HR challenges in the Indian oil and gas sector
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Overview of the Indian oil and gas sector

1.1 Oil and gas in India’s energy portfolio

With a GDP of US$1.25 trillion, India is currently the world’s fourth-largest economy. The country’s oil and gas sector has contributed significantly to the GDP, and the sector is expected to become increasingly critical for India’s economic development, since it fuels the growth of other sectors. India is already the fifth-largest energy consumer in the world, with oil and gas accounting for 45% of the country’s energy needs. However, the proportion of natural gas consumption in India to total energy consumption in the country (around 9%) is one third compared with the proportion of natural gas in the world’s primary energy consumption.

With a 53% share in the primary energy sector, coal remains the dominant fuel, but its share is projected to decrease with the thrust on gas and other renewable sources increasing. With India’s growing population and rising living standards, the demand for energy is expected to increase in future. India’s fuel needs are likely to grow at a significant rate, considering the growth pattern of the country’s GDP in the past few years. Currently, India’s per capita consumption of energy is well below that of the world average (around one fourth).

1.2 Changing business landscape

India is currently facing a substantial crude oil deficit, as its current production levels are lagging behind the fast pace of the economy. This has resulted in significant imports of crude oil. The demand-supply gap is set to widen in future with a consumption increase of 47% between 2008 and 2018 and with production poised to increase by around 12% in the same period.

India’s heavy dependence on import of crude oil has compelled the Government of India (GoI) to provide a long-term policy for the hydrocarbons sector in order to meet the country’s future energy needs. There are significant implications for the oil and gas sector in terms of the growth path it has charted:

- The introduction of the New Exploration and Licensing Policy (NELP) and the subsequent entry of multinational companies (MNCs) in the exploration and production (E&P) sector have given impetus to the country’s oil and gas sector. Unexplored sedimentary area of 50% in 1995–96 reduced to 15% in 2009.

In the past five years, the refining sector has witnessed additions in its refining capacities, and this trend is expected to continue with the implementation of major new capacities. It is anticipated that this sector will witness large investments for capacity augmentation, quality upgrades, the clearance of bottlenecks, and the revamping of various refineries. India is likely to boost its refining capacity by 45% by 2011-2012 as against 2008 (150 MTPA).

The petrochemical sector is poised for significant growth due to significant demand for petrochemical products. The demand is expected to touch 10 million tons by 2010, thereby witnessing annual growth of 9%-10%. With various refining companies diversifying into the petrochemical segment, existing capacities in this sector are likely to double in the next five years.

On the back of growth in petroleum production and refining, as envisaged by the Hydrocarbon Vision 2025 report, infrastructure is likely to witness significant growth, especially in the pipelines sector. IOCL and GAIL are cumulatively expected to add around 5,000 km to their existing pipeline networks.

It is expected that the GoI’s emphasis on clean fuel will lead to a marked increase in the city gas distribution (CGD) business, with around 40 cities expected to fall under the ambit of CGD by 2012.
Talent shortage

2.1 Manpower requirements

Anticipated business growth in the sector is contingent on the availability of skilled manpower in the country. As such, the report on Ernst & Young's study Manpower Demand and Supply Study for Oil and Gas sector, conducted in 2009, provides an assessment of the manpower demand for critical skill sets across the country’s oil and gas value chain and the corresponding supply of such resources. Key findings of the study include:

- India’s oil and gas sector is likely to require around 25,000 additional professionals in the next five years due to business growth and retirement or attrition in the sector. This is equivalent to around 48% of the current employee strength.
- Core (technical) functions are likely to account for around 80% of required manpower.
- The upstream sector is expected to see the maximum shortfall, with a requirement for around 7,600 employees in the next five years on account of high attrition and retirement.
- In the downstream sector, the refining and petrochemical sectors are likely to require around 6,000 and 2,700 professionals, respectively. The refining and petrochemical sectors are witnessing substantial capacity additions that are translating into significant manpower requirements.
- CGD is projected to require around 4,500 people in the next five years due to exponential growth in pipeline infrastructure and the network, while the marketing sector is expected to need close to 3,600 people.
Manpower projections for the oil and gas industry predict a substantial demand for oil and gas professionals over the next five years. The sector needs to tide over the challenges of attraction and retention efficiently to support current operations and execute planned growth. One of the common challenges all sectors within the oil and gas value chain currently face is planning for the sustained availability of a competent workforce. Although technological development has garnered benefits that have allowed oil and gas companies to reduce manpower requirements, future technological advancement is not expected to manage offsetting impending manpower requirements. Existing academic institutes are not sufficient to ensure industry stability in terms of manpower supply. The gap between the demand for trained manpower and its supply is widening annually. Some of the key issues include an aging workforce, retirement, attrition, and talent acquisition and supply.

3.1 Aging workforce
Largely in line with the global trend, the average age of workforce employed in the Indian oil and gas sector is high. This
is a major challenge, particularly for upstream companies, which are expected to find it particularly difficult to replenish talent loss due to heavy retirement in the next five years. Intermittent hiring by oil and gas companies has led to the majority of the workforce being skewed at the top of the organizational pyramid. Around 50% of employees have more than 20 years of experience, and the majority is due to retire in the next 5-10 years.

3.2 Retirement

As a natural consequence of the aging workforce, impending employee retirement in the sector is expected to peak over the next five years. Around 11% of the current workforce is estimated to retire in the next five years. This is likely to significantly reduce experienced talent in the oil and gas sector. Further, public sector undertakings (PSUs) are expected to be considerably impacted as a result of projected retirement rates. It is also anticipated that the sector will witness 34% of retirement at the middle-management level, which implies a significant loss of experience. Core technical functions will face major manpower challenges due to retirement. Three-fourths of all retired people are expected to hail from technical or core functions such as geosciences, reservoir, production, maintenance, technical services and R&D.

3.3 Attrition

Attrition is another major reason for the loss of talent in the Indian oil and gas sector. It is estimated that in the next five years, around 7% of the current workforce will leave the oil and gas sector in India. A study of total attrition by level reveals that the upstream oil and gas sector is faced with significant attrition at the middle-management level, while other sub-sectors are facing this challenge at junior-management levels. Middle-management attrition in the E&P sector is due to various international opportunities available for employees with more than 10 years of experience. The lack of career opportunities and extreme working conditions are other primary reasons for employee attrition. In the downstream (refining and petrochemical) and marketing sectors, around 75% of attrition is expected at the junior-management level, indicating the absence of a robust talent-retention mechanism in organizations.

3.4 Attracting talent

Attrition and retirement are not unique to the oil and gas sector. In fact, sectors such as IT-ITeS, retail and telecom face far more attrition than the oil and gas sector does. The loss of manpower due to retirement is common in core sectors such as power and heavy engineering. The key cause for concern around the loss of industry talent is that skill sets in this industry are highly specialized and...

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4 Manpower demand and supply study for oil and gas sector, Ernst & Young, 2009.
5 Manpower demand and supply study for oil and gas sector, Ernst & Young, 2009.
6 Manpower demand and supply study for oil and gas sector, Ernst & Young, 2009.
difficult to develop and acquire. Thus, the impact of losing industry professionals with five or more years of experience is likely to be of high magnitude.

Therefore, a strong talent development strategy needs to be developed and followed at all levels in an organization. Significant efforts to attract talent from engineering campuses are the need of the hour. Lack of awareness among people about this sector in India is another challenge. Certain negative perceptions around the sector have become common over time among students, parents and counselors. It is largely presumed that working conditions in this industry are generally hazardous and that postings are typically restricted to remote locations. This impacts talent attraction and acquisition relevant courses in the oil and gas sector in India.

As such, a dedicated communication campaign highlighting various career options in the sector needs to be developed. The communication campaign is likely to motivate students to opt for courses in oil and gas and subsequently join the sector.

3.4 Inadequate supply of talent from institutes

The sector is also facing issues around the availability of a solid talent pool from universities and institutes that typically contribute to its talent base. To analyze the magnitude of the problem, technical institutes were categorized into various levels based on the industry’s preference for these institutes:

The sector currently relies heavily on level 1 and level 2 technical institutes and universities for talent sourcing. These institutes produce high-quality technical manpower. Over the years, the inflow of talent from these institutes to core sectors, particularly oil and gas, has been dwindling.

As evident from Exhibit 2, around 60% of technical skill sets available (close to 0.45 million) fall under the non-relevant category for the oil and gas sector. This indicates the growing demand and popularity of courses such as IT, computer science and electronics. Level-1 institutes comprise only around 4% of total institutes in India (around 1,400). According to industry estimates, only 10% of students equipped with core skills are inclined to join the oil and gas sector.

The magnitude of the problem can be gauged from the fact that of all engineering graduates from Level 1 and 2 institutes, only 2% join the oil and gas sector annually. Sector interest in Level 1 institutes is can be primarily attributed to the following reasons:

- Periodic hiring pattern of oil and gas companies
- Unstructured internship process
- Competition from global oil and gas companies
- Faculty crunch
- Lack of a strong industry-academia interface

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Exhibit 1: Technical institutes (by level)

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Institute of Technology (IIT) /National Institute of Technology (NIT)/Indian School of Mines (ISM)/ Institute of Technology - Banaras Hindu University (IT-BHU)</td>
<td>Oil and gas sector institutes/universities</td>
<td>Other institutes</td>
<td></td>
</tr>
<tr>
<td>40%</td>
<td>54%</td>
<td>62%</td>
<td>60%</td>
</tr>
<tr>
<td>10%</td>
<td>19%</td>
<td>2%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Sources: AICTE, IIT and relevant universities

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Exhibit 2: Availability of skills in India

- Core skills
- Related skills
- Other skills

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7 Manpower demand and supply study for oil and gas sector, Ernst & Young, 2009.
Global HR challenges

Talent shortage has become a critical challenge for the oil and gas industry at a global level. The challenges are largely similar to those prevalent in India due to variations in employment within the industry. The significant variation in employment figures for the industry is a result of the intrinsic boom and bust cycles that have afflicted the industry. Globally, companies have struggled to recruit, retain and develop sufficient manpower to sustain operations. Manpower deficits are leading to project delays and cost overruns, and this problem is more serious in the upstream sector. The following sections detail some of the issues the industry is currently contending with in the global context:

4.1 Employment cycles

The global oil and gas industry has witnessed several business cycles in the past 40 years, mainly dictated by the principles of “oil economics,” with sharp increases in prices followed by rapid declines. This made it one of the most volatile industries to be employed in. A massive recruitment drive due to increased production typically followed sharp increases and, subsequently, a decline in oil demand resulted in substantial layoffs. Thus, employment in the oil and gas sector has largely followed crude oil price trends and lags behind the price peaks illustrated in Exhibit 3. The industry has also not managed to preempt trends and take corrective action, as it is difficult to predict oil and gas prices. Several factors, including the state of the economy and a number of geopolitical factors, are responsible for price fluctuations.

4.2 Aging workforce

Extended periods of low hiring in the sector have had a detrimental impact on

Exhibit 3: Annual variation

the demography of the industry’s current workforce. Since the recruitment of new graduate petro-technical professionals has been low for a long period, the global average age of employees in the sector has increased, and age distribution has bulged in the middle. This bulge, which peaks at employees in the 45 to 49 age range, represents the last period of large-scale hiring of college graduates in the late 1970s and early 1980s. The issue is far more critical in western countries, which are facing a maturing population. These countries have been struggling to replace aging employees with new engineers and companies are now heavily investing in training and development programs and creating management succession plans to generate a steady talent pipeline.

4.3 Inadequate supply of talent and dwindling course intake

The oil and gas sector currently faces an acute skill crisis due to challenges arising from an aging workforce. Lack of student interest in petroleum and geosciences courses has only compounded the problem. A marked decline has been witnessed in the number of petroleum degrees granted in countries such as the US, where even enrolments have decreased more than 90% since 1982\(^8\). Irregular periods of hiring have dented the image of the oil and gas industry. The sector’s reputation as a competitive employer in the media, as well as on college campuses, has been adversely impacted during downturns in the economic cycle. This has affected its image as a preferred recruiter and continues to hinder recruitment efforts to date.

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\(^8\) Manpower demand and supply study for oil and gas sector, Ernst & Young, 2009.
Our offices

Ahmedabad
2nd floor, Shivalik Ishaan
Near CN Vidhyalaya
Ambawadi
Ahmedabad - 380 015
Tel: + 91 79 6608 3800
Fax: + 91 79 6608 3900

Bengaluru
“UB City”, Canberra Block
12th & 13th floor
No.24 Vittal Mallya Road
Bengaluru - 560 001
Tel: + 91 80 4027 5000
Fax: + 91 80 2210 6000 (12th floor)
Fax: + 91 80 2224 0695 (13th floor)

Chennai
TPL House, 2nd floor
No. 3 Cenotaph Road
Teynampet
Chennai - 600 018
Tel: + 91 44 6632 8400
Fax: + 91 44 2431 1450

Gurgaon
Golf View Corporate Tower B
Near DLF Golf Course
Sector 42
Gurgaon - 122002
Tel: + 91 124 464 4000
Fax: + 91 124 464 4050

Hyderabad
205, 2nd floor
Ashoka Bhoopal Chambers
Sardar Patel Road
Secunderabad - 500 003
Tel: + 91 40 6627 4000
Fax: + 91 40 2789 8851

Kolkata
22 Camac Street
Block ‘C’, 3rd floor
Kolkata - 700 016
Tel: + 91 33 6615 3400
Fax: + 91 33 2281 7750

Mumbai
6th floor & 18th floor, Express Towers
Nariman Point
Mumbai - 400 021
Tel: + 91 22 6657 9200 (6th floor)
Fax: + 91 22 2287 6401
Tel: + 91 22 6665 5000 (18th floor)
Fax: + 91 22 2282 6000

New Delhi
6th floor, HT House
18-20 Kasturba Gandhi Marg
New Delhi - 110 001
Tel: + 91 11 4363 3000
Fax: + 91 11 4363 3200

Noida
Ernst & Young Pvt Ltd.
4th & 5th Floor, Plot No 2B, Tower 2,
Sector 126, Noida 201 304
Gautam Budh Nagar, U.P. India
Tel: + 91 120 671 7000
Fax: + 91 120 671 7171

Pune
C-401, 4th floor
Panchshil Tech Park
Yerwada (Near Don Bosco School)
Pune - 411 006
Tel: + 91 20 6603 6000
Fax: + 91 20 6601 5900

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