

Oil and Gas Workforce Solutions: An Introduction

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ABSTRACT

The oil and gas industry is one of the largest sectors in the world in terms of dollar value, generating an estimated \$5.3 trillion in global revenue as of 2024 [1, 2]. Oil is very crucial to the global economic framework, impacting everything from transportation to heating and electricity to industrial production and manufacturing.

The oil and gas services refer to products and processes that support the oil and gas industry, including energy exploration, transport of petroleum and gas to refineries, and the processing and delivery of energy assets to market. Other companies offer supportive services to the oil and gas industries, for example, providing IT solutions, help from experienced third-party business and technology consultants, leading to producers to save money, operate more efficiently, as well as plan and implement new business models. The oil and gas sector is divided into three parts, vis-à-vis: 1) the upstream, or exploration and production (E&P) companies, which find reservoirs and drill oil and gas wells, 2) the midstream companies are responsible for transportation from the wells to refineries, and 3) the downstream companies which are responsible for refining and the sale of the finished products. This paper looks into the oil and gas workforce solutions, the benefits, the challenges they face, and the way forward.

KEYWORDS: *Workforce, upstream, midstream, downstream, onboarding, background check, digital platforms, STEM, renewable energy sources*

INTRODUCTION

The oil and gas workforce solutions are systems and processes that help organizations manage their human resources. The workers in the oil and gas industry often face hazardous conditions – necessitating the paramount importance that the workforce must be efficient, optimized and well informed. This therefore calls for energy companies to modernize their legacy by using digital platforms such as mobile solutions, collaboration software, business analytics, and the cloud. The oil and gas production is a multistage entire process of discovering a resource, transporting it to the refinery, and turning it into a finished product ready for sale i.e. from the upstream, midstream, and downstream segments.

HISTORY

The oil and gas industry is vital to the global economy, providing essential energy resources to power daily life and fuel economic growth, as shown in Figures 1, 2 and 3. The industry provides job

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opportunities to millions of people worldwide and generating revenue for countries. The understanding of employment trends and statistics within the oil and gas industry is essential for policymakers, industry leaders, and job seekers alike. The biggest oil companies are located in several countries, including Saudi Arabia, the United States, China, the United Kingdom, and France, as shown in Figures 4 and 5. The global oil and gas sector combined employed 11.8 million people in 2019. Also the oil and gas industry's exploration and production roles had 148,610 oil and gas drilling extraction employees in the U. S. in 2023. The demand increase for (Science, Technology, Engineering, and Mathematics) STEM workers [3] in the oil and gas industry has been significant. However, future oil and gas employment shall be determined due to the shift toward renewable energy sources, as shown in Figure 6, and while the industry has some potential growth areas, and some

reports suggest optimism for future employment levels [4].

WHAT ARE OIL AND GAS WORKFORCE SOLUTIONS/BENEFITS?

The oil and gas workforce solutions are systems and processes that help organizations manage their human resources. The workers in the oil and gas industry often face very hazardous conditions in critical areas, which call for an efficient, optimized and well informed workforce, as shown in Figures 7 and 8. Many energy companies seeking to modernize their legacy solutions are doing so using digital platforms such as digital workforce mobile solutions (which reduces operating costs and simplifies construction work), collaboration software, business analytics and the cloud. The oil and gas companies need to seek for new ways of doing their business, and with the topmost concern of how to manage their workforce – this is being made easier by offering real-time visibility into labor, equipment and assets and work in process. By leveraging digital technologies, these tools can help managers make better operational decisions as they monitor labor costs, improve resource utilization and boost productivity. Other workforce solutions include workforce collaboration, manage crew scheduling, optimize workflows, generate emergency alerts, and to dispatch crews to repair field assets and restore outages [5], coupled with the integration of robots and drones for handling tasks showcasing a futuristic outlook.

Diversity and inclusion is used to actively seek to recruit from a range of backgrounds to incorporate perspectives and innovative ideas, as well as the increase in gender diversity in the industry. There is great emphasis on training and development, involving implementing programs to educate workers on drilling techniques and safety protocols, teaching leadership, and interpersonal skills. In addition, this will help in enhancing individuals in their communication, problem-solving, and teamwork abilities/skills. There is the need to seek for transparency when engaging with potential workforce providers in all aspects of their operations e.g. transparent pricing structures and project timeframes to foster confidence, and laying the basis for mutually productive cooperation.

Assess cultural fit – when selecting a workforce solutions supplier, assess whether their beliefs and ethos are consistent with yours, because a healthy cultural fit promotes collaboration and enhances a smooth sailing experience [6].

Employees' safety in the oil and gas industry today remains the biggest area of concern especially in these two challenging areas of health and safety. First

is managing operators with a less experienced workforce, since younger workers are twice as likely to be injured on the job as experienced workers. The second is effectively operating complex processes with ageing infrastructure. More than half of global oil and gas production comes from assets beyond the midpoint in their lifecycles. The use of digital advancements to prevent Loss of Containment (LOC) by detecting telltale anomalies, prevent personal injury and root out systemic safety hazards plays a crucial role in improving safety performance and avoiding major accidents – this focuses on how a human-centric approach and a risk-mitigation framework can help mitigate health and safety risks through digital work processes that proactively change the way people work. Workers safety programs are designed to adhere to safety standards that are practiced globally and based on learning from incidents. The U.S. Occupational Safety and Health administration (OSHA) recently updated the guidelines for safety and health programs it first released 30 years ago to reflect changes in the economy, workplaces, and evolving safety and health issues [7].

Due to the low relative oil prices since 2014, cum the loss of institutional knowledge (known as the Great Crew Change) has required the U.S. petroleum industry to scrutinize its operations and associated costs. The Great Crew Change is a demographic phenomenon that created a knowledge gap. It is believed that intelligent automation can help fill the knowledge gap by capturing the expertise of experienced workers before they leave, and minimize business opportunity losses due to lack of experience. This can also be coupled with the automation of repetitive processes to better manage their resources and data and improve safety and collaboration as well as increase productivity and profitability. In addition too, a variety of automation applications and autonomous systems are available for engineering, maintenance and operations. AI technologies transcend mere automated data gathering and entry, as newer capacities include data analysis. Since workforces are increasingly geographically dispersed, information (not just raw data) must flow seamlessly to employees and customers – wherever and whenever they need it most [8].

CHALLENGES IN THE OIL AND GAS WORKFORCE

For the industry to thrive, human resources must be available as highlighted by the Organization of Petroleum Exporting Countries (OPEC) in its recent World Oil Outlook. Efforts globally must be stepped up to recruit more talented oil and gas graduates to

the industry and also increase the interest among current employees. There is also the need for greater approach to ensure greater enrolment in and availability of energy related courses so as to meet the future needs of the oil and gas industry and to “continually broaden the ways and means of training and keeping the talented people the industry takes on.” In Bahrain, there is the fears of aging workforce, which revealed that the average worker in the country’s oil and gas industry is 50 years old; with already a 38% shortage in skilled labor in the region, particularly petroleum engineers and geologists, according to the oil and gas affairs minister and National Oil and Gas Authority (NOGA) chairman Dr Abdulhussain Mirza. Mirza told delegates at a conference: AllGulfCooperation Council countries are looking to increase their oil and gas capacity and for this reason, they will compete for limited talent.” We need a younger generation who have the right qualifications and are more attuned to the new technologies.” Bahrain plans on investing \$8 million (5.1 million pounds) on training its workforce for the future, however the problem is not just localized to the country. Across the Middle East, countries are facing the prospect of a skilled labor shortage. The interim president of the Petroleum Institute in Abu Dhabi, Michael Ohadi said that up to 50% of the skilled oil and gas workforce may retire in the next 10 years and there are not enough graduates waiting to replace them.

The demographics within the industry in the UK showed the average age of an offshore worker is 41 years old – which is at par with the national average for the working population between 20 and 60 years of age. Chris Allen, health, safety, social and environment director with Oil & Gas UK, explained: “The fact that the average age of the offshore workforce has remained unchanged from 2006 implies a steady intake of younger workers to match the ageing of the core workforce or attrition due to retirement” [9].

The difficult work conditions in remote areas and fluctuations in the industry have caused some workers to leave the industry for more stable positions. This may result to some companies to look for new workers that would require extensive training or rely more on third-party contractors, increasing the risk of workers compensation and liability claims. There is need to develop strong onboarding (or organizational socialization) and retention strategies to make employee recruiting more effective – through comprehensive training and mentoring programs that would drive performance and safety and broaden the labor pool [10, 11].

In the industry, there is shortage of workers i.e. the lack of individuals possessing the expertise to meet the industry’s demands effectively, vis-à-vis knowledge and experience gap due to those approaching retirement. Technology also presents its own challenges, even though it can enhance efficiency, requiring everyone to adapt and learn skills – it present challenges alongside opportunities.

In a dynamic oil and gas industry, companies must effectively manage employment regulations, payroll, and benefits in attracting and retaining top talents. The sector faces unique challenges such as:

- Recruiting skilled professionals aligned with the company’s mission and values.
- Onboarding diverse employees efficiently, considering their technical expertise.
- Navigating complex labor laws and employment standards across different regions.
- Competing for talented professionals committed to the success of oil and gas projects.
- Balancing budgets while offering competitive compensation packages.
- Conducting thorough background checks to ensure the safety and reliability of the workforce [12].
- Adhering to intricate visa requirements and immigration laws for international staff.

CONCLUSION

Due to the high level risks that the oil and gas industry workers are exposed to, adequate, modern, up-to-date safety and health measures/equipment must be provided for them. This will protect them from injuries and death, failure of which could result to worker compensation and liability. Therefore, in order to stem this and the problem of attrition, all industry workers must undergo necessary trainings regularly, strictly adhere to all safety and health regulations as put forward by the local, state, and international regulatory bodies. When all necessary risk management practices are utilized, the company will always be increasing its profit margins.

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Figure 1. Oil well.jpg - Wikipedia

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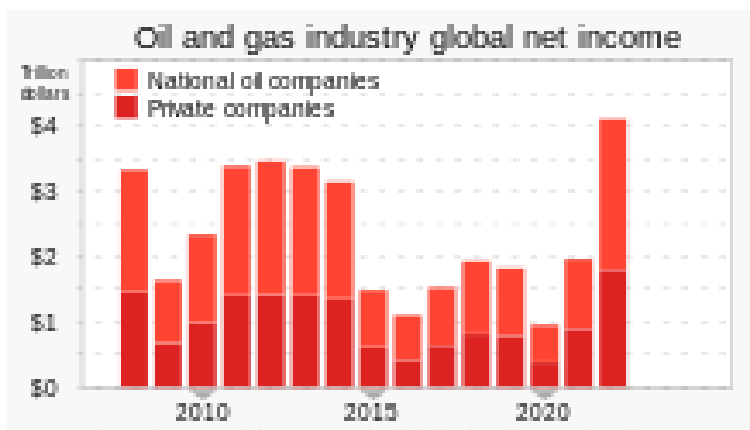


Figure 2. Petroleum industry - Wikipedia

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Global energy consumption, 2000 to 2021

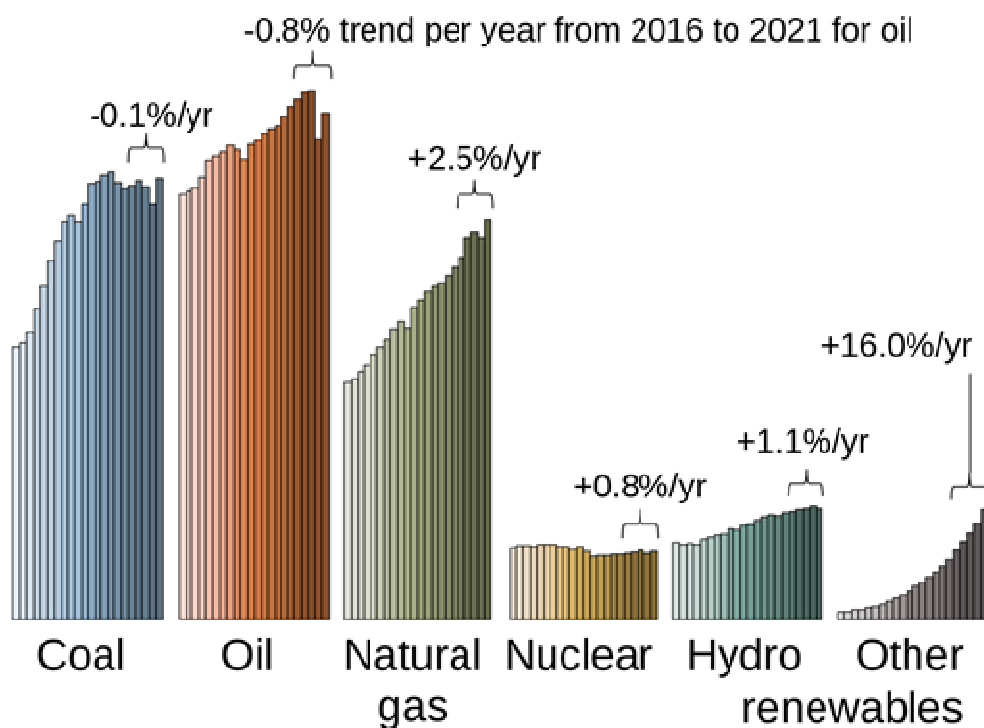


Figure 3, Energy transition – Wikipedia

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U.S. crude oil production by state in 2020

1,000 barrels per day

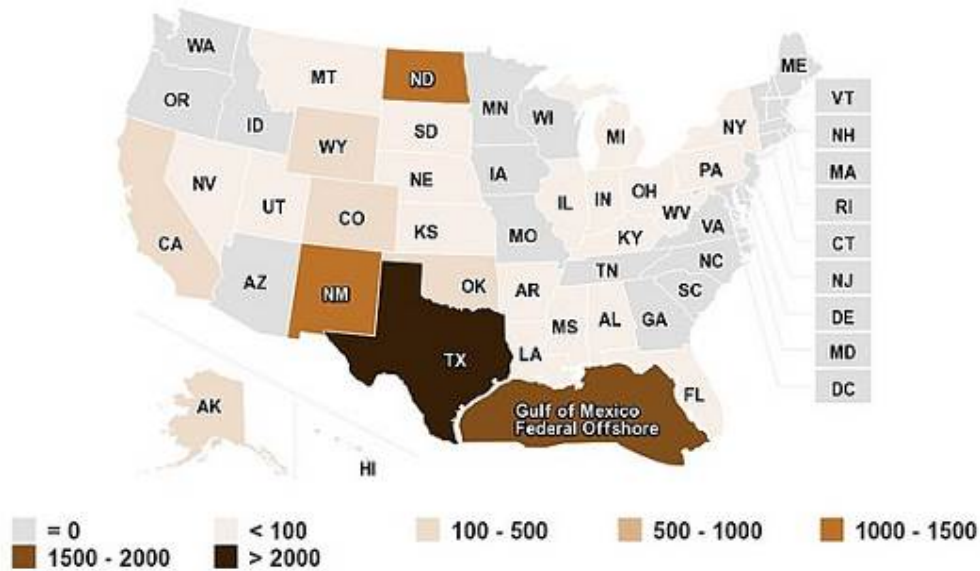


Figure 4. Petroleum in the United States – Wikipedia

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Figure 5. List of oil fields – Wikipedia

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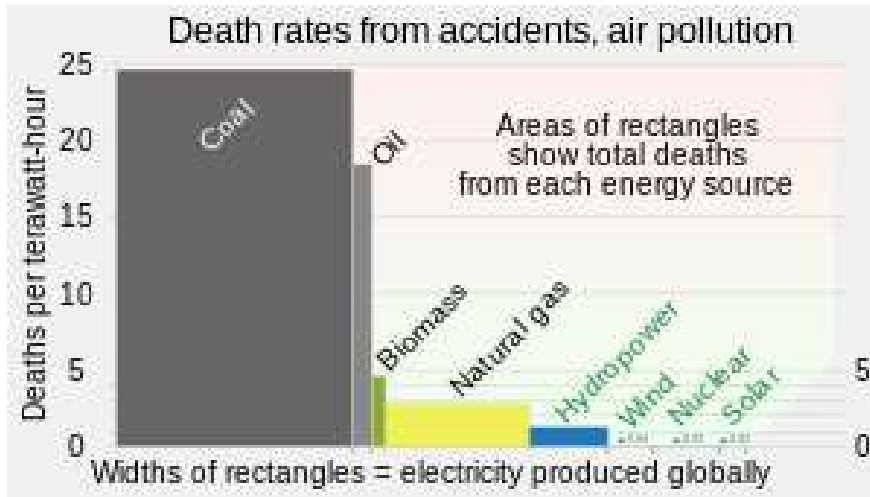


Figure 6. Renewable energy – Wikipedia

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Figure 7. Occupational safety and health - Wikipedia

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Figure 8. Petroleum Geo-Services – Wikipedia

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