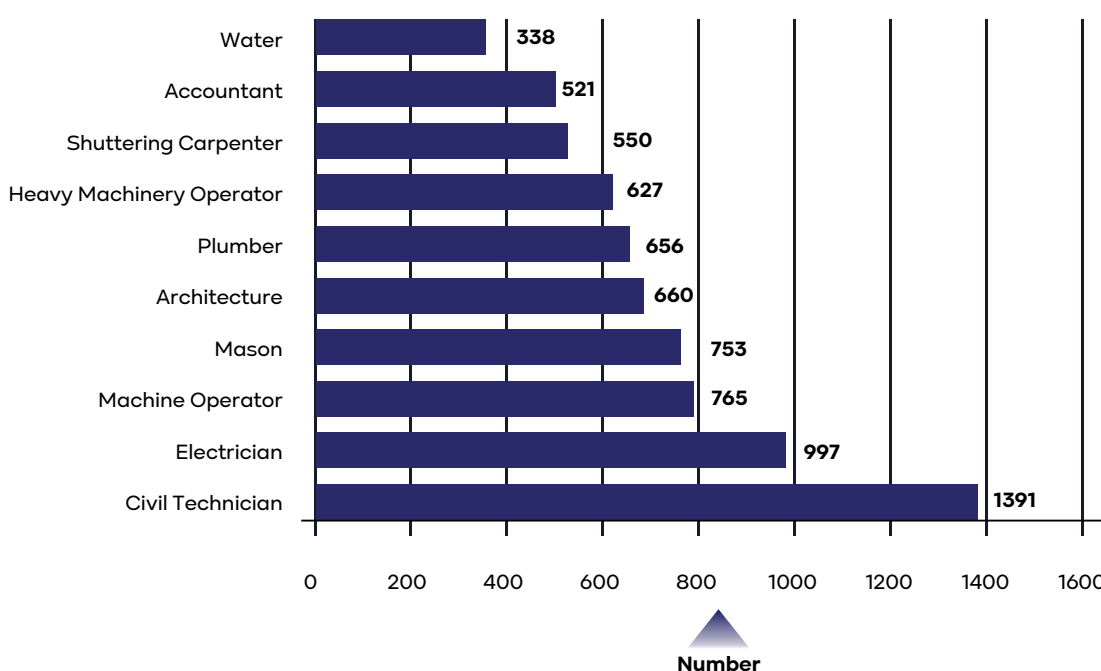
Mining Sector

The Mining sector has top demand for Machine Operators (829), reflecting mechanized extraction processes being in place (Figure 13). Demand for specialized roles like Drilling Technicians (490) and Mining Electricians (394) suggests a shift towards efficiency and productivity in extraction processes, highlighting the critical role of operators in handling drilling rigs, loaders, and transport machinery. The Drilling Technician (490) and Mining Technician (462) roles indicate a need for specialized technical expertise in mineral extraction and geological assessments. The sector's reliance on skilled Electricians (394) and Welders (315) points to the integration of electrical systems and metalwork in mining infrastructure, ensuring operational safety and equipment maintenance.

A moderate demand for Computer Operators (312) signals the sector's gradual adoption of digital tools for data logging, automation, and remote monitoring of mining operations. Similarly, the demand for Mechanical Technicians (198) suggests a continued requirement for equipment maintenance and troubleshooting. The relatively lower demand for First Aid Technicians (186), Fitters (147), and Marble Cutting Machine Operators (141) highlights the supporting roles necessary for occupational health, equipment installation, and specialized stone processing within the industry.

Figure 13: Workforce Distribution across Different Positions in Mining Sector

Number
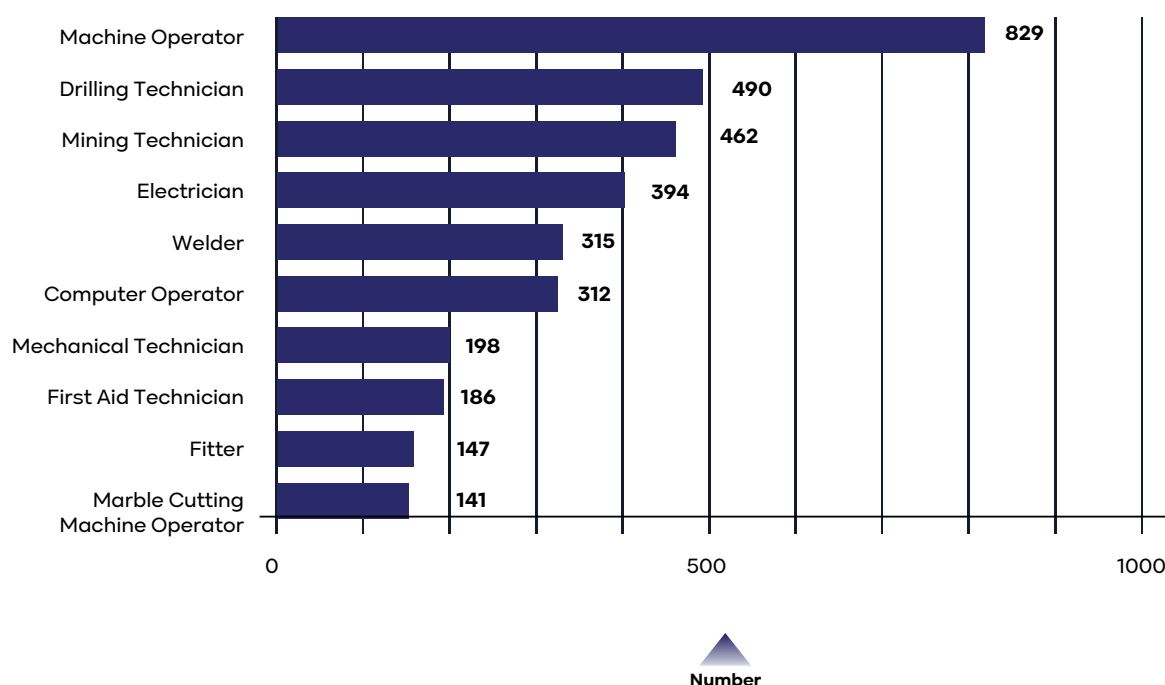
Water Sector

The Water Sector workforce demand is led by Boring/Tubewell Machine Operators (318) (Figure 14) emphasizing the sector's dependence on groundwater extraction for irrigation and potable water supply. The high demand for Water Management (277) professionals highlights the growing need for efficient water resource utilization and conservation strategies, reflecting concerns over water scarcity and sustainable usage. The demand for Water Supply Operator (240) and Tubewell Operators (208) underscores the importance of physical infrastructure maintenance in water extraction and distribution systems. These roles ensure the continued functionality of water supply channels and bore-well operations, particularly in agricultural and municipal settings.

Figure 14: Workforce Distribution across Different Positions in Water Sector
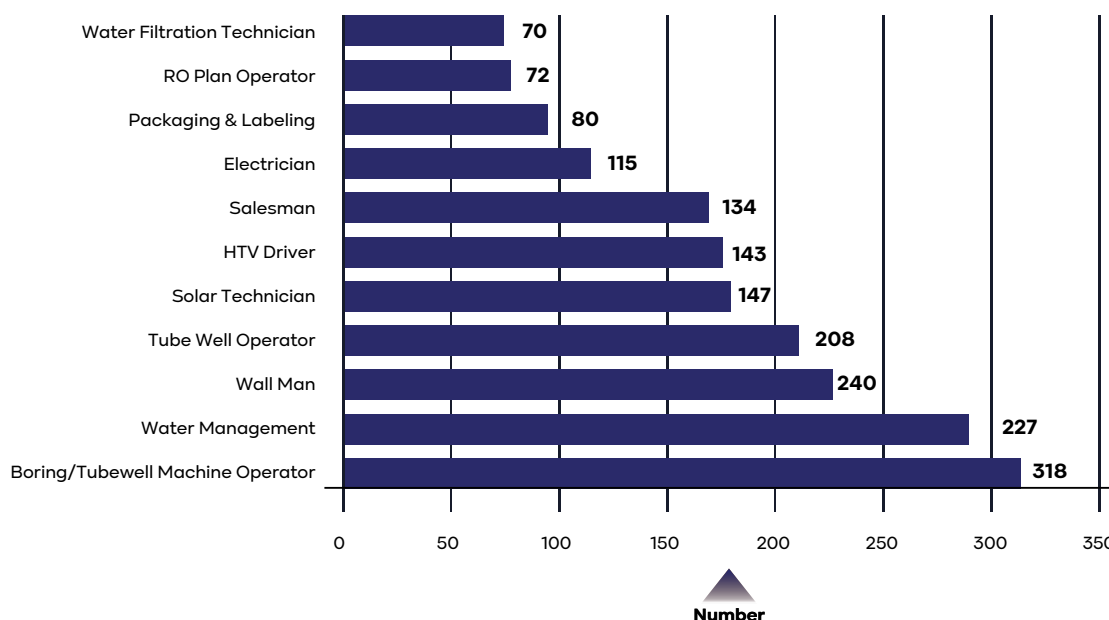
The notable demand of Solar Technicians (147) indicates an increasing adoption of solar-powered water pumping solutions, aligning with energy efficiency and cost-saving initiatives in water management. Similarly, demand for HTV Drivers (143) suggests the requirement for water tanker transportation in areas lacking direct water access. Roles such as Salesman (134) and Electricians (115) cater to commercial and maintenance aspects of water-related services. Meanwhile, the relatively lower demand for Water Filtration Technicians (70) and RO Plant Operators (72) signals limited water treatment infrastructure or a lower extent of focus and awareness.

4.9 Occupation in Top-5 Leading Districts

Below is the summary of study aspects on leading occupations in prominent districts of Balochistan, offering policymakers insights into the dynamics of industrial needs and the support required from public institutions.

Quetta

Figure 15 reflects Quetta's strong demand for a mix of industrial, technical, and service-oriented roles. The highest demand is for distributors (2,223), indicating a significant growth in supply chain and logistics, likely driven by expanding commercial activities and trade networks. A notable demand for grinders (1,248) and electricians (1,208) suggests that industrial operations and construction-related activities in the province require skilled workers for machinery maintenance and electrical installations. Similarly, demand for meter readers (1,105) and electrical technicians (1,101) highlight the growing importance of power distribution, infrastructure maintenance, and utility services.

The demand for welders (1,059) and mechanics (1,027) indicates that repair and maintenance job potential, possibly linked to the transportation, construction, and manufacturing sectors. Service-oriented roles such as chefs (855), housekeepers (816), and nurses (792) demonstrate the increasing demand for hospitality, domestic services, and healthcare workers, reflecting urbanization trends and the growing service sector. The requirement for electric fitters (780) further emphasizes the need for skilled labour in electrical installations and system repairs. The employment landscape in Quetta reflects a varied demand for skilled labour across sectors, highlighting the importance of focused training initiatives and policy actions to close skills gaps and promote long-term economic development.

Figure 15: Leading Occupations in Quetta
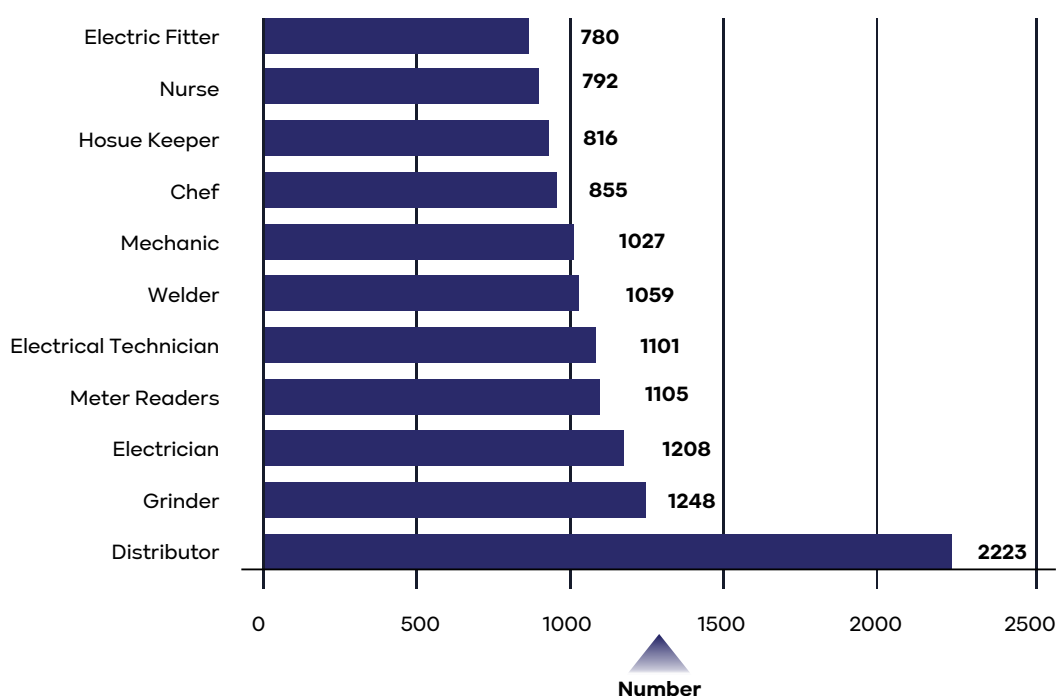
Lasbela

A look at Lasbela's labour market data (Figure 16) highlights several critical skilled roles. The demand for Industrial Electricians stands out at 2,283, by far the highest figure among the listed trades. Another significant role is Machine Operator, recorded at 1,335. This reflects Lasbela's industrial landscape, where exist multiple assembly lines, packaging units, and small-scale manufacturing enterprises that require skilled operators to run machinery safely and efficiently. Similarly, roles like Welder (955) and Packaging (858) underscore the district's focus on secondary industrial processes, including transforming raw materials and goods for local and regional markets.

A cluster of occupations with mid-range demand - Computer Operator (828), Crane Operator (701), Supply Chain Assistant (585), Vertical Operator (562), Accountant (559), and Warehouse Assistant (446) - points to the multifaceted nature of Lasbela's economy. At the lower end, Packing Machine Operator demand stands at 416, which is a notable but not a very high figure. This might suggest either a moderate demand or a relatively stable pool of existing operators.

The data also reveals an economy that is heavily industrial but also evolving to include robust logistics, supply chain, and administrative capacities. These findings underscore the demand for targeted vocational training programmes to meet high-skill industrial workforce demand while maintaining a need for mid-level logistics and administrative professionals.

Figure 16: Leading Trades in Lasbela
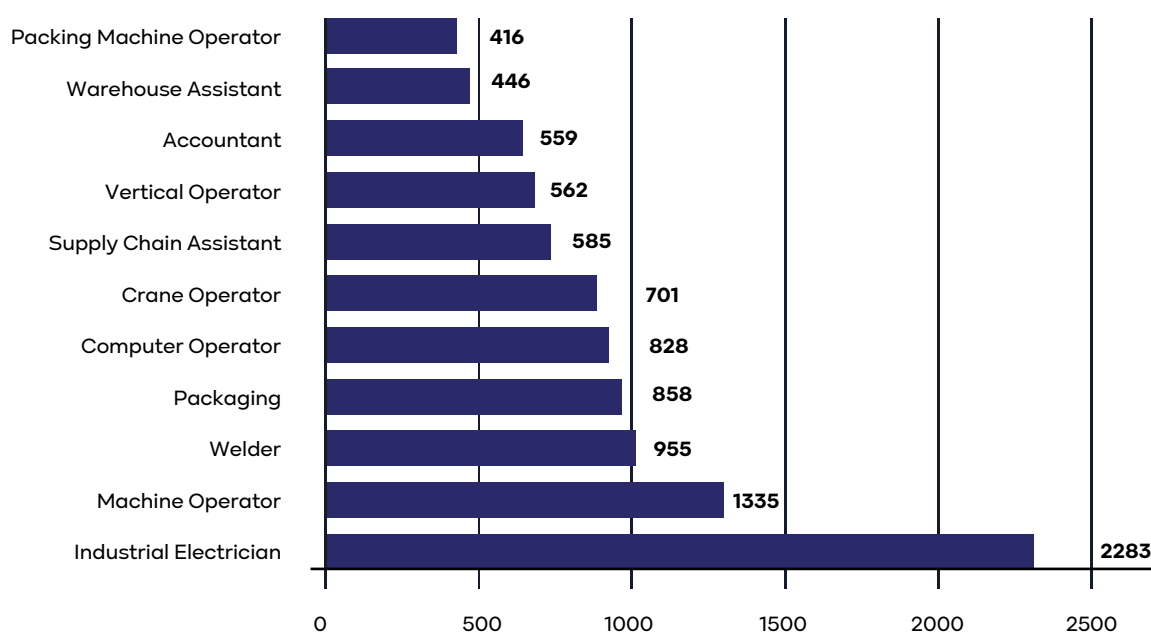
Gwadar

Figure 17 highlights key occupational demand in Gwadar. The highest demand among the listed roles is for Cooks (390), indicating the district's emerging hospitality and tourism prospects. With Gwadar's port and coastal development attracting visitors, investment, and new businesses, the food service sector needs a steady flow of culinary professionals, such as cooks that are high in demand. Demand for electricians (379) is second highest, underscoring the heightened need for electrical installation, maintenance, and troubleshooting. Meanwhile, Fish Packing (370) is also notably high. The demand for Civil Technicians (299) and Electronics Technicians (230) points to an expansion of construction, infrastructure, and technological requirements.

Gwadar's workforce demand is undergoing diversification beyond fishing and port services, with roles like Architecture (214), Printing Machine Operator (168), and Beautician (134). Aluminum workers (133) and Painters (130) support the growing construction sector, while Boat Making Experts (114) help sustain the maritime economy. Machine Operators (95) reflect industrial and logistical expansion.

From cooks and beauticians to civil and electronics technicians, these varied roles support Gwadar's transition into a multifaceted economic zone. Skill development and targeted training programmes will be pivotal in bridging skills gaps, ensuring that the local workforce can meet the specialized demands of an increasingly diversifying economy.

Figure 17: Leading Occupations in Gwadar
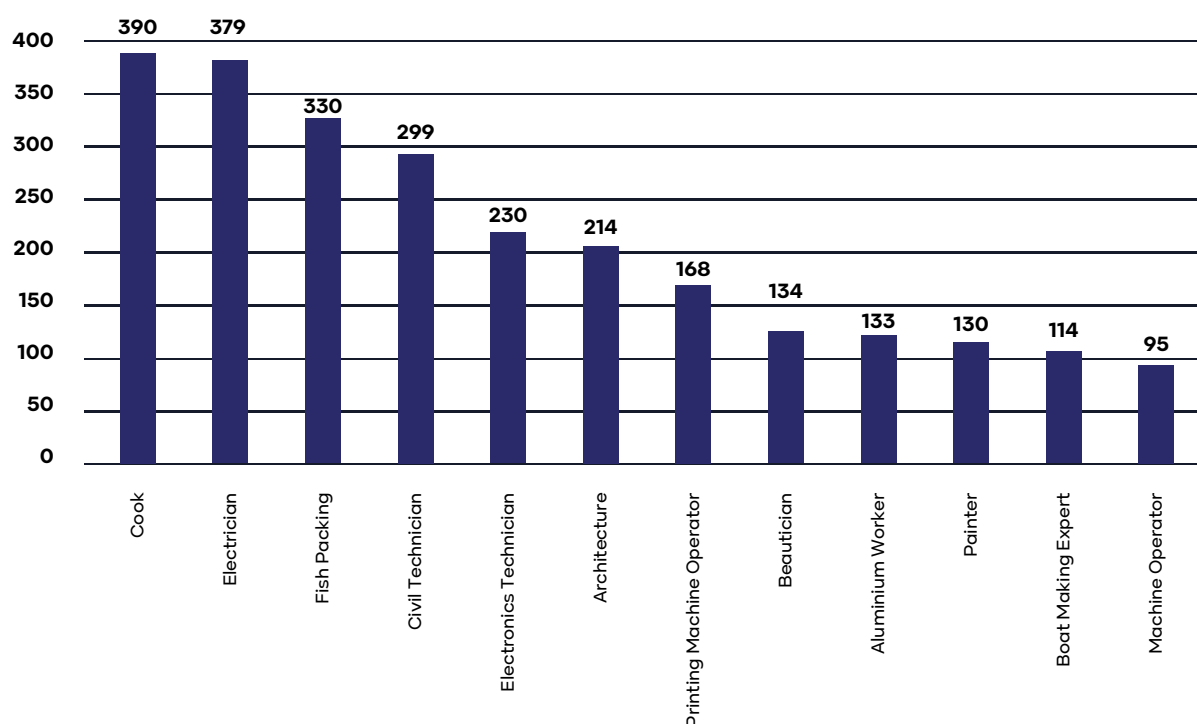
Kalat

Figure 18 shows the demand for several distinctive skills in Kalat that align with the region's agricultural, infrastructural, and emerging services needs. The highest demand is for Water Management (256), followed by First Aid Technicians (249). Close behind, Water Supply Operator (240) skills occupy a strong position, indicative of the region's construction and infrastructure development activities. Meanwhile, Laser Technicians (210) represent a more specialized skill set that may relate to advanced diagnostic, manufacturing, or precision-based tasks. At a similar level, demand for Tube Well Operators (208) and Mechanical Technicians (198) further underscores Kalat's need for a workforce adept at operating, maintaining, and repairing machinery used in irrigation and agricultural production.

Figure 18: Leading Occupations in Kalat
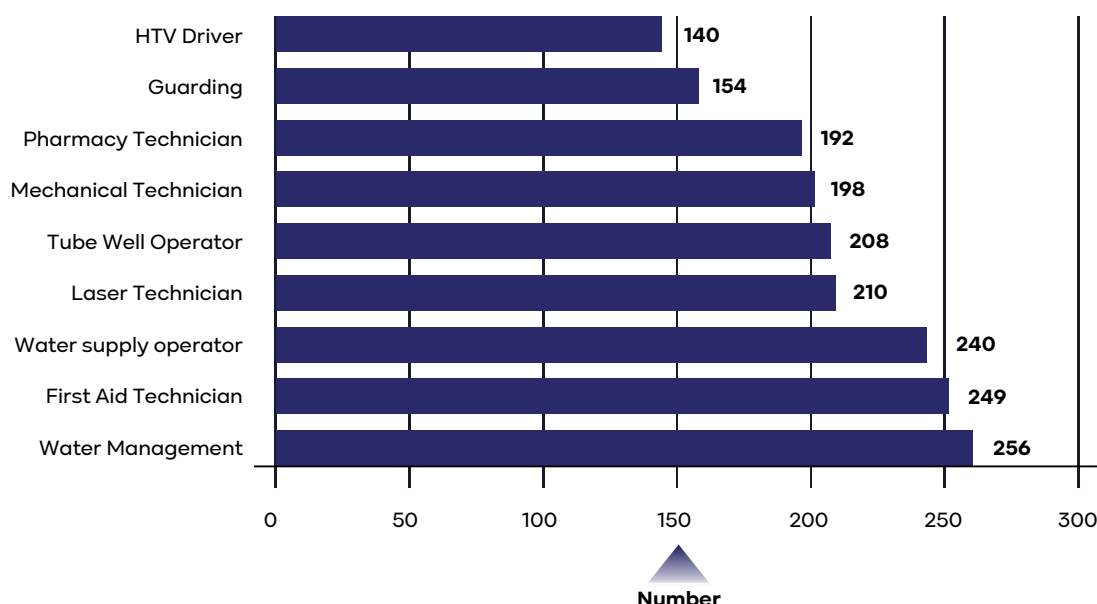
Pharmacy Technicians (192) also stand out as having a significant demand, reflecting local efforts to enhance healthcare services and medicine dispensing. Slightly lower on the list are Guarding (154) and HTV Drivers (140).

Overall, the skills demand in Kalat seems to revolve around three major themes: agricultural water resource optimization, infrastructure development and maintenance, and basic healthcare and logistical support. By developing training programmes that address these core areas, local authorities and development partners can help align the district's workforce's skills with its economic and social imperatives.

Killa Abdullah

Figure 19 highlights the concentration of demand for technical and service-oriented skills that align with Killa Abdullah's socioeconomic conditions and infrastructure requirements. Electricians (102) appears to be the most-needed skill, followed by Auto Electrician (85) and Auto Mechanic (79). Another prominent skill set is Solar Technician (70), illustrating the district's turn toward alternative energy sources to tackle electricity shortages. Meanwhile, Lab Technicians (68) represent a specialized need. Business & Marketing (62) underscores an emerging demand for soft skills to support local entrepreneurs. Mechanical Technicians (57) demand indicates need for robust repair and maintenance services. At a slightly lower demand level, Food Safety & Hygiene (49) is a key skill, suggesting welcome heightened awareness of proper food handling. Finally, Nurse (46) and Chef (44) highlight ongoing needs in healthcare and hospitality sectors, which are pivotal for improving living standards and potentially tapping into tourism or local culinary ventures.

Figure 19: Leading Trades in Killa Abdullah
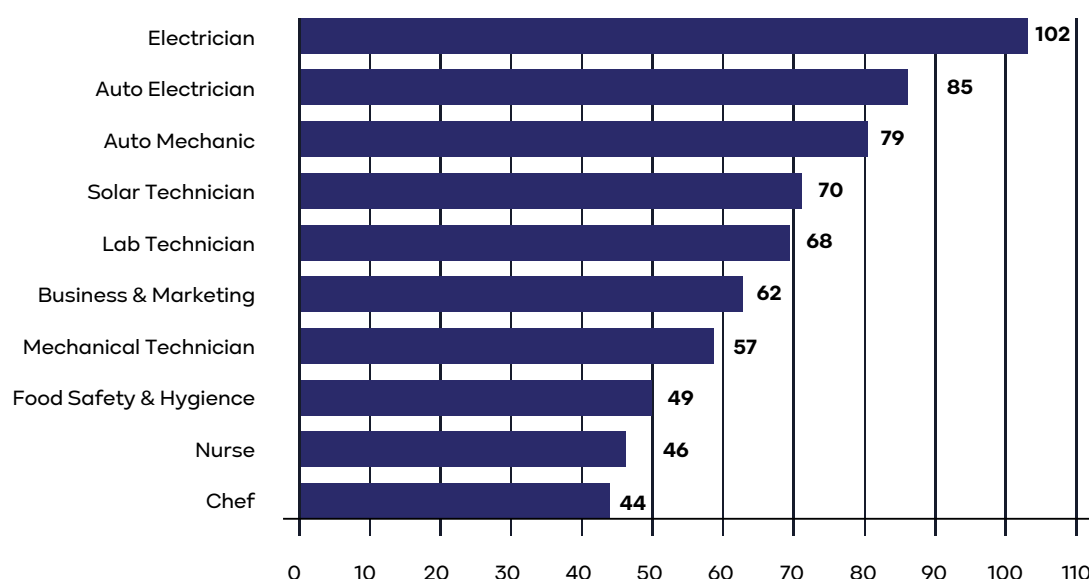
These findings show a strong trend toward technical maintenance and repair, alternative energy solutions, and provision of essential services. They indicate that Killa Abdullah is transitioning to a more diverse and skill-intensive economy and needs specialized technical training and broader business knowledge. Supporting vocational education and training programmes in these areas would be crucial in addressing local economic challenges, reducing unemployment, and fostering sustainable growth in the district.

4.10 Analysis of Skilled Workforce Demand & Supply Gaps

Table 18 (Annex C) gives a comprehensive overview of skill trades in Balochistan, highlighting significant discrepancies between the number of skilled workers currently available (Supply) and the number of workers required by the local labour market (Demand). These gaps range from severe shortages (negative values) to notable surpluses (positive values).

Acute Shortfalls in Traditional Trades vs. High Demand in Technical Fields

Many trades such as Tailor, Beautician, Hand Embroidery, and Stitcher seem to have a notable oversupply, with thousands of certified or trained workers against limited or no market demand (e.g., Tailor has a surplus of 6,129 against a demand of only 186). This discrepancy reflects likely inadequate market linkages and limited commercial-scale industry absorption. Conversely, certain more technical trades like Electrician (supply 299 vs. demand 4,384) and Industrial Electrician (supply 75 vs. demand 2,283) exhibit huge deficits, indicating that modernization of the province's economic base demands more technically skilled labour than is currently produced.

Potential Oversupply in Garment-Related and Basic Computer Skills

Trades such as Tailor, Sewing & Design, and Cutter Garments display negative demand, meaning there are far more trainees than the market requires. Similarly, computer-related courses like Data Entry Operator (supply 341 vs. demand 249) or general Computer Graphics (supply 280 vs. no explicit demand) point to an imbalance between the nature of skill sets taught and real hiring needs. This mismatch could be attributed to training institutes' reliance on legacy curricula or the absence of dynamic market assessments that would inform them of real-time hiring trends.

High Demand in Construction and Allied Sectors

Trades like Welder (supply 506 vs. demand 2,958), Mason (131 vs. 887), and Plumber (158 vs. 1,230) indicate that the ongoing infrastructure and development projects in Balochistan require more workers than are being trained. Particularly, there is a large gap for Electricians (4,085 short) and Civil Technicians

(1,094 short). This suggests that infrastructure expansion (road building, housing schemes, industrial setups) has outpaced the capacity of vocational institutes to generate enough skilled graduates.

Digital Economy and Emerging Skills

New trades such as Amazon Virtual Assistant (693 supply vs. no formal demand recorded) or E-Commerce (778 vs. 236) show a partial mismatch; though the supply in certain digital trades seems high, the official demand might be under-reported or too little. However, the negative values for software-oriented trades like Advance Web Application Development, Mobile Application Development, and Cloud Computing underscore that while these programmes exist, the local ecosystem may not yet be robust enough to absorb these learners in large numbers. Alternatively, the market might require more specialized or higher-level skills (e.g., software development with specific frameworks) than currently taught.

Healthcare and Specialized Technicians

The data for medical and allied health roles shows mixed trends. For instance, jobs like Nurse (56 supply vs. 1,711 demand) and Lab Technician (54 vs. 1,547) have significant shortfalls, reflecting the healthcare sector's unmet needs for qualified personnel. On the other hand, certain specialized roles like Operation Theatre Technician (25 supply vs. 0 demand) and some others have no official demand, possibly because official postings or private healthcare expansions have not yet been consolidated in these data sets. With demand in thousands, the shortage of medical technicians, points to an urgent need for expanded and well-structured medical/paramedical training programmes.

Agriculture, Food, and Fisheries

Agriculture-based trades (e.g., Farm Manager, Tissue Culture, Fish Processing & Preservation) have either zero or limited demand, and the supply is minimal. This suggests Balochistan's agricultural transformation, particularly in horticulture and fisheries, has not been systematically aligned with formal TVET structures. Meanwhile, the potential for export-oriented horticulture (e.g., data processing, orchard management) remains significant, but the skill supply pipeline is either non-existent or not formally tracked.

Under-Recognized Demand for Semi-Skilled Roles

Many semi-skilled positions (Generator Operator, Warehouse Assistant, Helper, or Waiter) show official demand with zero supply. This might reflect that many of these roles are historically learned through informal apprenticeships rather than formal vocational training. The presence of large negative gaps (e.g., Mechanic at -1,690, Computer Operator at -1,574, or Sales & Marketing at -967) further emphasizes that certain occupational categories are not systematically covered in skill development initiatives or remain outside the typical "formal trade" curricula.

Discussion

Skilled workforce demand and supply for Balochistan reveals important insights into the region's labour market dynamics and the extent to which current training programmes align with emerging and established economic needs. A careful reading of the data indicates that many traditional and low-value trades are oversupplied, while a variety of critical, high-demand fields face severe deficits. These mismatches reflect an overarching challenge that local training systems and vocational institutions have not kept pace with the evolving nature of employment in Balochistan, particularly while facing industrial expansion, infrastructure projects, and the rising importance of technology-oriented occupations.

One clear finding from the data is that many garment-related and basic computing trades, such as tailoring, sewing and design, and data entry operator, have excess supply. This imbalance suggests that these fields have limited commercial scalability in the local context or that the existing pool of trained individuals is far more than the market can absorb. Excess supply for e-commerce skills, Amazon virtual assistant, and advanced web application development also reflect an imbalanced ecosystem for technology-based employment. While these are globally in-demand skills, the official demand recorded in the data is negligible, which may signal that the province's local digital economy has not yet matured to utilize such expertise.

In contrast, many vital trades (Electricians, industrial electricians, welders, and various construction-oriented occupations including masons, carpenters, and plumbers) show significant gaps where demand

far surpasses the current supply of skilled workers. This discrepancy strongly suggests that ongoing infrastructure initiatives, industrialization efforts, and possibly increased private-sector development in Balochistan are all outpacing the training capacity of existing institutions. The mismatch implies that either training centers have not updated their admissions strategies to meet these critical needs or there is an information gap to meet the higher employability potential in these trades.

Similar tendencies appear in healthcare-related fields (where occupations like nursing, laboratory technology, and medical technicians show large deficits), presumably reflecting an urgent need for qualified staff to expand healthcare facilities and projects. This shortfall has broad implications for public well-being and underscores the importance of targeted investment in medical and paramedical education.

Another striking feature here is the presence of many unfilled semi-skilled roles. Many occupational categories (such as generator operator, warehouse assistant, and waiters) appear to have zero supply but show significant market demand. Absence of structured training for these roles likely arises because they are often learned informally on the job rather than through formal TVET programmes. This also happens in trades like housekeeping, sales and marketing, or certain manufacturing tasks where no recognized training pathway exists or where institutions have not yet formalized the curriculum to support the skill-sets that employers want.

It is also worth noting that the digital transformation of many industries has created a demand for specialized technical skills, however the data suggests a dearth of supply in mobile application development, cloud computing, advanced software frameworks, and cyber security. The presence of training courses for some of these trades (albeit with low or zero recognized demand) may mean that the local labour market has not fully captured its requirements or that the training offered does not precisely match the skill sets that local or international employers expect. The risk here is that training institutions may invest in teaching these skills but fail to job placement for graduates if no systematic connections exist between course offerings and employers' needs.

Several factors likely contribute to these imbalances. On one hand, vocational institutes may operate with outdated curricula or legacy programmes focusing on conventional garment work or general computing. On the other hand, Balochistan's economy is diversifying in ways that require more advanced technical capacities, be it in mining, construction, manufacturing, healthcare, or digital industries. Although the provincial economy and private sector increasingly require a skilled workforce in these areas, formal educational or training frameworks are not shifting quickly enough to accommodate the change. Another dimension may be the limited capacity of local enterprises to provide apprenticeship or internship opportunities that would more accurately shape programme content. When training programmes are devised without industry input, the result is an overabundance of individuals qualified for trades with minimal actual openings.

Training institutions and policymakers should work closely with employers and industry to periodically revise courses and admission numbers if these gaps are to be narrowed. One strategy might be to strengthen the existing network of technical and vocational institutes with modern equipment, updated syllabi, and strong industry linkages, especially in high-demand areas such as industrial electricians, welders, healthcare technicians, and construction trades. Collaboration with private sector stakeholders can also help to identify rapidly evolving skill requirements, whether in the building sector, advanced manufacturing, or the digital sphere. Introducing flexible and modular learning pathways could encourage more entrants to high-demand fields while ensuring that current students can adapt if their chosen trades prove oversupplied.

Moreover, career counseling and early engagement at the secondary school level may help students align their aptitudes and interests with fields that exhibit robust labour market demand. Such counseling can dispel the notion that certain trades are more prestigious than others highlighting the economic advantages and employment stability that can come from skilled manual or technical professions. Public awareness campaigns and job fairs could also address misconceptions about high-demand trades. For instance, the negative gap in female-dominated trades, such as beautician or hand embroidery, reflects an oversupply of skill rather than a sustainable career pipeline.

Ultimately, bridging the mismatch between skill supply and demand is crucial not only for individual livelihoods but also for Balochistan's broader economic growth and stability. Ensuring that more trainees

enter the labour market in high-demand occupations can enhance productivity and encourage further investment in the province. At the same time, the data calls for a concerted effort to update or phase out low-demand programmes, intensify skill development in sectors that are short of personnel, and establish new training modalities for emerging and digital-oriented jobs. By taking these steps, Balochistan can foster a better-aligned, more responsive skills ecosystem that positions the province to meet present and future economic challenges.

4.11 Employment Opportunities for Disadvantaged Groups

The employment opportunities available for disadvantaged groups show efforts toward workforce inclusivity, although disparities persist across different categories. Minorities represent the largest share of employment among disadvantaged groups, accounting for 55% (756 individuals), as shown in Table 19. The employment of persons with disabilities stands at 23% (312 individuals), indicating some level of workplace integration but also underscoring the need for more inclusive hiring practices and workplace accommodation to enhance accessibility.

Elderly individuals make up 14% (198 individuals) of employment opportunities, reflecting a relatively lower participation rate, likely due to barriers such as physical work limitations or a lack of targeted employment programmes for older workers. The transgender community accounts for 9% (120 individuals), the smallest among the groups. These findings highlight the importance of strengthening policies that promote inclusive hiring practices, vocational training, and workplace accommodation.

Table 18: Distribution of Quota or Reserved Seats for Disadvantaged Groups

Disadvantage Group	Number	Percentage
Minorities	756	55
Disabled	312	23
Elderly	198	14
Transgender	120	9
Total	**1386**	**100**

4.12 Skills for Disadvantaged Groups

The analysis of skills and occupations for disadvantaged groups reveals a significant concentration of employment in low- to semi-skilled roles, with limited representation in specialized or high-skill professions. The most common occupations include computer operators (114), machine operators (102), workers (90), and sweepers (84) (Table 20).

Sanitation-related roles, including cleaners (72), janitorial staff (72), and sanitary workers (24), constitute a notable portion of employment, reflecting the continued reliance on disadvantaged groups for essential but lower-status labour. Support roles for them such as security guards (54), administrative staff (24), receptionists (24), record-keepers (24), and office attendants (12) further indicate that a significant share of the workforce is employed in auxiliary services with limited career growth. Similarly, food and domestic services are represented by cooks (18), dishwashers (24), housekeepers (6), and commercial cooking staff (6), reinforcing the trend of employment in low-paying, labour-intensive jobs.

Table 19: Occupation-Wise Seats for Disadvantaged Groups

Occupation	Number	Occupation	Number
Computer Operator	114	Midwife	6
Machine Operator	102	Commercial Cooking	6
Worker	90	Construction Worker	6
Sweeper	84	Cutting Saila – Cutter	6
Accountant	72	Dialysis Technician	6
Cleaner	72	Doctor	6
Janitorial Staff	72	Dress Making	6
Support Staff	72	Floor Manager	6
Security Guard	54	Generator Operator	6
Software Developer	36	GIS & Remote Sensing	6
Supervisor	30	Housekeeper	6
Admin	24	Hygiene Staff	6
Dish Washer	24	Juice	6
Engineer	24	Low Scale	6
Labourer	24	Medical Assistant	6
Receptionist	24	Medical Technician	6
Record-keeper	24	Mining	6
Sanitary Worker	24	Mirror Work	6
Cook	18	Motor Operator	6
Dispenser	18	Needle Work	6
Lab Assistant	18	Office Boy	6
Packager	18	Peon	6
Support Staff	18	Pharmacist	6
Clerk	12	Printing Worker	6
Driver	12	Safety Officer	6
Generator Operator	12	Sewing	6
Handicraft	12	Stitching	6
Lab Technician	12	Tailoring	6
Mechanic	12	Telephone Operator	6
Nurse	12	Ward boy	6
Office Attendant	12	Watchmen	6
Plumber	12	Water Plant in charge	6
Technician	12	Welding	6
Auto CAD	6	**Total**	**1,374**

A relatively small number of individuals are employed in skilled or semi-professional roles, such as accountants (72), software developers (36), supervisors (30), engineers (24), lab assistants (18), and nurses (12), highlighting the challenges disadvantaged groups face in accessing technical and higher-education-based occupations. The demand of record-keepers (24), lab technicians (12), pharmacists (6), medical assistants (6), and medical technicians (6) suggests that while some individuals have transitioned into specialized fields but the overall representation remains minimal. Additionally, highly specialized trades such as GIS and remote sensing (6), AutoCAD (6), and dialysis technicians (6) are almost negligible in the list, indicating a lack of access to advanced technical education and certifications.

The list also includes various skilled trades with minimal representation, such as tailoring (6), stitching (6), sewing (6), handicrafts (12), dressmaking (6), construction work (6), plumbing (12), welding (6), and mechanics (12). Despite the demand for these trades in local markets, their limited presence among disadvantaged groups suggests a gap in vocational training outreach and programme alignment with broader labour market and social integration needs. Other niche occupations include mining (6), safety officers (6), mirror work artisans (6), and printing workers (6), demonstrating a scattered and inconsistent participation of disadvantaged groups across employment sectors.

The employment distribution highlights that disadvantaged groups are largely confined to low-skill and low-wage sectors, with minimal technical, managerial, or leadership roles. This trend underscores broader systemic challenges such as limited access to quality education and vocational training, social discrimination, inadequate career counseling, and weak institutional support. Addressing these disparities requires targeted interventions, including inclusive TVET programmes, market-driven skill development, and enhanced workplace accessibility.

4.13 Employers' Satisfaction with TVET Graduates

The labour market satisfaction survey in Balochistan reveals a generally positive outlook among respondents, with 71% expressing satisfaction (48% "Satisfied" and 23% "Very satisfied") (Figure 20). However, a notable 26.4% remained neutral, indicative of ambivalence or lack of strong engagement with current labour market conditions. Only a small minority, about 2%, reported dissatisfaction. No one showed 'very dissatisfied' on scale, suggesting that while most stakeholders view the labour market favorably, there remains room for improvement to address the concerns of neutral and dissatisfied groups. These findings highlight the need for targeted policies to enhance job quality, skills training, and employment opportunities to further increase overall satisfaction and reduce neutral position or negative perceptions.

Figure 20: Level of Satisfaction with Technical and Vocational Education and Training
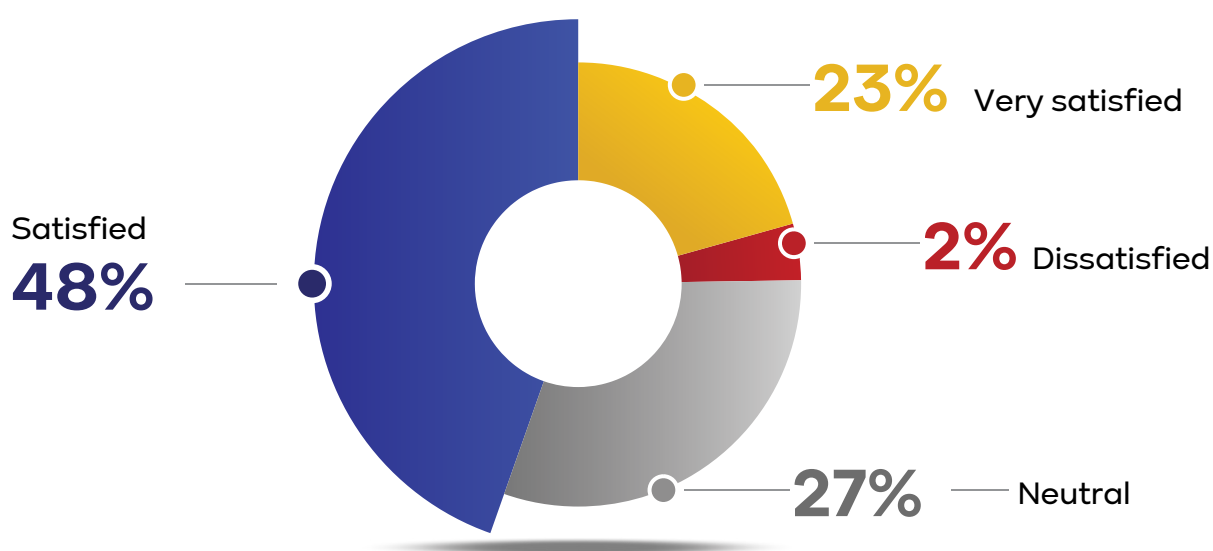
4.14 Industry-Led Training Opportunities

Survey findings show that only 12% of surveyed industries offer in-house training programmes, while the vast majority (88%) do not provide any (Figure 21). The limited availability of structured on-site skill-building opportunities suggests that many employers either lack the resources or the perceived need to invest in formal training for their workforce. This finding also points to a potential area of intervention for policymakers and TVET stakeholders. By encouraging or incentivizing employers to develop in-house training, the overall skill level and productivity of the workforce could be greatly enhanced.

Figure 21: Industry-Led Training Opportunities
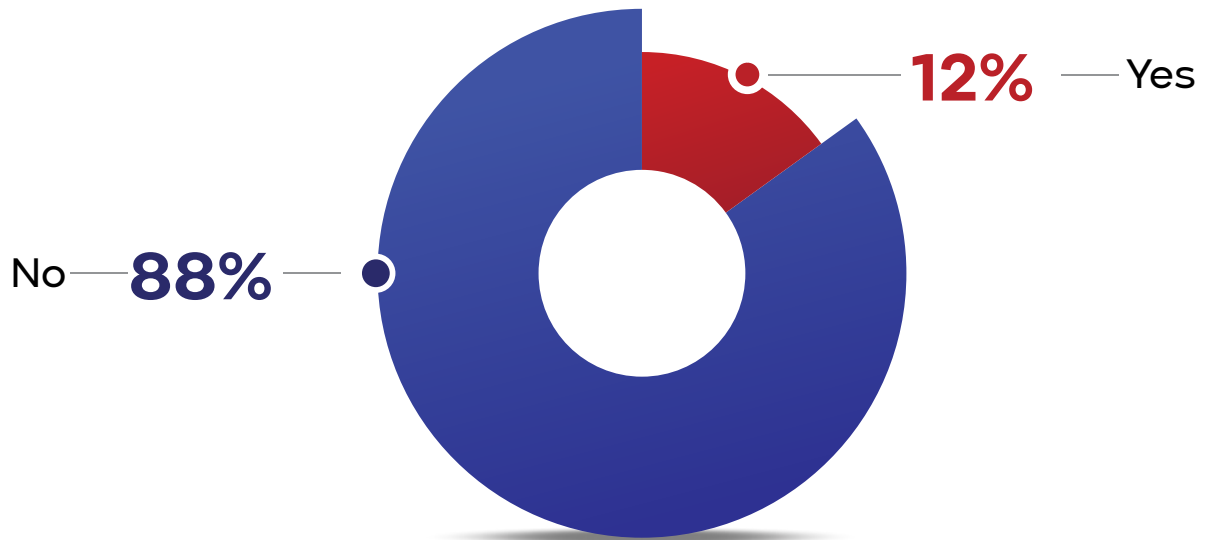
4.15 Skills Assessment in Recruitment

Figure 22 indicates that a significant majority of surveyed establishments rely on practical skills assessments (72%) to evaluate candidates during recruitment, reflecting the high value placed on hands-on competence. Personal interviews (64%) also emerge as a popular method, suggesting that interpersonal communication and direct engagement remain integral in hiring decisions. Written tests or exams (18%) are less frequently used, which may indicate that theoretical knowledge, is not the foremost criterion. Group discussions or activities are employed to a lesser degree (13%), suggesting that collaborative or problem-solving exercises are occasionally part of the selection process. Finally, 1% of employers mentioned other assessment forms, indicating that alternative methods are rarely used.

Figure 22: Methods of Skills and Competencies Assessment
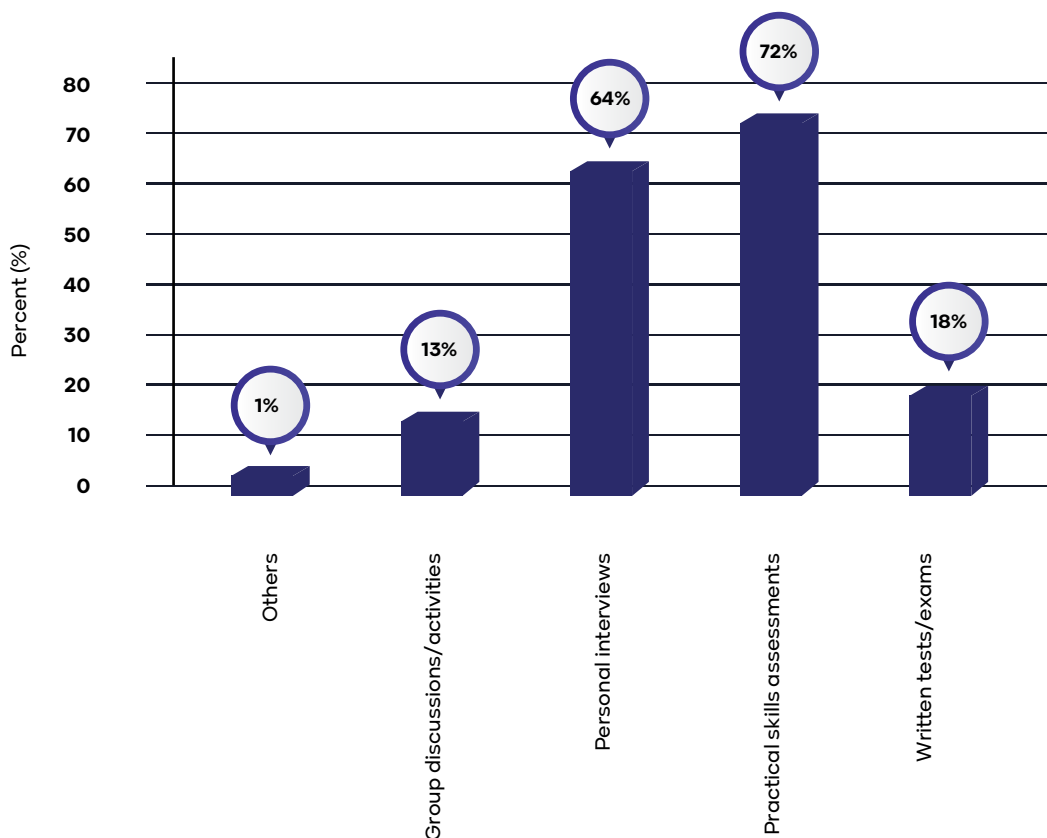
4.16 Challenges in Hiring or Retaining Employees

Female Employees

Figure 23 highlights two principal barriers to women participation in labour market, lack of flexible work arrangements and workplace policies or unconducive environment for women, each cited by 54% of respondents. These two challenges are often intertwined, as many women balance significant caregiving or household responsibilities alongside their professional roles. Without flexible hours, remote work options, or supportive workplace practices, female employees may struggle to keep/manage long-term employment.

Another notable challenge is occupational segregation and gender stereotypes, flagged by 37% of respondents. This phenomenon typically confines women to lower-paying, "traditional" roles while limiting their entry into technical or managerial positions. Likewise, safety and security concerns, also reported by 37%, remain a critical issue, especially in contexts where transportation or onsite security may be inadequate.

Figure 23: Challenges in Hiring or Retaining Female Employees
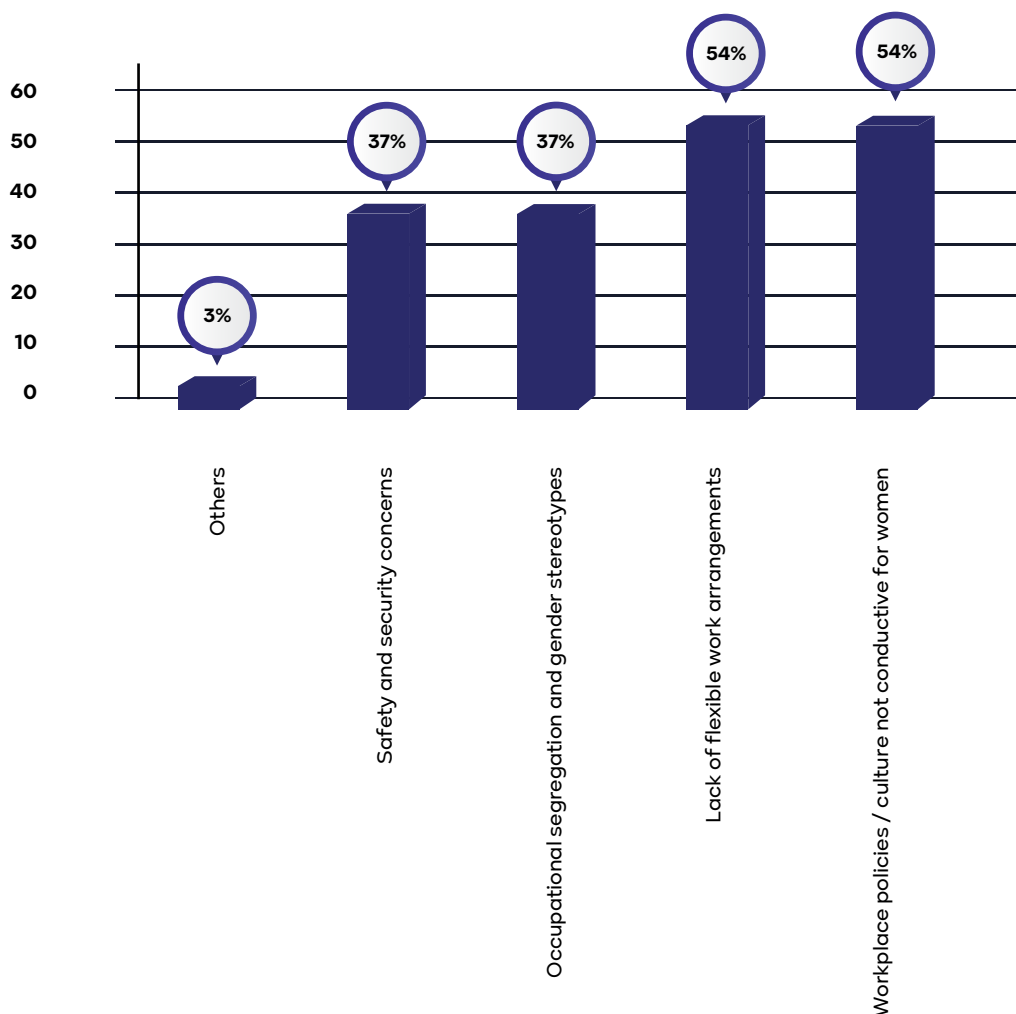
Disadvantaged Groups

Most respondents (61%) believe that a lack of supportive policies and reasonable accommodations is the biggest obstacle to engaging employees from disadvantaged backgrounds (Figure 24). This often means that even if individuals possess foundational skills, they may face systemic barriers such as insufficient workplace accommodations for physical or cognitive differences, limited mentorship programmes, or inadequate policy frameworks that could facilitate smoother integration into the workforce. Another prevalent challenge is accessibility issues, cited by 50%, encompasses both the physical infrastructure of the workplace (e.g., ramps, elevators, ergonomic workstations) and logistical constraints like transportation.

Figure 24: Challenges in Hiring/Retaining Employees from Disadvantaged Groups
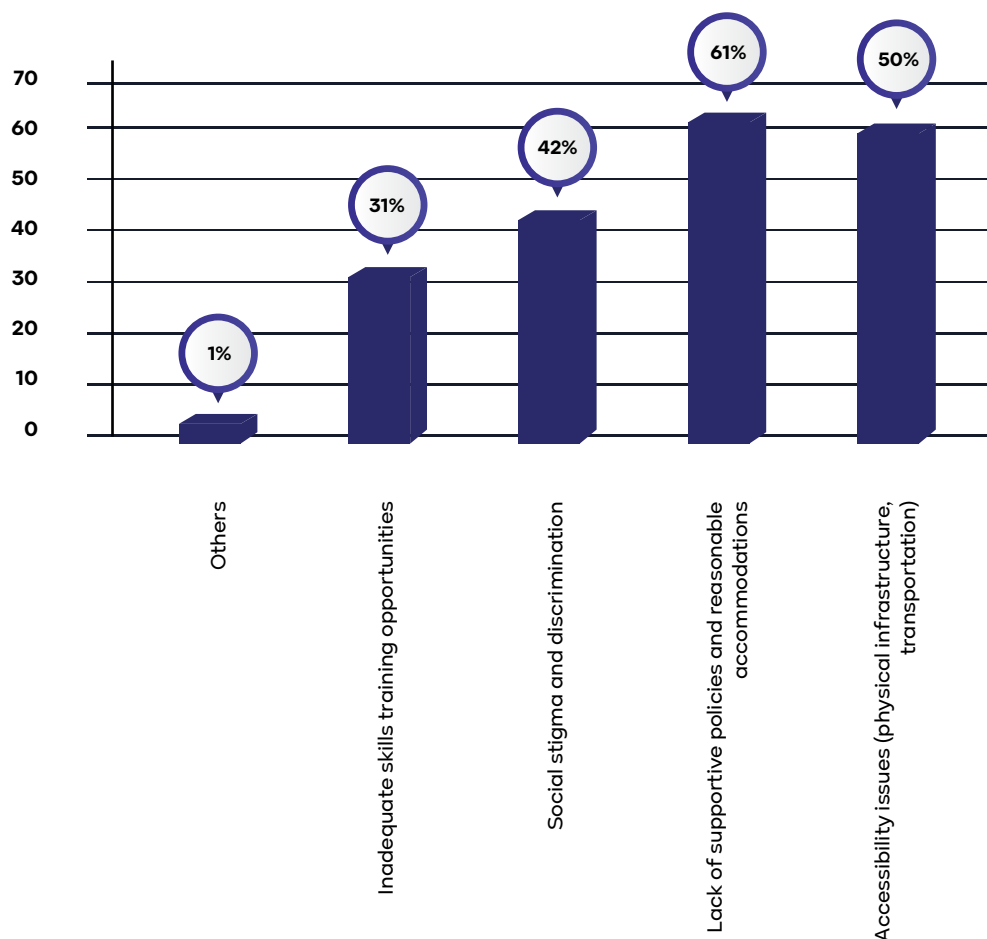
Forty-two percent (42%) of respondents reported facing social stigma, hence discrimination remains a significant hurdle. Furthermore, inadequate skills training opportunities, highlighted by 31% of respondents, suggest that members of disadvantaged groups may not have equitable access to specialized training or continuous professional development programmes. Lastly, other factors were reported by only 1% of the respondents, including the nature of work being unsuitable for disadvantaged groups.

Workforce Development and Skills Acquisition

According to 58% of respondents (Figure 25) skill mismatches between education/training and job requirements pose the most critical challenge in workforce development. They often find that newly hired employees, including graduates of vocational programmes, lack the practical and soft skills needed to function effectively in real-world settings. The rapidly changing technological landscape, cited by 51% of respondents, further complicates workforce development. A related concern is attracting and retaining talented employees, chosen as an issue by 43% respondents. Meanwhile, 37% employers underscore that even when they manage to attract the right people, retaining them becomes a challenge. These retention challenges can cause a revolving door of employees, adding costs of recruitment and training, and disrupting team cohesion.

Figure 25: Key Issues Emerging in Workforce Development and Skill Acquisition
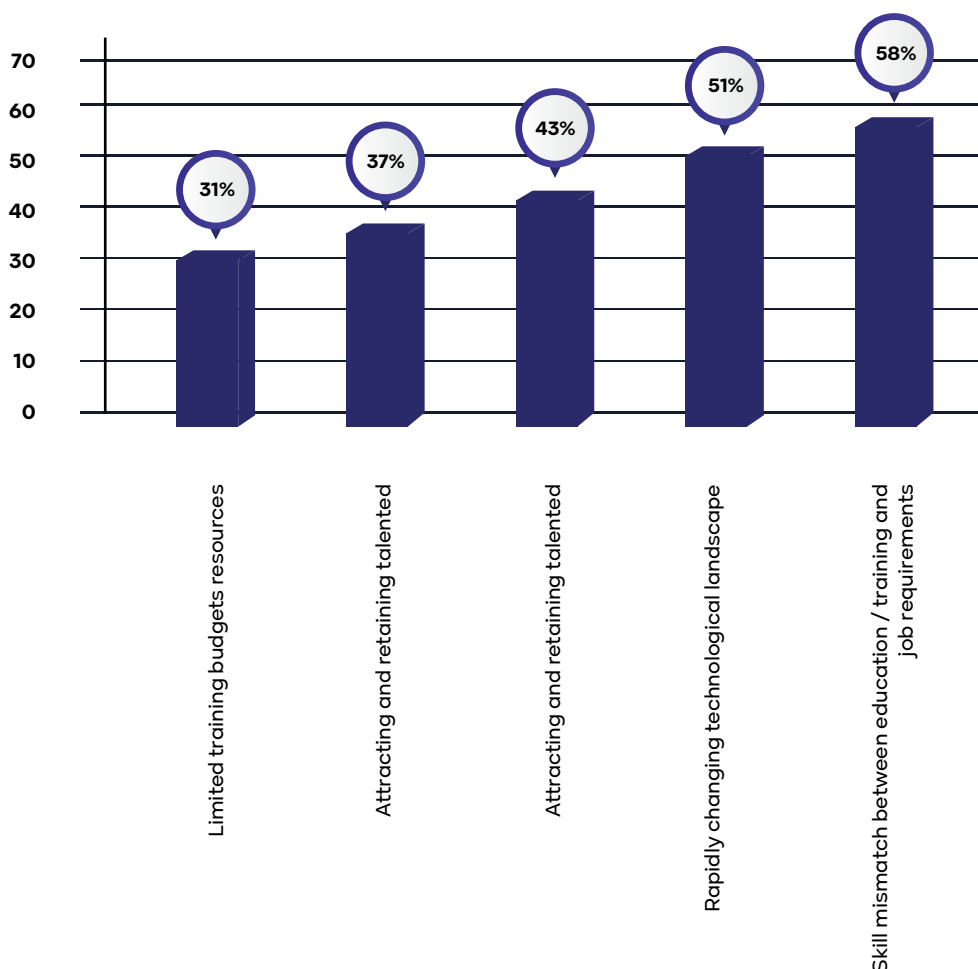
Finally, limited training budgets and resources, highlighted by 31% of respondents, is said torestrict their ability to systematically invest in workforce development. Many organizations, especially small and medium enterprises, operate under tight financial constraints that hinder robust training programmes or partnerships with educational institutions. As a result, employees often miss out on structured learning opportunities, exacerbating skill gaps and limiting innovation.

4.17 Suggestions for Improvement

Quality and Relevance of TVET Programmes

Figure 26 outlines suggestions to increase the quality and relevance of technical and vocational education and training. A substantial number of respondents (65%) emphasize the need to focus on incorporating transferable/hands-on skills in TVET curricula. Improving the quality of instructors and trainers is the second most frequently cited suggestion, with 53% of respondents underscoring its importance. The findings also reveal that 37% of respondents call for updated curricula aligned with technological and market changes.

Furthermore, 30% of respondents highlighted the need to enhance industry exposure through internships or on-site training programmes. These experiences can bridge the gap between theory and practice, enabling trainees to refine their skills in real-world settings. By expanding internships or apprenticeship placements, TVET graduates gain deeper insight into workplace cultures, equipment usage, and professional standards, factors deemed critical to career readiness. Finally, other 1% of respondents propose various other ideas, reflecting the diverse range of potential improvements.

Figure 26: Suggestions for improving the quality and relevance of TVET
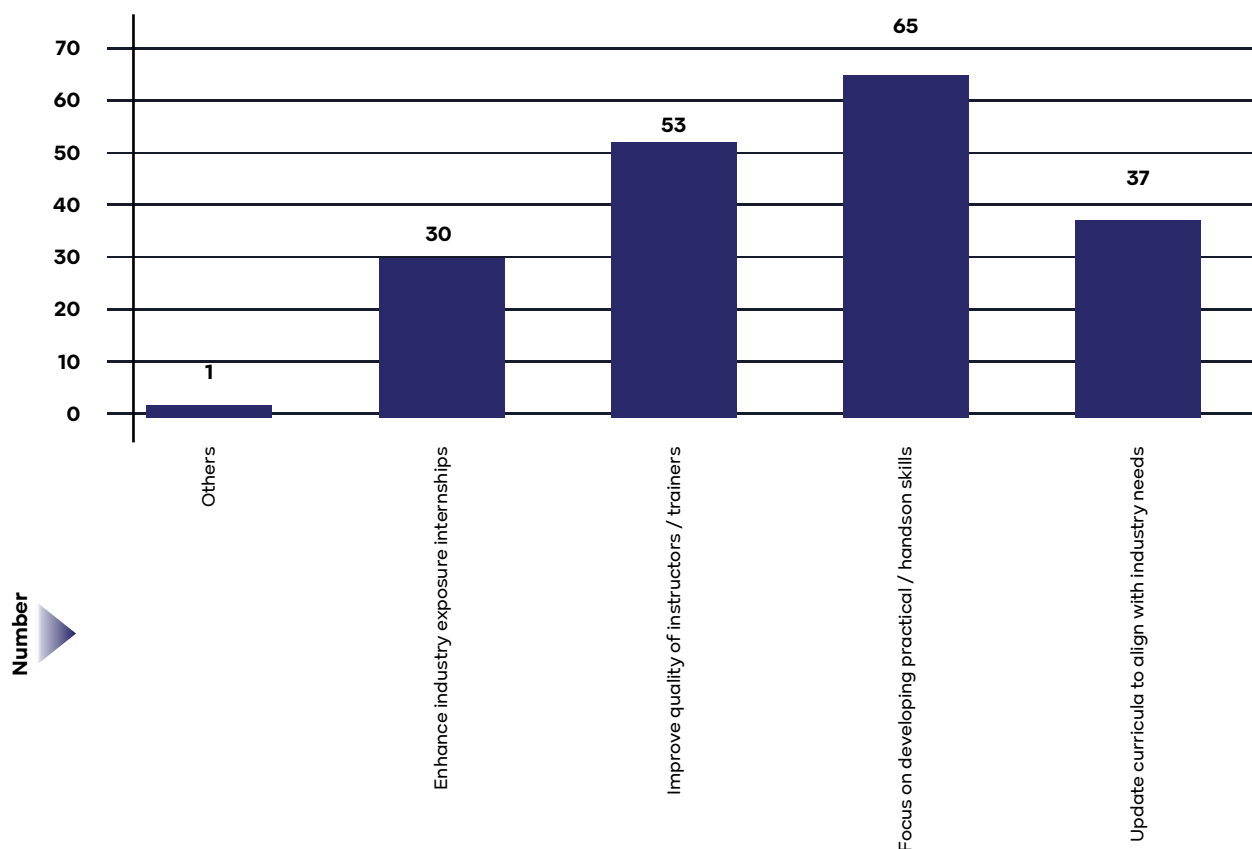
Green Skills

The survey results about green skills (Figure 27) reveal a notable shift in employers' priorities toward environmental sustainability, compliance, and resource management in the TVET sphere. Almost half of the respondents (49%) identify environmental compliance and regulations as a critical skill area, underscoring the growing importance of adhering to eco-friendly standards and legislation. A similar proportion (49%) emphasize waste management and recycling, indicating that reducing material waste and practicing responsible disposal are no longer optional but essential in contemporary workplaces. Moreover, sustainable manufacturing processes feature prominently, with 47% of respondents highlighting the need for skills related to green production techniques.

Figure 27: Green Skills across Industries
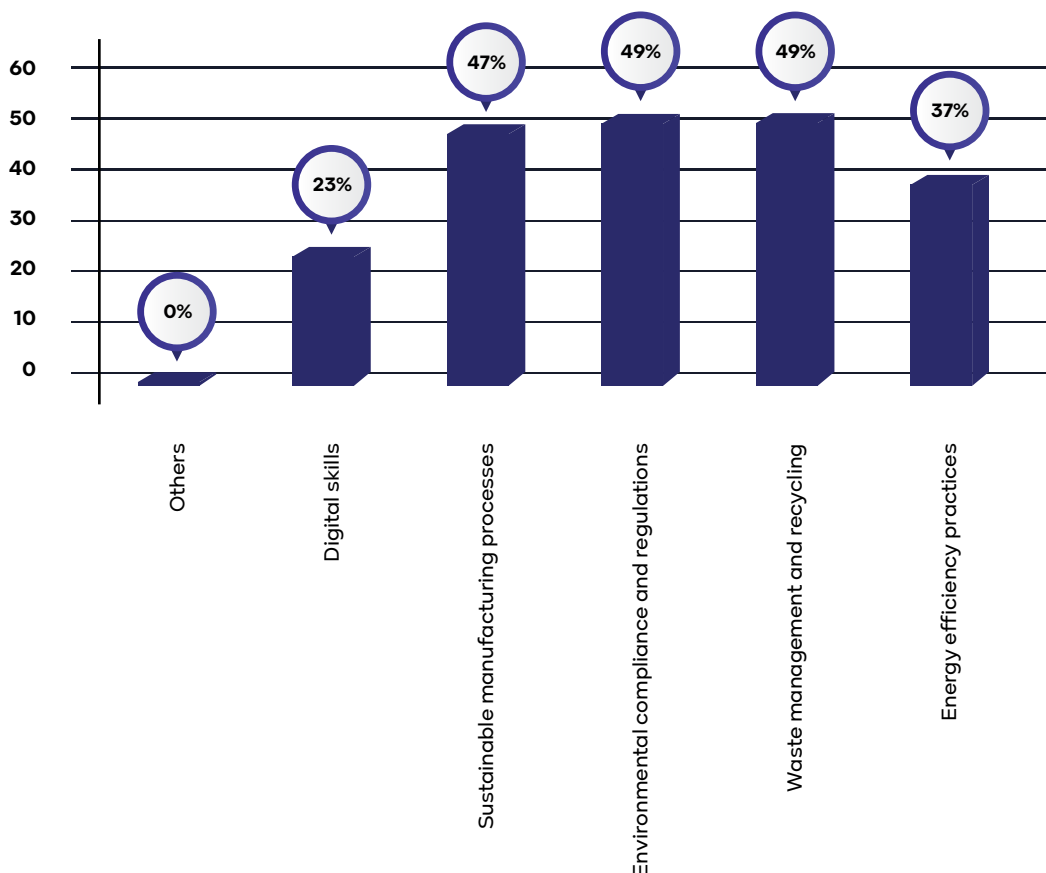
Energy efficiency practices are cited by 37% of stakeholders in the context of green skills, reflecting a recognition that energy-saving measures, such as optimized machine operation and building design, are integral to both cost reduction and environmental stewardship. Notably, 23% of respondents underscore the importance of digital skills in supporting these green initiatives. The absence of "Other" suggestions (0%) indicates that respondents' needs are well-represented by the given categories, reinforcing the idea that environmental and sustainability concerns have become mainstream in skills demand.

Introducing Green Skills in TVET Programmes

Figure 28 presents a clear consensus that practical exposure to green technologies should be a top priority in technical and vocational education, with 64% of respondents endorsing "practical training in green technologies" as a critical step. Collaborations with environmental organizations are highlighted by 44% of respondents as an important measure, reflecting the belief that industry partnerships and real-world environmental expertise can enrich TVET programmes. Another noteworthy approach, indicated by 47% of respondents, is integrating green concepts across relevant trades and disciplines rather than confining them to standalone modules. Finally, 35% of respondents advocate dedicated green courses or modules within the curriculum, indicating that while mainstreaming sustainability across all subjects is crucial, targeted, in-depth study of green skills remains crucial.

Figure 28: Suggestions for Introducing Green Skills in TVET Programmes
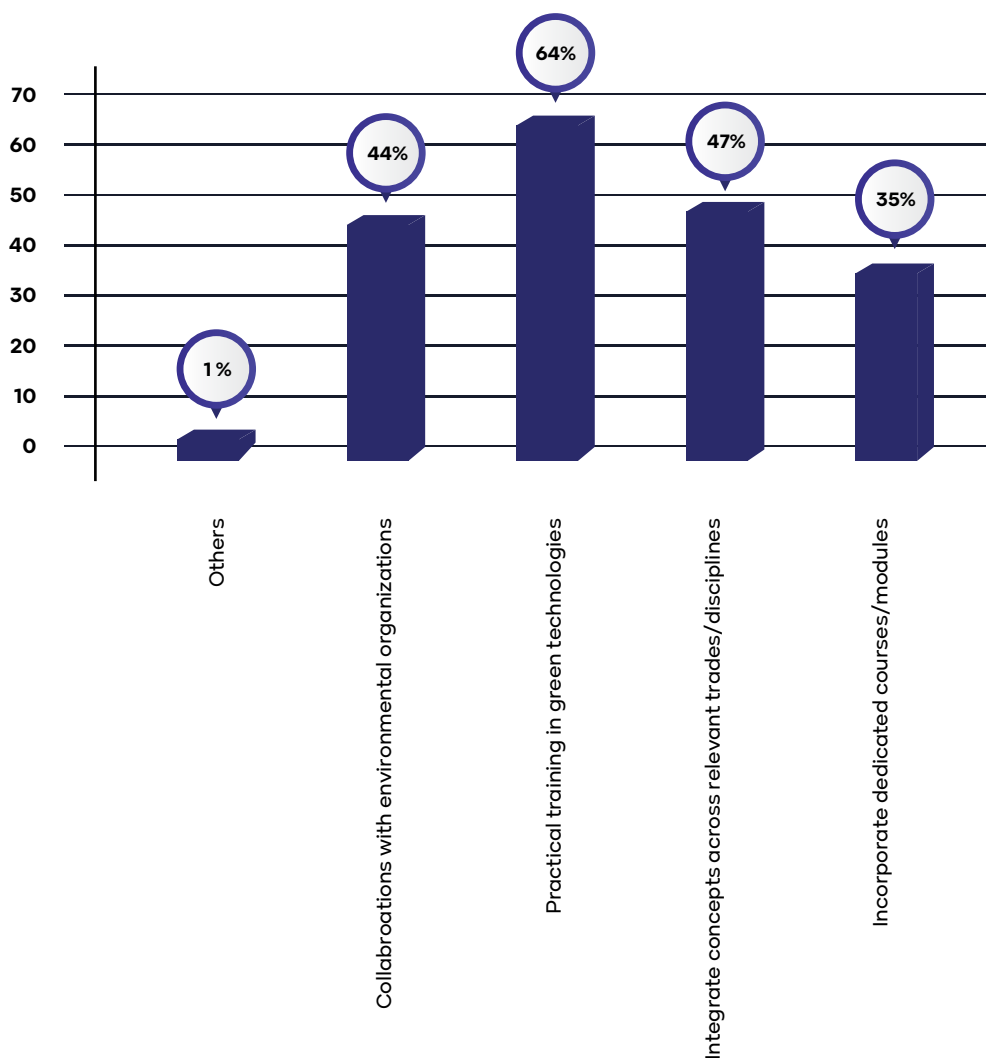
Improving the Overall TVET System

Sixty-two percent (62%) of respondents emphasize the need for increased funding and investment in TVET infrastructure, indicating that current training facilities, equipment, and technology are often outdated (Figure 29). Closely tied to this, better coordination between industry, government, and training providers is highlighted by 59% of respondents. Meanwhile, stronger quality assurance and accreditation, supported by 48% of respondents, are seen as a critical step in enhancing the credibility and consistency of TVET qualifications.

Finally, promotion of TVET as a viable career pathway, cited by 29% of respondents, reflects a lingering societal bias in which vocational education is often considered a lesser option compared to academic tracks.

Figure 29: Suggestions for Improving Overall TVET System
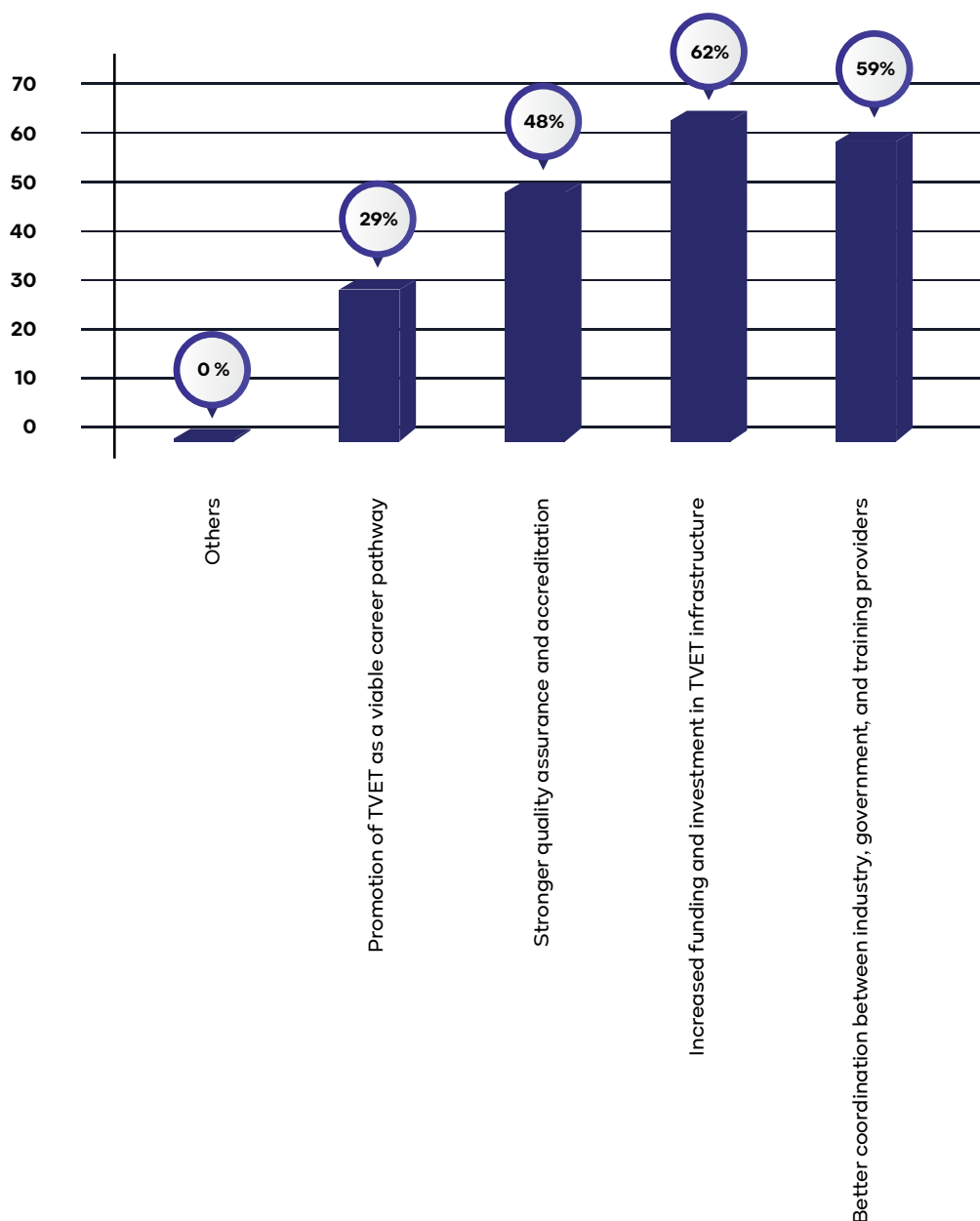
Promoting Greater Industry-TVET Collaboration

A large number of respondents (63%) emphasize the importance of facilitating more internship and apprenticeship opportunities (Figure 30), suggesting that immersive, real-world experiences are one of the most effective ways to bridge the gap between training institutes and employers. About half of the stakeholders (48%) advocate involving the industry in curriculum design and review. Moreover, 42% of participants call for establishing formal industry advisory boards or committees, which would offer a structured platform for consistent engagement. Finally, 34% of respondents believe in encouraging industry contributions. By supplying modern machinery, updated software, or even part-time trainers from within the company, businesses can enhance the practicality of TVET programmes and reduce the financial strain on institutions.

Figure 30: Suggestions for Promoting Greater Industry-TVET Collaboration
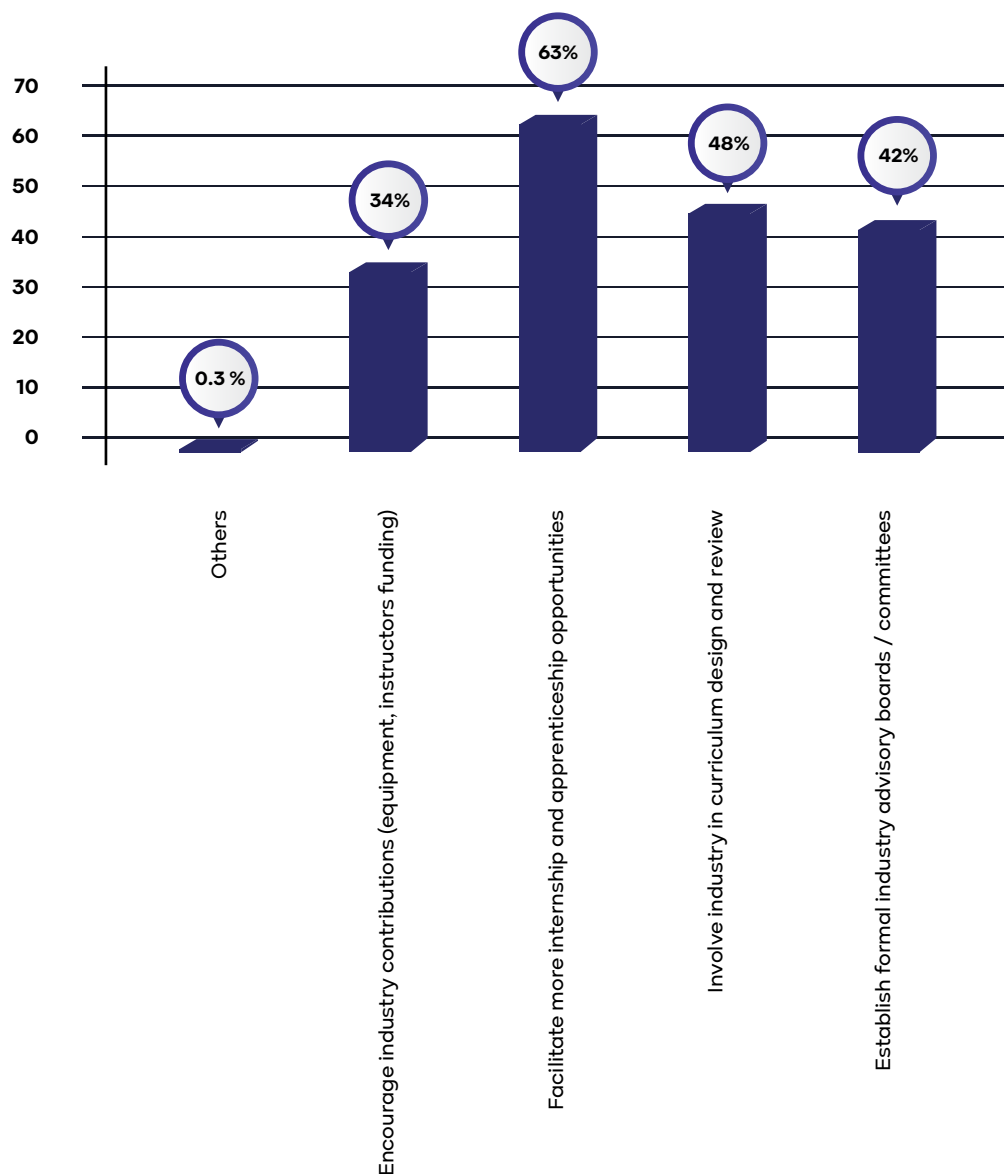
Suggestions for New Emerging Technologies in TVET

Figure 31 reveals critical priorities for workforce development, with training instructors on new technologies emerging as the top concern (33%), underscoring the need for upskilling educators to meet evolving industry demands. Close behind, 'collaboration with technology companies' (28%) highlights the importance of public-private partnerships to align training programmes with market needs. Additionally, upgrading equipment and facilities (21%) is seen as a key enabler for practical skill development, while specialized courses and certifications (18%) are recommended to offer specialized course/ certification address specific skill gaps. Notably, no respondents (0%) identified "Other" factors as a priority, suggesting a clear consensus on these four focus areas. To strengthen Balochistan's labour market, targeted investments in instructor training, industry collaboration, infrastructure modernization, and tailored certification programmes are essential to enhance employability and economic growth.

Figure 31: Suggestions for New Emerging Technologies in TVET
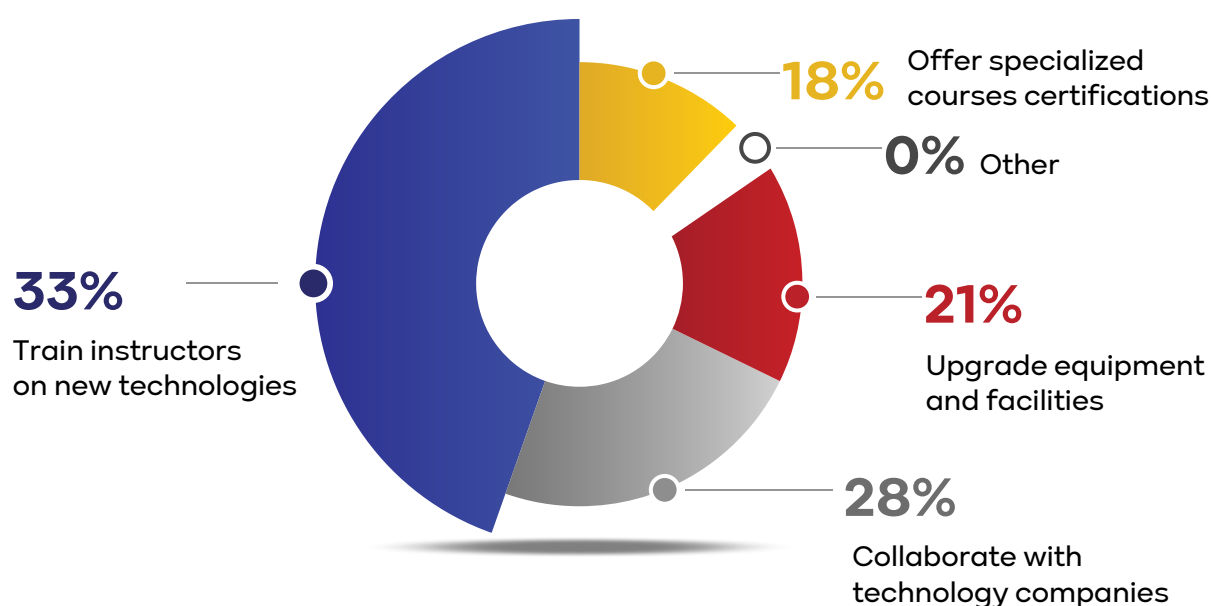
Enterprises Having Dedicated Training Facilities

Only 24% of respondents report having a dedicated training or learning and development department within their organization, while 76% do not have any (Figure 32). This disparity underscores a prevalent gap in systematic workforce development across many enterprises. Although a specialized department can significantly enhance quality, consistency, and relevance of staff training, the data indicates that most workplaces rely on ad-hoc arrangements or do not opt for formalized learning and development altogether.

Figure 32: Availability of Dedicated Training Department

24% — Yes

No — 76%
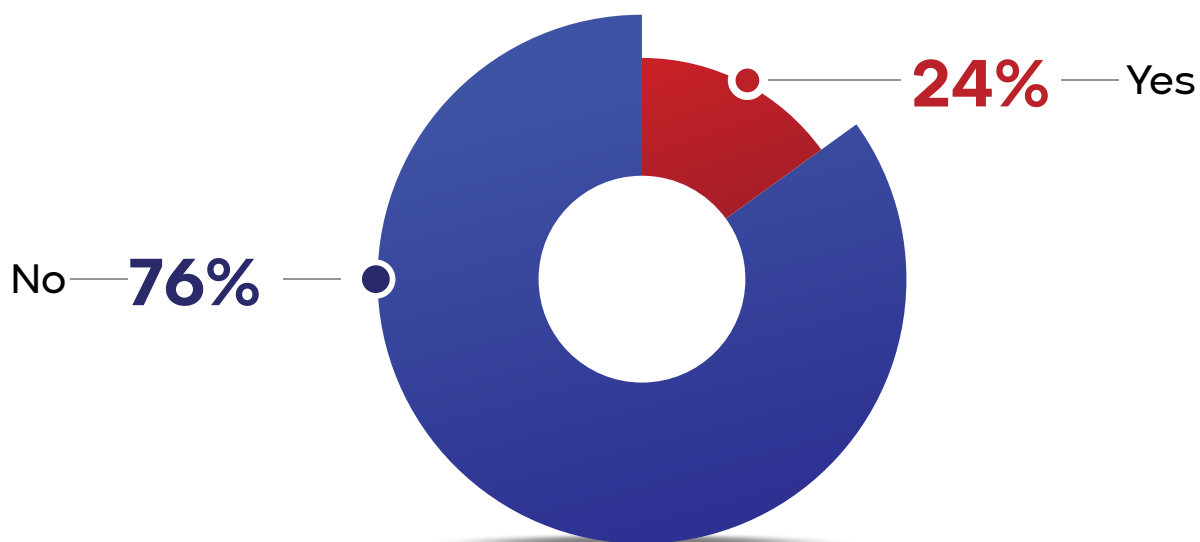
Identifying and Sourcing Potential Job Candidates

As shown in Figure 33, nearly half (47.1%) of employers prefer employee referrals as their primary recruitment channel, making it the single most popular method. This high reliance on internal networks suggests that many organizations trust existing employees' judgment, value informal recommendations, and possibly find referrals more cost-effective and reliable than other methods. The second most common approach, print media advertisement (24.8%), indicates that traditional recruitment platforms still play a substantial role in reaching local or specialized audiences, particularly in regions where digital penetration may be limited.

Online job portals, at 14.3%, are steadily gaining traction, reflecting the gradual shift toward digital hiring solutions. Meanwhile, campus recruitment drives (4.4%) and job fairs/career events (5.6%) remain less utilized but are still relevant for connecting with fresh talent pools and niche professionals. Finally, the small "Other" category (3.9%) may include direct walk-ins, or use of government employment offices or third-party agencies.

Figure 33: Preferred Methods for Identifying and Sourcing Potential Job Candidates
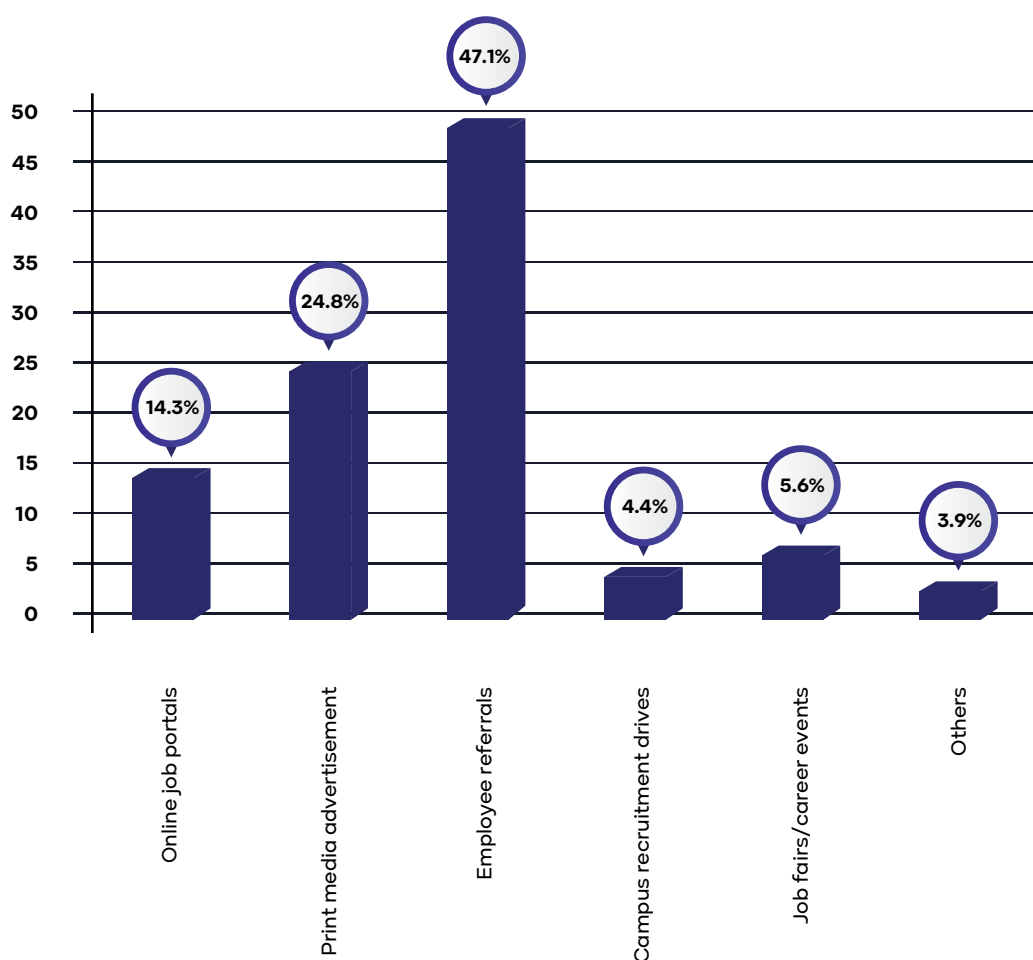
Competency Standards/Curricula

About 44% of respondents are involved in developing or reviewing competency standards and curricula for specific occupations, while 56% reported no participation (Figure 34). The moderate level of involvement suggests that a considerable portion of stakeholders (employers, industry representatives, or sector experts) are directly contributing to shaping the skills framework and quality of TVET offerings. However, the remaining 44% highlight a gap in broader industry input.

Figure 34: Interest in Participating in Development or Review of Competency Standards and Curricula

44% — Yes

No — 56%
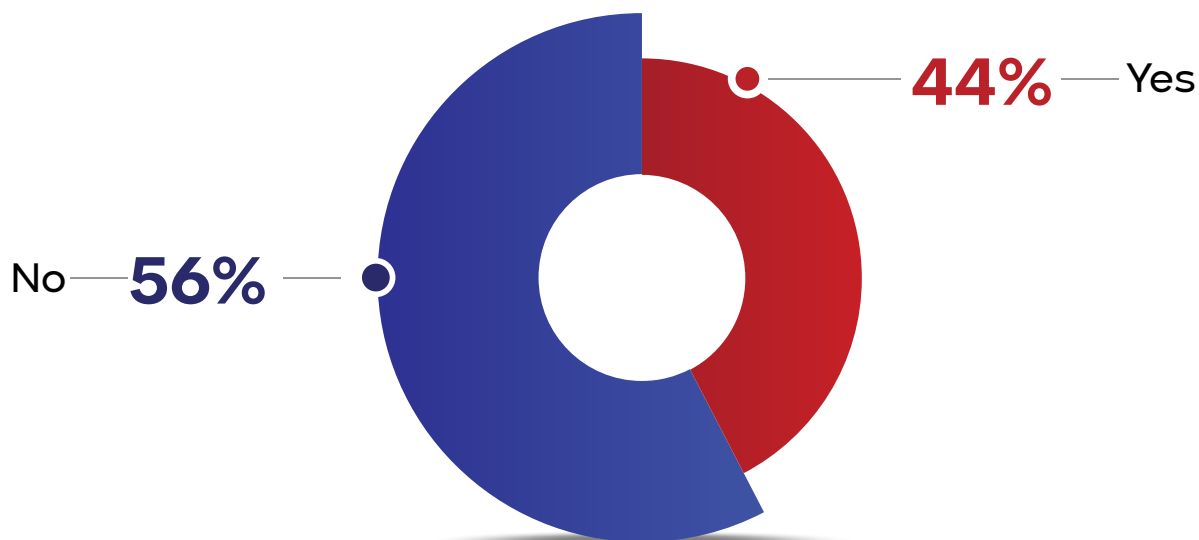
Employee Retention and Turnover

According to the data collected, 27% of the respondents report facing challenges related to employee retention and turnover, while 73% do not seem to experience such difficulties (Figure 35). The relatively smaller segment encountering retention problems may suggest that, in many workplaces, employees remain stable or that employers have policies in place to foster loyalty and continuity.

Figure 35: Challenges related to Employee Retention and Turnover

27% — Yes

No — 73%
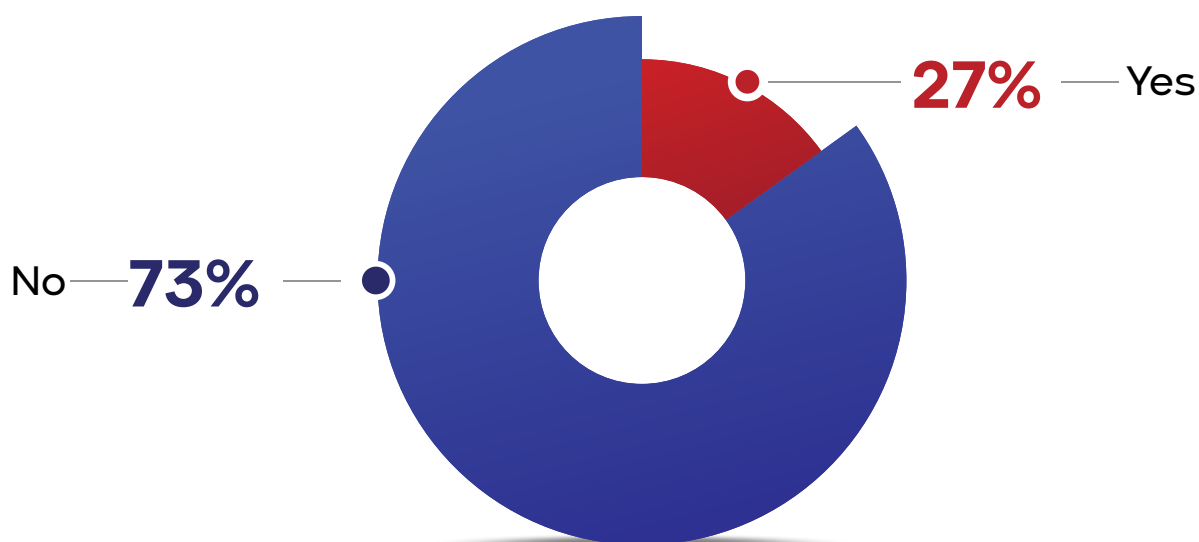
Digital/ICT Skills Workforce Demand

As shown in Figure 36, 49% regard digital or ICT skills as "very important," while 8.3% go even further to describe them as "extremely important." Another 28.6% view digital and ICT capabilities as "moderately important" reflecting a broad consensus that technology-related competencies are a key driver of employability, efficiency, and innovation across various sectors. At the other end of the spectrum, a combined 14.1% (5.3% "not at all important" and 8.8% "slightly important") assign a relatively low priority to ICT skills possibly due to the nature of their industries, the scale of their operations, or limited technological adoption in their specific work contexts.

Figure 36: Importance of Digital and ICT Skills for Current and Future Workforce
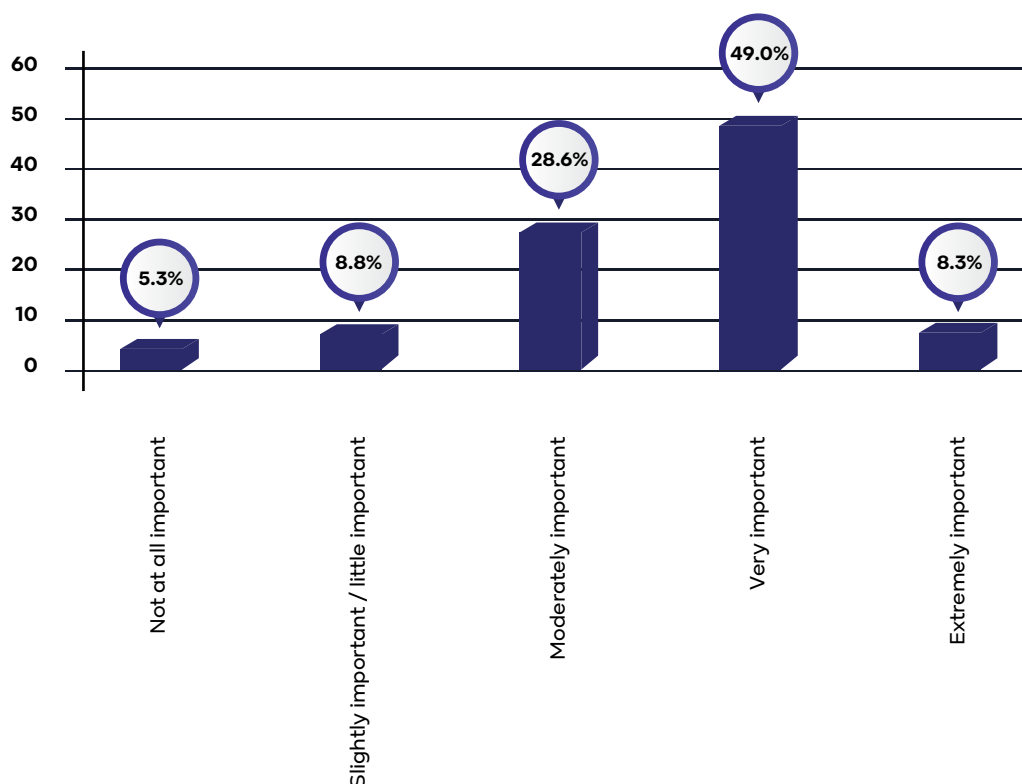
Digital/ICT Skills in TVET Programmes

Figure 37 presents valuable insights into the prioritization of digital and ICT-related skills within the technical and vocational education and training (TVET) ecosystem in Balochistan. The chart reflects the percentage distribution of stakeholder preferences for specific digital competencies, highlighting the key areas where curriculum development and instructional focus are most urgently needed.

E-Commerce (21%) emerges as the most in-demand digital skill, followed closely by Digital Marketing (18%) and Web Development & Designing (15%). This pattern underscores a clear shift toward entrepreneurial and online business-oriented skill sets. The emphasis on e-commerce and digital marketing suggests a growing recognition of the economic potential of online platforms, particularly in regions where physical market access is limited. For Balochistan's youth, these skills represent a gateway to self-employment, freelancing, and integration into the national and global digital economy.

Data Analytics (12%) and Artificial Intelligence (AI) (11%) also show significant relevance, pointing toward an increasing appreciation of data-driven decision-making and automation technologies in modern industry. These competencies align with emerging trends in sectors like renewable energy, health diagnostics, and smart agriculture, where data interpretation and AI-driven solutions are becoming integral.

Robotics (8%), Big Data Processing (7%), and 3D Printing (5%) represent medium to low priority areas. While these skills are crucial for advanced manufacturing, precision healthcare, and industrial automation, their lower ranking may reflect limited current adoption in Balochistan's industrial landscape or insufficient awareness of their application potential. However, as local industries evolve, especially with upcoming economic zones in Gwadar and expansion in construction and healthcare, these areas will gain importance.

Ranking the lowest (4%), Digital Accounting may indicate either under-appreciation of its relevance or a continued reliance on conventional bookkeeping methods within local enterprises. Despite this, as MSMEs digitize operations, especially with the increasing use of mobile banking and fintech platforms, this skill is likely to rise in importance.

Figure 37: Digital/ICT Skills in TVET Programmes
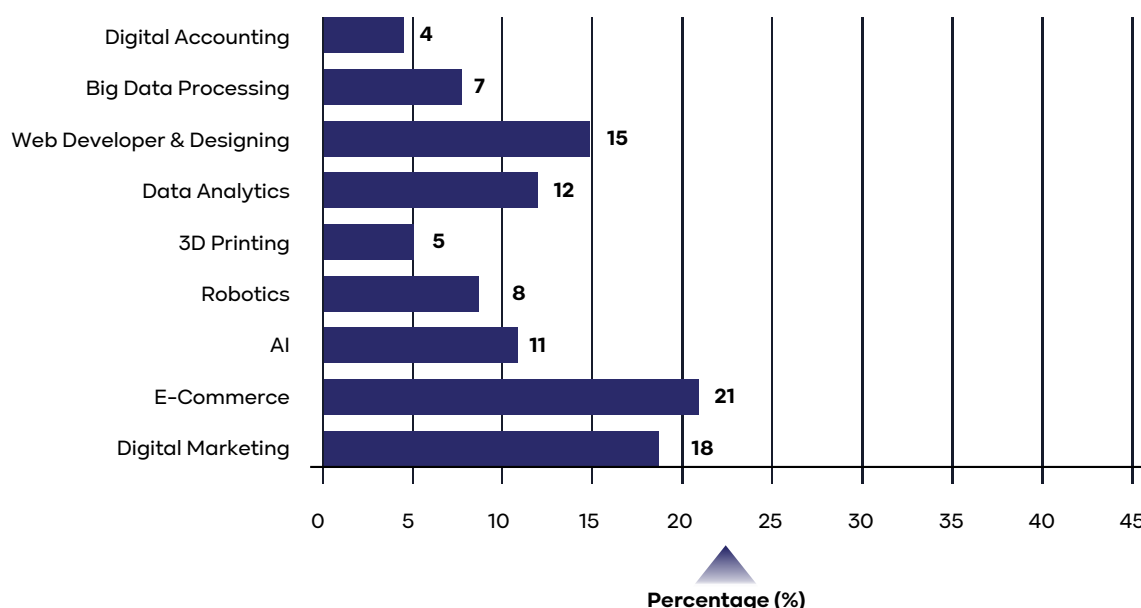
Introducing New or Emerging Technologies

Figure 38 reveals a pronounced emphasis on incorporating cutting-edge technologies within the TVET framework, with 41% of respondents highlighting the importance of Artificial Intelligence (AI), followed by Robotics and 3D printing, each cited by 26% of participants, and an additional 7% referring to other emerging tools. The prominence of AI indicates that stakeholders view intelligent automation and data-driven processes as integral to modern technical education, potentially transforming traditional curricula to encompass predictive analytics, machine learning, and algorithmic problem-solving. At the same time, the equal call for Robotics and 3D printing underscores a growing awareness that hands-on, design-based, and automated manufacturing skills will be essential for tomorrow's workforce.

Figure 38: Demand in Niche and Emerging Areas
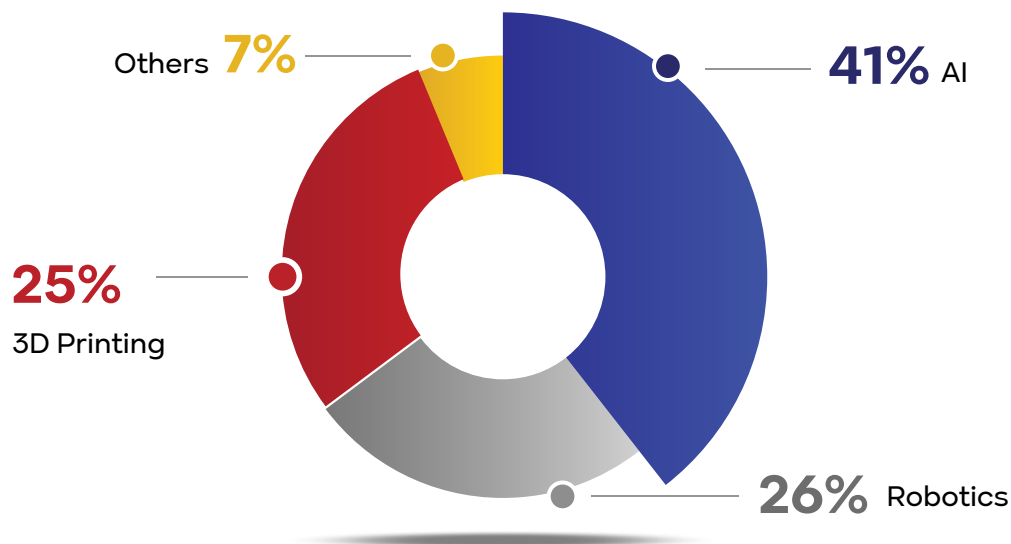
5. CONCLUSION

The findings from the labour market assessment of Balochistan reveal a complex interplay between demographic pressures, emerging sectoral demands, and institutional capacity to develop a skilled workforce. Balochistan's economic structure is driven by small and micro-enterprises, accounting for nearly 87% of establishments that fundamentally shape the nature of its workforce needs. Sectoral demand is highly concentrated in manufacturing, allied health, energy, and construction, whereas rural districts show a distinctive tilt toward agriculture, hospitality, and water resource management. This heterogeneity across regions underscores the need for district-specific workforce strategies that reflect local industrial clusters and occupational realities.

The analysis of sector-wise skilled workforce demand illustrates that the provincial economy is transitioning toward semi-technical and technical employment structures, driven by public and private infrastructure investments. For example, manufacturing leads with a workforce demand of 20,767, particularly for industrial electricians, welders, and machine operators. The allied health sector closely follows (demand 15,416) reflecting the rising healthcare needs in urban centres and underserved rural populations. The construction sector demands 11,213 skilled individuals, especially in civil technology, masonry, and plumbing. Notably, the energy sector, with a demand of 13,052 workers, signals a strong shift toward renewable energy and energy-efficient systems, such as solar technology, which require highly specialized training. These figures confirm that development of technical and operational skills is imperative for the province's workforce transformation.

However, the demand-supply gap is stark. Balochistan's annual skilled workforce demand stands at 95,465 against a supply of only 23,163, reflecting a shortfall of over 72,000 skilled workers. Key trades such as electricians (demand 4,195 vs. supply 299), welders (2,958 vs. 506), and nurses (1,693 vs. 56) experience severe undersupply. These gaps point to critical deficiencies in training outreach, curriculum alignment, and institutional readiness. On the other hand, certain trades such as tailoring, stitching, and basic ICT skills are oversupplied, largely due to legacy training programmes and the absence of market-responsive admission strategies. For instance, tailoring shows a surplus of 6,129 trained individuals with minimal industry absorption, while the Amazon Virtual Assistant and e-commerce skills also reflect premature investments without ecosystem support.

District-level analyses reinforce these trends. Quetta shows a diverse demand pattern, ranging from distribution and food services to electrical and mechanical trades. Lasbela exhibits a robust industrial profile, driven by high demand for machine operators and packaging workers. Gwadar, with its port-led development, is transitioning toward hospitality, marine-based trades, and logistics. Kalat and Killa Abdullah reveal agricultural and infrastructure-based demand profiles, especially for water management, auto electricians, and civil technicians. These regional patterns emphasize the importance of localized skill development initiatives tailored to the economic identities of each district.

Gender disparities remain significant. Only 17,690 out of 95,465 projected skilled positions are earmarked for women, limiting their participation primarily to allied health, hospitality, and handicrafts. Due to societal norms and occupational structures, the construction, mining, and energy sectors remain male-dominated. Furthermore, disadvantaged groups end up being largely confined to low-paying, low-growth occupations such as sanitation, basic security, and clerical work. A transformative inclusion strategy is required, encompassing flexible training, workplace accommodations, and awareness campaigns to integrate women and disadvantaged populations into high-demand trades.

Employer feedback paints a grim picture of current TVET system efficacy. Nearly 75% of the employers included in this survey report are dissatisfied with the skill level of graduates, primarily due to a lack of practical exposure, weak communication, and insufficient digital literacy. Only 12% of industries offer in-house training, while the majority rely on informal referral-based recruitment. This disconnect between training institutions and industries undermines the employability of TVET graduates. Furthermore, only 24% of firms have dedicated HR or training departments, severely limiting workforce development at the enterprise level.

Encouragingly, 49% of employers recognize the importance of digital and green skills, with strong demand for AI, robotics, and sustainable production practices. However, training institutions have yet to institutionalize these capabilities through mainstream curricula. Employers overwhelmingly advocate for reforms such as industry-institute collaboration, curriculum modernization, greater funding, and expansion of apprenticeship programmes.

To bridge the massive skilled workforce gap, the province must invest in district-sensitive, demand-driven vocational education that is gender-inclusive, digitally enabled, and environmentally responsive. By aligning TVET programming with labour market signals, empowering local institutions, and strengthening employer partnerships, Balochistan can pave the way for an inclusive, resilient, and future-ready workforce ecosystem.

6. RECOMMENDATIONS

Some policy recommendations are made here to help make Balochistan's TVET system more responsive, inclusive, and aligned with labour market needs.

1. Establish Sector-Specific CoE in Key Regions to Drive Skill Innovation

To address the deep-rooted skills mismatch and strengthen sectoral training capacities, the Government of Balochistan, through NAVTTC and TEVTA, should prioritize the operationalization of proposed CoEs in Chagai (Mining), Gwadar (Renewable Energy and Hospitality), Quetta (Construction and Engineering), and Zhob (Agriculture). These CoEs must serve as hubs of advanced, industry-aligned training and innovation. For instance, the Mining CoE in Chagai should be equipped and able to deliver specialized training in mineral extraction, geology, and mining safety. The Renewable Energy CoE in Gwadar should cater to the rising demand for solar, wind, and energy management technicians. Each CoE should be able to integrate simulation labs, industry-grade equipment, gender-responsive programmes, and apprenticeship linkages. This strategy would help ensure the emergence of a future-ready workforce aligned with Balochistan's evolving economic priorities.

2. Strengthen Institutional Governance, Enhance Employer Engagement

A coordinated policy approach is essential for creating a match between supply and demand of skills while enhancing the TVET system's operational effectiveness in Balochistan to fulfill market needs. To strengthen institutional governance, enhance employer engagement, and ensure that training programmes remain relevant to evolving sectoral priorities, the following set of policy recommendations is proposed:

Establish Institute Management Committees (IMCs)

Industry-Market-Community Committees need to be created and strengthened with representatives from both public bodies, TVET providers and local industry representatives. A mandatory function of these committees will be to determine regional skill deficiencies while developing curriculum and assessing training effectiveness to match market needs.

Conduct Regular Industry-Academia Dialogues

Regular seminars and consultative events should be scheduled to facilitate interaction between TVET institutions and employers to examine together labour market changes while showcasing upcoming work roles during discussions that support national and provincial growth plans particularly in promising sectors including construction, IT, renewable energy, and mining.

Implement a Continuous Employer Feedback Mechanism

Institutions should implement continuous feedback routines to help employers assess curriculum content and trainee abilities while also identifying the required future skills. Curricular adjustments will become possible with timely updates through a pre-established feedback process.

Develop Sector-Specific Training Plans

TVET institutions should design targeted training programmes for priority sectors identified by the government, including IT, renewable energy, advanced manufacturing, construction, and logistics. Training content must reflect both the foundational and specialized skills required within each sector.

Conduct Periodic Labour Market Assessments

Carry out annual or bi-annual labour market studies to evaluate employment trends, emerging skill demands, and programmeme relevance. The findings should inform of the introduction of new courses in growth sectors and the phasing out of outdated or low-demand programmes.

Institute a Bi-Annual Programme Review System

Develop a system for reviewing training programmes' performance every six months against key labour market indicators. This would ensure timely course corrections and improve the responsiveness of TVET to economic shifts and sector-specific transformations.

3. Expand Vocational Training in High-Demand Trades Across Core Sectors

TEVTA Balochistan must immediately expand vocational training in high-demand occupations where supply is critically lagging behind demand. These include Electricians (gap: 4,085), Industrial Electricians (gap: 2,208), Welders (gap: 2,452), Machine Operators (gap: 3,606), Civil Technicians (gap: 1,094), and Nurses (gap: 1,655). These occupations are fundamental to the functioning of the construction, energy, allied health, manufacturing, and hospitality sectors. Scaling training in these trades will directly support infrastructure growth, healthcare expansion, and industrial activity across the province.

4. Align TVET Programmes with Sector-Wise Demand to Close the 75.7% Workforce Gap

With a province-wide skilled workforce demand of 95,465 and supply limited to 23,163, Balochistan suffers from a staggering 75.7% shortfall. Sectoral demand is highest in Manufacturing (20,421), Allied Health (15,018), and Renewable Energy (13,052). TEVTA and allied agencies must revise their curricula and intake targets to match this sectoral distribution. Particular focus must be placed on mid-level occupations (Level 3 and Level 4), which together constitute nearly 50% of the total skilled labour demand. Introducing modular and accelerated certifications, particularly in high-demand trades like Solar Technicians, Civil Technicians, Machine Operators, and Allied Health professionals, will help bridge these gaps in the short to medium term.

5. Address Sectoral Gender Gaps by Designing Inclusive TVET Strategies

There is an evident gender disparity in skilled labour demand, with only 17,690 out of 95,465 jobs (18.5%) designated for females. Yet sectors like Allied Health (6,994), Handicrafts (1,472), and Hospitality (1,979) present viable entry and expansion points for women. TEVTA may establish targeted training pathways for women in these sectors and introduce gender-responsive programming across emerging sectors like Renewable Energy (1,435 female demand) and IT services. Introducing flexible schedules, dedicated female training cohorts, and transport support will enhance women's participation in traditionally male-dominated trades.

6. Revise Training Portfolios to Address Oversupply and Mismatched Trades

Many trades with oversupply with negligible or negative market demand, e.g., Tailors (surplus: 6,129), Beauticians (surplus: 3,942), and Stitchers (surplus: 3,303) are indicative of misaligned training programmes. TEVTA must undertake periodic market demand analyses and rationalize intakes accordingly. Phasing out low-demand programmes while reallocating resources to emerging sectors (e.g., Solar, HVAC, Electrical, Health, and Agritech) will ensure better employment outcomes and efficient training investments.

7. Scale Digital and ICT Skill Development Aligned with Emerging Technological Needs

With 49% of employers rating high digital and ICT skills and growing demand in areas like AI, robotics, and 3D printing, digital transformation may be included in Balochistan's TVET cirricula. TEVTA should integrate digital literacy, data analytics, energy monitoring, and digital diagnostics across all technical trades. Emphasizing hybrid skills (e.g., Solar + ICT, Medical Tech + AI) will help produce cross-functional professionals capable of meeting the future workforce needs in Balochistan's economy.

8. Mainstream Green Skills and Sustainable Practices Across Vocational Programmes

Green skills are increasingly demanded across sectors, with over 49% of employers identifying environmental compliance and waste management as critical training areas. TEVTA must embed green

modules into existing trades, e.g., energy-efficient construction, sustainable agriculture, solar installation, and waste reduction practices. Collaboration with environmental organizations and renewable energy firms can support curriculum development and internship placements. Courses should also highlight circular economy practices and climate resilience, positioning Balochistan's workforce as a strategic asset in Pakistan's green transition.

9. Institutionalize Industry-TVET Collaboration to Improve Employment Outcomes

Due to the fact that only 12% of surveyed firms provide in-house training and56% are not involved in curriculum development, TEVTA and NAVTTC must institutionalize partnerships through Industry Advisory Boards, co-designed curricula, and incentive-based apprenticeships. Equipment donations, guest lectures by industry professionals, and placement cells will help align training with market needs and improve employment retention. Moreover, TEVTA should include industry exposure (minimum 20%) for all vocational programmes to enhance hands-on learning.

10. Address Equity and Access through Targeted Support for Disadvantaged Groups

The underrepresentation of disadvantaged groups in high-skill sectors calls for policies that promote inclusive training opportunities for minorities, persons with disabilities, the elderly, and transgender persons. Reserved seats in high-demand trades, adaptive training infrastructure, and customized mentorship programmes are essential. For example, software development, medical technician, and computer operator roles can offer viable pathways for disadvantaged groups when paired with accessible training modalities and inclusive hiring practices.

11. Improve Public Perception of TVET Through Career Guidance and Community Outreach

A targeted communication strategy should promote TVET as a first-choice career pathway by leveraging career counseling in secondary schools, alumni success stories, and parent-industry-institute linkages to help reposition vocational education as a viable, respected career route. Promotional campaigns should also highlight earnings potential and pathways to entrepreneurship in sectors like agribusiness, solar energy, and digital services.

12. Introduce Monitoring and Feedback Mechanisms to Strengthen Quality Assurance

The TVET system in Balochistan must adopt data-driven monitoring frameworks. Real-time labour market information systems (LMIS) should be used to track evolving demand, employment outcomes, and feedback from graduates and employers. TEVTA must regularly update course content based on this feedback, while NAVTTC may implement performance-based funding models tied to placement rates and employer satisfaction scores. Strengthening quality assurance will increase graduate employability and institutional credibility.

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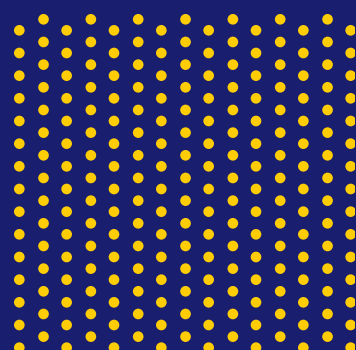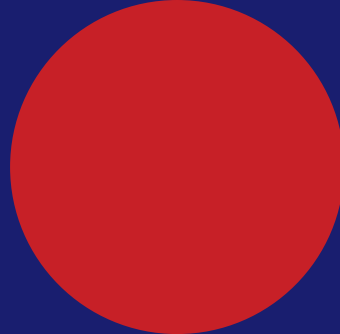
7. ANNEXURES

Annex A: Employer Survey Tool

Skilled Workforce Demand Side Questionnaires

This information supplied on this format will be kept strictly confidential and will be used for research & Planning of National Skills Information System, NAVTTC, Government of Pakistan

Assalam-o-Alaikum,

My name is [Your Name], and I am representing the TVET Sector Support Programme which GIZ implements in close coordination with NAVTTC and TEVTAs in Punjab and Khyber Pakhtunkhwa. This survey aims to improve Technical and Vocational Education and Training (TVET) programs by identifying skills gaps in various sectors, weaknesses in the current offerings and growth sectors. As part of this endeavor, we are conducting this survey to gain a deeper understanding of the current state of the labour market, skills demand, and the effectiveness of the current TVET initiatives both in the public and private sectors. Your participation in this interview is crucial in helping us gather accurate and relevant information to guide policy planning and program implementation efforts. We greatly appreciate your time, your views and expertise in contributing to this important study."

Your participation in this survey is completely voluntary and there is no payment for your participation. Your answers will be completely confidential and anonymous, meaning that we will not be sharing your answers with others. The answers and views of the survey respondents will be used, analyzed, and reported in an aggregated manner without specifying the names and identities of the respondents.

Please ask if you would like more clarification about the study. You may also like approach the research coordinator of the survey if you have any questions or concerns.

His name is **Mr. Himat Ullah.** His phone number is 0334-5259088.

Do you agree to participate in this survey? Your responses will remain anonymous and confidential.

☐ Yes   ☐ No

End Interview

Section A:

1.0: Basic Information

Name of organization:

Dated: [   ]   Province: [   ]   District: [   ]

Email: [   ]

Address of the establishment: [   ]

A 1.1:	Size of the enterprise (establishment) (Select only one answer):
1	Large (250 persons and more)
2	Medium (100–249 persons)
3	Small (10–99 persons)
4	Micro (less than 10 persons)

A 1.2:	Enterprise ownership (Select only one answer):
1	Public
2	Private

A 1.3:	Location of Enterprise (Select only one answer):
1	Urban
2	Rural

A 1.4:	Legal form of the enterprise (Select only one answer):
1	Limited liability company
2	Joint-stock company
3	Cooperative
4	Private enterprise
5	Public
6	Another form (write)

A 1.4:	Legal form of the enterprise (Select only one answer):	
A	Agriculture, forestry and fishing	1
C	Textile & Garments	2
D	Hospitality & Tourism	3
F	Construction	4
C	Printing and Packaging	5
J	Information and communication	6
L	Real estate activities	7
M,N	Professional, scientific, technical, administration and support services	8
O,P,Q	Renewable energy	9
R,S,T,U	Other services	10

Sub-Sector: _____ (Just to write name, For example, specify construction type: building, roadwork, or other)

A1.5:	How many people are currently employed in your establishment (full-time and part-time)?

		Full-time	Part-time
1	Currently (as …., 2025)		
2	Last year (as …., 2024)		

Efficient use of materials, technology, equipment and tools									
Organizational and planning skills									
Other (please specify)									

Section B:

B 2.1. Future Skilled workforce Demand

(Example: Machine operator, Software developer, Construction worker.)

S.N	Occupation	Number/Annum																	
		Male								Female									
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	Male	Female
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			

A1.5:	Does your organization reserve quotas for these groups: minorities, persons with disabilities, transgender individuals, elderly?

Yes = 1   No = 2

B 2.3: If "Yes", please give details in the following table.

S.N	Occupation	Disadvantage group (minorities/transgender/elderly)	No. of seats
1			
2			
3			
4			
5			

Section C:

How satisfied are you with TVET graduates?	1-Very satisfied, 2-Satisfied, 3-Neutral, 4-Dissatisfied, 5-Very dissatisfied	
What specific skills do you find lacking in TVET graduates?		
Does your organization offer training programs like on-the-job training, apprenticeships, or online courses?	1-Yes 2-No	
If yes, what types of training programs do you offer?		
How do you currently assess the skills and competencies of job candidates during the hiring process?	1. Written tests/exams 2. Practical skills assessments 3. Personal interviews 4. Group discussions/activities 5. Other (please specify)	
Do you have any specific suggestions for improving the quality and relevance of TVET programs?	Update curricula to align with industry needs Focus on developing practical/hands-on skills Improve quality of instructors/trainers Enhance industry exposure and internships Other (please specify)	
Which green skills are relevant: energy efficiency, waste management, environmental compliance, or others?	Energy efficiency practices Waste management and recycling Environmental compliance and regulations Sustainable manufacturing processes digital skills Other (please specify)	
Do you have any specific suggestions for introducing green skills or environmental skills in TVET programs?	Incorporate dedicated courses/modules Integrate concepts across relevant trades/ disciplines Practical training in green technologies Collaborations with environmental organizations Other (please specify)	
What are the major challenges in hiring or retaining female employees?	Workplace policies/culture not conducive for women Lack of flexible work arrangements Occupational segregation and gender stereotypes Safety and security concerns Other (please specify)	

What are the major challenges in hiring or retaining employees from disadvantaged groups?	Accessibility issues (physical infrastructure, transportation) Lack of supportive policies and reasonable accommodations Social stigma and discrimination Inadequate skills training opportunities Other (please specify)	
What are the top 3 challenges you face in terms of workforce development and skill acquisition?	Skills mismatch between education/training and job requirements Rapidly changing technological landscape Attracting and retaining talented workers Limited training budgets and resources 5. Other (please specify)	
Do you have any suggestions for improving the overall TVET system in your region?	Better coordination between I ndustry, government, and training providers Increased funding and investment in TVET infrastructure Stronger quality assurance and accreditation mechanisms Promotion of TVET as a viable career pathway Other (please specify)	
Do you have any specific suggestions for promoting greater industry-TVET collaboration?	Establish formal industry advisory boards/committees Involve industry in curriculum design and review Facilitate more internship and apprenticeship opportunities Encourage industry contributions (equipment, instructors, funding) Other (please specify)	
Which technologies should TVET include? Examples: AI, Robotics, 3D printing.	AI, Robotics, 3D printing Other (specify)	
Do you have any specific suggestions for introducing new or emerging technologies in TVET programs?	Upgrade equipment and facilities Train instructors on new technologies Collaborate with technology companies Offer specialized courses/certifications Other (please specify)	
Is there anything else you would like to add or suggest regarding TVET programs and industry collaboration? (Like, Preferred collaboration: joint curriculum development, equipment sharing, internships, or others)	1. Yes (please specify) 2. No	

Does your organization/enterprise have a dedicated training/learning and development department or team?	Yes No`	
What is your preferred method for identifying and sourcing potential job candidates?	Online job portals Print media advertisement Employee referrals Campus recruitment drives Job fairs/career events Other (please specify)	
Would you be interested in participating in the development or review of competency standards/ curricula for relevant trades/occupations?	1-Yes 2-No	
Does your organization/enterprise face any challenges in terms of employee retention and turnover?	1-Yes, if yes, please specify the major reasons low wages, limited career progression, work-life balance issues _____ 2-No	
How important are digital/ICT skills for the current and future workforce needs of your organization?	1. Not at all important 2 - Slightly important/Of little importance 3 - Moderately important 4 - Very important 5 - Extremely important	
Do you have any suggestions for enhancing the development of digital/ICT skills in TVET programs?	1. Yes 2. No c)	
What are the 3 digital skills you think will be in demand in future	1_____ 2_____ 3_____	
Do you have additional comments or suggestions for improving TVET programs?	Yes (specifiy) No	

Skilled Workforce Demand & Supply Gaps Analysis for Balochistan				
Sr.No	Trade	Supply	Demand	Gaps
1	Tailor	6129	186	-5943
2	Beautician	1224	271	-953
3	Fashion Design & Dress Making	952	756	-196
4	Hand Embroidery	899	155	-744
5	Stitcher	890	0	-890
6	E-Commerce	778	236	-542
7	Amazon Virtual Assistant	693	0	-693
8	Sewing & Design	690	0	-690
9	Accountant	678	1597	919
10	Welder	506	2958	2452
11	English Language (IELTS/PSL)	458	0	-458
12	Computer Hardware Technician	413	210	-203
13	Motorcycle Mechanics	387	119	-268
14	Korean Language (Skilled worker level certification)	377	0	-377
15	Civil Technician	376	1470	1094
16	Surveyor	367	0	-367
17	Cutting Machine operator	345	238	-107
18	General Electrician	344	216	-128
19	Data Entry Operator	341	249	-92
20	Gym Trainer	337	0	-337
21	Cook	320	1929	1609
22	Electrician	299	4384	4085
23	Early Childhood Education (with certification)	299	0	-299
24	German Language (Skilled worker level certification)	295	0	-295
25	Advance Web application Development	285	0	-285
26	Graphic Designer (ATs)	280	200	-80
27	Aluminum Fabricator	280	177	-103
28	Computer Graphic	280	0	-280
29	Digital Marketing	266	136	-130
30	Repair & Maintenance	244	0	-244
31	Carpenter	240	183	-57
32	Graphic Design and Video Editing	240	0	-240
33	Cutter Garments	236	0	-236
34	Steno typist	234	0	-234
35	UPS & Solar PV Technician	230	383	153
36	Mobile Phone Repairing	225	316	91
37	Quantity Surveyor	224	44	-180
38	Graphic Designing (UI /UX Designer)	219	0	-219
39	Hand & Machine Embroidery	195	0	-195
40	Graphic Design (Print Media)	177	0	-177
41	Plumber / Pipe Fitter	169	157	-12
42	Plumber	158	1230	1072
43	Mason	131	887	756
44	Steel Fabricator	123	0	-123

45	Auto Mechanic	119	1385	1266
46	Japanese Language (N4) (Skilled worker level certification)	119	0	-119
47	Certificate in IT (Web Development)	116	0	-116
48	Chef	102	1726	1624
49	Artificial Intelligence	100	207	107
50	Mobile Application Development	100	0	-100
51	Network Administrator (CISCO, HUAWEI, IBM)	100	0	-100
52	CIT Technician	82	0	-82
53	Cyber Security (CEH, CHFI)	80	0	-80
54	Professional Chef	80	0	-80
55	Diploma in Information Technology	77	0	-77
56	Professional Photography, Documentary Ad Making	77	0	-77
57	Rewinder Operator	76	0	-76
58	Industrial Electrician	75	2283	2208
59	Electrical Technician	73	0	-73
60	Dispenser	71	124	53
61	Medical Technician	65	1176	1111
62	Polisher	65	193	128
63	Farm Manager/Tunnel Farming	60	0	-60
64	Google UX Design	60	0	-60
65	Graphic Design & Video Editing	60	0	-60
66	Steel Fixer	57	0	-57
67	Nurse	56	1711	1655
68	Draw Material Machine Operator	56	20	-36
69	Mechanical Technician	56	0	-56
70	Front Desk Manager / Receptionist	55	44	-11
71	Digital Forensic & Cyber Security	55	0	-55
72	Lab Technician	54	1547	1493
73	Heating Ventilation, Refrigeration & Air Conditioning (HVACR)	50	0	-50
74	Solar Technician	47	1147	1100
75	Civil Surveyor	46	276	230
76	Shuttering Carpenter	45	550	505
77	Receptionist	45	395	350
78	Computerized Accounting (Peachtree; QuickBooks)	45	0	-45
79	Database Administration (DBA Track)	45	0	-45
80	Customer Services & Sales Representation	40	542	502
81	Block Chain Programming	40	0	-40
82	Home Appliance Repair & Maintenance	40	0	-40
83	Machinist	39	397	358
84	Civil Technician	36	0	-36
85	Electronics Technician	35	398	363
86	Auto CAD	35	48	13
87	Advanced programming/ Coding (Machine Learning; Data Mining)	35	0	-35

88	Furniture Designer	34	60	26
89	Hardware Technician	34	0	-34
90	U.P.S Technician	32	21	-11
91	Bakery & Pastry Making	30	0	-30
92	Fruit Plants Pruning, Budding & Layering Techniques	30	0	-30
93	Refrigerator & Air conditioning	27	21	-6
94	Operation Theatre Technician	25	0	-25
95	Dental Technician	24	287	263
96	Draftsman	24	42	18
97	Architectures	24	0	-24
98	Q.C Lab Technician	24	0	-24
99	Computer Applications	23	0	-23
100	Ultrasound Technician	21	966	945
101	Electrical Technician	20	1278	1258
102	Industrial Stitching Machine Operator	20	312	292
103	Restaurant Manager	20	115	95
104	Boat Maker Expert	20	114	94
105	Fish Processing & Preservation	20	62	42
106	Event Management & Tourism	20	12	-8
107	Advanced CAD/CAM	20	0	-20
108	Airport Management	20	0	-20
109	Barista Skills (Fast Food)	20	0	-20
110	Cooking / Chef	20	0	-20
111	Culinary Arts - Professional Cook	20	0	-20
112	Date Processing & Packing	20	0	-20
113	Digital and Precision Agriculture	20	0	-20
114	Internet of Things (IoT) System Development & Applications	20	0	-20
115	Marketing & Advertising	20	0	-20
116	Motor Winder	20	0	-20
117	Operation Theatre Attendant	20	0	-20
118	Overhead Crane Operator in shipping industry	20	0	-20
119	Plumbing & Solar Water Heating Technician	20	0	-20
120	Project Management (PMP Certification Course)	20	0	-20
121	Machine Operator	18	4115	4097
122	Quality Assurance	15	410	395
123	Auto Electrician	15	333	318
124	AC Technician	15	171	156
125	Full Stack Development	15	10	-5
126	Cloud Computing	15	0	-15
127	Cloud Computing - Microsoft	15	0	-15
128	Microsoft .Net + Angular / React	15	0	-15
129	Microsoft Dynamics 365	15	0	-15
130	Power BI	15	0	-15
131	Smart IoT Technologies for Agriculture	15	0	-15
132	Tissue Culture	15	0	-15

133	Veterinary, Poultry & Dairy Assistants	15	0	-15
134	Designing	12	505	493
135	Radiologic Technician	12	436	424
136	Fitter	12	190	178
137	Chemical Technician	12	0	-12
138	Healthcare Technician	12	0	-12
139	House Keeping	10	902	892
140	X Ray Technician	10	680	670
141	Diploma in Quantity Surveying (City & Guilds) (6165-20)	9	0	-9
142	Mechanical Technician	3	84	81
143	Mining Technician	2	462	460
144	Distributor	0	2230	2230
145	Crane Operator	0	701	701
146	Excavator Operator	0	277	277
147	Admin Assistant	0	234	234
148	Battery Repair	0	177	177
149	Clerk	0	130	130
150	Generator Operator	0	110	110
151	Boiler Operator	0	57	57
152	Gardening/ Vegetable Supervisor (ATs)	0	52	52
153	Cleaner	0	45	45
154	Generator Operator, Water Pump, Valve-Man , Line	0	36	36
155	3D Designer &Printing	0	31	31
156	Fabric Cutting	0	20	20
157	Glass work	0	20	20
158	Auto Mechanic Electric & Hybrid Vehicle Services	0	15	15
159	Helper	0	8	8
160	Finisher	0	4	4
161	Coal Supplier & Dealer	0	2	2
162	Mechanic	0	1690	1690
163	Computer Operator	0	1574	1574
164	Packing Machine Operator	0	1553	1553
165	Grinder	0	1278	1278
166	Digital Meter Readers	0	1105	1105
167	Sales & Marketing	0	967	967
168	Waiter	0	932	932
169	Vertical Machine Operator	0	865	865
170	Heavy Machinery operator	0	789	789
171	Electric Fitter	0	780	780
172	Food Quality controller	0	764	764
173	Architecture	0	732	732
174	HAC & QA	0	702	702
175	Supply Chain Management	0	657	657
176	Supervisor	0	602	602
177	Marble Fixer	0	582	582
178	Mechanical Technician	0	563	563
179	Pharmacy Technician	0	559	559
180	Livestock Technician	0	494	494

181	Drilling Technician	0	490	490
182	Warehouse Assistant	0	481	481
183	Printing Machine Operator	0	461	461
184	Turner Machine Operator	0	457	457
185	Captain	0	432	432
186	Security Guard	0	394	394
187	Sap Operators	0	390	390
188	ECG Technicians	0	366	366
189	Drugs Smokers therapist	0	360	360
190	Ward Boy	0	348	348
191	HVCR Technician	0	331	331
192	Fish Packing Labor	0	330	330
193	Maintenance Technician	0	322	322
194	Driver LTV	0	321	321
195	Mechanical Technician	0	320	320
196	Resizer Machine Operator	0	317	317
197	Kitchen Gardening	0	298	298
198	Wall Man	0	296	296
199	Painter	0	295	295
200	Water Management	0	289	289
201	MRI Technicians	0	288	288
202	MBBs	0	287	287
203	Hotel Management	0	285	285
204	Office Assistant	0	283	283
205	Molding Machine Operator	0	280	280
206	DC Electrician	0	273	273
207	Software Developer	0	266	266
208	Front Office Boy	0	264	264
209	First Aid Technician	0	260	260
210	Driver HTV	0	258	258
211	CT Scan Specialist	0	252	252
212	Respiratory Therapist	0	252	252
213	IT Expert	0	251	251
214	Motor winding	0	247	247
215	Water Source Management	0	246	246
216	Stitching Machine Operating	0	241	241
217	CNC Machine Operator	0	232	232
218	Vaccinator	0	232	232
219	Tub well machine operator	0	228	228
220	Pastry Cook	0	224	224
221	Marble Cutter	0	216	216
222	Laser Technician	0	213	213
223	Agriculture Technician	0	200	200
224	Mechanical Technician	0	198	198
225	Crops Spray Machine operator	0	186	186
226	Delivery Technician	0	184	184
227	Operational Manager	0	175	175
228	Pathologist	0	174	174
229	Manager	0	171	171
230	Press machine Operator	0	162	162
231	UI/UX Designer	0	162	162
232	Health & Safety	0	159	159
233	Gen Electrician	0	156	156

234	Physiotherapist	0	156	156
235	Seth Lab (Department Staff)	0	156	156
236	Mechanic	0	149	149
237	Entomologist	0	148	148
238	Handcraft maker	0	148	148
239	Floor Manager	0	144	144
240	Green Meter Technician	0	143	143
241	Concrete Machine Operator	0	138	138
242	Dress Making	0	137	137
243	Anesthesia Technician	0	136	136
244	Bio Medical Equipment Technicians	0	132	132
245	LHW	0	131	131
246	Agricultural Machinery operator	0	130	130
247	Garments Stitching	0	130	130
248	Steel Fixer	0	130	130
249	Furniture Assembly	0	126	126
250	Inverter Fitter	0	123	123
251	Scanning Machine	0	121	121
252	Water Filtration Technician	0	114	114
253	Drop Irrigation Technician	0	113	113
254	Wood work	0	112	112
255	Winch Operator	0	111	111
256	CT Scan Technician	0	108	108
257	Endocrinologist	0	108	108
258	General Manager	0	108	108
259	Building electrician	0	106	106
260	Embroidery	0	106	106
261	Sweets Maker	0	106	106
262	Hygiene Officer	0	104	104
263	LHV	0	104	104
264	Material Packer	0	104	104
265	Bio-Chemist	0	102	102
266	Green House Technician	0	100	100
267	Cardiologist	0	99	99
268	Skills Labour	0	98	98
269	Physiotherapists	0	96	96
270	Chemical Technician	0	94	94
271	Poultry Technician	0	94	94
272	Dastakari	0	91	91
273	Leather stitching operator	0	91	91
274	Social Mobilizer	0	91	91
275	Diesel Pump Technician	0	90	90
276	Furniture Makers	0	90	90
277	Phlebotomy Technician	0	90	90
278	Blast Hole Driller	0	88	88
279	OT Technician	0	86	86
280	Sensor Technician	0	85	85
281	Backing Machine Operator	0	82	82
282	Electric, Machine Worker	0	82	82
283	Gynecologist	0	82	82
284	Compactor Machine Operator	0	80	80
285	Crane Operator	0	78	78
286	Compressor Operator	0	78	78

287	Drilling Machine and Sifting Machine	0	78	78
288	Environmental Engineer	0	78	78
289	Meter Reader	0	78	78
290	Painter	0	78	78
291	Sizer Machine Operator	0	78	78
292	Cement & Block Company	0	76	76
293	Crush Plant Machine Operator	0	75	75
294	Web Designer	0	75	75
295	Data Analyst	0	74	74
296	Neuro	0	74	74
297	Hematologist	0	72	72
298	Lift Operator	0	72	72
299	Oncologist	0	72	72
300	RO Plan Operator	0	72	72
301	Business & Marketing	0	70	70
302	Hygienist	0	68	68
303	Midwife	0	68	68
304	Mine Safety & Management	0	68	68
305	Chef Fast-food	0	66	66
306	Dentary Services	0	65	65
307	Pipe fitter	0	64	64
308	Milk machine operator	0	63	63
309	Tiles Fixer	0	62	62
310	General Surgeon	0	60	60
311	Mobile repair technician	0	60	60
312	Hole Driller	0	60	60
313	Needle Work	0	60	60
314	Pattern Maker	0	60	60
315	Repair& Maintenance	0	60	60
316	Sea Food Farmer	0	57	57
317	Flooring Installers	0	56	56
318	Generator Machine for Making Blocks	0	56	56
319	Mushroom Cultivation	0	56	56
320	Agricultural Specialist	0	54	54
321	Electrical	0	54	54
322	Paste Making Machine Operator	0	54	54
323	Feed Formulation Specialist	0	53	53
324	CNC Machinist	0	52	52
325	Furnace Operator	0	52	52
326	Dialysis Technician	0	50	50
327	Derailing Machine, Car Motor Making Machine Motor	0	48	48
328	Mixture Machine Mechanic	0	48	48
329	Sales & Marketing	0	48	48
330	Seed Implanters	0	48	48
331	Instrument Technician	0	47	47
332	Asphalt Paver Machine	0	46	46
333	Products Manager	0	46	46
334	Bodyshop Technician	0	45	45
335	General Helper	0	45	45

336	Hybrid & Ev Technician	0	45	45
337	Line Man	0	45	45
338	Tunnel Farming Technician	0	45	45
339	Crush Plant Electrician	0	42	42
340	Farming Specialist	0	42	42
341	Mechanic/ Generator Technician	0	42	42
342	Rolling Machine operator	0	42	42
343	Surgical Technician	0	42	42
344	Box Making Machine Operator	0	39	39
345	Installation	0	39	39
346	Pizza Cook	0	39	39
347	R&D	0	38	38
348	Fully Equipped Laboratory	0	37	37
349	Agri-trained worker	0	36	36
350	Aya (Female in Gyno Ward)	0	36	36
351	Explosive Blast Technician	0	36	36
352	Nutritionist	0	36	36
353	Pathology Technicians	0	36	36
354	Radiologist	0	36	36
355	Water Dripping	0	36	36
356	Interior Designer	0	35	35
357	Plant Operator	0	35	35
358	Farmer	0	34	34
359	Order Supplier	0	34	34
360	Supporting Stuff	0	34	34
361	Dairy Processing Technician	0	33	33
362	Eco-Friendly Processing	0	33	33
363	Egg Production Skills	0	33	33
364	Formula Makers	0	33	33
365	Block Maker	0	32	32
366	Menu Planning	0	32	32
367	Paliting & Kruopes	0	32	32
368	Phulkari	0	32	32
369	Maintenance Technician	0	31	31
370	Wiring Technician	0	31	31
371	Automation	0	30	30
372	Bodywork & Painting	0	30	30
373	Eye Technicon	0	30	30
374	Furniture Craft Making	0	30	30
375	Geologist	0	30	30
376	Irrigation Technician	0	30	30
377	Mat Tester	0	30	30
378	Office Management	0	30	30
379	Remote Monitoring Specialist	0	30	30
380	Waste Water Operator	0	29	29
381	Dates Gardener	0	28	28
382	Diagnostic Expert	0	28	28
383	Diseases Specialist	0	28	28
384	Growing Bush Fruits & Nuts	0	28	28
385	Material Test	0	28	28
386	Organic Solutions	0	28	28
387	Physician	0	28	28
388	Planting Technician	0	28	28

389	Inverter Sitter	0	27	27
390	Carton Box Making Machine Operator	0	26	26
391	Chemist	0	26	26
392	Expanded Nutrition Programmes	0	26	26
393	Industrial Electronics	0	26	26
394	Paper Rolling Machine Operator	0	26	26
395	Gas Line Inspection Technician	0	25	25
396	Gas Metering & Calibration Technician	0	25	25
397	Pump Operator	0	25	25
398	Anesthesiologists	0	24	24
399	Dentist	0	24	24
400	Dermatologists	0	24	24
401	Field Assistant	0	24	24
402	Finance Manager	0	24	24
403	Guest Receive Officer	0	24	24
404	Immunologist	0	24	24
405	Occupational Therapy	0	24	24
406	Pest & Diseases Control Technician	0	24	24
407	Petroleum & Oil Service	0	24	24
408	Ploriat	0	24	24
409	Radiation Oncologist	0	24	24
410	Shisha Work	0	24	24
411	Smart Engineer for Production Of Eggs	0	24	24
412	Soil Specialist	0	24	24
413	Speech Therapy	0	24	24
414	Tree Planting	0	24	24
415	Biscuit maker	0	23	23
416	Fertilizer Technician	0	22	22
417	Purification Technician	0	22	22
418	Automotive Battery Repairer (Hybrid Car)	0	21	21
419	Chinese Instructor	0	21	21
420	Job Placement Officer	0	21	21
421	Swing Machine Operator	0	21	21
422	Ajrak Printing	0	20	20
423	Child Specialists	0	20	20
424	Customer Dealer	0	20	20
425	Fiber Ceiling	0	20	20
426	Flavor Innovation Formula Specialist	0	20	20
427	General Physician	0	20	20
428	Ground keeper	0	20	20
429	Hydraulic Driller	0	20	20
430	Kandhari Topi	0	20	20
431	Metallurgical Technician	0	20	20
432	Mirror & Beadwork	0	20	20
433	Pico Machine Operator	0	20	20
434	Powerplant Automation Engineer	0	20	20
435	Process Control Technician	0	20	20
436	Public Health Specialist	0	20	20

437	Recycling Water Technician	0	20	20
438	Relationship manager	0	20	20
439	Sample Testing	0	20	20
440	Shaping & Finishing	0	20	20
441	Steel Designers	0	20	20
442	Hybrid Vehicle Technician	0	19	19
443	Infinitude Designing	0	18	18
444	Bottle Maker Machin Operator	0	18	18
445	Master Trainer	0	18	18
446	Mirror Work &Sewing Clothes	0	18	18
447	Pasture Management Specialist	0	18	18
448	Propagation Specialist	0	18	18
449	Sanitation worker	0	18	18
450	Sheep Wool Production	0	18	18
451	Small Ruminants Genetics Specialist	0	18	18
452	Travel Guide	0	18	18
453	Detailers	0	17	17
454	Kitchen Gardening	0	17	17
455	Kitchen Man	0	17	17
456	Oils Change Machines and Oils Making and Oils	0	17	17
457	Power Maintenance Technician	0	17	17
458	CAD Operator	0	16	16
459	Carpet maker	0	16	16
460	CMO	0	16	16
461	Dye House Technician	0	16	16
462	Load Management	0	16	16
463	Loom Technician	0	16	16
464	Mirror Emending Specialist	0	16	16
465	Robotics Machine Technician	0	16	16
466	Scroll Salia Machine Operator	0	16	16
467	Smart & Engineered Stone Alternatives	0	16	16
468	Smart Hotel Technology	0	16	16
469	Billing	0	15	15
470	Cashier	0	15	15
471	Crafts designer	0	15	15
472	Industrial Engineering	0	15	15
473	Inspection Engineer	0	15	15
474	Operational Manager Mining	0	15	15
475	Pollination Management	0	15	15
476	Sales & Marketing Officer	0	15	15
477	Suspension Specialist of Cars	0	15	15
478	Trained worker	0	15	15
479	Understanding Of Colors Theories	0	15	15
480	Proper Lining	0	14	14
481	Picking Man	0	13	13
482	Budgeting & costing	0	12	12
483	Calligraphy	0	12	12
484	Camel Man	0	12	12
485	Chair Lift Technician	0	12	12
486	Color Therapist	0	12	12

487	Digital Literacy	0	12	12
488	Dupatta Design	0	12	12
489	Dynamite	0	12	12
490	Endodontic Technician	0	12	12
491	Fertility Management	0	12	12
492	Football Stitching	0	12	12
493	Good Chief	0	12	12
494	Herd Management	0	12	12
495	Hydraulic Press Machines	0	12	12
496	Inject & Laser Printing	0	12	12
497	Juice Maker	0	12	12
498	Kashida Machine Operator	0	12	12
499	Khrat Mechanics	0	12	12
500	Kushida Man	0	12	12
501	Manual Lifting Technician	0	12	12
502	Mating Management	0	12	12
503	Online Order Fulfillment Manager	0	12	12
504	Orthopedic	0	12	12
505	Phulkari	0	12	12
506	Preventive Maintenance	0	12	12
507	Primary Care Doctor	0	12	12
508	Research & Development	0	12	12
509	Sprayers	0	12	12
510	Staff Management	0	12	12
511	Storage & Processing	0	12	12
512	Water Boring Machine operator	0	11	11
513	Automation & Smart Manufacturing Processes	0	10	10
514	Formulation for Good Bags	0	10	10
515	Generator Filter Machine	0	10	10
516	Grid Technician	0	10	10
517	Machine Fitter Operator	0	10	10
518	Mining Technician	0	10	10
519	Management, Quality Control	0	10	10
520	Matcher Operator	0	10	10
521	Millwright	0	10	10
522	Petrochemical Quality Control Analyst	0	10	10
523	Refinery Process Automation Specialist	0	10	10
524	Restoration Specialist	0	10	10
525	Ribbon Tying	0	10	10
526	Sewers	0	10	10
527	Skills About Public Dealing	0	10	10
528	Space Mission Control and Operations	0	10	10
529	Sustainability & Design	0	10	10
530	Water Purification Technologies	0	10	10
531	Crush Plant Operator	0	9	9
532	Demand of Advance Printing Machine And Camera	0	9	9
533	FMT	0	9	9
534	Hydraulic Technician	0	9	9

535	Ice Cream Maker	0	9	9
536	Metal Worker	0	9	9
537	Operation Theater Technician	0	9	9
538	Shoemaker	0	9	9
539	Skilled Workforce in Automation & AI	0	9	9
540	Automated Packaging Line Operator	0	8	8
541	Brick Makers	0	8	8
542	Die Cutter	0	8	8
543	Gas Welder	0	8	8
544	Horticulturist	0	8	8
545	Kitchen &Food Safety Skills	0	8	8
546	Manufacturer	0	8	8
547	Operation Technician	0	8	8
548	Osaka Betray Engineering	0	8	8
549	Pharmacy Technician	0	8	8
550	Radiology Technician	0	8	8
551	Smart Construction Techniques	0	8	8
552	Stationary Business	0	8	8
553	Stones Management	0	8	8
554	Wedding Room Decoration	0	8	8
555	Cable & Wiring Technician	0	7	7
556	General Operator	0	7	7
557	Sonographer	0	7	7
558	Breeding & Genetics	0	6	6
559	Cold Storage Maintainer	0	6	6
560	Computerized Wheel Aliment	0	6	6
561	Continuous Mining Machine Operator (CMO)	0	6	6
562	Retail Traders	0	6	6
563	Exploration Technologist	0	6	6
564	Goat Farming	0	6	6
565	Harvesting Technician	0	6	6
566	Khali	0	6	6
567	Machine Repair Mechanic	0	6	6
568	Material Handling	0	6	6
569	Mining Underground	0	6	6
570	Mirror Work	0	6	6
571	Office Support Staff	0	6	6
572	Operating Printing Machines	0	6	6
573	Photo State Machine Operator	0	6	6
574	Pouch Printing Machine Operator	0	6	6
575	Site Manager	0	6	6
576	Smart Irrigation Solution	0	6	6
577	Smart Packaging	0	6	6
578	Trendy & Sustainable Footwear	0	6	6
579	Waskat Catering Specialist	0	6	6
580	Crash Plant Operator	0	5	5
581	Crush Machine	0	5	5
582	Biosecurity Measures	0	4	4
583	Boor Machine Operator	0	4	4
584	Boxes & Container	0	4	4

585	Chikankari	0	4	4
586	Clay & Material Knowledge	0	4	4
587	CRM Specialist	0	4	4
588	Despenser	0	4	4
589	Digital Health Monitoring	0	4	4
590	Digital Printing Technician	0	4	4
591	Drainage Specialist	0	4	4
592	Electric Vehicle Labour	0	4	4
593	Fruit Pikers	0	4	4
594	Hardware Tools	0	4	4
595	Hygienic Packaging	0	4	4
596	Joke Machine	0	4	4
597	Canola Oils Extractor	0	4	4
598	Kiln Firing	0	4	4
599	Kiln Operator	0	4	4
600	Kishda Kar	0	4	4
601	Material Handling	0	4	4
602	Material Science Technician	0	4	4
603	Mirror Work Embroidery	0	4	4
604	Mixing Technician	0	4	4
605	Multimeter Checker	0	4	4
606	Paving Technician	0	4	4
607	PC Operator	0	4	4
608	Plashing & Firmware Installation	0	4	4
609	PLC Technician	0	4	4
610	Sewing Machine	0	4	4
611	Sewing Machine Operator	0	4	4
612	Soft Skills for Mobile Repair	0	4	4
613	Speaker And Microphone Repairer	0	4	4
614	Specialized Care Services	0	4	4
615	Wrapping	0	4	4
616	Clothes Designer	0	3	3
617	Date Marketing	0	3	3
618	Denting Mechanic	0	3	3
619	Digital Crafter	0	3	3
620	Digital Wiring Mechanic	0	3	3
621	Retail Trader	0	3	3
622	Generator Operator	0	3	3
623	Inverter Technician	0	3	3
624	Shal Designing Maker	0	3	3
625	Water Distributors	0	3	3
626	Digitalization	0	2	2
627	Export-Ready Packaging	0	2	2
628	Froot Packing Labor	0	2	2
629	General Supplier & wholesaler	0	2	2
630	Kashida Kary	0	2	2
631	Mirror Worker	0	2	2
632	Sewing Juki Machine	0	2	2