Oil and Gas Sector

Introduction

As one of the six core industries in India, the oil and gas industry has a very significant role to play in the growth of the Indian economy. The petroleum and natural gas sector which includes transportation, refining and marketing of petroleum products and gas constitutes over 15 percent of the country's gross domestic product (GDP).

About a decade ago, the petroleum sector was almost completely controlled by national oil companies. Presently, there are many players both in the upstream and downstream sectors. With the significant discoveries of oil and gas in various sites in recent years, India is looking at huge investments in the sector. Growth continues apace, and the Indian oil sector looks vibrant with opportunities.

Total production of crude oil during 2009-10 was 33.68 MT. Total production of natural gas has been 47.57 BCM. There are 19 refineries: 17 in public sector and 2 in private sector. The capacity had grown from 62 MMT in April 1998 to 149 MMT in January 2007 and 160.03 MMT in 2009-10. Refining capacity is expected to reach 235 MMT by April 2012.

India still largely remains dependant upon coal and oil. The growth in energy consumption is projected to catapult the overall demand to 196 MMT in 2011-12 and 250 MMT in 2024-25. According to the estimates by the Integrated Energy Policy Report, Planning Commission of India, 2006, the total energy requirement (including oil, gas, coal, nuclear and hydro energy sources) in the country by 2032 would be 1,651 million tonnes of oil equivalent (MTOE). Growth in demand is projected to catapult the overall demand to 199 MMT in 2011-12 and 376 MMT in 2024-25.

Key players

PSU's in Oil and Gas Sector

	Installed capacity	Refinery crude throughout
Public Sector (in thousand tonnes)		
IOCL	**47,350**	**47,401**
BPCL	**12,000**	**12,748**
HPCL	**13,000**	**16,818**
KRL	**7,500**	**8,134**
CPCL	**10,500**	**10,266**
BRPL	**2,350**	**2,020**
NRL	**3,000**	**2,568**
ONGC	**78**	**63**
MRPL	**96,90**	**12,525**
Private Sector (in thousand tonnes)		
Reliance	**33,000**	**36,931**
Essar	**10,500**	**6,631**

The key players in the industry are the PSUs operating under the Ministry. These PSUs are involved in a range of operations, from exploration to production, refining, marketing, infrastructure and diverse multi-sector operations. Some of the leading players in the industry are as follows:

Gas Authority of India Ltd. (GAIL)
GAIL is India's flagship natural gas company, present along all aspects of the natural gas value chain (including E&P, processing, transmission, distribution and marketing). Today, GAIL is spearheading the move to a new era of clean fuel utilisation and is also expanding its business to become a player in the international market. Its business infrastructure comprises:

• 5,800 kilometres of natural gas high pressure trunk pipeline, with a capacity to carry 130 Million Metric Standard Cubic Metres per Day (MMSCMD) of natural gas across the country.
• 7 LPG processing units to produce 1.2 Million Metric Tonnes Per Annum (MMTPA) of LPG and other liquid hydrocarbons.
• Gas-based integrated petrochemical complex at Pata, with a capacity of producing 310,000 tonnes per annum of polymers.
• 1,922 kilometres of LPG transmission pipeline network, with a capacity to transport 3.8 MMTPA of LPG.
• 30 oil and gas exploration blocks and 3 coal bed methane blocks.
• 13,000 kilometres of optical fibre cable network, offering highly dependable bandwidth for telecom service providers.
• Joint venture companies in Delhi, Mumbai, Hyderabad, Kanpur, Agra, Lucknow, Bhopal, and Pune, for supplying Piped Natural Gas (PNG) to households and commercial users and Compressed Natural Gas (CNG) to the transport sector.
• Participating stake in the Dahej LNG Terminal and the upcoming Kochi LNG Terminal in Kerala.

Besides, GAIL has been entrusted with the responsibility of reviving the LNG terminal at Dabhol, as well as sourcing LNG. It has established a presence in the CNG and city gas sectors in Egypt, through equity participation in three Egyptian companies, namely, Fayum Gas Company SAE, Shell CNG SAE and National Gas Company SAE. It also has a stake in China Gas Holding, to explore opportunities in the CNG sector in mainland China and a wholly-owned subsidiary company GAIL Global (Singapore) Pte Ltd, in Singapore.

Oil India Limited (OIL)

OIL is a premier national oil company, engaged in the business of E&P and development of crude oil and natural gas, transportation of crude oil and production of LPG. The company has over 100,000 square feet of license area. Today, it is an integrated upstream petroleum company.

ONGC

ONGC is India’s flagship energy company, which is fully integrated across the hydrocarbon value chain. ONGC is ranked number one amongst E&P companies in Asia and third amongst global E&P companies. It figures in the Fortune Global 500 list of 2007. It also has the distinction of being the first Indian public enterprise to have its Clean Development Mechanism (CDM) projects registered by the United Nations Framework Convention on Climate Change (UNFCCC). Some of the company's achievements include:

1. Discovery of six of the seven oil producing basins in India.
2. Establishment of over 75 percent of the 8.5 billion metric tonnes of in-place hydrocarbon reserves discovered so far in India.
3. Production of over 1 million barrels of Oil Equivalent per day.
4. Contribution of around 80 percent of domestic oil and gas production ONGC Videsh Limited (OVL), a wholly-owned subsidiary of ONGC, operates exclusively in foreign markets, with the mission to acquire 60 MMTPA of oil and gas by 2025.

Bharat Petroleum Corporation Limited (BPCL)

BPCL is one of India's largest PSU companies. It is involved in the refining and retailing of petroleum products, which include Speed brand of petrol, high speed diesel, auto lubricants, LPG and aviation turbine fuel. BPCL has a number of refineries in India. Some of these include the Mumbai Refinery – 12 MMT capacity, Kochi Refinery – 7.5 MMT and Numaligarh Refinery – 3 MMT. BPCL is also a Fortune Global 500 company.

Hindustan Petroleum Corporation Limited (HPCL)

HPCL is India's second largest oil company and is involved in the refining and retailing of petroleum products. HPCL has a number of refineries in India, including its Mumbai refinery, having a 5.5 MMTPA capacity and its Visakhapatnam refinery, with a 7.5 MMTPA capacity. HPCL is a Fortune Global 500 company.

Indian Oil Corporation Limited (IOCL)

IOCL was formed in 1964 through the merger of Indian Oil Company Ltd. and Indian Refineries Ltd. It is India's largest oil company and is involved in the refining and retailing of petroleum products, including petrol, diesel, lubricants, LPG, auto LPG, aviation turbine fuel, naphtha, bitumen, paraffin, kerosene and mineral turpentine oil. It has a number of refineries. The key locations include Haldia, Panipat, Digboi, Barauni, Guwahati, Mathura and Bongaigaon. It holds controlling stake in CPCL Limited, which operates a refinery at Chennai. The total capacity of the company is about 55.20 MMTPA. IOCL has approximately 16,000 petrol stations. The company is the highest ranking Indian company in the prestigious Fortune Global 500 listing. It is also the 20th largest petroleum company in the world and the number one petroleum trading company amongst the NOCs in the Asia-Pacific region. Besides, the involvement of several public sector companies in the oil and gas sector, India has witnessed significant activity by the private sector, including Indian as well as foreign/transnational companies, especially in the NELP era.

Important Private Players

1. Reliance Industries

2. Essar

3. British Gas

4. Cairn Energy

Some of the key developments in the oil and gas industry from the private sector include:

• Reliance Industries struck gas in the offshore Krishna Godavari Basin with estimated reserves of 14 TCF, in 2002 (world's biggest gas discovery of 2002)

• Cairn Energy plc discovered oil onshore in Rajasthan in 2004, with estimated production capability of 100,000 barrels per day (4.9 MMTPA) and has since invested over US$ 1 billion in the state.

• Petronet LNG Limited has a regasification terminal at Dahej. It was the first LNG terminal to get commissioned and it has commenced LNG imports from Qatar.

• Shell, a transnational giant and Fortune 500 company, with a focus on petro marketing, natural gas, lubricants, LPG, petrochemicals and solar energy has the

Shell Hazira LNG project, the second LNG project to be commissioned in India, with an investment of US$ 650 million. Its LNG terminal at Hazira which was commissioned recently is expected to support imports. Three more LNG terminals are expected to be commissioned in the near future.

• British Gas (BG), a transnational player with interests in natural gas, E&P and city gas projects has primary operations in India, focused on E&P and city gas distribution. It has investments of over US$ 800 million, in its upstream and downstream activities. BG India also has 30 percent stake in Panna Mukta Tapti fields, with combined investment of US$ 900 million along with its consortium partners.

• British Petroleum (BP), another transnational major, also a Fortune 500 company with focus on petro marketing, E&P and LNG and a leading private player in lubricants has made its presence felt in India. It has signed a Memorandum of Understanding with Hindustan Petroleum Corporation Limited, to set up a 9 MMTPA refinery in Bhatinda, which involves an investment of US$ 444 million. Possibility of partnership with ONGC and RIL, for deepwater exploration is being examined by BP.

Other players that have set up base in India for various operations include Total, Exxon Mobil, Gaz De France and Chevron.

SUs in Oil and Gas Sector

Natural Gas

Gas demand in India is dominated by the power and fertilizer sectors which account for 66 percent of the current consumption. In 2006, the total gas demand was estimated to be 152 million standard cubic metre per day (MSCMD). The gas demand is projected to grow at a CAGR of 8.6 percent during 2009-10 to 2016-17 to reach a level of 320 mscmd, which is more than double the existing demand. Significantly, the share of natural gas in the overall fuel mix is expected to increase from 8 percent in 2006 to 20 percent by 2025.

Encouraged by this scenario, a number of players have evinced a keen interest in laying pipelines in the domestic market to supply gas to the consumers. For example, Gujarat State Petronet Ltd plans to connect all 25 districts of the state with 2,200-kilometre high pressure gas pipeline laid down across the state. Reliance Industries plans to invest between US$ 5.45 billion to US$ 6.54 billion over the next three years to lay a 10,000 km pipeline grid that covers main gas transport trunk lines supplemented by spur lines crisscrossing the country.

Reliance Industries Ltd (RIL), along with British Petroleum (BP), signed a production-sharing contract for the block KG-DWN-2005/2 (off the east coast of Andhra Pradesh near Kakinada) with the Indian government in December 2008. Massive gas discoveries were made on the site and the block was offered to the consortium under Nelp VII.

Growth in Production

Domestic production of crude oil and gas has been increasing steadily.

While production grew by 5.6 percent in 2006-07 to 33.98 million tonne (MT) from 32.19 MT in 2005-06, it has increased to 34.11 MT during 2007-08.

The production of petroleum products went up to 144.93 MT in 2007-08, (between April 2007 to February 2008), from 135.26 MT in 2006-07. The production of natural gas went up to 32.27 billion cubic metres tonnes in 2007-08, (between April 2007 to February 2008), from 31.747 billion cubic metres tonnes in 2006-07.

Further, explorations for the discovery of natural gas and oil are underway in various river basins and sites.

Crude oil production from the deepwater block D6 in KG Basin commenced on 17th September 2008. The block is expected to generate a peak production of about 34,000 barrels per day by 2009 and is expected to last for 11 years.

The Improved Oil Recovery and Enhanced Oil Recovery projects of ONGC are underway in its 15 largest fields. The overall incremental oil gain up to March 2008 has been around 39.8 million tonnes. ONGC hopes to extract an additional production of 14 million tonnes of oil and 16 billion cubic metres tonnes of gas from its marginal fields during the present Plan period.

Furthermore, after Cairn India Ltd's oil finds in Mangala of Rajasthan, India can look forward to reducing its oil imports.

India presently imports 2,000,000 barrels of oil per day, while Cairn India Ltd is expecting a maximum production of 175,000 barrels per day, which would be accounting for 25 percent of India's present production.

Growth in Consumption

However, India's domestic demand for oil and gas is also on the rise. As per the Ministry of Petroleum, demand for oil and gas is likely to increase from 176.40 million tonnes of oil equivalent (mmtoe) in 2007-08 to 233.58 mmtoe in 2011-12.

India's primary commercial energy consumption (including coal, oil and gas) was 423 mmtoe in 2006, making it the fourth largest consumer in the world with a four percent share of the global primary commercial energy consumption. The primary commercial energy consumption in India grew at a compound annual growth rate (CAGR) of 4.5 percent during 1996-2006, which is more than double the global CAGR during the same period. Of the total primary commercial energy consumption in India, oil constitutes 28 percent and natural gas 8 percent. Coal continues to be the dominant fuel accounting for 57 percent of total energy consumption.

Opportunities

Global Refining Destination

India is emerging as the global hub for oil refining as it enjoys a competitive cost advantage, with capital costs lower by as much as 25 to 50 percent over other Asian countries.

Already, the fifth largest country in the world in terms of refining capacity (up from 19th in 1995), with a share of 3 percent of the global capacity, India is likely to boost its refining capacity by 45 percent or 65.3 mtpa (million tonne per annum) over the next five years, according to a Deutsche Bank report. According to the report, Indian companies plan to increase their refining capacity to 242 mtpa by 2011-12 from about 149 mtpa in 2007.

During the first half of 2008, the average capacity utilized of Indian refineries was 104 percent.

The export of petroleum products during 2007-08 went up by 17 percent over the exports made during 2006-07. In dollar terms, the increase was nearly 50 percent. During the first six months of 2008, an estimated 18 million tonnes of petroleum products were exported, posting a rise of 43 percent. Exports accounted for 24 percent of gross imports of oil and products during 2007-08. Petroleum products continue to be the single largest merchandise export from India.

1. Public sector undertaking Indian Oil Corporation Ltd (IOCL) plans to increase its refining capacity from 60.2 mtpa to 80 mtpa.
2. The two public sector undertakings, GAIL (India) Ltd and IOCL are looking at setting up a US$ 2.09 billion petrochemical plant at Barauni, which would be of a minimum 3 lakh tonnes capacity.
3. ONGC plans to scale up its refining capacity up to 45.5 million tonnes by 2009-10 from about 13 mtpa in 2006.
4. Reliance Industries Ltd is constructing a new refinery in the Jamnagar SEZ with a capacity of 29 mtpa, which will be operational shortly.
5. Nagarjuna Oil Corp is planning a new refinery at Cuddalore with a capacity of 6 mtpa to be operational by 2011 at an investment of US$ 1.05 billion.
6. Essar Oil plans to more than triple the capacity at its refinery at Vadinar to 34 mtpa from the current 10.5 mtpa at an investment of US$ 6 billion.
7. Hindustan Petroleum Corporation plans to invest US$ 2.5 billion in expanding its Visakhapatnam refinery capacity to 16 million tonnes.

Retail Sector

Due to the surge in automobile sales, significant investments are being made to develop and expand the petroleum retail market. Automobile sales, which number about a million vehicles per year, are likely to grow to about 20 million a year by 2030, making India the third largest automobile market in the world.

Consequently, many companies have stepped up investments to expand their retail network. For example, Indian Oil Corporation Ltd (IOCL), Bharat Petroleum Corporation (BPCL) and Hindustan Petroleum Corporation (HPCL) together are planning to open over 3,000 retail outlets this financial year as against 2,000 outlets opened last year. Similarly, Reliance plans to build 6,000 services stations.

As an initiative towards better customer services, the government has advised the public sector oil marketing companies (OMCs) to go for a complete automation of retail outlets (RO), which are selling more than 200 KL per month. IOCL, HPCL and BPCL have already automated 4104 Ros till September 2008 covering 60 percent of the Ros. The rest are to be completed by March 2009.

As another measure to improve the efficiency in the product delivery system, Tank Trucks have GPS systems installed in them. By October 2008, OMCs had installed GPS systems in around 26,000 Tank Trucks which accounts for 86.5 percent of the target.

The third party certification of Ros (which sell above 100 kilo liter per month) by OMCs is underway. By October 2008, 85.4 percent of the targeted Ros were covered under this programme.

Government Initiatives

The government has been taking many progressive measures to create a more conducive policy and regulatory framework to attract investments into this industry.

- FDI up to 100 percent under the automatic route is permitted in exploration activities of oil and natural gas fields, infrastructure related to marketing of petroleum products, actual trading and marketing of petroleum products, petroleum product pipelines, natural gas and LNG pipelines, market study and formulation and petroleum refining in the private sector.
- FDI up to 49 percent is permitted under the government route in petroleum refining by the public sector undertakings.
- Vision-2015 approved in 2009, for the oil sector which will focus on expanding the marketing network as well as quality of the products and services to customers covering four broad areas of LPG (liquefied petroleum gas), kerosene, auto fuels and compressed natural gas/piped natural gas.
- In 2009, the government announced a seven-year tax holiday for commercial production of gas in respect of contract to be signed under NELP VIII & Coal Bed Methane (CBM) IV with a view to give a boost to exploration and production.

India will complete building its first strategic crude oil storage by October 2011 in an effort to insulate itself from supply disruptions.

The country is building underground storages at Visakhapatnam in Andhra Pradesh and Mangalore and Padur in Karnataka to store about 5.33 million tonnes of crude oil. This is enough to meet nation's oil requirement of 13-14 days.

The storage at Visakhapatnam will have capacity to store 1.33 million tonnes of crude oil in underground rock caverns and will be completed by 2011, while the Mangalore facility will be able to store 1.55 million tonnes and would be completed by November 2012. A 2.5-million tonnes storage at Padur, near Mangalore, would be completed by December 2012.

After a revision of the extant policy for the Petroleum & Natural Gas sector, it has been decided that:

1. The condition of compulsory divestment of up to 26 percent equity within 5 years for actual trading and marketing of petroleum products will be removed.

2. FDI up to 49 percent will be permitted (with prior approval of FIPB) in petroleum refining by PSUs. This will be done without involving any divestment of dilution of domestic equity in the existing PSUs.

3. The government has eased norms in order to permit companies in the mining, exploration and refineries sectors to bring in up to US$ 500 million as external commercial borrowing (ECB) for rupee expenditure. Previously the limit was US$ 50 million.

In November 2008, the Cabinet Committee on Economic Affairs (CCEA) agreed to the awarding of 44 oil and gas exploration blocks under the seventh round of auction of the New Exploration Licensing Policy (Nelp-VII).

With this, the overall number of blocks brought under exploration exceeded 200.

The allocation is likely to bring in investments worth US$ 1.5 billion. Oil and Natural Gas Corporation (ONGC), which is India's largest oil and gas producer, along with its partners, won the maximum number of 20 blocks. Winners of the blocks had also committed an investment of US$ 3.5 billion for data collection and exploration in these blocks.

As per an Investment Commission report, petroleum exports have also emerged as the single largest foreign exchange earner, accounting for 11.5 percent and 15 percent of the total exports in 2005-06 and 2006-07, with export of petroleum products touching US$ 20.03 billion during April-December 2007.

According to an official release by the Ministry of Petroleum and Natural Gas, India's total exports from the sector during April 2007 to February 2008 added up to US$ 128.15 billion.

Investments and Acquisitions

- Indian Oil Corp aims to expand the capacity of its Panipat plant to meet the growing fuel demand. The refinery expansion will cost US$ 224.8 million.
- Mahanagar Gas Ltd (MGL) will invest over US$ 3.37 billion in a span of 5-6- years to lay infrastructure for the supply of both Compressed Natural Gas (CNG) and Piped Natural Gas (PNG).
- The Ruias of Essar Group have injected US$ 293 million in Essar Oil by subscribing to global depository shares (GDS) to part finance its US$ 1.7-billion expansion plans. The proposed expansion plan includes scaling up of the Jamnagar refinery capacity by 25 percent to 375,000 barrels.
- State-owned gas firm GAIL India will invest about US$ 3.37 billion over the next 2-3 years in laying pipelines to connect consumption centres in North India to fuel sources.
- Energy major Reliance Industries gained an overseas foothold by agreeing to pay US$ 1.7 billion to form a joint venture with U.S.-based Atlas Energy.
- Gujarat State Petroleum Corporation (GSPC) has inked an agreement with government of Egypt for oil and gas exploration in the African nation where the Indian firm has been allotted blocks.
- Templeton Strategic Emerging Markets Fund (TSEMF) has invested US$ 20.6 million investment in Shiv-Vani Oil & Gas Exploration Services.
- Indian state-run Oil & Natural Gas Corp will invest US$ 7.11 billion for the first phase development of three marginal fields located in Mumbai offshore on the western coast.

Global Tie-ups

The government has made considerable progress in its bilateral cooperation with a number of countries.

1. The India-Romania Joint Working Group met to discuss the possibility of Indian companies participating in the utilization and upgradation of refineries, and GAIL setting up a CNG/ piped gas distribution network in Romania.
2. The India-Turkey Joint Working Group also looked at the scope of investment by the Indian oil companies in Turkey's pipelines and refineries.
3. In April 2008, a Joint Venture agreement was signed between OVL and CVP of Venezuela to utilize the San Cristobal field in Venezuela.
4. In September 2008, an MOU for bilateral cooperation was signed with Colombia.
5. India and South Africa will be working on a number of areas of cooperation in South Africa's hydrocarbon sector.
6. In November 2008, the India-Russia Joint Working Group met and identified areas of investment by ONGC/ OVL in the upstream sector of Russia.

Looking Ahead

An expanding economy with its concomitant increase in energy demand is likely to throw open huge investment opportunities in the oil and gas industry. India's energy sector will provide investment avenues worth US$ 120 billion-US$ 150 billion over the next five years.

Major discoveries of oil and gas have been made in recent years. However, with large areas of India's sedimentary basins remaining unexplored, the Indian oil scenario is ripe with possibilities.

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