

OIL & GAS SECTOR

AN OVERVIEW

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OIL & GAS

INTRODUCTION



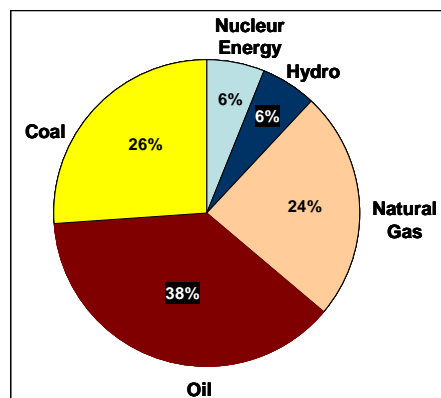
The business environment in India has undergone a significant change in the past few years, and nowhere is it as pronounced as in the petroleum sector. Increase in refining capacity has transformed India from a net importer to a net exporter of petroleum products. Petroleum marketing has been decontrolled leading to entry of new domestic and international players into the sector. The Government has provided operational freedom to the Government oil companies in a host of areas including determining their own market share, freedom to prepare and implement their market plans, selection of dealers etc. The country is also gradually moving towards a market determined pricing regime in letter and spirit. This liberalized scenario is making the sector intensely competitive, and the oil companies, especially those in the public sector are gearing to adopt a more customer-focused approach to the retail end of their business.

Besides providing the policy framework for a liberal, decontrolled petroleum sector, the Government has come out with the Draft Petroleum and Natural Gas Regulatory Board Bill which seeks to regulate refining, distribution and marketing of products with a view to protect the interest of consumers and promote fair competition among the entities.

The hydrocarbon sector is also witnessing the emergence of the Natural Gas market in India. It has now moved from a more or less localized controlled business to a market determined activity. Natural Gas is becoming the preferred fuel in several industries. The Government has initiated many steps to increase its availability and subject the Gas market to competitive forces. Some of these important initiatives are increasing domestic gas production, import of LNG, trans national gas pipelines, a Gas pipeline policy and Regulatory framework for Gas marketing and transportation. With the onset of competition, this sector would also throw up the challenge of providing efficient and quality service to the consumers.

PRIMARY ENERGY OVERVIEW

Energy Services play a critical role in enhancing the human and economic development of a nation. The Total Consumption of Energy in the whole world was around 9741 Million Tonnes Oil Equivalent (MTOE) in 2003. Demand for energy is projected to touch 11,131 Mtoe in 2010 and 13,689 Mtoe in 2030 (as described in figure)¹. World per capita energy consumption is expected to increase from



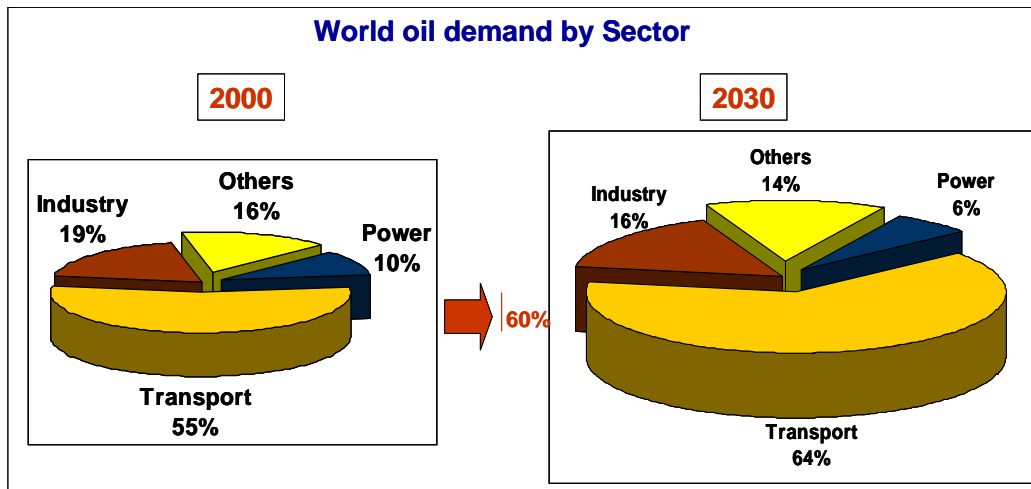
Primary Consumption of Energy (MTOE) World

¹ Source: International Energy Agency

68 mbtu/annum in 2005 to 81 mbtu / annum in 2020. For India, the projected per capita increase is from 14.26 mbtu / annum to 20.52 mbtu / annum. Oil, Natural gas and Coal are the primary sources of world energy catering to around 88% of the world energy requirement in 2003.

The Asia Pacific region is gaining importance in the world oil & gas map, with India and China together accounting for 47.50% of the total demand in this region.

Globally, the requirement for fossil fuels and its derivatives will grow significantly in future with the transportation sector driving demand. Number of vehicles is expected to increase from 61 million in 2004 to 81 million in 2011.



Global oil & gas production is skewed with most of the reserves concentrated in the Middle East, which supplies to deficit countries in the Americas and the Asia-Pacific. As at end 2003, the world had proven oil reserves of a little over 1147.7 Thousand Million Barrels (TMB) with Middle East accounting for 63.3% or 726.6 TMB and proven world gas reserves of about 175.78 Trillion Cubic Meters (tcm). In view of the disturbances in the Middle East, countries have been forced to look for other sources of oil and gas to meet their requirements.

INDIAN ENERGY OVERVIEW

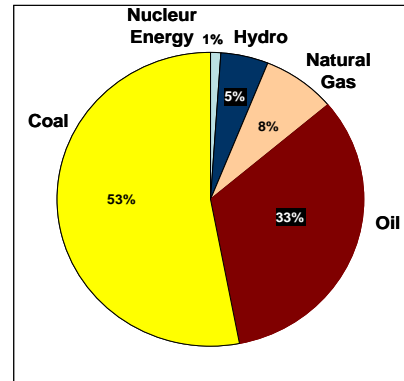
India is the 4th largest consumer of primary energy in the world. However, the per capita energy consumption of 479 kg of oil equivalent (kgoe) is far lower than that of other countries such as China (907 kgoe), Thailand (1319 kgoe) and Brazil (1051 kgoe).

The country's primary energy consumption has grown at over 4% CAGR over the last few years as compared to world primary energy consumption growth of 1% CAGR over the same period. Indian economic growth has been the key driver of energy consumption growth during this period. This growth is likely to be maintained, given that the country's GDP is expected to grow by at least 5-6% p.a. over the next couple of decades².

² Ernst and Young and Chemtech Report "Translating India's Hydrocarbon Vision into Reality"

In India, Oil and Natural Gas contribute to 41% of the total primary energy consumption and coal contributes 53% of the total energy requirement of the country (as described in figure).

The inherent advantages of oil & gas in terms of versatility ease in handling & transport and adaptability to new environmental standards makes it the preferred fuel of the future. The share of oil and gas in the primary commercial energy consumption of the country has been increasing over the years and the demand is likely to increase further in the next two decades. The transportation sector will be the main driver for the projected increase in oil demand. Consequently import dependence for oil, which is presently about 70 per cent, is likely to increase further.



Primary Consumption by Fuel

Oil and Gas Resources, Demand and Production

India has 26 sedimentary basins with total proven reserves estimated at around 739 Million Metric Tonnes (mmt) of Crude Oil and 923 Billion Cubic Metres (bcm) of Natural Gas. This represents 0.4% of the world's proven reserves. As against this, the domestic crude consumption is estimated at 2.8 per cent of the world's consumption. The current domestic production of crude oil at 33.37 mmt caters to only 30 per cent of the demand with the Xth Plan document estimating the demand to touch 134.6 mmt in 2007 and 172.5 mmt by 2012. Consequently import dependence for oil, which is presently about 70 per cent, is likely to increase further during the Tenth and Eleventh Plans.

India's natural gas production reached a level of 30.1 BCM in 2003. The projected domestic production of natural gas in 2007 is 37.62 BCM. Until now the country has been able to meet the demand with the available domestic production. However, the India Hydrocarbon Vision 2025 of the Government has identified natural gas as the preferred fuel for the future and several options are being explored to increase its supply capacity which includes building facilities to handle imports of liquefied natural gas (LNG) and setting up of pipelines from major gas producing countries. A number of projects for setting up of LNG terminals have been approved by the Government to bridge the demand-supply gap. Three such LNG terminals at Dabhol, Hazira and Kochi



are in advanced stages of development with the Dahej terminal already being operational. Besides that, India is also negotiating with Iran and Pakistan for setting up a gas pipeline

As India is one of the highest energy intensive economies importing about 70% of its fuel requirement, the huge demand supply deficit has a serious impact on the country's financial position. It is estimated that oil imports account for 1/3rd of the country's total import bill. Fluctuating global fuel prices might slow

down the rate of economic growth, propel inflation and reduce economic output by acting as a tax on consumption.

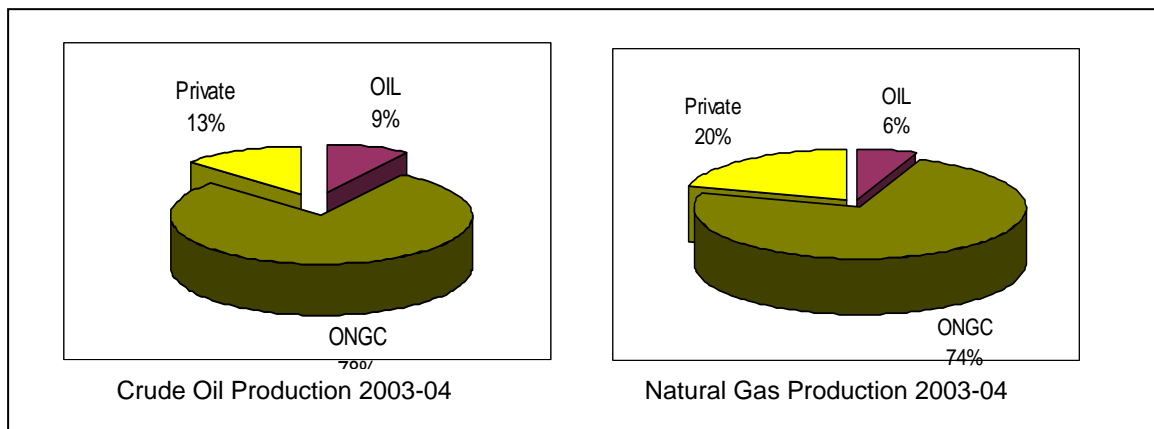
To secure India's energy future, the government has envisaged acceleration of exploration efforts, acquisition of acreage abroad for equity oil, creation of strategic reserves, deregulation/rationalisation of the Administered Pricing Mechanism (APM), import of natural gas in the form of LNG, creation of adequate refining capacity and setting up of regulatory mechanism etc. as the key thrust areas.

UPSTREAM

Exploration and Production (E&P)

Crude Oil and Natural Gas in the country are currently produced from both offshore and onshore fields. Total onshore production of crude oil was 11.456 Million Tonnes which was 34.33% of the total crude oil production of 33.373 Million Tonnes. The total onshore production of Natural gas was 8.972 bcm which was 28.07% of the total production of Natural Gas in the country. The total natural gas production in 2003-04 stood at 31.962 bcm.

The two Oil PSU's, Oil India Limited (OIL) and Oil and Natural Gas Corporation (ONGC) accounted for 87% of the total crude production with OIL contributing 9% of the total production, ONGC contributing 78% and the balance 13% being contributed by the private players. In natural gas the PSU's accounted for 79.69% and the private sector contributing 20.31% of the total natural gas production.



The government opened the Exploration and Production (E&P) sector to private sector in 1979 following the second oil shock. However, unattractive fiscal regime, reservation of attractive acreage for the PSU's, imposition of strict domestic market obligations, slow pace of signing contracts, lack of significant finds were some of the deterrent to private sector participation in this sector.

In 1997-98 the government amended The Oilfields (Regulation and Development) Act (1948) and The Petroleum and Natural Gas Rules (1959) and announced the New

Exploration Licensing Policy (NELP) to accelerate exploration activities in the country. NELP aims for substantial investment in this high-risk, capital intensive area from the private entrepreneurs, particularly foreign companies. The NELP is based on two cardinal principles: (i) attractive terms of offer comparable to the best in the world (ii) level playing field for all

The successful bidder for the block enters into a Production Sharing Contract (PSC), which is negotiated based on the Model Production Sharing Contract (MPSC).

Success of Previous Rounds of NELP

In the first four rounds of NELP, production sharing contracts (PSCs) for 90 exploration blocks have been signed, and 19 discoveries have already been made so far in Cambay onshore, North East Coast and Krishna-Godavari (KG) deepwater areas. Of these, North Surat (NS) and Bhima fields in Cambay onshore block have been under production since May, 2004 and November, 2004 respectively. Significantly, the reserves of gas, which is an environment friendly fuel, have gone up over 50 per cent in last 2-3 years due to substantial gas finds in KG deepwater as well as in Cambay offshore. Currently bidding is underway for the fifth round of NELP which will end in May 2005.

Natural Gas

Of the 30.1 BCM of gas produced in the country about 68% of natural gas is being used for energy purposes and 32.2 % is being used for non energy purposes. Natural Gas has been steadily increasing its share in the primary energy mix from 2.5% in the early 1980's to approx. 8% at present. Initially gas reserves were utilized as a feedstock for the fertilizer and petrochemical industry. But now the shift is more pronounced towards the energy sector. This has been on account of scarcity and rise in prices of oil and also on account of natural gas being a clean fuel

Increase In Hydrocarbon Reserve Accretion

To increase the hydrocarbon reserve accretion and to bridge the ever increasing gap between supply and demand, following new thrust areas have been identified by the government.

Exploration in Deepwater and Frontier Areas

Oil giant Oil and Natural Gas Corporation (ONGC) has awarded multi million dollar contracts for deep sea drill rigs to Transocean Inc and Dolphin Drilling. These contracts and related technical expertise will augment ONGC's deep sea drilling experience.

Improved Oil Recovery (IOR)/ Enhanced Oil Recovery (EOR)

A number of improved oil recovery projects and enhanced oil recovery projects are proposed to be taken up to maintain current production levels. The national oil companies are experimenting with technologies like Horizontal wells, Multilateral wells, High Pressure air Injections to take recovery to higher levels. Contracts for number of

marginal oil fields have been farmed out so as to increase private sector participation. The total investment of ONGC for implementing 19 IOR/EOR projects in their 16 major fields is envisaged to be about Rs. 120 Billion (US \$ 2.72 Billion)

Equity oil and gas abroad

Geopolitical considerations have forced the country to diversify and de-risk its oil supply sources, and acquire oil and gas acreages abroad. This is an important component of the strategy to achieve oil security. The Government is encouraging oil public sector undertakings (PSU)s/private sector companies to tap opportunities available abroad for acquiring exploration acreages. ONGC through its subsidiary the ONGC Videsh Limited (OVL) has already acquired 25 per cent interest in the Greater Nile Oil Project (GNOP) in Sudan, Sakhalin II in Russia and with the recent acquisition of one Exploration block in Cote d' Ivoire, OVL now has presence in 10 countries.

The Indian Oil Corporation is seeking a tie up for deepwater exploration in Sri Lanka while Reliance has acquired a 30% stake in an offshore block in Yemen. Gail has also earmarked INR 20 Billion (US \$ 455 Million) for overseas investments and will be acquiring equity in foreign E&P projects.

Coal Bed Methane (CBM)

Coal Bed Methane (CBM) is an environment friendly clean fuel with properties similar to those found in natural gas. Coal is both the source and reservoir rock for CBM. A saturated CBM reservoir could contain upto five times the amount of gas contained in a conventional gas reservoir of comparative size, temperature and pressure. India is endowed with rich deposits of coal and lignite, which could host vast quantities of CBM.

Directorate General Hydrocarbon (DGH) have identified 23 blocks as yet in various coal bearing areas in Gondwana & tertiary coal belts for CBM exploration & exploitation. Of these, 3 blocks were awarded by the Govt. on nomination basis and the remaining 7 blocks were offered under CBM-I global bidding round and 9 blocks were offered under CBM II round.

Gas hydrates

The National Gas Hydrate Programme (NGHP) roadmap is being finalised by the government. The draft roadmap envisages a number of activities like geo-scientific works and studies, laboratory studies, formulation of drilling technology and undertaking drilling operations besides brainstorming for working out the most appropriate production technologies of gas from gas hydrates.

DOWNSTREAM

Refining

India has 18 refineries with a total capacity of 126 million tonnes.73.80% of this is in the public sector with IOC being the largest refiner in the country with an installed capacity of

35.288 million tonnes or 31.0% of the total capacity. Reliance is the only private sector refiner in the country and has an installed capacity of 33 million tonnes.

The hydro carbon vision provides focus on the refining sector for achieving self sufficiency in petroleum products and moving towards a competitive free market environment. To achieve this vision the challenges for the refining sector are threefold:

1. To build up adequate refining capacity; new refineries, expansion and replacements.
2. Maintain approximately 90% self sufficiency of middle distillates.
3. To improve the quality of India's petroleum products to make them environment-friendly and globally competitive

Creating refining capacity in the country is the preferred option as country's energy security is safeguarded, greater value addition can take place, handling of large crude volumes becomes easier and transportation costs go down.

In a fully decontrolled scenario, stand alone refineries face potential pressures and volatility in margins. In order to realize better margins and garner the requisite critical mass to compete with the private sector firms, some of the stand alone refining companies in India were merged with the marketing companies that lacked adequate refining capacities of their own. Subsequently Chennai Petroleum Corporation Ltd. and Bongaigon Refineries were made subsidiaries of Indian Oil Corporation (IOC) Ltd. Kochi Refinery Ltd. and Numaligarh Refinery Ltd. was merged with Bharat Petroleum Corporation Ltd. (BPCL). The government also divested its stake in Indo Burmah Petroleum (IBP) to IOC. Companies can integrate refineries with upstream and downstream activities to yield better returns.

In lines with the global trend, there has been significant improvement in the product mix with increase in production of high value light and middle distillates and reduction in the production of heavy ends. At present heavy ends constitute about 19% of the total production in India which is comparable to 16% in developed countries. Considering all these advantages, promoting profitable investments in refineries is desirable.

Capacity addition of 84.55 Million Metric Tonnes per Annum (mmtpa) is on the anvil at the cost of Rs. 410.38 Billion (US \$ 9.32 Billion). Significant amongst these is Essar Oil's refinery at Vadinar and HPCL's refinery at Bhatinda.

Marketing

Marketing of refined products is done mainly by the 4 PSU's i.e. the Indian Oil Corporation (IOC), Hindustan Petroleum Corporation Ltd. (HPCL), Bharat Petroleum Corporation Ltd. (BPCL) and Indo-Burmah petroleum (IBP). These 4 oil PSU's controlled 93% of the market in 2004 with IOC garnering the lion's share i.e. 51% of the total market.

For the liberalization of the downstream sector the Government has opened up retail marketing of automotive fuels under the 100% automatic route and decontrolled the marketing sector by dismantling the APM.

Possession of adequate infrastructure for transportation, storage and distribution will be one of the key factors for success in retail marketing of petroleum products. The government has recently granted licenses to few companies desirous of setting up of retail outlets.

Company	No. of Retail Licences
ONGC, MRPL	1100
Shell	2000
Reliance	5849
Essar	1700
Numaligarh Refinery	510
IOCL, BPCL, HPCL	2900

Location of retail outlets will be an important factor in determining the 'product and service' mix of the retail marketing company. For instance, more diesel is sold on highways where as petrol consumption is greater in cities.

Transportation (Railways and Pipelines)

The railways currently transport about 40% of India's fuel consumption, with roads and coastal transport accounting for about 18% and 12% respectively, the balance 30% being transported through pipelines. While Indian Railways has traditionally been the largest transporter of petroleum products in the country, the share of the railways has been steadily decreasing over the past few years.

Transportation through pipelines leads to lower transit cost (the transportation cost through pipelines is 40% cheaper than transporting through railways and approximately 56% cheaper than transporting through roads) in the long run with minimal transit losses and minimal environmental impact. Combined with technological advancements such as 'intelligent pigs' that can clean the interior of pipelines, 'batching' which can transport different petroleum products through the same pipeline, and cathodic protection which reduce the corrosion of pipelines, have enabled pipelines to emerge as the preferred mode of transport the world over. In India however these advantages are negated by absence of clear directions on regulations and tariff policy of the government hence several players in the petroleum sector are evaluating alternate options for transportation

of oil products. For example, Reliance is trying to negotiate a preferential rate from the railways in return of assured volumes.

Product Pipelines

Indian Oil Corporation (IOC) is the biggest player in the Indian crude oil and product pipelines network since it is the sole refiner in India to have several inland refineries. IOC maintains a relatively extensive crude oil pipeline network spanning over 2,387 km having an aggregate capacity of 25.20 mmtpa which account for more than 50% share in capacity terms. ONGC and Oil India Ltd. (OIL) are the other entities holding and operating crude oil pipelines in India. In addition to its crude oil pipeline network, IOC also has a network of 8 product pipelines spanning over 4,100 km, having an aggregate capacity of 18.2 mmtpa, accounting for a 60% share in capacity terms.

Gas Pipelines

Gas authority of India Ltd. (GAIL) distributes almost all of the gas produced in the country and operates over 4,200 km of gas pipeline, the most prominent being the 2,300 km Hazira-Bijaipur-Jagdishpur (HBJ) pipeline with a capacity to handle 33.4 Million Standard Cubic Metre per Day (mmscmd). The company has regional pipeline networks in the areas of Mumbai, Gujarat, Rajasthan, Andhra Pradesh, Tamil Nadu, Pondicherry, Assam and Tripura. These pipeline networks are smaller and vary in size - from 4 km to 90 km in length. GAIL is also present in city gas distribution projects. It has a joint venture (JV) with British Gas to supply gas in Mumbai (Mahanagar Gas) and another JV with Bharat Petroleum to supply gas in Delhi (Indraprastha Gas).

Proposed Expansion Plans (Product Pipelines)

The opening up of petroleum retailing to the private sector has created significant interest. Reliance Industries has outlined plans for laying six new product pipelines (5,895 km) over the next couple of years costing approx. Rs 44 Billion (US \$ 1.0 Billion).

Route	Length (km)	INR BN (approx.)	US\$ MN (approx.)
Jamnagar-Patiala	1580	15.64	355.59
Jamnagar-Kanpur	2540	16.98	385.94
Goa-Heydrabad	660	4.3	99.73
Chennai-Bangalore	540	3.1	70.46
Kakinanda-Vijaywada	200	1.09	23.85
Haldia-Ranchi	375	2.48	56.38

The Oil PSUs are also planning to expand their product pipelines through extensions and expansions such as BPCL's expansion of its Mumbai-Manmad-Indore product pipeline all the way to Delhi.

Some of the other pipeline projects for crude and products under consideration/implementation are the Vadinar- Bina crude pipeline, the Mundra-Bhatinda crude pipeline, the Bina-Kanpur; Paradip-Rourkela and the Bhatinda-Pathankot pipeline.

Proposed Expansion Plans (Gas Pipelines)

It is estimated that at least 10,000 km of the 17,000 km of new pipelines will cater to gas transportation. GAIL plans to lay approximately 7,900 km of pipelines over the next 5-6 years, forming the National Gas Grid. GAIL has already begun work on the 610- km Dahej-Bijaipur and the Dahej-Uran pipelines. This will evacuate the LNG that arrives at Petronet India's 5 mmpa LNG plant at Dahej and link it to the HBJ pipeline.

Reliance is working on a 2,000 km gas pipeline from the Kakinada coast to Goa. It will largely cater to the needs of the mining industry in the state and will also support gas demand in Andhra Pradesh, Madhya Pradesh and Karnataka. Reliance has planned another gas pipeline from Cuttack, where it is exploring gas in the NEC-OSN field to its refinery at Jamnagar.

Transnational Pipelines

The Government is trying to strike alliances to import piped gas from gas surplus countries in the vicinity such as Iran and Turkmenistan in Central Asia, Qatar and Oman in West Asia, and neighbouring Bangladesh and is actively considering two proposals for gas pipelines from Bangladesh and Iran.

Iran – India Gas Pipeline

This proposition seeks to connect Iran's South Pars field with the HBJ pipeline, through a 2,700 km long pipeline, either sub-sea or onshore through Pakistan. The capacity of this pipeline is expected to be 56 mmscmd.

Bangladesh – India Gas Pipeline

Unocal proposes to lay a 363 km pipeline with an initial capacity of 14 mmscmd from its Bibyana gas fields in Bangladesh, which have reserves of around 6.6 tcf. This proposal is pending approval from the parliament of Bangladesh. The section of the pipeline from the Bangladesh - India border to the Indian target markets will be built by an Indian consortium of IOC-GAIL-ONGC in a 48%, 26%, 26% joint venture.

This pipeline would have to be brought up to northern India (the states of Uttar Pradesh and Delhi) or southern India (the state of Andhra Pradesh). The development of this line is also contingent on the pace of development of new LNG terminals both on the west and east coasts.

Storage Infrastructure

Strategic Storage of Crude Oil

The need for strategic storage arises from the lack of self-sufficiency in meeting the crude oil requirements of the country and to provide for energy security in any eventuality.

The Government has cleared the establishment of a 5-million tonne strategic crude reserve at 3 locations - 2 near Mangalore and one in Vishakhapatnam. This stockpile will meet requirements for an additional 15 days (addition to the 19 days requirements being held currently at site by refineries). The total estimated cost for the entire exercise of creation of storage facilities has been estimated @ Rs 16.40 Billion (US \$ 372 Million). IOC, will execute this venture through a 100 % SPV.

Installations and depots

Installations are large storage points attached to refineries or to a port and serve as supply sources to small locations in the region. Depots are small storage & distribution centers that generally cater to the needs of a city or town. At present oil companies have installations in almost all major cities and port locations and depots at all district headquarters.

POLICY INITIATIVES

In 1999 the government announced the New exploration and Licensing Policy (NELP) and the Petroleum Tax Code which provided a level playing field to the private sector.

Some Policy Initiatives

- Foreign participation up to 100%.
- No minimum expenditure commitment during the exploration period.
- No signature, discovery or production bonus.
- No mandatory state participation.
- Income Tax Holiday for seven years from start of commercial production.
- No customs duty on imports required for petroleum operations.
- Biddable cost recovery limit up to 100%.
- Option to amortize exploration and drilling expenditures over a period of 10 years from first commercial production.
- Sharing of profit petroleum based on pre-tax investment multiple achieved by the contractor and is biddable.
- Royalty for on-land areas payable at the rate of 12.5% for crude oil and 10% for natural gas. For offshore areas, royalty payable at the rate of 10% for oil and natural gas.

- Fiscal stability provision in the contract.
- Freedom to the contractor for marketing of oil and gas in the domestic market.
- Provision for assignment.

The government has introduced The Common Carrier Pipeline Policy 2002 which has laid down certain policy guidelines for the development of product pipelines networks.

Petroleum product pipelines are categorized as follows.

- Category I – Pipelines originating from refineries, whether coastal or inland upto a distance of around 300 kms from the refinery
- Category II – Pipelines dedicated for supplying product to a particular customer
- Category III – Pipelines originating from refineries exceeding 300 km in length and pipeline originating from ports, other than those specified above

For pipelines falling under the first 2 categories, Right of User inland would be granted as captive pipelines i.e. for exclusive use by the proposed company. However, under the third category, common carrier principles would apply. Any company interested in taking capacity in the pipeline will enter into "take or pay" or alternative mutually agreeable arrangement with the installing/ operating party. The designed pipeline capacity needs to be at least 25 percent more than the capacity requirement of the installing/ operating party.

The committee of secretaries (CoS) in May 2005, have made significant amendments to the draft Petroleum and Natural Gas Regulatory Board (PNGRB) Bill 2005. The amended draft proposes to regulate all downstream activities in India (which include refining, processing, storage, transportation and gas transmission and distribution, setting up LNG terminals and gas retailing etc) and to establish a strong affiliate code of conduct in the industry. The amended draft includes provision relating to contract carrier vis-a-vis the earlier common carrier approach. The contract carrier approach is in line with the suggestions proposed by the Gas Industry Group (GIG), a lobby of seven oil and gas companies comprising Reliance, British Gas, Exxon Mobil, Shell and others. The bill would be shortly circulated to the members of the group of ministers and to the department of legal affairs.

Dismantling of Administered Price Mechanism (APM)

Under the APM, all entities were assured a minimum return on investments. The E&P companies were assured a minimum return of 15% on the capital employed. The downstream companies were allowed a 12% post tax return on their net-worth. Effective April 1st 2002, the E&P companies have been allowed the freedom to set their own prices.

The end-user prices of Motor spirit (MS), High Speed Diesel (HSD), Aviation Turbine Fuel (ATF), Kerosene for public distribution (PDS Kerosene) and domestic LPG would be market determined and the subsidies on PDS kerosene and domestic LPG would be based on flat rate basis.

The notification on dismantling the APM also lays down the entry criteria in terms of minimum outlay of investments of Rs. 20 Billion (approx. US \$ 500 Million), the market service obligations and the retail service obligations to be followed by the marketing companies

Though the marketing sector theoretically is decontrolled, the Government still plays a dominant role in fixing the prices. This government intervention is evident from the fact that while international crude oil prices have increased by 43%, the increase in domestic fuel prices has not been more than 17 %.

THE WAY FORWARD

Though the private participation in oil, gas and electricity sectors in India has seen an upswing, it is believed by the industry that the absence of an independent regulator is still a deterrent for development of the gas market. A standard market design, with ample options for hedging against market risks, price volatility etc. is intrinsic to the growth of the sector. More importantly, for a continued flow of investment in these sectors undergoing transition, there is a need to find risk mitigation measures by way of market and policy instruments.

Internationally, energy exchanges have been viewed as a viable option for effective market development and mitigating risks. An energy exchange can act as a neutral platform for all stakeholders, offering the choice of customer and price. Energy exchanges can create the market instruments to reduce fiscal uncertainty demand risk, price risk, fuel uncertainty while they also bring about greater economic performance into energy markets. The creation of a competitive marketplace will spawn a multitude of opportunities to entice investments and active participation of private players.

CONCLUSION

The dynamics of Indian energy sector has undergone a sea change over the past year. Continued economic development and population growth are driving India's demand for energy faster than its capacity to produce energy. Currently among the fastest growing economies, India's energy demand is burgeoning at a prodigious rate.

The energy intensity of India, the amount of energy needed to produce one unit of Gross Domestic Product (GDP) stood at 2.88 times that of developed countries (estimated by International Energy Agency). The Indian economy with its high energy intensity is more vulnerable to oil shocks than most other countries. According to an estimate, a sustained 5% rise in oil prices (over an entire year) will bring GDP growth down by 0.25 percent, push up inflation by 0.5-0.6% and hike up import bill by \$ 3 billion a year. In this context,

continued gas price deregulation by increasing linkages to the international fuel basket poses greater challenges to domestic gas suppliers and consumers.

With some of the largest oil and gas discoveries, India has caught the attention of the E&P world with the government expecting to raise more than Rs. 48.4 Billion (US \$ 1.1 Billion) from the fifth round of NELP. Demand for natural gas would increase exponentially given that it is a clean fuel. India has already invested upto Rs.176 Billion (US \$ 4 Billion) in acquiring oil assets abroad and this figure might go upto Rs. 2200 Billion (US \$ 50 Billion) in coming years.

ANNEXURES

India Hydrocarbon Vision 2025 - A Snapshot

Hydrocarbons Vision - 2025

- To assure energy security by achieving self-reliance through increased indigenous production and investment in equity oil abroad.
- To enhance quality of life by progressively improving product standards to ensure a cleaner and greener India.
- To develop hydrocarbon sector as a globally competitive industry which could be benchmarked against the best in the world through technology upgradation and capacity building in all facets of the industry.
- To have a free market and promote healthy competition among players and improve the customer service.
- To ensure oil security for the country keeping in view strategic and defence considerations.

Exploration and Production Sector

The gap between supply and availability of crude oil, petroleum products as well as gas from indigenous sources is likely to increase over the years (Annexure-IV). The growing demand and supply gap would require increasing emphasis to be given to the exploration and production sector. The objectives of the exploration policy would be as follows:-

Objectives

- I. To undertake a total appraisal of Indian sedimentary basins for tapping the hydrocarbon potential and to optimise production of crude oil and natural gas in the most efficient manner so as to have Reserve Replacement Ratio of more than 1.
- II. To keep pace with technological advancement and application and be at the technological forefront in the global exploration and production industry.
- III. To achieve as near as zero impact, as possible, on environment.
- IV. To achieve the above objectives the following actions are required to be taken.

Medium term

- I. Continue exploration in producing basins.

- II. Aggressively pursue extensive exploration in non-producing and frontier basins for knowledge building and new discoveries, including deep-sea offshore areas.
- III. Finalise a programme for appraisal of the Indian sedimentary basins to the extent of 25% by 2005, 50% by 2010, 75% by 2015 and 100% by 2025. Sufficient resources to be made available for appraising the unexplored/partly explored acreages through Oil Industry Development Board (OIDB) cess and other innovative resource mobilisation approaches including disinvestment and privatisation.
- IV. Provide internationally competitive fiscal terms, keeping in view the relative prospectivity perception of Indian basins, in order to attract major oil and gas Companies and through expeditious evaluation of bids and award of contracts on a time bound basis.
- V. Optimise recovery from discovered/future fields.
- VI. Improve archival practices for data management.
- VII. Continue technology acquisition and absorption along with development of indigenous Research & Development (R&D).
- VIII. Ensure adequacy of finances for R&D required for building knowledge infrastructure.
- IX. Make Exploration and Production (E&P) operations compatible with the environment and reduce discharges and emissions.
- X. Support R&D efforts to reduce adverse impact on environment.
- XI. Acquire acreages abroad for exploration as well as production.

Long term

- I. 100% exploration coverage of the Indian sedimentary basins by 2025.
- II. Leapfrog to technological practices to restore the original base line.
- III. Put in place abandonment practices to restore the original base line.
- IV. Conserve resources and adopt clean technologies.

External Policy & Oil Security

Objectives

Supplement domestic availability of oil with a view to provide adequate, stable, assured and cost effective hydrocarbon energy to the Indian economy. To achieve the above objective the following actions are required to be taken.

Medium term

- I. Put in place a comprehensive policy to include total deregulation of overseas E&P business and empowering them to compete with international oil companies with provision of fiscal and tax benefits.
- II. Evolve a mechanism to leverage India's "Buyer Power" to obtain quality E&P projects abroad.
- III. Have focussed approach for E&P projects and build strong relations in focus countries with high attractiveness like Russia, Iraq, Iran and North African countries.

Natural Gas

Natural gas is emerging as the preferred fuel of the future in view of it being an environmental friendly, economically attractive fuel and also a desirable feedstock. Increased focus needs to be given to this potential sector.

Objectives

- I. To encourage use of natural gas; which is relatively a clean fuel.
- II. To ensure adequate availability by a mix of domestic gas imports through pipelines and import of LNG.
- III. To tap unconventional sources of natural gas like coal bed methane, natural gas hydrates, underground coal gasification etc.

To achieve the above objectives the following actions are required to be taken.

Medium term

- I. Timely and continuous review of gas demand and supply options to facilitate policy interventions.
- II. Pursuing diplomatic and political initiatives for import of gas from neighbouring and other countries with emphasis on transnational gas pipelines.
- III. Expediting setting up of a regulatory framework
- IV. Import LNG to supplement the domestic gas availability and encourage domestic companies to participate in the LNG chain.
- V. Provide a level playing field for all the gas players and ensure reasonable transportation tariffs.
- VI. Rationalise customs duty on LNG and LNG projects.
- VII. Put in place an effective organisational structure, which would facilitate progress in the National Gas Hydrates Programme.
- VIII. Operationalise the Coal Bed Methane Policy with a time bound programme.

- IX. Formulate National Policy on Underground Coal Gasification in a time bound manner.
- X. Increase R&D efforts on conversion of gas to liquids.

Long term

- I. Review of LNG option in the light of economic, political and energy security considerations.
- II. Exploit the gas hydrates reserves.
- III. Produce gas from Coal Bed Methane and through Underground Coal Gasification.
- IV. Commercialize the production and use of alternate fuels like Di-Methyl Ether and use of Fuel Cells through increased R&D efforts.

Refining & Marketing

This is another important sector and its development is crucial for having self sufficiency in petroleum products and in moving towards a consumer oriented competitive market.

Objectives

- I. To maintain around 90% self-sufficiency of middle distillates in the sector with an appropriate mix of national oil companies, foreign players and private Indian players.
- II. To develop a globally competitive industry.
- III. To have a free market and healthy competition amongst players.
- IV. To develop appropriate infrastructure such as ports, pipelines etc. for an efficient hydrocarbons industry.
- V. To improve customer services through better retailing practices.
- VI. To make available un-adulterated quality products at reasonable prices.
- VII. To achieve free pricing for products while continuing subsidised prices for some products in certain remote areas, which are to be identified and reviewed from time to time.

To achieve the above objectives, the following action is required to be taken:-

Medium term

- I. Grant operational flexibility to refineries in crude sourcing and in respect of risk management through hedging.
- II. Set out a timetable for achieving product quality norms to conform to cleaner environmental standards and to global standards by 2010.

- III. Formulate a clear, stable long-term fiscal policy to facilitate investment in refining, pipeline and marketing infrastructure.
- IV. Grant full operational freedom to existing PSUs to establish and maintain marketing networks and allowing entry of new players into the marketing sector through transparent and clear entry criteria and provide a level playing field for new entrants.
- V. Make marketing rights for transportation fuels conditional to a company investing or proposing to invest Rs. 2000 crore (US\$ 0.48 billion) in E&P, refining, pipelines or terminals. Such investment should be towards additionality of assets and in the form of equity, equity like instruments or debt with recourse to the company.
- VI. Set up mechanisms to enable new entrants to establish own distribution network for marketing without encroaching on the retail networks of existing marketing companies.
- VII. Set up a common regulatory mechanism for downstream sector and natural gas.
- VIII. To take up with the States for a uniform State taxation on petroleum products.
- IX. Provide for level tax rates for domestic products vis-a-vis imported products.
- X. Increase the ceiling of Foreign Direct Investment (FDI) in refining sector from the present level of 49% to 100%.
- XI. Provide a level playing field among all market participants.

Long term

- I. Develop an optimal transportation mix keeping in view the existing rail and port infrastructure.
- II. Develop a policy for encouragement of transportation of crude through Indian flag vessels.
- III. Develop a policy for transportation of LNG preferably through Indian flag vessels.
- IV. Provide for massive capacity expansion of the refining and marketing infrastructure to be taken up. The total investment in refining sector upto 2025 is estimated at Rs. 2,50,000 crore (US\$ 59.52 billion) while the same for the marketing infrastructure is estimated at Rs. 1,35,000 crore (US\$ 32.14 billion).

Tariff and Pricing

A rational tariff and pricing policy is vital to ensure healthy growth of the hydrocarbon sector and to protect the consumers as well.

Objectives

- I. To provide incentives for cleaner, greener and quality fuels to promote environment friendly Hydrocarbon sector.
- II. To balance the need to boost Government revenue with need to align duties with Asia - Pacific countries and moving the prices to international levels.
- III. To promote new investments, by ensuring adequate protection to domestic producers.
- IV. To remove subsidies and cross-subsidies to promote efficient and optimal utilization of scarce resources and also to eliminate adulteration.

To achieve the above objectives the following actions are required to be taken.

Medium term

- I. Phase out existing subsidies as early as possible.
- II. Set up a Group of Experts to determine appropriate levels of tariffs and duties for introduction in a phased manner as early as possible.
- III. Transfer freight subsidy on supplies to far flung areas and subsidies on products to fiscal Budget. Necessity for concession is to maintain the supply line to hilly and remote areas, after decontrol of marketing.
- IV. Increase linkage of consumer price of natural gas from current level of 75% fuel oil (FO) import parity to near 100%.

Restructuring and Disinvestment

Objective

The core objective of industrial restructuring is to maintain long-term profitability and strengthen competitive edge of the concerned companies in the context of changes in market forces and also to ensure that the consumers benefit by the restructuring.

To achieve the above objectives the following actions are required to be taken.

Medium term

The following sequence needs to be followed

- I. Announce policy in regard to specific public sector enterprises in alignment with the overall disinvestment policy of the Government.
- II. Complete the internal restructuring of oil PSUs, making full use of information technology.
- III. Implement proposals of mergers and alliances of oil PSUs with the objectives of enhancing shareholder value.

IV. Disinvest in a phased manner in oil PSUs down to appropriate level to realise best shareholder value.