THE INDIAN OIL AND GAS SECTOR: RECENT DEVELOPMENTS, GROWTH AND PROSPECTS

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The oil and gas sector consists of three segments—upstream, midstream and downstream. The upstream segment primarily comprises companies that are engaged in exploration and production activities, while the midstream segment comprises players in storage and transportation, and the downstream segment comprises of players that are engaged in refining, processing and marketing of petroleum products.

A country’s economic growth is closely correlated to the energy demand. Consequently, the demand for oil and gas, which is one of the main sources of meeting energy requirements, is expected to increase further. The value of the Indian oil and gas sector is forecasted to grow from US$ 117,562.9 million in 2012 (estimated) to US$ 139,814.7 million by 2015.

The Indian government is looking forward to promoting a plan for the sustainable development of the oil and gas sector, and investments in research and development (R&D) activities in alternative fuels segment so as to prevent the depletion of the country’s natural reserves.

This report therefore analyses the sector’s development over past years, its current state and future prospects while keeping in mind key metrics such as regulatory frameworks, foreign direct investments and the participation of private players in all segments of the Indian oil and gas industry. It also analyses key points from the 11th Five Year Plan that have had a positive impact on the industry, the measures suggested in the 2012–13 Union Budget to safeguard the sector, and steps to be taken in the coming years to ensure a sustainable and a high rate of development. This report also assesses some actionable measures from the 12th Five Year Plan that affect the industry.

1 Datamonitor Report – Oil and Gas in India, August 2011
1. KEY DEVELOPMENTS AND CURRENT STATE OF THE INDIAN OIL AND GAS SECTOR

The oil and gas sector in India is a critical component of the country’s economy, accounting for 15 per cent of the country’s gross domestic product (GDP). Economic growth is directly linked with energy demand, and a conservative estimate of 7 per cent growth is expected to double India’s per capita energy consumption from 560 kilograms of oil equivalent (kgoe) in FY10 to 1,124 kilograms of oil equivalent (kgoe) by FY32. As oil and gas is one of the main sources to meet the required demand for energy in India, its demand is forecast to rise further. In 2011, natural gas accounted for 10 per cent of the country’s total energy requirements, whereas estimates suggest that this figure will reach 20 per cent by 2025, with oil and gas together accounting for approximately 45 per cent of the total demand. Market reports estimate that this growth is expected to take the size of the Indian gas market to that of the gas market in Japan, the largest consumer of liquefied natural gas (LNG) in Asia, by the end of 2015. As shown in Figure 1.1 and Figure 1.2, despite having significant reserves in India, the increase in demand is expected to be primarily met through imports.

Figure 1.1
India’s total Oil and Gas reserves

Source: Business Monitor International: India Oil and Gas Report, 2012

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1. Invest in India – Oil and Gas Sector
2. Google Public Data
3. ASSOCHAM-Deloitte Paper – Indian Oil and Gas Sector
4. Planning Commission
5. Indian Energy Congress
6. Energy Information Administration

The Indian Oil and Gas Sector: Recent Developments, Growth and Prospects
In 2010, an approximately 63 per cent of the total oil and gas imports came from the Middle East, followed by Africa with 22 per cent and the Western Hemisphere with 10 per cent.\footnote{Energy Information Administration}
To cope up with the high demand, the Indian government has adopted policies such as allowing 100 per cent foreign direct investment (FDI) in many segments of the oil and gas sector such as refineries, pipelines, petroleum products, natural gas and infrastructure related to the marketing of petroleum products. In 2011, the oil and gas sector experienced one of the biggest FDI deals in the country, with British Petroleum (BP) entering a US$ 7.2 billion deal with Reliance Industries for the exploration of offshore oil and gas. Subsequently, BP formed a joint venture with Reliance for the marketing of gas and took a 30 per cent stake in 23 oil and gas blocks. Owing to many large scale investments, the oil and gas sector in India attracted FDI worth US$ 3,152 million over 2000–11.

Some other policy initiatives to promote investments included the New Exploration Licensing Policy (NELP), to aid both public and private sector companies in bidding for exploration rights. Over 246 blocks were given out over eight bidding rounds through this initiative during the last decade alone, resulting in the discovery of 68 oil and gas fields. The NELP allows 100 per cent FDI in small to medium sized oil fields. However, the NELP may soon be replaced by the Open Acreage Licensing Policy (OALP), which invites bids all year round unlike NELP that invites bids yearly.

The following section highlights the regulatory environment and the competitive scenario in the Indian oil and gas industry.

1.1. Regulatory landscape and competitive scenario

The Indian oil and gas sector is highly regulated and largely state controlled. Figure 2 shows key regulatory authorities in India and the main legislations that govern the sector.

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**Figure 2**

Regulatory environment for Oil and Gas sector in India

- Planning Commission
- Ministry of Finance
- Ministry of Petroleum and Natural Gas
- Directorate General for Hydrocarbons
- Petroleum and Natural Gas Regulatory Board
- Petroleum Act (rules for import, transport, storage)
- Oilfields Act (development of oilfields)
- New Exploration and Licensing Policy (competitive bidding)
- Integrated Energy Policy (addressing key challenges)
- Open Acreage Licensing Policy (bidding for exploration rights)

Source: PricewaterhouseCoopers Analysis – Indian Energy Congress, IEA, Indian Energy Congress

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*Indian Express – FDI in India*
*Business Monitor International: India Oil and Gas Report, 2012*
Among other initiatives, the Petroleum and Natural Gas Regulatory Board was formulated to ensure the smooth supply of petroleum and petroleum products throughout the country at regulated prices. This body was also tasked with enabling pipeline development, and regulating the midstream and downstream segments of the oil and gas sector.\(^6\)

The oil and gas sector is dominated by PSUs and a few large private sector companies. Figure 3 highlights the credentials of leading players in each segment (upstream, midstream and downstream) of the oil and gas industry.

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**Table: Competitive landscape for Oil and Gas sector in India (top players)**

<table>
<thead>
<tr>
<th>Industry Segments</th>
<th>Company</th>
<th>Upstream</th>
<th>Midstream</th>
<th>Downstream</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Exploration &amp; Production</td>
<td>Storage &amp; Transportation</td>
<td>Refining, Processing &amp; Marketing</td>
</tr>
<tr>
<td></td>
<td>Oil and Natural Gas Corporation</td>
<td>Oil Production: 531,000 b/d</td>
<td>Pipelines: 10,329 km</td>
<td>Refining: 880,000 b/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gas Production: 25.6 bcm</td>
<td>Turnover: US$ 68,488 mn.</td>
<td>Retail Outlets: 18,643</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turnover: US$ 13,782 mn. 74% state owned</td>
<td>Turnover: US$ 6,762 mn. 57% state owned</td>
<td>Turnover: US$ 34,591 mn. 66% state owned</td>
</tr>
<tr>
<td></td>
<td>Oil India Limited</td>
<td>Oil Production: 73,000 b/d</td>
<td>Pipelines: 12,000 km</td>
<td>Refining: 450,000 b/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gas Production: 2.4 bcm</td>
<td>Turnover: US$ 1,730 mn. 98.1% state owned</td>
<td>Retail Outlets: 6,553</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turnover: US$ 340 mn. Private sector</td>
<td>Turnover: US$ 34,591 mn. 66% state owned</td>
<td>Turnover: US$ 27,812 mn. 51% state owned</td>
</tr>
<tr>
<td></td>
<td>Cairn Energy</td>
<td>Oil Production: 25,000 b/d</td>
<td>Pipelines: 12,000 km</td>
<td>Refining: 260,000 b/d</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gas Production: 0.4 bcm</td>
<td>Turnover: US$ 6,762 mn. 57% state owned</td>
<td>Retail Outlets: 8,539</td>
</tr>
</tbody>
</table>

**Source:** Business Monitor International: India Oil and Gas Report, 2012, IBEF

In India, Oil and Natural Gas Corporation (ONGC) accounts for approximately 67 per cent of the total oil and gas production, whereas the Indian Oil Corporation (IOC) and its subsidiary, the Chennai Petroleum Corporation Limited (CPCL), command the largest market share (approximately 48 per cent) in petroleum products. The country’s refining segment is primarily dominated by domestic players such as Hindustan petroleum Corporation Limited (HPCL), Bharat
Petroleum Corporation Limited (BPCL), IOC and Reliance Industries. 9

1.2. Key developments for the Oil and Gas sector during the 11th Five Year Plan

In the 11th Five Year Plan, the government focus related to energy was threefold. First, its main objective was to attain energy security and mitigate the need for imports in the oil and gas sector through sustainably scaling up exploration and production (E&P) activities, use of alternate fuels and infrastructure development.10 Second, the government focused on tax and pricing reforms, with plans to phase out subsidy on LPG and kerosene, and to align fuel prices with global trends.10 Third, the government tried to focus specifically on infrastructure development for the midstream oil and gas segment.10

Further, the government undertook numerous measures such as setting up the Integrated Energy Policy, the Directorate General of Hydrocarbons, and the Petroleum and Natural Gas Regulatory Board to aid the rapid development of the sector. Further, the government focused on creating a level playing environment in both the upstream and downstream segments by ensuring unhindered access to common infrastructure at the regulated prices.10

The government has taken into consideration the Kirit Parikh Committee’s recommendations, and made numerous actionable reforms on the pricing of petroleum products. The recommendations are the following10:

- Petrol prices should be hiked, while diesel prices should be adjusted to market rates instead of being subsidised, as this will not affect consumers significantly, and can be borne by them. These price hikes will reduce under recoveries to zero, as failing to hike fuel prices will result in under recoveries of approximately Rs 2 trillion (US$ 37.6 billion).11

- The price hike process and distribution system needs to be more transparent, as there is currently a significant disparity in the per capita allocation of kerosene between states11. Transparency especially in the distribution of LPG and kerosene can be attained through the UID smartcard scheme.10

The implications of these measures would primary reduce the under recoveries in the oil and gas sector, thereby making the sector more profitable.

Acting on these recommendations, the government implemented numerous actionable reforms on the pricing of petroleum products.

10 Planning Commission – Mid-Term Appraisal of the 11th Five Year Plan
11 MoneyControl – Kirit Parikh Committee
Table 1 demonstrates the total expenditure outlay in the oil and gas sector during the 11th Five Year Plan, and some indications on the revised projections that were made over the course of the midterm appraisal.

<table>
<thead>
<tr>
<th>Activities</th>
<th>11th Plan outlay</th>
<th>11th Plan outlay (revised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration and Production</td>
<td>1,50,933</td>
<td>1,75,264</td>
</tr>
<tr>
<td>Refinery and Marketing</td>
<td>62,582</td>
<td>78,321</td>
</tr>
<tr>
<td>Petrochemical</td>
<td>15,321</td>
<td>15,678</td>
</tr>
<tr>
<td>Engineering</td>
<td>236</td>
<td>198</td>
</tr>
<tr>
<td>Total</td>
<td>2,29,072 crore</td>
<td>2,69,461 crore</td>
</tr>
</tbody>
</table>

Source: Planning Commission – Mid Term Appraisal of the 11th Plan

There was a notable increase in projected expenditure in the E&P segment, primarily due to increased drilling costs and high production costs. The refineries segment is also expected to experience an increase in its expenditure, due to an increase in infrastructure development cost for pipelines.¹⁰

1.3. Factors affecting the Indian Oil and Gas sector

Some key factors affecting the Indian oil and gas industry are the following:

- **Dominated by state controlled enterprises:** The sector is primarily dominated by state controlled enterprises, with only a few foreign players. The primary reason for this could be the country’s regulatory framework, where ventures involving foreign players take longer to get the required approvals.⁹ Further, the participation of foreign players has been limited during the nine rounds of bidding for exploration rights through the NELP, while the participation of state owned players has been high.¹²

- **Subsidies on Oil and Gas products:** Eliminating subsidies on oil and gas products is proving to be a major challenge for the government, due to political pressure.⁷ These subsidies have led to large scale under recoveries in the Indian oil and gas sector.

- **Environmental issues:** Offshore mining of oil and gas and deep water exploration poses significant threats to the environment in terms of potential threats of water contamination. Further particulate emissions of refineries and production plants could have an adverse impact on the environment as well.⁶,⁹,¹³
• **Requirement of advanced technology for upstream segment:** The industry faces a shortage of skilled labour for the mining of unconventional assets such as shale gas and Coal Bed Methane (CBM), which offer a huge potential in terms of ensuring sustainability.  

The Government has proactively aimed to curb some of these challenges including subsidies on oil and gas, and technology requirements in the upstream segments through actionable reforms such as the Kirith Parikh Committee’s recommendations, and by encouraging a higher level of private sector participation. It further addresses them through initiatives introduced in the 2012–13 Union Budget and the 12th Five Year Plan, as discussed in the subsequent sections.
2. WAY FORWARD – AN ANALYSIS OF THE 2012–13 UNION BUDGET, AND OTHER INITIATIVES

Oil and gas is a major part of the energy sector, which, in turn, is essential for the growth of the manufacturing, utilities, infrastructure and commercial services industries. It is therefore essential to analyse the government’s key policy initiatives to boost this sector and attract investments.

The following sections provide a perspective on the government’s various policy reforms in the Union Budget of 2012–13, and other key initiatives that enable growth in the sector.

2.1 What the Union Budget of 2012–13 holds for the Oil and Gas sector

Some suggested reforms that the current Union Budget holds for the oil and gas sector are the following:

- The duty on crude oil produced in India is increased by 80 per cent to Rs 4,500 (US$ 84.6) per metric ton from Rs 2,500 (US$ 47) per metric ton. This increase implies a reduced realisation of approximately US$ 5 per barrel for upstream oil and gas companies, and will benefit the government by about Rs 7,500–8,000 crore (US$ 141.1–150.0). Consequently, this is expected to impact the earnings of large oil and gas companies operating in India.

- The basic customs duty on the import of LNG for power generation is exempted for two years. This will reduce fuel costs for the generation of electricity and the manufacturing of fertilisers. In addition, oil and gas pipelines and storage facilities were made eligible for viability gap funding (VGF), thereby enabling growth in the sector by enhancing the feasibility of projects that are expected to yield low financial returns.

- The government is providing subsidies on sensitive petroleum products such as kerosene, liquefied petroleum gas (LPG) and diesel. Though these products are sold below acceptable market prices, the subsidy provided by the government only covers a portion of the cost difference, thereby resulting in under recoveries for oil marketing companies.

Among other indirect initiatives affecting the sector is an increase in service tax from 10 per cent to 12 per cent, which is expected to increase the cost of oil field services.

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14 ICRA – Analysis of the 2012–13 Union Budget
15 Business Standard – Crude Cess to Eat into Profitability of Oil and Gas Companies
16 DNB – Analysis of the 2012–13 Union Budget
17 Tata Energy Reserach Institute Article
Given that the impact of Union Budget of 2012–13 on the Indian oil and gas sector is expected to be balanced, it is critical to assess other measures and developments that will lead to future growth.

2.2 Way forward and key opportunities

The Indian oil and gas sector expects to attract investment of Rs 3.9 trillion (US$ 75 billion) over 2012–17, during the 12th Five Year Plan, while ONGC and IOC, both upstream companies, are expected to spend Rs 1.75 trillion (US$ 32.9 billion) and Rs 190 billion (US$ 3.6 billion), respectively, primarily in exploration activities. It is therefore essential to analyse, and capitalise upon key opportunities that are put forth before the oil and gas sector to maximise output, and ensure sustainable development.

In the 12th Five Year Plan, the government is expected to focus majorly on E&P activities, including intensive exploration of existing hydrocarbon reserves and geographical focus on the east coast for exploring off shore oil fields. Further, the government will focus on harvesting unconventional fuels such as shale gas, CBM and bio diesel. The focus on R&D is expected to increase during the 12th Plan period, with major focus on fuel conservation/efficiency improvement, reduction of carbon emissions and innovations to diversify the domestic product portfolio.

Some other key action points for the Indian oil and gas industry in the coming years are the following:

Using unconventional fuels/ alternative sources of gas

The focus is expected to shift to assessing the feasibility of using alternative fuels such as hydrogen to run automotives. The Ministry of Petroleum and Natural Gas set up a fund of Rs 1 billion (US$ 18.8 million) with contributions from major oil companies to conduct R&D in hydrogen based fuels. Coal bed methane is also a prospective future fuel, due to its large scale availability.

Developing midstream infrastructure

The Indian oil and gas industry offers significant opportunities in the development of midstream infrastructure, with an expected capacity addition of 6,000–8,000 km pipeline to the National Gas Grid in the southern and central parts of the country. Further, the city gas distribution network is not developed in most parts of the country except in cities such as Delhi and Mumbai. This particularly offers benefits in the vehicular segment as an alternative fuel, which offers a 20 per cent cost benefit over diesel.

18 Wall Street Journal – Investments Expected in India Oil and Gas
19 Working Group Report on the Petroleum and Natural Gas Industry
Forming joint ventures or partnerships with foreign players

State run oil and gas companies in India need to form partnerships or joint ventures with foreign players to effectively use their technology and monetary resources for ultra deep water exploration, which can yield significant results. Currently, Indian companies are only equipped with the technology that helps them explore on land, or in shallow basins.\(^2^\)

Development of strategic storage facilities

The government is constructing a total capacity of 15 million metric tons (MMT) in the form of strategic storage facilities for crude oil and petroleum products. This resource will be used as an emergency mechanism in the case of short term disruptions in fuel supply. In the first phase, the construction of the 5 MMT storage space has been started simultaneously at Vishakapatnam (1.3 MMT), Mangalore (1.5 MMT) and Padur (2.5 MMT). The proposed storage structure is expected to be underground in manmade caverns.\(^6\)

Effectively capitalising upon potential opportunities, clubbed with the increasing demand for natural gas, favourable government policies, large scale investments and the recent discovery of offshore gas reserves\(^2^0\) are expected to fuel strong growth in the Indian oil and gas sector.

\(^{20}\) IBEF – Report on Oil and Gas Sector
3. CONCLUSION

The oil and gas sector is fairly well developed in India, and is poised to contribute a large share to India’s energy basket over the next 15–20 years. A conservative estimate of 7 per cent growth in the Indian economy is expected to approximately double India’s per capita energy consumption over the next 20 years. Since energy demand and economic growth are almost interlinked, the Indian oil and gas sector, which provides the country with a significant portion of its energy requirements, has been identified as a key metric that will drive future GDP growth.

To cope up with the increasing demand, the government has allowed 100 per cent FDI in the oil and gas sector, enabling some large partnerships such as the US$ 7.2 billion deal between BP and Reliance Industries. In order to further aid the development of the sector, the government introduces legislations such as the NELP to enable companies to bid for exploration rights, and encourage private sector participation. The participation of the private sector is expected to bring in monetary resources and technological capabilities, especially in the field of deep sea exploration while simultaneously reducing the dominance of PSUs in the country’s competitive landscape.

This year’s Union Budget is expected to have a mixed impact on the sector, as the government has increased cess on crude oil production by approximately 80 per cent, thereby reducing its under recoveries. On the other hand, the government has also exempted the basic customs duty on the import of liquefied natural gas for power generation for two years, and made oil and gas pipelines eligible for viability gap funding, consequently aiding the midstream segment and thereby greatly benefiting the sector.

The main future opportunities for the sector include assessing the feasibility of using non conventional fuels such as coal bed methane, hydrogen and bio diesel. The sector must also lay greater focus on developing midstream infrastructure, with specific attention on city gas distribution networks, and the construction of strategic storage facilities as a safeguard against short term disruptions in fuel supply.
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