Status And Performance Of Indian Petroleum Industry

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Historical Perspective:

The Indian petroleum industry dates back to 1890 when oil was first struck at Digboi in northeastern India. The petroleum industry stands out as an example of the strides made by the country in its march towards economic self-reliance. At the time of Independence in 1947, the industry was controlled by international companies. Indigenous expertise was scarce, if not non-existent. Today, a little over 55 years later, the industry is largely in the public domain with skills and technical know-how comparable to the highest international standards. The testimony of its vigour and success during the past five decades is the significant increase in crude oil production from 0.25 to 33 million metric tonnes per annum (MMTPA) and refining capacity from 0.3 to 116 MMTPA. The consumption of petroleum products has grown 35 times in the last 55 years from 3 million metric tonnes (MMT) during 1948-49 to about 110 (MMT) in 2002-03. A vast network of over 29,000 dealerships and distributorships has been developed backed by over 400 storage points over the years to serve the people even in the remote and once-inaccessible areas.

A major boost to the oil industry came in pursuance of the Industrial Policy Resolution, 1956 that intended to promote growth of the vital sectors such as petroleum under the state control. ONGC, which was formed as a Directorate in 1955, became a Commission in 1956. Indian Refineries Ltd., a Government company, was set up in 1958. In 1959, the Indian Oil Company (IOC), again a wholly-owned Government company, was formed for marketing of petroleum products. Indian Refineries Ltd. was merged with Indian Oil Company Ltd. to form Indian Oil Corporation Ltd. in September 1964.

The real growth in exploration and production sector began after the discoveries by Burmah Oil Company in the fifties prompting the Government to establish Oil & Natural Gas Commission in 1956 and Oil India Ltd. in 1959.

During the second decade of Independence (1957-67) a number of oil and gas-bearing structures were discovered by ONGC in Gujarat and Assam. Discovery of oil in large quantities in Bombay High in February 1974 opened up a new vista of oil exploration in offshore areas.

During the period 1977-87, exploratory efforts by ONGC and OIL India yielded discoveries of oil and gas in a number of structures in Bassein, Tapti, Krishna-Godavari-Cauvery basins, Cachar (Assam), Nagaland, and Tripura. The indigenous production reached 30 million tonnes by 1984-85, a self-sufficiency level of 70% of the country's requirements.

While the exploration and production sector remained under the state control until 1991, the Government policy now allows joint as well as private sector to participate in this sector.

India's first refinery was built at Digboi in 1901. Thereafter, more refineries were set up in the late 1950s and early 1960s with the assistance of international oil companies such as Shell, Caltex and

Esso to meet India's growing petroleum product needs.

In 1976, India nationalized the refining and marketing sector in response to the oil crisis of the 1970s and introduced regulatory controls on production, imports, distribution and pricing of crude oil and petroleum products. The Oil Coordination Committee (OCC) was formed to act as a regulatory body in this regard.

With the key objective of providing basic necessities to the economically weaker sections of the society at affordable rates, the Administered Pricing Mechanism subsidized prices for products like kerosene and LPG by correspondingly charging higher prices for other products like gasoline and aviation fuel. Diesel prices were kept neutral.

The Administered Price Mechanism (APM) ensured fixed 12% post-tax return on net worth deployed for refining, distribution and marketing of petroleum products. Also, petroleum product prices were maintained at an even level throughout the country by balancing various subsidies through a number of pool accounts.

In 1991, critical balance of payment position impelled the Indian government to launch general economic reforms with the objective of transforming the regulated economy into a market-driven one and attract investments from the private sector.

Under the liberalization policy, a number of structural changes have already been effected in form of the private sector being allowed to carry out refining as well as marketing of a limited number of petroleum products e.g. LPG, naphtha, Aviation fuel, fuel oil etc.

The most significant step towards liberalization in the oil industry however was announced in November 1997 in form of a blueprint for de-regulation of the Indian oil industry.

Today, we are operating under a liberalized regime. The Administered Price Mechanism (APM) was dismantled on 1.4.2002. Prices of crude oil and petroleum products are market driven in line with the international trends. Global and domestic companies are treated alike in the matter of award of acreages. Domestic companies have to compete globally to sustain and maintain their place in the market.

Exploration & Production

Oil & Natural Gas Corporation Limited (ONGC) and Oil India Ltd. (OIL), the two national oil companies (NOCs), apart from private and joint-venture (JV) companies, are engaged in the exploration and production (E&P) of oil and natural gas in the country. Crude oil production by the NOCs during 2002-03 was 29 MMT. In addition, there was production of 4.1MMT from the private and JV companies during 2002-03. Natural Gas production during the year was about 31.4 billion cubic metres (BCM).

The country is endowed with 26 sedimentary basins, besides deep-water sedimentary areas. The total sedimentary area is of the order of 3.14 million sq. km. upto Exclusive Economic Zone (EEZ), that is, upto 200 nautical miles from the coast. The basins have been grouped under four categories based on current status of exploration and prospectivity as currently known. There are seven category-I basins with established commercial production. Number of giant oil and gas fields have already been discovered namely, Mumbai High, Bassein, Neelam, Panna, Mukta, Heera, Ankleshwar, Gandhar, Lakwa-Lakhmani, South and Mid Tapti and Naharkatiya.

Two basins with known accumulations of hydrocarbons but without commercial production are grouped under category-II. Seven category-III basins are considered geologically prospective by virtue of hydrocarbon shows and ten category-IV basins are those with uncertain potential, which may be prospective by analogy with similar basins in the world.

The estimated hydrocarbon resources are of the order of 28 billion tonnes (205 billion barrels) and are currently under upward revision. Based on the new data acquired by Directorate General of Hydrocarbons (DGH), especially in deep waters, the hydrocarbon resource estimates have been revised to 32 billion tonnes (235 billion barrels).

In order to increase the recovery factor of the major producing fields and increase production of oil, ONGC and OIL are implementing Improved Oil Recovery (IOR) and Enhanced Oil Recovery (EOR) schemes in their major fields. This is expected to increase production of oil and gas further from these fields.

Consequent upon liberalization in petroleum sector, Government of India is encouraging participation of foreign and Indian companies in the exploration and development activities to supplement the efforts of NOCs to narrow the gap between supply and demand. A number of contracts have been awarded to both foreign and Indian companies for exploration and development of fields on production sharing basis.

New Exploration Licensing Policy

Government has formulated New Exploration Licensing Policy (NELP) to accelerate and expand exploration of oil and gas in the country. So far, Government has invited three rounds of bidding under NELP. A total of 70 blocks have been awarded in these three rounds. The estimated investment in these blocks in three exploration phases would be about US $ 3 billion (about Rs. 14,500 crore). Out of the total area of approx. 1 million sq.km. under exploration today, as much as 70% has been taken up in the last three years under NELP. NELP has been able to achieve its objective of expanding and accelerating exploration specially in deepwater areas. Exploration under NELP has also started showing positive results with discoveries made in the Krishna-Godavari deepwater and in Cambay onland, including a significant gas discovery made in the Krishna-Godavari basin.

NELP-IV round has been launched in the backdrop of the recent huge deepwater gas discoveries made in the Krishna-Godavari basin. In fact, some of these discoveries are the largest in the world during the year 2002. So far, a total of 9 discoveries spread over KG basin and Gujarat onland with initial inplace reserve estimates of over 300 MMT of Oil plus Oil Equivalent Gas (O+OEG), have been made under NELP during the short span of less than 3 years of exploration efforts. With the implementation of an aggressive exploration programme, more and more discoveries are expected to be made in the future. ONGC has also made a large oil & gas discovery, namely Vasai (West), in the Western offshore in March 2003. The initial estimate of inplace reserves is about 30MMT. 7 discoveries covering Cambay and Rajasthan have been made in the pre-NELP contracts signed by Government of India.

These recent huge gas discoveries have put to rest the feeling that existed in some quarters that India had a poor to moderate hydrocarbon prospectivity. The discoveries have also demonstrated that hydrocarbons are initially `found' in the mind of geologists and that what we need are ever new ideas and concepts to locate the vast hidden treasure of Black Gold in our onland and offshore basins. We need bold players with new geological models and ideas to find these untapped oil and gas reserves.

Acquisition of Equity Oil Abroad

Path-breaking achievements have been made in acquiring equity hydrocarbons abroad. ONGC-Videsh Ltd. (OVL), a wholly owned subsidiary of ONGC, has acquired 20% interest in the Sakhalin-I offshore fields in Russia and 25% stake in Sudan oilfield project. The last 9 months have indeed been historic for the country. In December 2002, the first equity gas by any Indian company was brought onto commercial production in Vietnam Offshore field by ONGC Videsh Limited. Also, in May, 2003, our first equity oil from Sudan, about 80,000 MT reached Indian shores at Mangalore. The total investment made by OVL in major fields abroad is over US $ 2.5 billion (Rs. 12,000 crore).

OVL has also been actively pursuing some other opportunities in countries like Iran, Iraq, Russia, Venezuela and Algeria to acquire exploration acreage and oil producing properties in these countries. OIL is also actively pursuing opportunities abroad for equity oil.

Natural Gas - A Preferred Fuel

The Natural Gas Industry has an impressive growth record and is often considered as "Energy Source of the 21st Century". Over the last few years, it has emerged as the preferred source of fuel and feedstock. Natural Gas has strong growth potential especially in the new markets. Natural Gas is the most preferred route for power generation in view of its economic and environmental superiority vis-à-vis other alternatives. It is true that over medium and long term, Natural Gas may continue to enjoy superiority over other competing fuels thus increasing its share in the overall primary energy consumption mix. The Power Sector currently utilizes bulk of gas for generation of power and Fertilizer Sector for production of urea. In addition, gas is also used as feedstock for the production of steel by Sponge Iron plants. Besides above, significant demand exists from large and small volume industrial consumers from commercial, domestic and automotive sectors mainly for fuel application.

Most of the production of Natural Gas comes from the Western Offshore Region. Gujarat, Assam and Andhra Pradesh are the other producers of natural gas. Some gas is also produced in the States of Rajasthan, Tripura and Tamil Nadu. Around 60% of natural gas is produced along with crude oil as "Associated Gas" and the remaining is produced as "Non-associated Gas" or "Free Gas". South Bassein, Tapti and Hazira fields in the Western Offshore and the gas fields in the States of Gujarat, Andhra Pradesh and Tripura are the main producers of free gas.

Production of natural gas, which was almost negligible at the time of independence, is currently at the level of around 82 MMSCMD, of which after internal consumption, extraction of LPG and unavoidable flaring, around 70 MMSCMD is available for sale to the Power, Fertilizer, Sponge Iron, Industrial, Domestic, Commercial and Automotive Sectors throughout the country. The production, which is currently around 82 MMSCMD is expected to double in next 5 years, once the large new discoveries of gas are put on production. The demand (Potential) however is about 150 MMSCMD and is expected to reach 231 MMSCMD by 2006-07 and further to about 391 MMSCMD by 2024-25.

India is emerging as a large gas consumer market with a growing gap between the demand and availability of domestically produced gas. Apart from taking steps to increase the indigenous production of gas, India is looking for the import of natural gas and LNG. The import of LNG has been placed on Open General List (OGL) and does not require any licence or permission from the Government. 100% Foreign Direct Investment (FDI) has been permitted for import of LNG, setting up of LNG terminals and marketing and distribution of re-gasified LNG. Now there is a race to bring LNG to India. India's first LNG is expected to come to Dahej terminal sometime in 2004.

Coal Bed Methane (CBM)

Coal Bed Methane is primarily a methane gas, which occurs in coal seams. CBM is an environment-friendly fuel and its exploration reduces mining safety hazards in coal mining. This non-conventional source of energy is being harnessed commercially for more than a decade in USA. India holds significant prospects for exploitation of CBM as a new source of energy.

In order to explore and produce this non-conventional source of natural gas from coal bearing areas, Government has formulated a CBM Policy providing attractive fiscal and contractual framework for exploration and production of CBM in the country. Government has awarded eight blocks in the States of Jharkhand, Madhya Pradesh and West Bengal for exploration and production of CBM, which is an environment friendly source of gas. 9 more CBM blocks in different States are being offered under the second round of CBM.

Refining

The refining capacity as on 1.4.2002 was 116.07 Million Metric Tons Per Annum (MMTPA). Availability of petroleum products during 2002-03 from domestic refineries was adequate to meet the domestic demand except for Liquefied Petroleum Gas (LPG). The availability of petrol and diesel is in excess of domestic requirement and the surplus quantity was exported during the year.

At present, there are 18 refineries operating in the country, (17 in Public Sector and one in private sector). Out of the 17 Public Sector refineries, 7 are owned by Indian Oil Corporation Limited (IOC), two by Chennai Petroleum Corporation Limited (subsidiary of IOC), two by Hindustan Petroleum Corporation Limited (HPCL) and one each by Bharat Petroleum Corporation Limited (BPCL), Kochi Refineries Limited

(KRL) (subsidiary of BPCL), Bongaigaon Refinery and Petrochemicals Limited (BRPL) (subsidiary of IOC), Numaligarh Refineries Limited (NRL) (subsidiary of BPCL), Oil and Natural Gas Corporation Limited (ONGC) and Mangalore Refinery & Petrochemicals Limited (MRPL) (subsidiary of ONGC) and one in private sector viz. Reliance Industries Limited (RPL).

Marketing

Since the deregulation of the petroleum sector from 1.4.2002, Govt. has formulated norms allowing marketing of transport fuels by private companies. The Govt has also notified Norms for common carrier principal. This has had a positive impact and private players like oil major Shell, domestic private giant Reliance Industries Limited, Essar Oil Ltd., and Public Sector company ONGC and Numaligarh Refinery Ltd. have been given permission to market transport fuels.

Deregulation is aimed at providing petroleum products at competitive prices, with a better service and enable consumers to have more choice. Government has also taken steps to provide a regulatory framework in the downstream petroleum sector. The Petroleum Regulatory Bill is currently in Parliament. However, until the passage of the Bill, Government is looking after the regulatory aspects.

Ethanol Blending

To promote clean sources of energy, Govt. has made 5% Ethanol blending in motor spirit mandatory in part of India. It is planned to make blending mandatory for the entire country. This step, apart from providing a cleaner source of fuel, would also provide remunerative prices to sugarcane growers.

Investing in Indian Oil & Gas Industry

The Indian Hydrocarbon Sector offers mutually beneficial investment opportunities in the entire hydrocarbon value chain. This includes the upstream, which is the exploration and production, midstream that is, distribution and marketing of gas & LNG and the downstream refining and marketing.

India imports about 70% of its hydrocarbon requirements to satisfy domestic demand spending one third of our export earnings. Even in case of natural gas, while imports of gas are yet to start, the country's indigenous gas production is far below the existing demand. One of the biggest attractions of India is that today it counts amongst some of the fastest growing economies of the world. It is already the fourth largest economy in the world on purchase power parity basis. India's energy requirements are correspondingly increasing with this growth. The Hydrocarbon Sector plays an important role in meeting about 42% of our primary energy requirements. With the passage of time, the share of hydrocarbons in meeting India's energy requirements is expected to increase. Meeting the country's demand for hydrocarbons for sustained development is one of the major challenges for India.

India offers internationally one of the best fiscal and contractual terms to attract investors for exploration and production in the country. The Model Production Sharing Contract (MPSC) followed by India has found wide acceptance among the E&P companies. The Union budget for the current year has reduced the surcharge on income tax to 2.5%. This is in addition to other attractive fiscal terms such as fiscal stability, foreign participation upto 100%, no signature, discovery or production bonus to Govt. of India, income tax holiday for seven years from start of commercial production, no customs duty on imports required for petroleum operations, nominal (5 to 12.5%) royalty rates etc.