
Petro-Products and India's Oil Sector - A Study



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The downstream oil sector in India is today at a crucial juncture. The rising domestic as well as international demand presents sizable opportunities to the sector. In this context, it is critical that a right mix of business strategies is applied. Indian downstream oil companies have strategically chosen their investment plans in pursuit of expanding their scope in the international market and integrating into the entire value chain through investments E&P and petrochemicals.

Key Words: Liberalization, Independence, Vibrant, Infrastructure, Marketing, Juncture, Investments.

INTRODUCTION

Today the petro-products are of the vast importance in the world. A country that does not produce its own petro-products like L.P.G, HSD, Kerosene, Petrol, Bitumen, Lube, Greases etc. holds a very weak position. Petro-products are an integral part of any developed country. Petro-products play a very significant role in the economic life of any country. Petro-products are most considerable part in India's economy earner of foreign exchange.

India's downstream oil sector today stands out as a significant refining hub a major growing market. Starting from scratch at the time of independence, the sound foundations of the sector were laid by the public sector and in the liberalization era the sector saw unprecedented expansion and growth.

Significance of India's Oil Sector

Though, rising crude oil prices in the context of domestic price control have been straining the financial health of the public sector oil marketing companies. Today, India downstream sector is at a critical juncture facing a mix of challenges and opportunities. The traditional challenge of import dependency has further intensified with growing geo-political tension in recent times. However, opportunities abound in the domestic sector, especially in the rural space, providing better quality of products and services.

The future of the sector depends critically on the adoption of appropriate business strategies notwithstanding a reform in the present policies governing the sector.

Today, India boasts of a vibrant downstream oil sector, with its oil majors finding a place in the coveted Fortune 500 list of top global companies. The sector has come a long way from its humble beginning in the post-independent India.

At the time of independence, consumption of petroleum products was 2.72 million tonnes and the refining capacity was 2.5 lakh tonnes.

The initial downstream efforts began with the setting up of three refineries by multi-national corporations. In the meantime, efforts to build refineries by the public sector also began with the founding of Indian Refineries Limited.

With the formation of Indian Oil Company (which was later merged with Indian Refineries Limited to form the present day Indian Oil Corporation Limited), development of marketing and distribution infrastructure of the public sector was initiated as well. During this period, the petroleum industry was operating in a free market environment. After the first oil shock of 1973, the MNC refineries were nationalised and taken under the ambit of the public sector with a view to protecting domestic consumers from high crude oil prices.

From the 1970s onwards, the sector was solely in the hands of the public sector. The public sector built its refining capacities, marketing and distribution network. During this phase, the industry was operating in a sheltered environment with government-guaranteed fixed (12 per cent) post-tax return under the Administered Pricing Mechanism (APM) introduced in 1977. APM was basically cost plus pricing and aimed at the continuous availability of petroleum products to consumers at fairly stable prices.

In the post-liberalisation period, the sector was thrown open to competition. In 1998, the refinery sector was delicensed. This was followed by opening up of the sector for foreign direct investment (FDI) in 2000 and the dismantling of APM in 2002. Around that time, in order to face the free market, select public sector boards were granted autonomy to exercise powers under Mini-ratna/ Navratna schemes. These schemes were aimed at making

the public sector companies more accountable while giving them greater autonomy and flexibility in day-to-day operations and in investment decisions.

Oil marketing companies (OMC) were fortunately the first batch of such empowered public sector units (PSUs) in the post-liberalisation period.

Coupled with an empowered oil public sector and the new private sector entrant, the sector witnessed significant investments flow leading to the creation of additional refining capacity from 62 million tonnes in 1998 to 193.4 million tonnes per annum.

The sector, today, has over 68,000 marketing touch points and pipeline length of over 21,000 km for catering to the domestic demand of 141.7 million tonnes annually. Today, India is the fourth largest consumer of petroleum products in the world after the United States, China and Japan. Petroleum products consumption grew by around 2.9 per cent during 2010-11, led by transportation fuels, that is, motor spirit (MS), high speed diesel (HSD) and aviation turbine fuel (ATF). India is already emerging as a global refinery hub with the advantage of low capital costs, geographical proximity to supply centres (the Middle East) and growing demand centres (Southeast Asia). Since 2001-02, India has been a net exporter of petroleum. India also is the largest exporter of petroleum products in Asia August 2009.

Issues of India's Oil Sector

Some of the major issues and trends facing the oil and gas sectors are:

- Rising import dependency on crude oil coupled with several geopolitical issues has been creating serious concern on oil security of the nation.
- India's conventional oil reserves, estimated at 800 million tonnes, are 0.4 per cent of world reserves. Over the years, India's dependency on imported oil has enlarged considerably to more than 75 per cent today. Today, India is the sixth largest importer of crude oil in the world.
- A critical risk to the Indian refining sector is its excessive reliance on imported crude oil. In the present era of globalisation, dependency on imported products/ commodities may not be a worrisome feature. However, the risk of supply disruption due to geo-political reasons, as seen in the recent MENA (Middle East and North Africa) crisis coupled with volatility in the international crude oil prices witnessed in the last few years place large importers such as India in a disadvantaged position.

In this context, there has been thrust on raising domestic exploration & production. India's resources base is small and remains largely unexploited. In the liberalization era, New Exploration and Licensing Policy (NELP) of the Government has been the main agent of bringing about improvement in domestic supply. After seven rounds of

NELP, the area under exploration has increased more than four times to 48 per cent of Indian sedimentary basin area. Hydrocarbon reserves accretion has been more than 600 million tonnes of oil equivalent (million tonnes OE). The recent oil and gas discoveries in the east coast Krishna-Godavari Basin & in Rajasthan represent the success of these policies. Additionally, oil companies are constantly in search of overseas equity oil and gas assets abroad. Volatility of crude oil prices in international markets and subsidising fossil fuel has been creating serious financial strains in the economy.

With the Gazette notification of November 21, 1971 the Government had announced the details of phasing out the APM and dismantling schedule beginning 1998-99. By 2002, APM was dismantled completely. As an exception, it was decided to continue to subsidise SKO (superior kerosene oil) (PDS) and LPG (domestic) in view of their mass consumption by economically weaker sections of the society. However, since late 2003, the unprecedented rise in international crude oil prices combined with sharp week-to-week and even day to day volatility restrained the 'pass-through' of the international prices to domestic consumers.

International prices of crude oil and petroleum products have remained highly volatile in the recent past. The Indian basket of crude oil, which averaged about 23/bbl at the time of dismantling of APM in March 2002 and \$36/bbl in May 2004, went up to an average of \$85/bbl during 2010-11.

The average price of Indian crude basket has further increased to \$110/bbl in the current financial year 2010-11 (April-December 2011). The continuing control of the government over pricing of these high volume petroleum products acts as a principal challenge for the sector in general and for the financial health of PSU oil marketing companies (OMC) namely IOC, HPCI and BPCL in particular.

While the government's burden-sharing mechanism, wherein, the gross under-recovery, that is, the difference between the actual revenue from the sale of these products and the desired revenue of PSU OMCs is partially compensated by the government and the upstream PSU oil companies brings in relief, the compensation is only partial. Besides, the form of compensation received from the government only recently changed from oil bonds (which had limited liquidity) to cash compensation. Rising crude oil prices have resulted in escalating under-recoveries. During 2010-11, gross under-recoveries rose to Rs. 78,190 crore from Rs. 46,051 crore in 2009-10. Correspondingly, the net under-recoveries borne by the OMCs rose to Rs. 6,893 crore from Rs. 5,621 crore in 2009-10. This rising burden of under-recoveries dented the profitability of PSU OMCs and increased the borrowing burden to an unprecedented level which is not sustainable in the long-term.

The unsustainability of the present situation is widely acknowledged. The Government has also shown its intent on reforming the present system. Deregulation of petrol prices in June 2010 came as a positive policy development. In addition, the Government is considering direct subsidisation of domestic LPG and PDS SKO through cash transfers. Should the policy change materialize, this may bring relief to PSU OMCs from the financial burden of under-recoveries in the near future and augur well for the future of the sector.

Another component of the retail price of petroleum products in the various taxes and levies of the Central and State government constitutes a large proportion of the final price.

With rapid economic growth, OMCs need to extend access of modern fuel to rural households. Despite the robust growth in consumption of petroleum products, in per capita terms, India ranks low. Millions, especially in rural India, continue to use biomass (firewood and cow-dung) for cooking through efficient and hazardous 'chulhas'. Providing the rural population access to modern fuels through innovative business models is a big challenge as well as an opportunity.

The renewed thrust of the oil companies towards the basic energy needs of the below poverty line (BPL) families through focused schemes such as Rajiv Gandhi Gramin LPG Vitaram Yojana (RGGLVY) is unleashing the potential of this sector. RGGLVY aims to extend coverage to at least 50 per cent of the population in each district and at least 60 per cent overall LPG coverage in each state over the next five years. Further, the Oil Sector Vision 2015 aims to increase the overall LPG coverage from 57% to 75% of the population by providing 55 million new LPG connections by 2015. Product quality and customer satisfaction are the twin challenges of downstream business success.

Pricing of Petro-products

According to the expert group on sustainable pricing of petroleum products, as much as 35 per cent of SKO (PDS) gets diverted for adulteration.

The pricing structure provides incentive for adulteration and black marketing in the case of SKO (PDS) and LPG (domestic). Ensuring delivery of proper quality and quantity of petroleum products has been the endeavor of OMCs.

In this context, the focus of the oil sector Vision 2015 of the Ministry of Petroleum and Natural Gas through thrust on technology for ensuring Q&Q (quality and quantity) should augur well for customer satisfaction. The oil marketing companies have taken initiatives such as automation of retail outlets, periodic sampling, third-party inspections, monitoring of movement of tank trucks through global positioning system (GPS), revision of marketing discipline guideline (MDG), smart card scheme in order to address these challenges.

Implementing suitable abatement options towards meeting environment challenges will be the key to sustainable business practices. In line with the Auto Fuel Policy, the country moved in 2010-11 to upgraded BS-IV (13 cities) and BS-III petrol and Diesel (in rest of the country). This was possible through significant investments in fuel quality up-gradation projects in refineries implemented in the last couple of years. Indian refineries have invested about \$7 billion in the last four years in processes to produce greener fuels with lower emissions.

The oil and natural gas industry is known to be directly responsible for just six per cent of global CO₂ emissions. However, on adding CO₂ emitted in the end to extend uses (transportation, power and heat generation), the petroleum and gas sectors account for almost half of all global emissions.

In this context, the oil and gas sector is at the centre stage in the debate over how to reduce the global greenhouse gas (GHG) emissions. This calls for additional investments in energy efficiency, demand-side management, development of bio-fuels and R&D by the oil and gas companies.

In the petroleum sector, energy conservation has been a thrust area for many decades now, much before the issue of climate change received worldwide attention. Petroleum Conservation & Research Association (PCRA), which was established in 1976, has been spearheading the energy conservation effort of the sector. Indian refineries have taken a slew of measures to improve the energy index of the refineries.

The energy index of Indian refineries is comparable to international standards. Moreover, now, with the National Action Plan on Climate Change, making enhanced energy efficiency a national mission. Energy efficiency efforts will get a renewed thrust in oil sector too.

Competition from gas

The sector is facing increased competition from natural gas and other cleaner fuels, as a result of which, most downstream companies have started diversifying their businesses to these cleaner fuels. Natural gas is expected to witness significant growth much faster than the world average and its share in domestic energy mix is projected to rise from the present share of 7 per cent to 11 per cent.

Domestic petroleum demand is projected to continue to grow at the prevailing growth rates, that is, between 3 and 4 per cent. Specifically, during the medium-term, the Working Group on Petroleum & Natural Gas for XII Plan Projects demand growth of 4.7 per cent (2012-13 to 2016-17) and 5.5 per cent (2017-18 to 2021-2). As regard, long-term projections, as per the International Energy Agency (IEA), demand is projected to grow 3.1 per cent during 2009.2035.

Refining

With a view of catering to this rising domestic demand and rising global oil demand, refining capacity is projected to reach 310.9 million tonnes per annum by the end of the XII Plan.

Transportation of fuels and middle distillates is to continue to account for the bulk of the demand growth with rising per capita vehicle ownership. Investments in refining, therefore, have to be aligned to this demand pattern. In the era of high crude oil prices, investments in refinery will have to be made to enable refineries to process a diversified basket of crude.

In this context, there is a need to invest in refineries which can process heavy, high sulphur cheaper variety of crude for improvement of GRMs (gross refining margins). Investments in the refinery sector have to be in line with the changing environmental norms and changing demand patterns.

In addition, while efforts have already been made for upgrading bottom of the barrel by introducing new residue processing technologies, namely, setting up of hydrocrackers and RFCCs, there is still significant scope to implement and improve/change residue-processing technologies. Integration with petrochemicals is another way to derive maximum value from every hydrocarbon molecule and thereby enhance overall competitiveness.

Pipelines

India has around 11,000 km of product pipelines with a total capacity of 67.8 million tonnes per annum. As a means of transportation, pipelines as compared to rail or road, stand out as the cheapest and most environmentally benign. Today, pipelines are the major mode for white oil (MS, HSD, SKO and ATF) transportation, carrying about 46 percent of petroleum, oil and lubricant (POL) products. There has been a steady growth in its share of transportation, over the past few years. With projects under implementation and nearing-completion during the XI Plan and new projects expected to be completed during the Plan period the of pipeline transportation" is likely to increased to over 51 per cent. Plans are afoot to connect more and more primary distribution points, namely, depots and terminals with pipelines.

Marketing

In view of enhancing Q&Q and customer satisfaction, automation drive of the entire distribution and marketing facilities is required. Investments are called for to entrench the rural outreach of the network. The sector has an extensive supply-chain network. OMCs have leveraged information technology for optimising the end-to-end supply chain. This has, in turn, enabled to getting the most from the assets and provided flexibility to product movement in keeping with the market dynamics.

Along with investments in infrastructure development, it is pertinent that the infrastructure so created is efficient

and effective. In this context, taking up of innovative development models is required, especially in distribution and marketing infrastructure.

The recent initiative to use open access system for refuelling operations in some airports has shown lower cost of supplying ATF as compared to the traditional supply model of company-owned infrastructure.

India regularly imports LPG as demand for LPG exceeds the domestic production. Projected demand numbers for LPG exceed the expected production capacity. In view of this, investments need to be lined up for setting up of import terminals. Besides, investments in storage, bottling, and distribution infrastructure of LPG will be a priority area for the sector, with special focus on building and strengthening the rural marketing and distribution of LPG.

Lubes (lubricants and greases) constitute a unique and important segment for the downstream oil sector as it involves high value, high margin products. Lubes find wide ranging use, spread across the transport and industrial sectors. In view of the significant growth in the vehicle ownership, the retail segment in lubes is growing in importance.

Here, there is a need to focus on branding, the way it is down for (fast moving consumer goods (FMCG)). In addition, in view of the high competition levels in the lubes market, with a significant presence of international players it is pertinent to create product differentiation. In this context, thrust on R&D in lubes should be a focus area for the sector.

Moreover, continuing R&D for chemical, catalyst, gas and refinery operations will be the key to the development of the sector, especially in the face of high international crude oil prices and price control in the domestic market. Indian R&D efforts have more visibility in the fields of refining technology and development of speciality lubes and greases. Keeping pace with the development worldwide on this front will also be required to facilitate the presence in complete value chain.

Conclusion

Forward and backward integration of downstream oil companies into exploration and production and petrochemicals, respectively has proven to be a successful strategy with many of the international oil majors following this business model.

With ever-rising crude oil prices and the growing environmental concerns in regard to energy-related Carbon emission, the scope of downstream oil companies should widen to the entire energy value chain, with special focus on the emerging renewable and alternate energy technologies.

The downstream oil sector in India is today at a crucial juncture. The rising domestic as well as international demand presents sizable opportunities for the sector. In

this context, it is critical that a right mix of business strategies is applied. Indian downstream oil companies have strategically chosen their investment plans in pursuit of expanding their scope in the international market and integrating into the entire value chain through investments E&P and petrochemicals.

With emerging economics taking the lead in the incremental energy demand, Indian the downstream oil sector should make further efforts to make its presence felt in foreign lands both through exports and setting up of refineries and marketing networks. As regards integration, petrochemicals present a significant area as the per capita consumption in India is way below the world average.

In addition, the sector needs to rake continuous efforts for talent management and up gradation, R&D a striving for sustainable operations as these are the key to the long-term competitiveness of the sector.

For the public sector oil companies, Governments' empowerment has been a key enabling factor in making investments in new businesses, going to international markets and business integration. However, a major road block to the growth and sustainability of the sector continues to be the present pricing policies, which have drained the investible surpluses of the PSU downstream companies.

Reform in the pricing and subsidy policies affecting the sector is mandatory for sustainability of the sector and for the achievement of energy security for the Indian economy.

Finally, over and above the focus on economic gains, for the long-term sustainability of the business, the sector will have to rightly balance its endeavours with focus on bringing energy to the masses in an environmentally-friendly manner.

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