

# 2025 EDUCATION AND WORKFORCE READINESS

## OVERVIEW

### EDUCATION AND WORKFORCE READINESS FOR LIBYA'S ENERGY SECTOR (2025)

Libya enters 2025 with a hydrocarbons sector that remains the backbone of the economy and a young population seeking employment in oil and gas. At the same time, education and training systems continue to face challenges in keeping pace with the skills required by a more digital, safety critical and efficiency driven industry. Oil and gas account for approximately sixty to sixty eight percent of GDP, more than ninety percent of fiscal revenues, and around ninety four to ninety seven percent of export earnings, underlining the central role of the sector in Libya's economy.

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# Executive Summary - 2025 Snapshot

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Oil and gas account for approximately sixty to sixty eight percent of GDP, more than ninety percent of fiscal revenues, and around ninety four to ninety seven percent of export earnings, underlining the central role of the sector in Libya's economy (1)(2). Youth unemployment is estimated at around fifty to fifty one percent, among the highest rates globally (1)(3)(4).

Several signals shape education and workforce readiness in 2025. Demand for skilled talent continues to rise. Production and revenue data for 2025 confirm that oil remains the primary source of national income, with oil revenues reaching approximately fourteen point six five billion United States dollars in the first nine months of the year (5). Efforts to sustain and increase output translate into demand for engineers and technicians in areas such as gas turbine maintenance, compressor overhaul, pipeline maintenance and broader turbo-machinery services.

Large scale graduate training is under way. The National Oil Corporation graduate programme, launched in 2023, is designed to train approximately seven thousand graduates from more than fifty one Libyan cities in petroleum related disciplines (6)(7). Technical and vocational education reform is gaining international support. The Libya Almaharat Land of Skills programme, funded by the European Union and implemented by the British Council, works with technical institutes and employers to modernise curricula and improve governance in technical and vocational education (8)(9).

The energy transition is moving from strategy to implementation. National authorities have outlined a target for renewable energy to supply twenty five percent of electricity generation by 2030, with projects such as the five hundred megawatt Sadada solar plant highlighted as early examples (11)(12)(13).

Despite these developments, persistent gaps remain in practical skills, English and communication, digital competencies and health and safety culture. Addressing these gaps is essential for traditional upstream and downstream activities as well as newer areas such as digital measurement and project delivery involving engineering, procurement and construction contractors. Key opportunities for the period beyond 2025 include institutionalising graduate bridging programmes, aligning university and technical curricula with industry needs, upgrading technical training infrastructure, and expanding internships and mentorship opportunities.

# 2025 Sector Context & Talent Demand

Libya remains one of Africa's largest oil producers and holds some of the continent's largest proven reserves, estimated at approximately forty eight to fifty billion barrels (19). Hydrocarbons account for roughly sixty to sixty eight percent of GDP and more than ninety percent of public revenues, reinforcing the sector's economic centrality (1)(2).

Economic outlooks from international institutions show growth rebounding during the period 2023 to 2025 on the back of sustained oil output, even as governance and security challenges persist (2). Youth unemployment of around fifty to fifty one percent, combined with a public sector that absorbs much of formal employment, highlights a mismatch between education outcomes and private sector demand (3)(4).

Talent demand in 2025 translates into specific skill requirements. These include operations and turbomachinery expertise, with strong demand for maintenance, overhaul and upgrade work on gas and steam turbines and compressors. Valve systems, control and instrumentation skills remain critical for safe and reliable operations. Measurement and digital solutions, including flow measurement and emissions monitoring, are increasingly important as operators focus on optimisation and environmental performance (10).

Skills related to filtration, water treatment, pipelines and oil well maintenance remain essential for reliability. In parallel, drilling and workover activity supports demand for competencies linked to tubular goods, field services and offshore support. The combination of established upstream skills and newer digital and environmental competencies defines the education and training context in 2025.

## Education & Training Landscape in 2025

### 3.1 Universities and Higher Education

Libya's higher education system is dominated by public universities in Tripoli, Benghazi, Misrata, Sirte and Sebha, alongside a number of private institutions offering engineering and geoscience programmes relevant to oil and gas (18). Higher education is free, and enrolment has expanded significantly over the past two decades, producing thousands of graduates annually (14).

However, institutional reviews highlight persistent challenges, including limited practical content, outdated laboratories, weak links with employers and slow curriculum updates (14). Graduates often have strong theoretical knowledge but limited exposure to modern industrial equipment and operational environments.

### 3.2 Technical and Vocational Education in 2025

Technical and vocational education remains critical for preparing technicians for operations, maintenance, instrumentation and field services. International assessments describe longstanding challenges including fragmented governance, under investment and outdated equipment (8)(15).

Key developments in 2025 include continued implementation of the Libya Almaharat Land of Skills programme, which aims to strengthen leadership, governance and labour market alignment within technical education (8). Broader education and employment initiatives supported by international partners also target youth unemployment and private sector skills gaps.

Specialised petroleum institutions, including the Petroleum Training and Qualifying Institute and the Ajdabiya Petroleum Institute, continue to provide technician level training, although consolidated public data on trainee numbers by sector remains limited.

### 3.3 Private Training Providers and Industry Academies

A growing ecosystem of private and semi-public providers is helping to address skills gaps. The Petroleum Research Center offers upstream and downstream training, including laboratory based courses (16). Other academies provide targeted programmes in turbomachinery, health and safety, instrumentation and digital transformation.

These providers often focus on short, specialised courses linked to project delivery, measurement systems, control upgrades and tender related requirements, complementing formal education pathways.

## Graduate Pipeline & Employer Feedback

There is no single consolidated dataset covering all graduates by discipline in 2025. However, the National Oil Corporation graduate programme, targeting around seven thousand participants from more than fifty one cities, provides an indication of scale (6)(7). Policy analysis suggests that approximately twenty thousand graduates enter the job market annually across all fields (14).

Employer feedback highlights several strengths among graduates, including solid theoretical foundations, strong motivation to work in oil and gas, resilience developed during years of instability, and growing interest in digital technologies and renewable energy (3)(14).

At the same time, multiple sources identify skills gaps. Practical, workplace ready skills remain limited, with many graduates lacking hands on experience with turbines, compressors, valves and measurement systems. Digital competencies related to monitoring, diagnostics and optimisation remain scarce (10). English language proficiency, communication and workplace behaviours are also cited as barriers to employment, alongside broader labour market constraints (3)(4). Health, safety and process safety culture often require additional training after recruitment.



# Future Competencies & 2025 Signals

Global trends and national strategies indicate that several competencies are shifting from future requirements to immediate needs. Digital oilfield technologies, including remote monitoring and diagnostics, are becoming more common, particularly in complex processing units (10). Maintenance and reliability skills related to aging assets are increasingly important to reduce unplanned downtime.

Environmental performance and emissions management are gaining prominence as Libya advances renewable and sustainable energy strategies, increasing demand for process safety and environmental monitoring skills (10). Infrastructure upgrades also require engineers capable of working across engineering, procurement and construction project lifecycles. Renewable energy projects such as the Sadada solar plant highlight the need for hybrid skill sets spanning gas, power and renewables (11)(12)(13).

## 2025 Initiatives & Case Examples

Several initiatives illustrate efforts to address skills gaps. The National Oil Corporation graduate training programme provides structured technical and employability training and could be expanded to include targeted modules linked to operations, maintenance, safety and digital tools (6)(7)(17).

Technical education reform under Libya Almaharat continues to support leadership development, governance improvements and curriculum alignment with labour market needs (8)(9). Implementation of the National Sustainable Energy Strategy has also prompted capacity building activities related to renewables and grid integration (13).

## Opportunities for Action

For universities and institutes, priorities include expanding practical modules, strengthening laboratory based learning and embedding technical English and teamwork within core curricula. Training providers can focus on modular, industry recognised courses in high demand technical areas and invest in instructor upskilling. Companies can strengthen predictable graduate programmes, mentorship and on the job training, while international partners can continue supporting system level reforms and investment in modern training infrastructure (3)(8)(14)(17).

# Conclusions & Recommendations

In 2025, Libya's oil and gas sector remains economically central but constrained by skills gaps. While education systems produce large numbers of graduates, mismatches persist between academic outcomes and the specialised needs of industry. Priority actions for the period beyond 2025 include strengthening education to work pathways, aligning curricula with real equipment and roles, upgrading training infrastructure and building instructor capacity. Coordinated action across institutions, companies and partners can help turn current challenges into a foundation for long term, skills driven growth in Libya's energy sector.

# Appendix

## 1. World Bank. Libya Economic Update and Labour Market Indicators

Organization: World Bank

Link: <https://www.worldbank.org/en/country/libya>

Date: 2024–2025

## 2. African Development Bank. Libya Economic Outlook

Organization: African Development Bank

Link: <https://www.afdb.org/en/countries/north-africa/libya>

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## 3. UNICEF. Youth Employment and Employability in Libya

Organization: United Nations Children's Fund (UNICEF)

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## 4. Libya Herald. Labour Market and Education Reporting

Organization: Libya Herald

Link: <https://libyaherald.com>

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Organization: Reuters

Link: <https://www.reuters.com/world/africa>

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Link: <https://noc.ly/en/national-oil-corporation-announces-the-launch-of-the-new-graduate-training-programme-2/>

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## 7. Libya Observer. NOC Graduate Programme and Workforce Coverage

Organization: Libya Observer

Link: <https://libyaobserver.ly>

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8. British Council. Libya Almaharat – Land of Skills Programme

Organization: British Council

Link: <https://www.britishcouncil.ly/en/programmes/society/libya-almaharat>

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9. European Union. Support to TVET Reform in Libya

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Organization: Renewable Energy Authority of Libya

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14. Policy Center for the New South. Education, Skills and Labour Market Analysis

Organization: Policy Center for the New South

Link: <https://www.policycenter.ma>

Date: 2023–2025



# Appendix

15. European Training Foundation. Technical and Vocational Education and Training in Libya

Organization: European Training Foundation

Link: <https://www.etf.europa.eu>

Date: 2023–2024

16. Petroleum Research Center (Libya). Training and Research Activities

Organization: Petroleum Research Center

Link: <https://prc.ly>

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17. Petroleum Africa. Graduate Training and Workforce Development Reporting

Organization: Petroleum Africa

Link: <https://petroleumafrica.com>

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18. Wikipedia. Overview of Higher Education in Libya

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19. EBSCO. Libya Hydrocarbon Reserves and Sector Overview

Organization: EBSCO Information Services

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JW MARRIOTT



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