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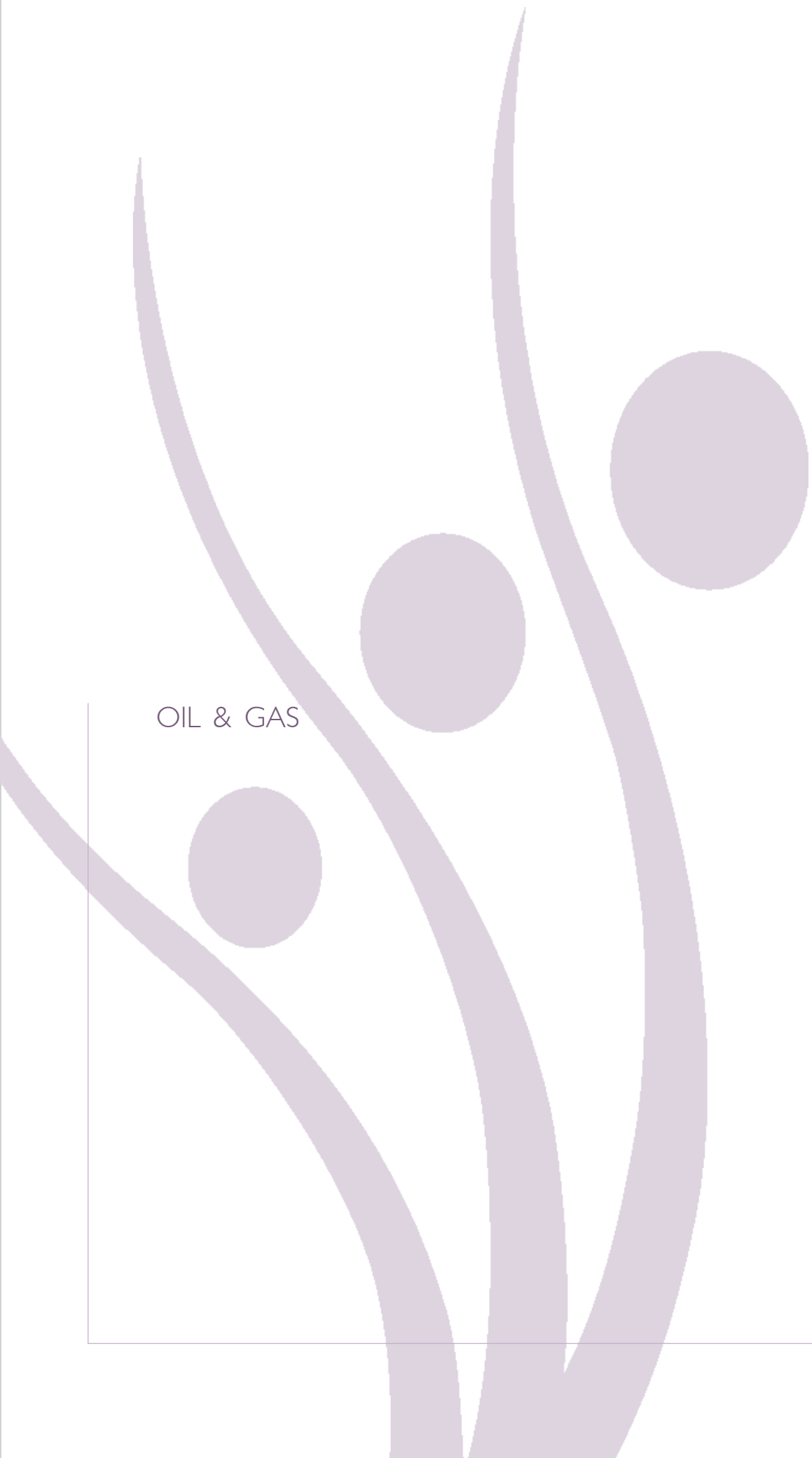

OIL & GAS

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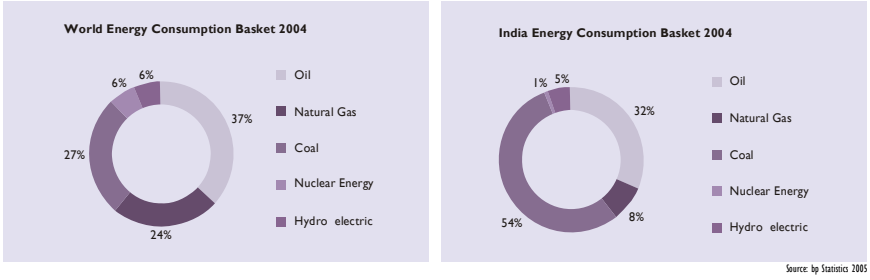
A report by PricewaterhouseCoopers Pvt. Ltd. for IBEF

Market Overview

Overview of Current Energy Mix

India is the fifth largest energy consumer in the world with primary commercial energy consumption in 2004 of 375.8 Million Metric Tonnes of Equivalent (MMTOE) (Source : bp statistical survey 2005). In 2004, the consumption of oil and gas formed a major percentage in the world energy consumption basket. In India, however, coal dominated the consumption basket.

Figure 1: World vs. India Energy Consumption - 2004



Source: bp Statistics 2005

Energy consumption grew at an average compounded annual growth rate (CAGR) of 3.8 per cent in the period 1999-2005 with the GDP growing at CAGR of 6.3 per cent resulting into a very attractive GDP elasticity of little above 0.6.

Overview of Oil & Gas Sector

The significance of the Indian Oil & Gas Sector can be gauged from the following facts:

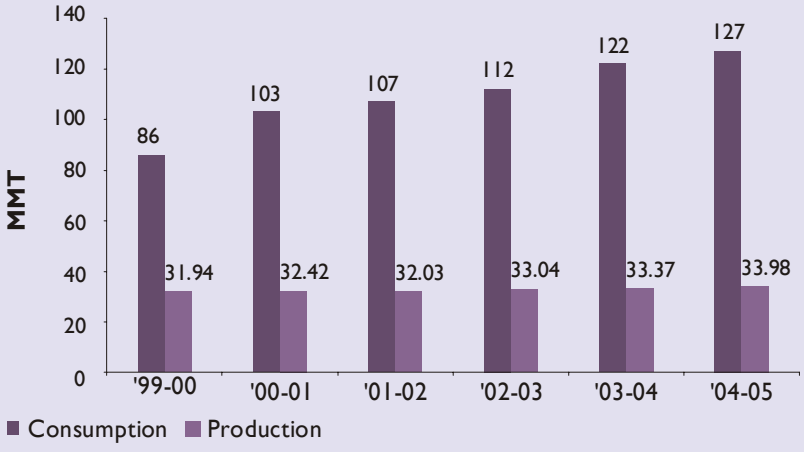
- Largest contributor to the national exchequer in 2004-05 with taxes amounting to US$ 27 billion.
- Oil & Gas constituted 40 per cent of primary energy source in 2004.
- India is sixth largest crude oil consumer in the world with consumption at 119.3 MMT in 2004.
- Petroleum, Oil Lubricants (PoL) imports is 28 per cent (Source : PwC Analysis) of the total imports of India and PoL exports is 8 per cent of total exports for 2004-05.
- All five Indian companies appearing on the Fortune 500 list operate in the Oil & Gas sector.
- India is Ninth largest crude oil importer in the world.

- India ranks sixth in refining capacity in the world with capacity at 2.5 million barrels of oil per day in 2004 which is 3 per cent of the world's refining capacity.
- Reliance Industries Ltd (RIL) in India is the third largest refinery in the world with a capacity of 33 MMTPA.

Demand & Supply Overview of Crude Oil & Natural Gas

India met 75 per cent of its crude oil demand through imports. The domestic production of crude oil has been in the range of 32-34 MMT over the past few years. About 60 per cent of it's crude imports are from the Middle East.

Figure 2: Consumption & Production of Crude Oil 1999-2005



Source : MoPNG

The consumption of natural gas grew at a CAGR of 2.7 per cent in the period 1999-2005 supported by rise in availability through domestic and imported sources of gas. The imports through LNG route commenced in early 2004.

Table 1: Natural Gas Consumption & Production (Billion Cubic Meters - BCM)

	99-00	00-01	01-02	02-03	03-04	04-05	CAGR
Consumption	26.88	27.68	28.03	29.96	30.90	30.77	2.74%
Gross Production	28.45	29.48	29.71	31.40	31.96	31.80	2.25%

Source: MoPNG

Segmental Overviews

Upstream Segment

India has 26 sedimentary basins with an area of 3.14 million square km and prognosticated reserves of 28 billion tonne of oil equivalent of gas. The country is relatively unexplored with only 18 per cent of area extensively explored (Source : DGH). Only 25 per cent of the prognosticated reserves have been established till date.

Post 2000, India witnessed some world class discoveries. RIL struck gas in the offshore Krishna Godavari (KG) Basin on the East coast of India with estimated reserves of 14 tcf in 2002 (world's biggest gas discovery of 2002) and Cairn Energy Plc. discovered oil onshore in Rajasthan (Western region of India) in 2004 with estimated production capability of 100000 barrels per day (4.9 MMTPA).

The national oil companies (NOCs), Oil & Natural Gas Corporation Ltd. (ONGC) and Oil India Ltd. (OIL) dominate upstream segment with 80 per cent contribution of oil & natural gas production of India. Other major players of this segment are RIL, British Gas, Cairn Energy and Niko Resources.

Under the five periodic rounds of awards of upstream blocks under New Exploration Licensing Policy (NELP), launched in 1999, private and foreign companies along with the NOCs committed about US$ 5 billion for exploration in more than 100 Production Sharing Contracts (PSCs). The periodic rounds of awards are continuing and the exploration investments are projected to rise considerably.

Refining and Marketing Segment

India has a total of 18 refineries with IndianOil (Indian Oil Corporation Ltd.) currently owning the maximum refining capacity. Besides being the largest refinery in India in terms of refining capacity, RIL's Jamnagar refinery is the biggest grassroots refinery in the world and is the third largest in the world.

In the last five years, the downstream sector has witnessed additions in the refining capacities and the trend is expected to continue with some new major capacities also getting off the ground. It is expected that by 2007, the refining capacity of the country would increase from 127.4 MMTPA (Million metric tonnes per annum) to 141.7 MMT (Source : Mid term year Review of Tenth Five Year Plan).

India is net exporter of petroleum products. The production of petroleum products for 2004-05 was 118.23 MMT with consumption being 111.56 MMT (Source : Mid term year Review of Tenth Five Year Plan).

Prior to 2002, the Government of India (GoI) administered pricing of transport and domestic fuels under the Administered Pricing Mechanism (APM). The APM regime was dismantled in 2002 as a step towards free market pricing. Currently, the Government attempts to distribute equitably the severe burden of oil price hike amongst various stakeholders, i.e., oil marketing companies, Government and consumers. The Government periodically reviews movements in global crude oil and product prices and advises the Government owned oil marketing companies (OMCs) on retail price determination.

In March 2002, the Government granted transport fuel marketing rights to private and foreign players and thereby allowed retail stations to be opened up by other than existing PSU OMCs. The new entrants were NRL, MRPL, ONGC, Essar Oil, RIL and Shell, of which the former five have commenced retail operations.

Table 2 : Marketing Infrastructure of NOCs as on April 1, 2005

	Retail Outlets	LPG Distributors	SKO-LDO Dealership
IndianOil	13,500	4,787	3,985
BPCL	6,466	1,605	1,006
HPCL	6,426	2,153	1,648
Total	26,652	8,545	6,589

Source: MoPNG

Table 3 : Retail outlets set up by new entrants till January 2005

Company	Authorized	Set up till Jan 31, 2005
Reliance	5,849	318
Essar	1,700	132
Shell	2,000	1
ONGC+MRPL	1,100	-

Source: Industry sources

Pipelines Segment

The pipeline infrastructure available in the country is as follows (Source : MoPNG) :

- Crude : 3,971 km with capacity of 36.18 MMTPA
- Product : 7,013 km with capacity of 61.62 MMTPA
- Natural Gas : 5,340 km
- LPG : 1,850 km with capacity of 3.83 MMTPA

Recent gas discoveries are expected to lead to new pipeline infrastructure set-up. Similarly the product pipelines also may see growth with new refineries being set-up.

Natural Gas Segment

Demand of natural gas is currently met by domestic production and LNG imports.

Table 4 : Natural Gas Production (BCM)

	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
ONGC	23.3	24.0	24.0	24.2	23.6	23.0
OIL	1.7	1.9	1.6	1.7	1.9	2.0
Private/JV	3.5	3.6	4.1	5.4	6.5	6.8
Total	28.5	29.5	29.7	31.3	32.0	31.8

Source : MoPNG

Petronet LNG Limited (PLL) regasification terminal at Dahej was the first LNG terminal to get commissioned and it has commenced LNG imports from Qatar. Shell's LNG terminal at Hazira has also got commissioned and it is expected to support imports.

Three more LNG terminals are expected to be commissioned in near future. Capacity addition to 5 MMTPA, PLL Dahej terminal of another 5 MMTPA and to Shell's 2.5 MMTPA of 7.5 MMTPA at Hazira have also been proposed.

Table 5 : Proposed LNG Plans

	Capacity MMTPA	Owners	Commissioning
PLL Kochi	2.5	Petronet LNG	2008-09
Dabhol	2.9	NTPC, GAIL	Being revived
Ennore	5.0	IndianOil	Being planned
Mangalore	2.5	ONGC	Being planned

Source : MoPNG

City Gas Projects

In recent years, use of natural gas for the automotive sector has gained importance for reducing chronic vehicular pollution in big cities. The Supreme Court, the highest court in India, has made it mandatory to convert all commercial automobiles in 11 select cities to CNG. Rising environmental awareness and such directives have led to cities being provided with CNG network for automobile fuelling. Plans have been drawn to extend CNG facilities to cities like Kanpur, Lucknow, Agra, Bareilly, Faridabad and Pune.

Mahanagar Gas Limited (MGL) in Mumbai, Gujarat Gas Company Limited (GGCL) in Gujarat and Indraprastha Gas Limited (IGL) in Delhi are engaged in developing CNG infrastructure. GGCL, Assam Gas Company Limited (AGCL), and Bhagyanagar Gas Ltd (BGL) are also engaged in distribution of piped natural gas in different cities in Gujarat, Assam, and Andhra Pradesh respectively.

Trans-national Pipelines

To augment the domestic supply of Natural Gas and LNG imports (Liquefied Natural Gas), the GoI is trying to implement transnational pipelines. Pipelines which are being actively pursued are:

- **Iran Pakistan India Pipeline :** This project plans to bring gas from the fields of Iran to India via Pakistan. A special Joint Working Group (JWG) has been set up to implement this project by 2007. The project is worth US$ 4.0 billion for about 2000 km pipeline.
- **Myanmar Bangladesh India Pipeline :** Indian companies ONGC Videsh Ltd (OVL) and GAIL India Ltd jointly hold 30 per cent stake in offshore block A-1 in Myanmar, where commercial gas discoveries of about 5 tcf were made in January 2004. The block has a capacity to produce 20-25 mmscmd for a period of 20 years. In February 2004, Myanmar decided to sell its 65 per cent share of gas in block A-1 to GAIL. To transport gas from Myanmar, a transnational 800 km pipeline costing US$ 1 billion is being proposed (Source : MoPNG).
- **Turkmenistan-Afghanistan-Pakistan (TAP) pipeline :** Daulatabad area of Turkmenistan is reported to have sufficient gas reserves. There are plans to extend pipeline to transport gas from this area to India.

Key Policy Initiatives

Overview

India offers favourable investment climate across all the sub-segments of oil & gas. The regulatory regime of India permits Foreign Direct Investment (FDI) into petroleum sector without any constraints. Upstream sector investments are facilitated by licensing policy (NELP) which provides a conducive regulatory framework. A Downstream Petroleum and Gas Regulatory Bill awaiting enactment will set up a regulator to regulate downstream activities.

Key Features of Policy Initiatives:

Upstream

New Exploration Licensing Policy (NELP) –

- Fifth round of awards concluded recently
- Sixth round of bidding is expected to be held in early 2006. Over 100 PSCs signed attracting of US$ 5 billion investment commitment.
- Fiscal stability provision
- Finalisation of contract on the basis of Model Production Sharing Contract (MPSC) provided at the bidding stage
- Petroleum tax guide provided with bidding documents
- Possibility of seismic option in the first phase of the exploration period
- NOCs also compete on the same terms.
- No mandatory state participation/carried interest by NOCs
- No payment of signature, discovery or production bonus
- No Customs duty on imports required for petroleum operations
- Freedom to sell crude oil and natural gas in domestic market at market determined prices
- Biddable cost recovery up to 100 per cent
- Sharing of profit petroleum based on pre-tax investment multiple achieved and is biddable
- No cess on crude oil production. Royalty payment for crude oil and natural gas on *ad-valorem* basis.

- Corporate Tax Deduction and allowances available to companies prospecting for oil and gas and they have a 7 year income tax holiday.

Downstream Petroleum and Natural Gas Segment

a) Draft Downstream Petroleum and Natural Gas Regulatory Board Bill–

- Proposed Regulator to oversee all downstream activities in India which include refining, processing, storage, transportation, gas transmission and distribution.
- Any company that wants to enter into the retail segment, should have invested US$ 444 million in any of the other segments of oil and gas.
- Pipelines - originating from refineries and ports will need to be built on a common carrier principle. The company laying the pipeline would have to share 25 per cent of the carrying capacity with other companies.
- Draft Gas Pipeline Policy that has merged with this bill, proposed to set up a gas regulator which would authorize laying down of pipelines for any entity desirous to transport gas along with preparing long term gas pipeline network and laying down cap for negotiable tariffs.

b) National Auto Fuel Policy –

Comprehensive Policy on auto fuels, their availability and security of supplies, vehicle technology, and emission reduction in a cost effective manner.

FDI Limits

- Exploration & Production – 100 per cent (automatic – no approvals required).
- Petroleum Product Pipeline & Marketing - 100 per cent (automatic).
- Natural Gas / LNG Pipeline - 100 per cent (non-automatic – Approvals required from the Foreign Investment Promotion Board, GoI)
- Refining – In case of state owned companies, FDI is limited to 26 per cent (26 per cent held by NOCs and balance by public). In case of private Indian companies, FDI upto 100 per cent permitted under the automatic route.

Emerging Scenario and Energy requirements - 2030

In 2003-04, India registered a GDP growth rate of 8.5 per cent. This is a record performance in the first half decade of the new millennium and a substantial improvement over 2002-03.

India has an ambition of achieving a high growth rate economy. The Common Minimum Programme of United Progressive Alliance (UPA) running the Government in India wants to ensure that the growth of economy is in the range of 7 to 8 per cent per year in a sustained manner over the next decade and more. A large quantum of energy in the form of coal, refined fuels and natural gas would be required to fuel such high GDP growth rates.

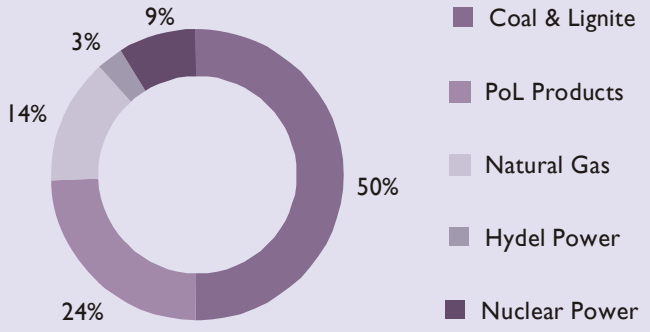
India's Planning Commission estimates the energy demand to annually grow between 5.2 per cent to 5.9 per cent should the economic growth of 8 per cent be achieved. The energy to GDP elasticity was 0.74 for the period 1990-91 to 2003-04 compared to 0.97 for the period 1980-81 to 2003-04. The total primary commercial energy supply in 2003-04 was about 327 Million Tonne Oil Equivalent (MMTOE). Planning Commission's 'low' estimate of demand of the same in the year 2030 is 1,341 MMTOE which is 4 times and the 'high' estimate is of 1,620 MMTOE which is 5 times the requirement in base year 2003-04. The above leads to 4 to 5 times requirement of coal, 2.7 to 3.5 times of petroleum products and 6.5 to 7.8 times of natural gas in 2030 in comparison to requirements of 2003-04. More importantly, this energy demand growth needs to be serviced under a stretched global supply-demand scenario and rising energy prices.

Energy source availability and investments are the areas to be focussed upon by the energy sector and the Government of India is aligning policy structure conducive to attract investments of high magnitude.

Primary Energy Outlook

Primary energy sources for India in 2030 in estimate is expected to be dominated by the fossil fuels viz coal & lignite and oil & gas.

Figure 3 : India Energy Mix: 2010



Source : Planning Commission, Govt of India

The outlook of various agencies on India's hydrocarbons demand indicates robust growth. As per publication released by PetroFed in early 2005, PoL product consumption is projected to grow at a CAGR of 4 per cent from last year's 112 MMT to about 327 MMT in 2030 under "Business as Usual" scenario, which presumes 6 per cent GDP growth. The demand for middle distillates, which include transport fuel, is expected to grow at the highest rate. As regards natural gas, the last year's consumption of 30.9 BCM is expected to rise at a CAGR of 6.75 per cent to 181 BCM in 2030 under supply unconstrained scenario.

Table 6 : Petroleum Products and Gas Demand Projections

Agencies	Scenarios and Basis of forecasting	PoL Current Demand: 111.71 MMT				Gas - Current Demand: 30.9 BCM			
		2020		2030		2020		2030	
		BAU	HOG	BAU	HOG	BAU	HOG	BAU	HOG
PetroFed-PwC-IRADe Vision 2030	GDP Growth: BAU@6% HOG@8%	216	264	327	475	130	243	181	406
India Vision 2020 (GoI document)	PoL	BAU	BCS	-	-	BAU	BCS	-	-
	Growth@5% - BAU Gas–as per sectoral growth	245	195	-	-	71	65	-	-
IEA WEO 2002	GDP growth@4.6%	186	-	251	-	83	-	108	-
Planning Commission, GoI	GDP growth@8% With various elasticity assumptions	Low Energy Growth Rate	High Energy Growth Rate	Low Energy Growth Rate	High Energy Growth Rate	Low Energy Growth Rate	High Energy Growth Rate	Low Energy Growth Rate	High Energy Growth Rate
		239	271	324	419	91	113	169	204

Opportunities in Oil & Gas

Growing energy demand of India and necessity to service that to ensure economic growth is not compromised, presents business opportunities in the complete value chain of oil and gas sector. Exploration for domestic production growth, development of discovered fields, transportation of crude oil, gas and products, refining to service the petroleum product domestic demand and exports, retailing infrastructure; prospective blocks to encourage all these sectors provide business and investment opportunities.

Exploration & Production (E&P)

In order to improve the current 18 per cent level of exploration of sedimentary blocks, the Government of India is undertaking a number of initiatives to intensify exploration activities. Launch of New Exploration and Licensing Policy (NELP) in the year 2000, made a quantum leap forward in award of blocks to private and multinational companies. NELP resulted in increase in participation of various private and foreign E&P companies in India. In last five years, more than 100 E&P blocks have been awarded. Over 30 blocks are expected to be offered in the sixth round under NELP in January, 2006. The Government is also making the terms of NELP and the format more investor friendly through constant interaction with the industry. The Government of India is proposing 30-35 blocks under NELP VI, which is expected in January 2006.

The Government of India is also proposing to introduce open acreage policy that allows companies to bid for exploration of desired blocks without waiting for periodic round of awards to be announced. Blocks would be available throughout the year and companies would be able to visit data room anytime. This would allow companies to leverage on their technical interpretation edge over their competitors, select blocks which suit their risk profile and time the bids.

The prognosticated resource appraisal of deep-water basinal areas of the east and west coast estimates around 12 billion tonnes of oil and oil equivalent gas (O + OEG) (Source : DGH) in an area covering about 1.4 million square kms. With the world class deepwater gas discovery of 2002 by RIL, the deepwater exploration programme in India has generated interest amongst global oil and gas majors across the world. The number of deepwater blocks being offered has increased under the NELP. This provides a major opportunity for deepwater exploration for technology leveraged companies with a high risk appetite either on their own or by partnering with other E&P companies.

ONGC is redeveloping 14 of its oil fields across the country to improve the recovery factor from 28 to 40 per cent. These initiatives are likely to cost US$ 2 billion (Soure : DGH). ONGC is seeking help from international technology and service providers to achieve this.

Technological innovations make it possible to extract significant quantities of oil and gas from abandoned and marginal fields not being considered earlier. ONGC has taken initiative to seek partnership from private and foreign companies in abandoned /marginal fields.

In order to mitigate the risk of supply disruptions and short term price spikes, the Government proposes to build strategic reserves of crude oil to provide for additional 15 days consumption equivalent storage.

A considerable seismic data acquisition and drilling of wells has been committed by NELP license awardees under various rounds of bidding. It will be a challenging task for E&P companies to achieve these aggressive commitments. In addition, the following reasons provide additional business and investment opportunities for oil field service providers:

- New discoveries would trigger an additional requirement of drilling services, technology & other oilfield services.
- Acreages awarded under open acreage policy will generate additional work requirement.
- Seismic acquisition, processing and interpretation activities undertaken by DGH *suo-moto* to promote exploration acreages will generate additional oilfield services requirement.

Refining

Indian companies are expanding refinery capacity and putting up green-field refinery projects. Global oil majors are seriously evaluating investments in India. Recently BP announced understanding for forming a joint venture with HPCL (Hindustan Petroleum Corporation Ltd.) for a grassroots refinery. RIL has also announced their interest in increasing refining capacity from 33 MMTPA to 50 MMTPA.

India has ambitions to become the hub for petroleum products exports. Demand for petroleum products in the Asia Pacific region is estimated to be around 25 to 27 million barrels per day (1.2-1.3 billion tonnes per year) in the year 2010. China with a demand of around 9 million barrels per day (447 million tonnes per year) and Japan at 5.2 million barrels per day (260 million tonnes per year) are expected to dominate future demand for energy products. However, the refining capacity in the Asia Pacific region is expected to increase from the current 21.9 million barrels per day (1.09 billion tonnes per year) to a maximum of 25 million barrels per day in the year 2010 (Source : Industry Sources). The export potential coupled with the additional capacity additions and new refineries provide a unique opportunity for potential investors. The opportunity exists in the form of investment in capacity additions to the existing refineries and forming consortium with private and NOCs to set up new refineries.

Major oil and petrochemical companies would find opportunity to partner with NOCs in their greenfield and expansion projects. Further, equipment and technology providers can contribute to these projects with their specialised offerings relating to engineering services, automation, IT, equipments etc.

Under the guidance of MoPNG (Ministry of Petroleum & Natural Gas), NOCs viz. IndianOil and HPCL are experimenting with various mix of bio-diesel with diesel in State Transport buses in Haryana, Gujarat and Mumbai. IndianOil has also signed a MoU with Indian Railways for plantation of Jatropha curcus on railway land. In October 2005, the MoPNG has announced a bio-diesel purchase policy which comes into effect from 1.1.2006. The policy prescribes that the NOCs shall purchase bio-diesel of prescribed BIS specification from registered authorised suppliers through 20 purchase centres at a uniform price of US$ .55 per litre. The purchase price would be reviewed by the oil companies every six months with due consideration to market conditions. Small and medium entrepreneurs would find opportunities in Jatropha cultivation and Bio-diesel conversion.

Pipelines

Crude and refined product pipeline infrastructure across the country would need to grow as refinery capacities grow. As currently planned, crude and refined product pipeline infrastructure would increase by 4,065 km and 15,788 km respectively.

As per the Tenth Plan document of Planning Commission, natural gas pipeline investments to the order of US$ 4.6–5.7 billion are expected in the plan period ending 2007. Additional gas now found in the KG basin on the eastern coast is expected to be monetised between 2008 and 2011, for which additional pipeline investment is expected. This requirement of increase in the pipeline infrastructure in the country provide opportunities for the international gas (transportation) companies, engineering companies, EPC contractors and vendors of pipeline and equipments.

Petro Marketing & Retailing

New licenses have been awarded to oil companies for putting up retail stations on the basis of minimum US$ 450 million investment criteria. Demand for transportation fuels is growing at over 4 per cent per annum and is creating opportunities for existing players and potential investors to set up modern retail outlet facilities that also include forecourt retailing.

With over 10,000 retail outlets expected to be put up by oil companies, there are significant opportunities for private and foreign companies to

partner/assist oil companies with respect to expansion of retail network, forecourt automation, latest equipments, construction, logistics support services, etc. Also, they can leverage on international retailing experience and partner/assist oil companies in branding, quality assurance products, smart cards, monitoring effectiveness of ongoing schemes, surveys, customer feedbacks, gauging customer loyalties, preferences etc. They can also help oil companies in developing non-fuel business and adding new product lines in the retail outlets such as service centres, ATMs, etc.

A substantial increase in LPG customer enrolment is expected with oil companies attempting to penetrate the rural market and strengthen urban markets. This would provide opportunities for small & medium players to supply cylinders, valves, kits, gasket, regulators etc. to oil companies marketing LPG. New LPG pipelines, tankages and bottling facilities offer business and investment opportunities.

Use of cleaner fuels like auto LPG provide opportunities to develop Auto LPG infrastructure, construction of dispensing stations, automation, manufacture and trading of auto LPG kits etc.

Natural Gas

Natural gas related projects and additional gas availability are expected to attract attention of private and foreign companies to support development of infrastructural facilities such as LNG terminals, laying of pipelines, installation of compressor stations, etc.

Natural Gas supply scenario is slated to improve with development of KG basin gas production facility and enlargement of LNG regasification capacity. This would lead to development of CNG and piped natural gas network. GAIL is planning to set up cross-country grid of natural gas pipelines.

India is endowed with vast reserves of coal of around 200 billion tonnes and 24 billion tonnes of lignite (Source : India Hydrocarbon Vision 2025). Therefore, Indian companies are exploring the feasibility of generating natural gas from Underground Coal Gasification (UCG). Recently, ONGC has signed an MoU with Skochinsky Institute of Mining (SIM), Russia which has expertise in the field of UCG. GAIL (India) Ltd. has also signed an MOU with Ergo (a Canada based company) for exploitation of UCG potential.

In last two years Government of India has awarded 16 blocks for exploring CBM. It is expected that these 16 blocks have potential of over 800 million cubic metres of CBM reserves available. Government is contemplating a third round of bidding for CBM blocks. The natural gas hydrate programme has been launched with an overall investment of US$ 46.3 million.

UCG and CBM projects would improve gas availability providing impetus not only to businesses involved in development of these projects but also downstream projects utilising the gas.

City gas projects in the states of Uttar Pradesh, Andhra Pradesh and Gujarat are already underway. GAIL plans to undertake city gas distribution in 22 cities spread across Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Gujarat, Andhra Pradesh, Tripura, Karnataka, Maharashtra and Tamil Nadu. The estimated investment for these 22 cities will be around US$ 2.53 billion. There is opportunity for gas equipment and engineering services companies to contribute in development of city gas distribution networks, compressed gas stations for supplying CNG, booster stations, equipments, automation, engineering services, construction etc.

Government of India is increasingly encouraging the use of cleaner fuels like CNG and there is a opportunity for companies in developing CNG related infrastructure, CNG dispensing stations, automation, manufacture and trading of CNG kits etc

Planned Major Investments

Various Oil & Gas projects have been announced by companies in India, which amounts to investments of over US$ 30 billion upto 2008.

Table 7 : Planned Major investments by 2008 in US$ billion

Proposed projects	US$ (bn)
Gas Pipelines	
GTICL (RIL) Pipelines	1.56
GAIL Pipelines	4.44
LNG	
Petronet LNG, Dahej (Expansion)	0.20
Petronet LNG, Kochi	0.35
Shell LNG, Hazira	0.20
Dabhol LNG (Commissioning)	0.20
Mangalore LNG	1.00
Refinery and retail expansion	
Downstream Projects by PSUs	9.78
Downstream Projects Private Sectors	4.89
Upstream	
RIL KG Basin (Development)	2.50
Upstream Exploration (Private)	4.00
Total	**29.12**

Source: MoPNG, Industry sources

Success Stories

Cairn Energy

Exploration & Production – Cairn Energy

- Independent Scottish E&P explorer and quoted on the London Stock Exchange
- E&P Assets owned in the Northern, Western and Southern region of India.
- Investments of over US$ 2 billion in the E&P Assets South Asian region with Rajasthan having an investment of US$ 1 billion.
- The Rajasthan acreage has in place reserve of 2.5 billion barrels with potential for further discoveries.
- Biggest oil discovery in India in the Barmer basin since Mumbai High oil discovery in 1975.
- Key Success Factors.
  - Growing oil consumer and bulk of this consumption is met through oil imports. This provides significant opportunities for Cairn as India is relatively an unexplored market.
  - FDI is allowed in this segment.
  - Joint ventures with behemoths like ONGC.
  - Utilisation of local talent to understand local conditions.

British Gas

Natural Gas – E&P and City Gas Projects – BG Group

- Rapidly growing in energy market with operation in more than 20 countries. The group turnover is US$ 7.06 billion for 2004.
- Primary operations in India are focused on E&P and city gas distribution.
- Investments over US$ 800 million in its upstream and downstream activities.
- BG India has 30 per cent stake in Panna Mukta Tapti fields with combined investment of US$ 900 million by the consortium partners.
- Produces 7 per cent of India's oil and gas production
- Keeping in mind, the growing demand of natural gas in the retail and commercial segments, BG through MGL and GGCL distributed gas to Mumbai (Maharashtra) and Gujarat respectively.
- Future Plans include setting up more city gas distribution projects

- Key Success Factors
  - Growing demand of gas – As per the India Hydrocarbon Vision 2025, the demand of gas is expected to be 20 per cent of the energy mix.
  - FDI permitted in E&P and natural gas.
  - Has proactively shared its knowledge for the development of the natural gas sector.
  - One of the few private companies in India to distribute gas to the retail and commercial segments

Shell

Petroleum Marketing & Retailing & LNG – Shell

- Fortune 500 company with focus on petro marketing, natural gas, lubricants, LPG, petrochemicals and solar energy
- Shell Hazira LNG project – second LNG project to be commissioned in India with an investment of US$ 650 million (Source: UK Companies in India – Success Stories)
- Future Plans include setting up retail stations across India and ramping up capacity of the LNG terminal
- Key Success Factors
  - Systematic plan for India which has helped it to become a key player in the gas industry
  - Conducive regulatory regime
  - Leveraged its international expertise to build and consolidate in India
  - Sensitised to opportunities which allowed it to enter them in the right manner.

BP

Emerging Player – bp

- Fortune 500 company with focus on petro marketing, E&P and LNG
- Leading private player in lubricants
- MoU with HPCL 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 programme

- Key Success Factors
  - Strategic partnerships
  - Growth in lubricants through brand equity and acquisition of Lubricants
  - Sensitized to opportunities which allowed it to enter them in the right manner

Total

Emerging Player – Total

- Fortune 500 company with focus on Refining and LNG
- Assets include 26 per cent stake in the Hazira LNG project of Shell, Vishakapatnam LPG import terminal (storage capacity of 60,000 MT and 50 per cent partnership with HPCL) and marketing of lubricants & LPG
- Significant presence in lubricants
- Key Success Factors
  - Strategic Partnerships
  - Growth in Lubricants through brand equity and acquisition of lubricants
  - Leveraging on global expertise

CONTACT FOR INFORMATION

Information on the market and opportunities for investment in the oil and gas sector in India can be obtained from the Confederation of Indian Industry (CII), which works with the objective of creating a symbiotic interface between industry, government and domestic and international investors.

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