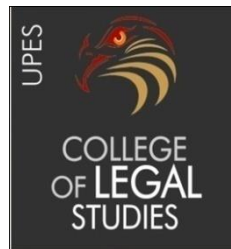


REVIEW OF NEW EXPLORATION AND LICENSING POLICY: IS IT A SUCCESS?

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Submitted under the guidance of: MR. RAJ KUMAR

*This dissertation is submitted in partial fulfillment of the degree of B.A. LL.B.
(Hons.)*



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2015

CERTIFICATE

This is to certify that the research work titled “*REVIEW OF NEW LICENSING POLICY : IS IT A SUCCESS?*” is the work done by Mr. Sashanka Akash Barik, under my guidance and supervision for the partial fulfillment of the requirement of the degree of LLB. In Energy laws at College of Legal Studies , University of Petroleum and Energy Studies, Dehradun.

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DECLARATION

I, declare that the dissertation “*REVIEW OF NEW LICENSING POLICY : IS IT A SUCCESS?*” is the outcome of my own work conducted under the supervision of Prof. Rajkumar Narayan, at College of Legal Studies, University of Petroleum and Energy Studies, Dehradun.

I declare that the dissertation comprises only of my original work and due acknowledgement has been made in the text to all other material used.

(Signature)

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Date – 6th April, 2015

Table of Contents

Table of Abbreviation.....	6
INTRODUCTION:.....	10
Chapter 1: Overview Oil and Gas Sector in India	16
➤ Evolution of Indian Oil and Gas Industry	26
➤ Structure of Indian Oil and Gas Industry:.....	30
➤ Upstream	31
➤ Demand-Supply Dynamics	37
➤ Basic overview on Downstream.....	39
➤ Key Regulatory Policies:	42
➤ Regulatory Agencies:.....	45
➤ Oil pricing in India:	46
➤ Key challenges and future outlook of oil and gas sector in India	49
Chapter 2: Pre- NELP Scenario:.....	53
➤ Introduction of NELP:.....	54
➤ Reason for introduction of NELP and its Salient features:.....	56
➤ The main features of NELP:.....	57
➤ Bidding Rounds:	58
➤ Concern of Investors	62
➤ The Production Sharing Contracts	65
Chapter 3: Fiscal structure under NELP:	70
➤ Cost Petroleum and Profit Petroleum under PSCs:	70
➤ Other receipts:	71

➤ Comparison of Fiscal Regimes:	72
Chapter 4: Draft billon Uniform Acreage Licensing Policy in India:	75
➤ REGIMES FOR AWARD OF EXPLORATION BLOCKS.....	76
➤ The present two contractual regimes in force for allocation of acreages for E&P operations of hydrocarbons have different fiscal terms and conditions. While PSCs under the New Exploration and Licensing Policy (NELP) for E&P of Oil and Gas, is based on production sharing contract (PSC) where Government take depends on sharing of profit petroleum, based on the Pre-Tax Investment Multiple (PTIM) with cost recovery, contracts under Coal Bed Methane (CBM) Policy provides for revenue sharing based on production linked payment (PLP) without cost recovery. Both PTIM and PLP are biddable parameters.....	76
➤ FISCAL TERMS:	78
➤ HIGHLIGHTS OF THE PROPOSED CONTRACT:	80
➤ BENEFITS OF NEW REGIME	80
Chapter 5: Conclusion	84

Table of Abbreviation

APM.....	Administered Price Mechanism
ATF.....	Aviation Turbine Fuel
BCM.....	Billion Cubic Meters
BPCL.....	Bharat Petroleum Company Limited
CNG.....	Compressed Natural Gas
CBD.....	Coal Bed Methane
DGH.....	Director general of Hydrocarbon
EGoM.....	Empowered Group of Ministers
E & P.....	Exploration and Production
FDI	Foreign Direct Investment
GDP.....	Gross Domestic Production
GAIL.....	Gas Authority of Indian Limited
GSPC.....	Gujarat State Petroleum
HPCL.....	Hindustan Petroleum Corporation Limited
IEC.....	Imperial Oil Company
IEP.....	Integrated Energy Policy
IHV	India Hydrocarbon Vision
IOC.....	International Oil Company
IPI.....	India-Pakistan-Iran pipeline

KG.....Krishna Godawari

Kgoe.....Kilogram Oil Equivalent

kWh.....Kilowatt Hours

LDO.....Light Diesel Oil

LNG.....Liquefied Natural Gas

LPG.....Liquefied Petroleum Gas

Mmscmd.....Million Standard Cubic Metres

MMT.....Million Metric Tonnes

MWP.....Minimum Work Programme

Mtoe.....Million Tonnes of Oil Equivalent

MmbtuMillion Metric British Thermal

MW.....Mega Watts

MOpnGMinistry of Petroleum and Natural Gas

NELP.....New Exploration Licensing Policy

NOC.....National Oil Company

NTPC.....National Thermal Power Corporation

OIL.....Oil Indian Limited

ONGC.....Oil and Natural Gas Corporation

OALP.....Open Acreage Licensing Policy

OMCs.....Oil Manufacturing Companies

PNG.....Petroleum Natural Gas

PLL.....Petroleum LNG Limited
PPP.....Purchasing Power Parity
PSU.....Public Sector Undertaking
PSC.....Production Sharing Contract
RGTIL.....Reliance Gas Transportation Infrastructure Limited
RIL.....Reliance Industries Limited
RNRL.....Reliance Natural Resources Limited
SCM.....Standard Cube Metre(s)
SKO.....Superior Kerosene Oil
SEZ.....Special Economic Zone
UALP.....Uniform Acreage Licensing Policy

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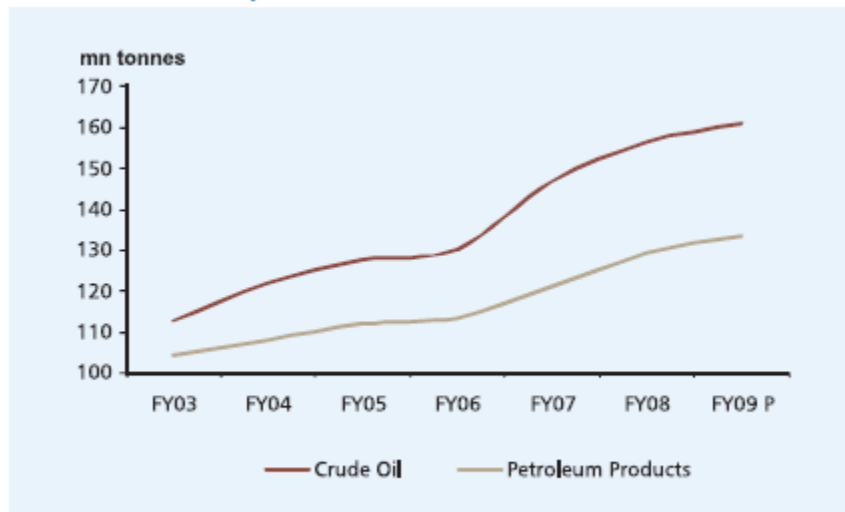
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INTRODUCTION:

Energy being vital inputs for a wide range of activities including manufacturing, agricultural, mining & construction, has been instrumental in overall economic growth & development. India is currently the world's fifth largest consumer of energy and accounts for nearly 3.5% of world's energy consumption. Despite India emerging as the world's fourth largest economy in PPP terms and the world's fifth largest consumer of energy, its per capita consumption of energy related products is extremely low as compared to other countries and the world average partly due to the high population. India's per capita energy consumption is estimated to be about 0.51 tonnes of oil equivalent (toe), while the world average is 1.8 toe/capita and that in OECD countries is around 4.7 toe/capita. The significantly low level of India's per capita energy consumption indicates that there is huge potential in India for the growth of energy consumption.

Given the strong growth of the Indian economy and rising population, the country's oil & gas consumption has witnessed substantial increase. Today, Oil accounts for 36% of primary energy mix in India, while gas accounts for 9% of the country's primary energy mix. India had been self-sufficient in oil to the extent of 70% till the mid of 1980s. However presently, almost 75% of India's crude oil requirements are met from imports. In view of rapidly rising demand for crude oil and the country's high import dependence, the development of the indigenous oil & gas industry has always been a high priority area for the Government.

Chart 1.2: Consumption of Crude Oil & Petroleum Products



P: Provisional

Source: Ministry of Petroleum & Natural Gas

The Indian oil & gas industry constitutes around 15% of India's GDP¹ and has been instrumental in accelerating growth of the Indian economy. The industry has also emerged as one of the largest foreign exchange earner, with oil exports accounting for 14.7% of the total exports in fiscal year 2009. The sector is also the largest contributor to the national exchequer as it contributed around Rs 1,617.98 bn as profit, excise & custom duties, corporate tax, sales tax and dividend, in Fiscal Year 2009.

The Indian oil & gas industry falls under the purview of the Ministry of Petroleum & Natural Gas (MoP&NG), and being highly regulated, is mostly dominated by Government undertakings. However, with the deregulation of the sector, new private players have also entered the sector.

The origin of the Indian oil & gas industry can be traced back to the late 19th century, when oil was first struck at Digboi in Assam in 1889. At independence, oil exploration and production activities were largely confined to the North-Eastern region, particularly Assam and the daily crude oil production averaged just 5,000 barrels per day. In the downstream sector, the first refinery was set up at Digboi in 1901. In view of the significance of the oil & gas sector for overall economic growth, the Government of India, under the Industrial Policy Resolution of 1954, announced that petroleum would be the core sector industry. In pursuance of the Industrial Policy Resolution, 1954, petroleum exploration & production activity was controlled by the government-owned National Oil Companies (NOCs), namely Oil & Natural Gas Corporation (ONGC) and Oil India Private Ltd (OIL).

With the discovery of the Cambay onshore basin (in 1958) and the Bombay offshore basin (in 1974), the domestic oil production increased considerably. As a result, in the early 70s, almost 70% of the country's oil requirement was met domestically. However, by the end of the 1980s, some of the existing oil & gas fields were experiencing a decline in their production since they had already been in production for several years and were past their 3 plateau phase. At the same time, there was a steady increase in consumption of oil & gas, leading the two NOCs to meet only about 35% of the domestic oil requirement.

¹ Available at <http://www.dnb.co.in/IndiasEnergySector/OilPrice.asp>

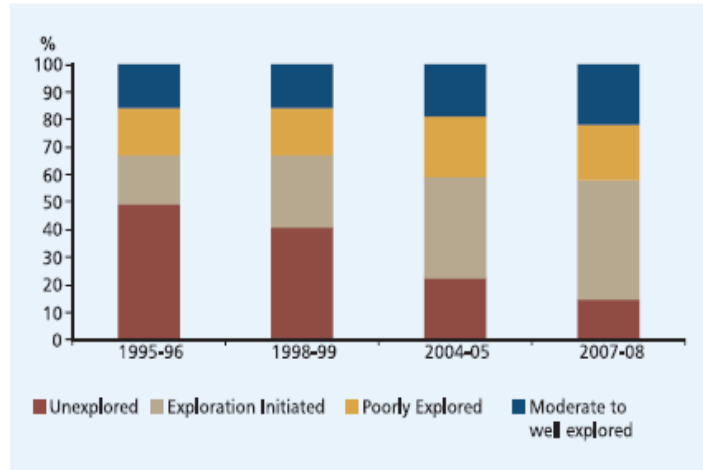
After the oil shock of 1970s, the nationalisation of both the upstream & downstream sectors was initiated and was completed on October 14, 1981. This resulted into the exit of the international oil companies from the Indian oil & gas industry. Moreover, the resource crunch in the beginning of the 1990s that held up the NOCs from developing some of the then newly discovered oil & gas fields (such as Gandhar, Heera Phase-II & III, Neelam, Ravva, Panna, Mukta, Tapti, Lakwa Phase-II, Geleki and Bombay High Final Development scheme), had adversely impacted domestic oil production. Apart from this, controls were imposed by the Government on the pricing and distribution of crude oil and petroleum products in India. Factors like the administered oil prices and non-availability of appropriate technology logistics augmented the problem.

Upto 1990s, there were three rounds of exploration bidding with no success in finding new oil/gas deposits by the foreign companies who only were allowed to participate in the bidding process. This led the government to initiate Petroleum Sector Reforms (PSR) in 1990, under which the fourth, fifth, sixth, seventh and eighth rounds of exploration bidding were announced during 1991-94. For the first time, Indian companies with or without prior experience in exploration & production activities were allowed to participate in the bidding process during these rounds. In 1995, the Government announced the Joint Venture Exploration Programme. However, this was viewed as a deterrent by major private sector oil companies. This led the government to announce New Exploration Licensing Policy (NELP) in 1997 (operationalised in 1999) as part of its Hydrocarbon Vision 2025, a landmark 25-year planning document. Under NELP, licenses for exploration are being awarded only through a competitive bidding system and NOCs are required to compete on an equal footing with Indian and foreign companies to secure Petroleum Exploration Licenses. In addition to NELP, other efforts were made to address the need for achieving energy security. These include:

1. Acquisition of Oil and Gas assets abroad;
2. Developing strategic storage facilities at identified locations;
3. Exploring alternate sources of Energy, including Coal Bed Methane, gas hydrates, etc;
4. Improving the recovery of oil and gas from existing fields through methods such as Enhanced Oil Recovery (EOR and Increased Oil Recovery (IOR).

Consequent to the various initiatives taken by the government, currently the area under exploration has increased fourfold. Prior to implementation of NELP, 11% of Indian sedimentary basins area was under exploration. With the conclusion of seven rounds of NELP, the area under exploration has increased to about 50%. One of the world’s largest gas discoveries was made by Reliance Industries Ltd in 2002, in Jamnagar (about 5 trillion cubic metres). Besides, the entry of international companies like Hardy Oil & Gas, Santo, GeoGlobal Resources Inc, Newbury, Petronas, Niko Resources and Cairn Energy into India has helped boost the growth of the industry.

Chart 2.1: Level of Exploration



The substantial increase in the level of exploration post NELP points to the increased interest that the bidding process has received in recent times from both domestic and foreign companies

Source: Directorate General of Hydrocarbons

The Hydrocarbon ²Vision, 2025 lays down the framework, which would guide the policies relating to the hydrocarbons sector for the next 25 years. The Hydrocarbon Vision, 2025 statement is as follows:

1. To assure energy security by achieving self-reliance through increased indigenous production and investment in equity oil abroad.

² Available at <http://www.dnb.co.in/IndiasEnergySector/OilPrice.asp> visited on 16/11/2013

2. To enhance quality of life by progressively improving product standards to ensure a cleaner and greener India.
3. To develop hydrocarbons sector as a globally competitive industry, which could be benchmarked against the best in the world through technology up gradation and capacity building in all facets of the industry.
4. To have a free market and promote healthy competition among players and improve the customer service.
5. To ensure oil security for the country keeping in view strategic and defence considerations.

The introduction of New Exploration & Licensing Policy NELP in 1999 is the key initiative of the Government in terms of Indian oil & gas sector reforms. NELP was formulated to provide a level playing field to both Public and private sector companies in exploration and production of hydrocarbons with Directorate General of Hydrocarbons as a nodal agency for its implementation.

Under NELP, 9 rounds of bidding have been taken place which allured many foreign investors and national private investor's participated in competitive bidding for Indian oil and gas exploration and production scheme. Till, 68 oil & gas discoveries have been made by private/joint venture companies in 19 blocks, thereby adding more than 600 MMT of oil equivalent hydrocarbon reserves. As on April 1, 2009, investment commitment under NELP amounted to about US\$ 10 bn on exploration, while actual expenditure upto April 1, 2009 was approximately US\$ 4.7 bn. In addition, investment worth US\$ 5.2 bn has been made on development of discoveries.

Thus the Ninth round of bidding came up with attractive scheme of investment providing total block on offer are 34 amongst which 8 are deep water blocks, 9 shallow water blocks and 19 on land blocks with total area 88,807 sq km.

Though introduction of NELP³ regime to OIL and Gas Sector in India has enhanced the efficiency in all prospects, provides for flexibility in policy which has resorted footing for both the national oil companies and foreign players to bid through competitive bidding but the oil and gas industry for achieving more efficacy requires bring new policy with more flexibility to attract more investors as well safeguarding the interest of player's.

The government is considering the new policy, the Uniform Acreage Licensing Policy (UALP) to replace the existing NELP. Under this policy company can choose for offer at any time, without wait for normal bidding round under NELP. Thus, the blocks will be awarded to the player giving best bid at any time of the year. The proposed policy is still under pipeline for the consideration, government have provided with new fiscal terms and benefits to attract investors for the growth of oil and gas sector in India.

³ Ministry of Oil and Petroleum and Natural Gas notification O-19018/25/2013-ONG-I

Chapter 1: Overview Oil and Gas Sector in India

The structure of primary energy consumption in India shows that coal (51 percent) dominates as the major energy source. Hydrocarbon's (45 percent) is the next available energy provider of the nation. Natural gas is fast emerging as an alternative; it meets around 9 percent of the primary energy needs. Considering the global trend of shift in energy mix from oil to gas, the share of gas in consumption pattern, in the Indian context, is also likely to increase gradually in the days to come.

Currently, India's consumption (111.9 MMT in 2005-06) of petroleum products⁴ is only about 1/5th of world's average per capita consumption. In the X Plan (2002-07), the growth in consumption is expected to be around 2.6 percent per annum. In India, the indigenous production of crude oil has not been increasing in tandem with the consumption/demand of petroleum products. Government of India, under the NELP program, has already given a number of blocks for exploration, to various national and international agencies.

The hydrocarbon industry has been passing through very turbulent and challenging times for the last few years. The increasingly stringent environmental regulations, emergence of natural gas and soaring crude prices have thrown up challenges to the oil industry on one hand and opportunities on the other hand, such as gas business. Although natural gas is now being used as transport fuel the liquid fuels have traditionally remained the mainstay of hydrocarbon industry. There has been emphasis and quest for cleaner alternatives and CNG has merged as an alternative fuel.

The crude oil and gas reserves as on April 1, 2006 stand at 756 MMTOE and 1,075 BCM respectively. In 2005-06, crude oil and natural gas production by ONGC, OIL and Pvt/JV companies was about 32.19 MMT and about 32.20 BCM respectively.

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⁴ Ministry of Petroleum and Natural Gas

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Surplus Refining Capacity and Potential for an Export Hub

India has at present 18 refineries with refining capacity at 132.47 MMTPA. At the end of the X Plan (2007) the refining capacity is expected to reach 148.97 MMTPA against the consumption of about 114 MMTPA thereby resulting into surplus of refining capacity. India's export performance has also been very impressive. India has turned into net exporter of petroleum products from 2001-02 and during the year 2004-05 the net exports were 8.7 MMT. During the year 2005-06, India exported 21.50 MMT of products mostly comprising of Naphtha, Petrol, Aviation Turbine Fuel (ATF) and Diesel. By these exports about Rs. 46,785 crore of revenue was generated by the refining sector. Thus, the Ministry and companies are taking initiative for exploiting the potential for an export hub in India for petroleum products based on the export opportunities available in South East and East Asian countries.

Status of Product Pipelines

Cross-country pipeline networks, preferred as a cost-effective, energy-efficient, safe and environment friendly mode for transportation of crude oil and petroleum products, have been playing a vital role in meeting India's energy demand. They are now a key constituent of the country's infrastructure, transporting crude oil from import terminals as well as domestic sources to inland refineries, and finished products from refineries to major consumption centres.

Creating sustainable transportation system through cross-country pipeline in the next few decades with the objective of preserving environment and protecting human health and safety would be the great challenge for the petroleum industry. As on 1.4.2006 India has around 7,696 KM of product pipeline in the country with total capacity of around 55.58 MMTPA. In addition there are 1850 KM of LPG pipelines with a capacity of 3.83 MMTPA. During 2005-06, capacity

utilization of product pipeline in the country was around 60 percent only. The share of product movement through pipeline was only 32 percent of total POL (Petroleum Oil and Lubricants) consumption as compared to more than 62 percent in developed countries.

Improvement in Auto Fuels

With the introduction of improved auto-fuels, the quality of fuels in India is better than in most countries of the region. The following programme for introduction of improved fuels has been implemented in the country as decided by the Government.

- Euro-III Petrol & Diesel has been introduced from 01.04.05 in all 11 identified cities (Delhi/National Capital Region, Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Ahmedabad, Pune, Surat, Kanpur and Agra).
- Introduction of Bharat Stage – II (BS-II) Petrol throughout the country by 01.04.05.
- Introduction of BS II Diesel in all states except Rajasthan, West U.P., Uttaranchal, Madhya Pradesh, Punjab, Himachal Pradesh, and Jammu & Kashmir by 1.4.2005.
- Introduction of BS II Diesel in the above states in a phased manner completed by 1.10.2005.

Globalisation and Diversification Efforts

The Indian economy is set to grow at the fastest rate ever in the coming decades with a major thrust being to manufacturing and services sector as well as formation of Special Economic Zones (SEZs). India, traditionally an import dependent country, has set forth a clear agenda for development of the energy sector in the coming decades with a clear emphasis on stepping up the steam on domestic production while simultaneously pursuing various import options. The government policy clearly emphasises the need for energy security through diversification of energy resources while integrating with the global trends to emerge as an important player in the global arena.

In view of unfavourable demand–supply balance of hydrocarbons in the country, acquiring equity in overseas oil and gas assets is one of the important components of enhancing oil and gas security. The Government is encouraging oil PSUs to aggressively pursue equity oil and gas opportunities overseas. OVL has made an investment commitment of over US\$ 5 billion and has an oil and gas production of 6.6 MMTOE (Oil and oil equivalent gas) in the year 2005-06. OVL has a target to produce 20 MMTPA of O+OEG by 2020. OIL, IOC and GAIL are also engaged in acquiring overseas E&P assets. In addition, private Indian companies like RIL and Essar are also pursuing E&P opportunities abroad.

In the context of energy diversity, natural gas is expected to play a major role in diversifying the energy options. New domestic finds and LNG imports have made the market quite vibrant in recent times.

Retail & Marketing companies took big strides in new growth areas during the X Plan period towards globalisation and diversification in to related areas. Among these, initiatives are upward integration into E&P, diversification to natural gas and forward integration into petrochemicals business. Companies are gearing themselves for setting up mega petrochemical hubs with world scale plants. Companies are also progressing well in tapping opportunities in neighbouring countries for export of its products and services.

Pricing Policy

The country has been witnessing sharp and spiralling increase in international oil prices combined with considerable volatility since the end of 2003. Another trend being noticed in the international market in recent months is that the prices of some sensitive petroleum products have been moving faster and with greater volatility than the prices of crude, depending on seasonal and regional demands for these products globally.

The prices of crude oil in the international market have increased steeply. The crude oil price of Indian basket has gone up from about \$23 per barrel during March 2002 to \$ 55.72 per barrel for April 2005 to March 2006 average. The average for April 2006 to October 2006 is \$66.25 per barrel representing an increase of about three times.

Considering the impact of the price increase on common man and economically vulnerable sections of the society, Government has not increased the domestic prices of sensitive petroleum products in line with international prices. Holding the price-line has taken its toll on public sector oil marketing companies. Oil Marketing Companies (OMCs) namely, Indian Oil Corporation (IOC), Hindustan Petroleum Corporation (HPCL), Bharat Petroleum Corporation (BPCL) and IBP Ltd, as a result have suffered losses.

Government has taken several measures to contain the increase in domestic prices. From March 2005, customs and excise duty on PDS Kerosene and Domestic LPG has been made nil. Customs duty on petrol and diesel has been reduced from 20 percent in March 2004 to 10 percent currently. Ad valorem excise duty for diesel has been reduced from 14 percent in March 2004 to 8 percent. For petrol, the reduction has been larger from 30 percent in March 2004 to 8 percent at present. In addition to the tax relief, Government is also directly absorbing a part of the burden. Government has decided to issue oil bonds to the oil marketing companies to compensate them for their losses.

Several experts have forecast an era of high oil prices to continue. With the country's high oil import dependence, it is necessary that petroleum products be priced in a consistent manner under a long-term policy. It is also essential that economic pricing is blended with social responsibility so that the oil sector continues to function and service the oil needs of the economy.

Natural Gas Sector:

India is fast emerging as the focal point for the future development of the Asian natural gas market. In recent years, the Indian gas sector has received a progressively growing attention from global companies and has made rapid strides. The rapid growth of the Indian economy in the X Plan has greatly contributed to the development of the Indian energy sector as a whole and provided a major trigger for the growth of the gas sector as well. While gas occupies only about 9-10 percent of the total energy basket, primarily due to supply constraints all these years, the scenario is fast changing.

With the advent of LNG and progressive de-regulation of the gas prices, the natural gas sector in India is moving towards certain degree of maturity with better understanding of the pricing mechanisms. Reflecting this, the first spot cargo of LNG brought in by GAIL truly launched India on the global gas map with global suppliers showing serious interest on the Indian gas sector.

Gas Infrastructure

On the supply side, there are two LNG terminals at Dahej and Hazira in Gujarat which are already operational with a total existing capacity of 7.5 MMTPA. The third terminal in Dabhol with a capacity of 5 MMTPA is under commissioning. There is another terminal at Kochi which is taking a final shape for implementation.

In terms of transmission pipelines, there is an existing network of 6,300 km including the Hazira-Vijaipur-Jagdishpur (HVJ) network, Dahej-Vijaipur Pipeline (DVPL) and other regional networks. During the X Plan, pipelines like the DVPL, Kelarus-Malanpur Pipeline, Thulendi-Phulpur Pipeline got commissioned. A number of pipelines, including those by the private sector, are at various stages of implementation and are likely to be implemented during the XI Plan.

The city gas distribution sector has simultaneously grown with the gas sector growth. From coverage of just 2 cities at the beginning of the X Plan, the city coverage has grown to 10 in 2005-06 across the western, northern and southern regions of the country. Currently, there is a total city gas distribution network of about 6,000 km. As far as Compressed Natural Gas (CNG) supplies are concerned, there are 278 stations dispensing CNG in the country and the number is expected to continuously grow in the coming years.

Pricing of Natural Gas

In the beginning of the X Plan period, under the Administered Pricing Mechanism (APM), gas produced from the nominated fields of ONGC and OIL was priced at Rs.2,850 per 1000 Standard Cubic Metre (SCM) uniformly for all customers except in North East, wherein the customers were charged a price of Rs.1700 per 1000 SCM. Even the gas procured by GAIL from JVs and sold under APM was similarly priced, with the subsidy being met by ONGC.

With effect from 1.7.06, the gas pricing for APM gas was changed. It has been decided in the public interest that all available APM gas would be supplied only to the power and fertilizer sector consumers against their existing allocations along with the specific end users committed under Court orders and small consumers below 50,000 SCMD, at the revised price of Rs. 3,200/MCM and calorific value of 10,000 Kcal/cubic meter.

All other consumers would be supplied natural gas at market related price depending on the producer price being paid to joint venture and private operators at landfall point, subject to a ceiling of ex-Dahej RLNG (re gasified LNG) price of US \$ 3.86/MMBTU for 2006-07. In case of reduction in availability of this gas in future, the supplies to APM consumers would be reduced on a pro-rata basis.

The price of gas for the North–Eastern region will be pegged at 60 percent of the revised price for general consumers. Thus, the consumer price for the North-East region has been increased from the existing price of Rs. 1,700 to Rs. 1,920/MCM. Also, w.e.f. 1.07. 2006, ONGC will get a fixed producer price of Rs. 3,200/MCM till Government takes final decision on their prices. Producer price for OIL will be considered as equal to that of ONGC.

Free Market Gas

Under this category falls the gas supplied by the JV/Private sector, re-gasified LNG and new gas supplies by ONGC and OIL. It may be noted that the gas supplies by the JV/Private sector are governed by the provisions under the PSCs. Similarly, the gas produced under NELP would be governed in terms of the NELP provisions. Imported LNG is priced as per the pricing formula agreed between the LNG supplier and importer for long term supplies, and as per the spot price for spot purchases. Of course the gas transportation charges would be regulated by the Regulatory Board being setup under the PNGRB Act, 2006.

Import Dependence and its Impact

Presently, about 45 percent of primary commercial energy needs are met from oil and gas. Of this, over 70 percent of domestic oil consumption is imported mainly from Middle East. Gas imports started in 2004-05 and in 2005-06 about 19 percent of the gas consumption was met from imports. Import dependence is likely to increase considering low accretion to domestic oil

and gas reserves. In fact, the case of India is not typical and several oil consuming countries face similar situation. It is expected that global oil dependence on OPEC will continue to rise with countries competing for scarce resources.

1.1.1 The import bill for crude oil over last few years is as under:

Table 2.2: Import Bill for Crude Oil					
Particulars⁵	2002-03	2003-04	2004-05	2005-06 (P)	2006-07 (April-Sep)
Quantity in MMT	82.0	90.4	95.9	99.4	53.6
Value					
\$ Billion	15.8	18.3	26.0	38.8	25.2
Rs Crore	76,195	83,528	1,17,003	1,71,702	1,15,985
Average Price in \$/bbl	26.22	27.56	36.99	53.21	64.03
Increase over 02-03					
In \$/bbl		1.34	10.77	26.99	
In \$ Billion		2.5	10.2	23.0	
In Rs Crore		7,333	40,808	95,507	

The country has spent foreign exchange to the tune of about \$ 39 billion in 2005-06 towards the import of crude oil. The projected outgo of foreign exchange on account of import bill of Crude Oil in 2006-07 will remain high. The crude oil payments are in fact more than double for every barrel of crude in 2005-06 over 2002-03. This is a high price to pay for our dependence.

⁵Petroleum Planning and Analysis Cell (PPAC)

Unfortunately, even in the future this position does not appear to improve. Given our track record in domestic E&P, our situation is likely to deteriorate.

Oil price vulnerability may affect GDP growth and has the potential to disrupt future development. Obviously India needs to shift focus from short-term management of energy requirements and pricing to long-term energy policy in light of core objectives indicated above and particularly in light of recent price spikes in the international oil markets. The challenge then is to ensure supply of energy at affordable price within available resources. Policy direction and intervention need to reorient the approach to match circumstances.

Industry Structure

Economic theory suggests that larger the number of companies operating in a sector, the more competitive it is and greater the productivity gains. Though at the same time economists have difficulty in finding perfectly competitive markets and particularly so in oil and gas. This is so because oil is intertwined with national interests and energy is recognized as fundamental for economies to function. In fact it is easier to find regulation and control in oil sector more so in the developing countries.

Given the nature of oil & gas, the current price scenario and future projections reveal that oil will increasingly be concentrated in hands of few nations, it appears, that there could be mounting resistance in moving towards a free market as visualized above. One of the biggest hurdles that India faces today is a lack of political consensus on free pricing of sensitive petroleum products. Any approach that does not recognize the geopolitical nature of oil and the current domestic level of consensus would eventually fail.

At the same time, companies under the state dominate the oil industry in the country today. These companies follow government policies and directions and are accountable to the parliament. Besides, the C&AG (Comptroller and Auditor General) verifies their books of accounts and CVC oversees their commercial transactions. The present pricing structure is determined by the Government policy. Even if one argues that the state is operating a monopoly, it would be a public monopoly with all the attendant controls and accountability in place.

Competition in Indian markets can come if the state cedes its ground to other players. As privatization of Navratnas is not an option, reduction in PSU market share would have to happen organically, which could take some time, provided there is strong consensus on free pricing of sensitive petroleum products, which fully translates in the market place.

There is also a need to recognize that competition is a tool to improve efficiency and service standards but not an end in itself. The objective could be still achieved, within the present constraints.

In the oil sector currently there are mainly four companies in the marketing of products namely IOC, BPC, HPC and RIL besides players like Essar and Shell. The Herfindahl-Hirschman Index (HHI), which is square of the market share of the companies, for India (see note at **Error! eference source not found.** Annexure – IV) with the existing companies is higher than the desired number of HHI (range 1000-1800). However, with the pricing becoming free the market share will align itself in some desired ratios, which is expected to bring HHI to a reasonable level. Most competitive markets have five strong players. Thus, the current structure of the oil sector could continue. In suitable environment, the current structure will deliver a competitive market. This could be reviewed at the time of appraisal of the XI Plan.

In addition, the Government could do the following to achieve higher efficiency and service standards:

At the National Level

- Encourage exports from the country compelling refineries to compete worldwide, meet global standards and meet requisite quality specifications.
- Create a domestic petroleum product market through a commodity exchange.
- Amalgamate individual state markets in one national wide market with unified state taxes, remove state tax anomalies, provide level playing field to domestic production vis-à-vis direct imports (which can be imported without state taxes), and introduce a uniform VAT which provides full set-off for local levies such as octroi and entry tax.

At the Corporate Level

- Benchmark operation with world standards, the top refineries and make suitable improvements.
- Ensure inter-PSU competition, particularly at the retail level. It could be contended that this action would lead to duplication of assets. But then competition always does that, for instance say the airline industry where infrastructure has been duplicated. Duplication of assets is a natural corollary to competition.
- Exponential expansion of e-commerce transactions, which promotes competition and enhances welfare by reducing transaction and search costs.

➤ **Evolution of Indian Oil and Gas Industry**

The origin of the Indian oil & gas industry can be traced back to the late 19th century, when oil was first struck at Digboi in Assam⁶ in 1889. In the early 20th century, just two private companies operated in India's petroleum and natural gas sector. After India gained its independence in 1947, a period of expansion and nationalization took shape in the sector, beginning with the establishment of the Oil and Natural Gas Directorate (later Commission) (ONGC) in 1955, and eventually resulting in the existence of two large National Oil Companies (NOCs) – ONGC and Oil India Limited (OIL) by 1981. Petrofed (2005) details the evolution of this post-independence exploration regime. (2011) provides a summary of early exploration activities and major discoveries.

ONGC and OIL dominated the exploration sector⁷ from the 1950s to the late 1970s, and exploration activity was, by extension, conducted entirely within the domain of the government. The federal government allocated oil and gas leases through administrative procedures carried

⁶Available at <http://www.dnb.co.in/IndiasEnergySector/GasIndustry.asp>

⁷Available at <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2013/12/SP-30.pdf>

out within the public sector – the NOCs were required to ‘nominate’ areas of acreage believed to contain resource potential, and were awarded licences to explore these areas.

Although early discoveries by the NOCs sustained production up to the 1990s, reserve accumulation targets, set by the federal government under each of the Five Year Plans, consistently failed to be met. In response to this, the earliest bidding round for exploration licences, allowing partial private sector participation, was carried out in 1980; this was followed by two more rounds, in 1982 and 1986.

However, the impact of declining reserve accumulation began to be seriously felt in the early 1990s, when it was clear that production from ONGC’s largest offshore discovery (made in 1974), the Bombay High field, was beginning to plateau, and no significant new discoveries had been made.

This spurred renewed efforts to attract private capital and technology into the sector and six more bidding rounds for exploration acreage took place between 1991 and 1995. Additionally, as part of the Structural Adjustment Programme attached to a World Bank loan at the time of India’s 1991 financial crisis and subsequent economic liberalization, the federal government held two bidding rounds for the development of ‘discovered fields’ or acreages. These had been previously held by NOCs, and had been proven to contain substantial quantities of hydrocarbons.

The bidding rounds for the development of reserves discovered by the NOCs were far more favourable than responses to the bidding rounds for exploration licences. The bidding rounds for exploration licences attracted responses ranging from a high of 38 bids for one round to no bids for another; this variance can be attributed partially to international factors (such as the discovery of non OPEC supply sources, and competition for investment from other developing nations) and partially due to investors’ perceptions of prospectivity at the time

The defining characteristic of the bidding rounds between 1980–95 was the extent of involvement of the NOCs, which operated as extensions of the government. NOCs were involved in the selections of acreage and publishing of geological data, right through to the evaluation of bids; they also had a stake in the Production Sharing Contracts signed with private companies – in the first seven rounds through a 30 per cent carried interest and in the last two rounds through a joint

venture with between 25 and 40 per cent working interest. Despite the relatively positive response to the last two bidding rounds, the number of contracts that were actually signed was very small. This was partially due to inefficient ex post procedures, where some contracts were signed nearly two years after the bids were awarded.

By the mid 1990s, there was increasing pressure to review the procedure for allocation of exploration licences. Part of this came from within the government and its desire to address a slowdown in the rate of reserve accumulation; it was felt that deep-water exploration would be enabled by attracting capital and technology. Another part of the pressure came from the private sector, which argued that the incentive structure in the existing regime was flawed; given their independent exploration activity alongside their role in the bidding rounds, NOCs had an incentive to not fully reveal geological and other information on prospectivity – and therefore, the selection of acreage for the bidding rounds, carried out by NOCs, was subject to moral hazard. A similar argument was made in relation to the fiscal terms relating to the NOCs' carried and working interest shares. In the event of a discovery, NOCs were liable for all royalty payments for contracts signed in the 1994 and 1995 bidding rounds or exploration – it was argued that this created disincentives for NOCs, leading to inefficiencies in the operation of joint ventures.

A review of the allocation procedure for exploration licences was carried out in 1995, resulting in the 1999 launch of a new regime for auctioning exploration acreage, the New Exploration Licensing Policy (NELP). The move to the NELP involved two components of reform; first, addressing concerns over the need to separate the NOCs from administrative and regulatory functions during the allocation of acreages, and second, reviewing the fiscal regime and reducing the royalty rate from its pre-NELP level of 20 per cent, to attract greater private investment.

The first component was addressed by appointing a separate body, the Directorate General of Hydrocarbons, in 1993 under the purview of the Ministry of Petroleum and Natural Gas, to take over all administration and oversight of the bidding rounds, freeing the NOCs to compete on a 'level playing field' with private companies in the bidding rounds.³¹ The second aspect required obtaining consensus from, first, the Ministry of Finance, which wanted to ensure that the new regime would allow for an early flow of revenues to the exchequer, and second, from the state

governments, for whom royalties from onshore resources constituted a potentially crucial source of revenue. The federal government faced particular resistance from states in lowering the royalty rates. Eventually, a consensus was achieved and the rates were reduced to 10 per cent for offshore and 12.5 per cent for onshore discoveries under a Production Sharing Contract model. The NELP at the time was meant to be an intermediate arrangement in the transition from state control to an 'Open Acreage Licensing Policy. However, it continued to be pursued over the following 14 years, during which nine bidding rounds for exploration were carried out.

Table 2.1: Chronology of Exploration & Production Events in India

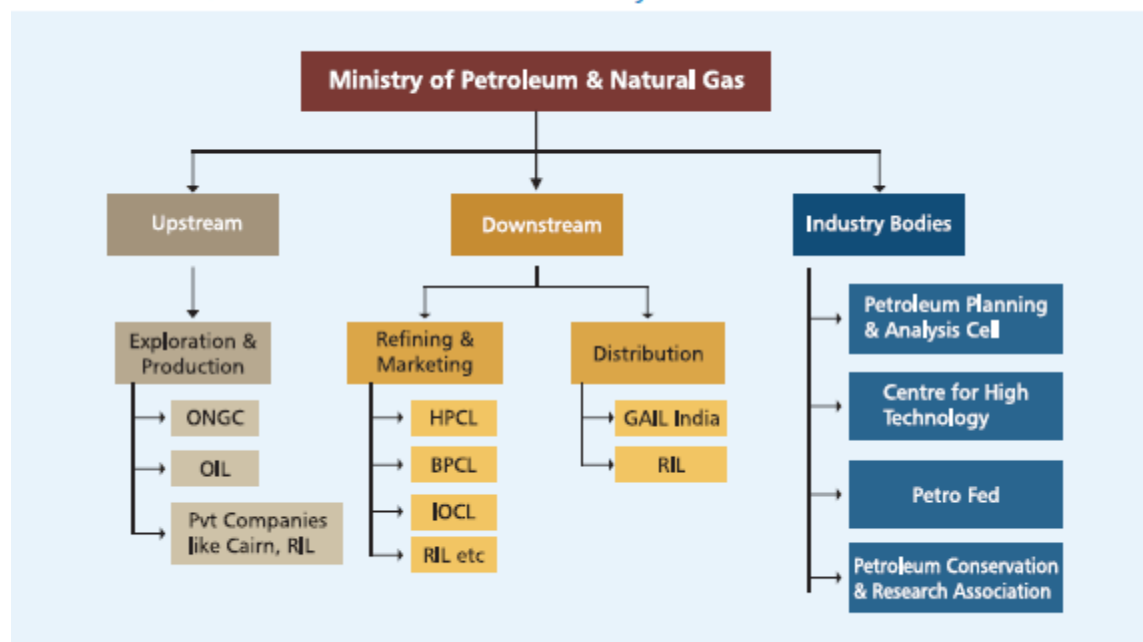
Year	Chronology of Events
1889	W. L. Lake of Assam Railway and Trading Co. (AR & T Co) started Digboi Well No-1
1899	AR&T Co formed a new company Assam Oil Company (AOC) and set up a small refinery at Margharita (Upper Assam) with a capacity of 500 bopd to refine the Digboi-oil.
1901	Digboi refinery commissioned
1911	Entry of Burmah Oil Company (BOC) in India
1921	BOC takes over AOC
1937-39	Seismic surveys were initiated in and a major 'High' was located at Nahorkatiya in Assam
1948	Geological Survey of India (GSI) started geophysical surveys in Cambay area
1956	Moran oil field discovered by AOC.
August 14, 1956	Oil & Natural Gas Commission (ONGC) was established.
October 15, 1959	'ONGC' becomes autonomous body, under an act of parliament
1959	Oil India Private Ltd (OIL) incorporated and registered as a Rupee Company
1960	Oil struck at Ankleswar in Gujarat and Rudrasagar in Assam
1962	The first public sector refinery comes up at Guwahati
1963	- World's first crude oil conditioning plant commissioned at Nahorkatiya. - India's first deviated well NHK122 drilled by OIL.
1968	Oil discovered in Geleki by ONGC.
1970	India's first offshore well spudded in the Gulf of Cambay
1974	Drillship Sagar Samrat strikes oil in Bombay High
1981	First well spudded in Godavari offshore
October 14, 1981	'OIL' becomes a Government of India enterprise
1983-84	Gas struck at Razole in Andhra Pradesh and Gotaru in Rajasthan
1984	First Early Production system (EPS) commences in Gujarat
1984-85	Oil struck in kutch offshore, Godavari offshore and Changmaigam in Assam
1986-87	ONGC strikes oil in the Tapti offshore area and Namti structure (Assam)
1988-89	Commercial gas finds in Rajasthan by OIL Nada field in Gujarat discovered
1989-90	- Western offshore production reaches a peak of 21.72 MMT - South Heera field discovered in Mumbai offshore
1998	New Exploration Licensing Policy (NELP) launched and 48 Exploration blocks offered under round-I.
2000	Second round of New Exploration Licensing Policy launched and 25 Exploration blocks offered
2002	Third round of New Exploration Licensing Policy launched and 27 Exploration blocks offered
2003	Fourth round of New Exploration Licensing Policy launched and 24 Exploration blocks offered
2005	Fifth round of New Exploration Licensing Policy launched and 20 Exploration blocks offered
2006	Sixth round of New Exploration Licensing Policy launched and 55 Exploration blocks offered
2007	Seventh round of New Exploration Licensing Policy launched and 57 Exploration blocks offered

Source: Directorate General of Hydrocarbons

➤ **Structure of Indian Oil and Gas Industry:**

Indian oil & gas industry is mainly divided into upstream (includes exploration & production) and downstream (includes refining & marketing and distribution) segments.

Exhibit 3.1: Structure of Indian Oil & Gas Industry



Source: Ministry of Petroleum & Natural Gas

➤ Upstream⁸

Crude Oil & Petroleum Products

Over the last few years, a considerable progress has been made in exploring the hydrocarbon potential of the sedimentary basins of India. The Eleventh Five Year Plan (2007-2012) has targeted the area under exploration at 80% of total Indian sedimentary basins' area. So far, 26 sedimentary basins have been recognised, covering an estimated sedimentary basin area of 3.14 mn square kilometres (mn sq km). Out of this 1.35 mn sq km area is in deepwater and 1.79 mn sq km area is in onland & shallow offshore. NOCs (such as ONGC & OIL) and Private/Joint Venture companies possess 1.06 mn sq km area under Petroleum Exploration Licenses (PEL) in 18 basins.

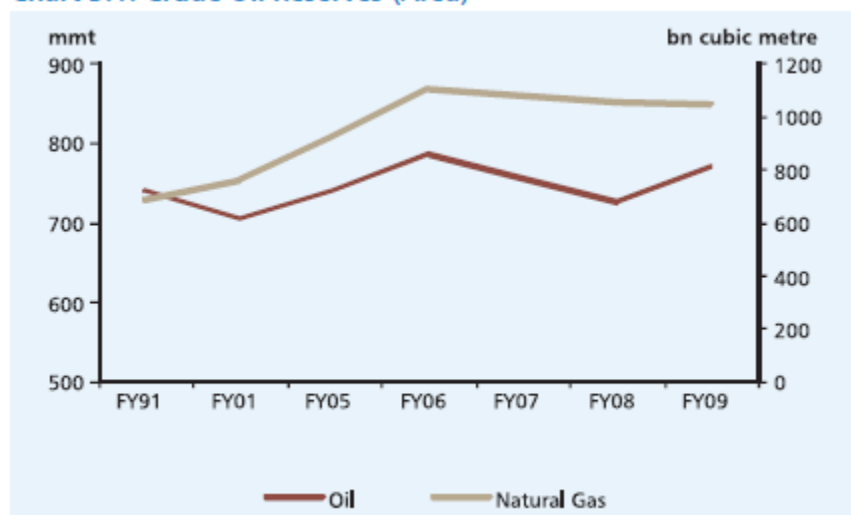
Currently, the total prognosticated reserves of oil and oil equivalent gas (O+OEG) of the country stand at an estimated 28-32 bn tonnes⁹. Much of India's crude oil reserves are located

⁸Ministry of Petroleum and Natural Gas

⁹ Source: Ministry of Petroleum & Natural Gas (MoP&NG)

off the Western coast (Mumbai High) and in the northeast of the country (Assam), while substantial undeveloped reserves are located in the offshore Bay of Bengal and in Rajasthan state.

Chart 3.1: Crude Oil Reserves (Area)



Source: Ministry of Petroleum & Natural Gas

Further, in order to safeguard against short-term supply disruptions and enhance oil security, the Government aims strategic oil storage of 5 mn metric tonnes (MMT), spread across Mangalore (1.5 MMT), Vizag (1.0 MMT) and Padur (2.5 MMT). These strategic storages would be in addition to the existing storage of crude oil and petroleum products with the oil companies. The construction of the proposed strategic storage facilities is being managed by Indian Strategic Petroleum Reserves Limited, a special purpose vehicle, established in FY06 and owned by Oil Industry Development Board (OIDB). Moreover, to enhance the oil security, the Government is encouraging oil PSUs to acquire oil & gas exploration & production assets abroad. Indian oil PSUs currently have a presence in 18 countries. For instance, ONGC Videsh Ltd, a subsidiary of ONGC which was incorporated for international exploration & production has its presence in 15 countries including Sudan, Vietnam, Russia, Syria and Cambodia. It produced about 8.78 MMT of oil and equivalent gas from its assets abroad in FY09. The largest ever acquisition of a foreign company, Imperial Energy Co, UK (IEC) by ONGC Videsh Ltd took place in 2008. Besides, private Indian companies like RIL and Essar are pursuing exploration and production opportunities abroad. IECOVL-IOC alliance, BPCL along with Videocon too have acquired oil assets abroad.

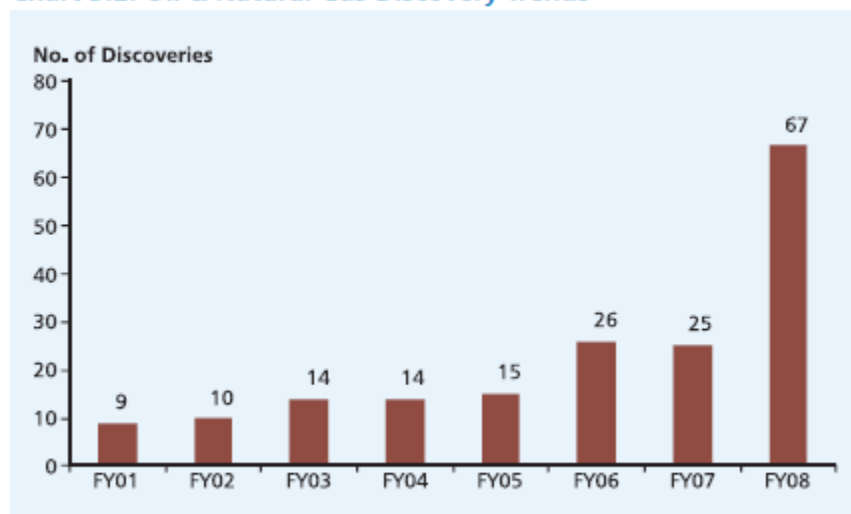
The significant boost in exploration & production activity in recent years can largely be attributed to the NELP, which opened up the Indian oil & gas sector for private and foreign investment (presently 100% Foreign Direct Investment (FDI) is allowed.). Under NELP, seven rounds of bids have so far being concluded and 203 Product Sharing Contract (PSC) have been signed. In the eighth round of NELP, as many as 70 blocks have been offered.

Box 3.1: Measures taken to enhance hydrocarbon reserves and increase oil & gas production

- I. Major thrust on exploration in the new frontier areas like deep water and other geologically and logistically difficult areas
- II. Ensuring continuation of exploration in the existing and unexplored areas
- III. Development of new fields and additional development of the existing fields through implementation of Improved Oil Recovery (IOR) and Enhanced Oil Recovery (EOR) projects in major fields and medium size fields
- IV. Implementation of specialised technologies like extended reach drilling, horizontal drilling and drain hole drilling
- V. Obtaining the services of international experts whenever considered necessary
- VI. Maintenance of reservoir health through work-over operations and pressure maintenance methods
- VII. Better reservoir delineation through three dimensional (3D) seismic survey of oil fields
- VIII. Optimisation and redistribution of water injection
- IX. Infill drilling in the unswept areas of the reservoir

Source: Ministry of Petroleum & Natural Gas

Chart 3.2: Oil & Natural Gas Discovery Trends



Source: Directorate General of Hydrocarbons

With the progress in exploration activities, several oil & gas discoveries have been made in onland and offshore area including deepwater. Oil production has already commenced from

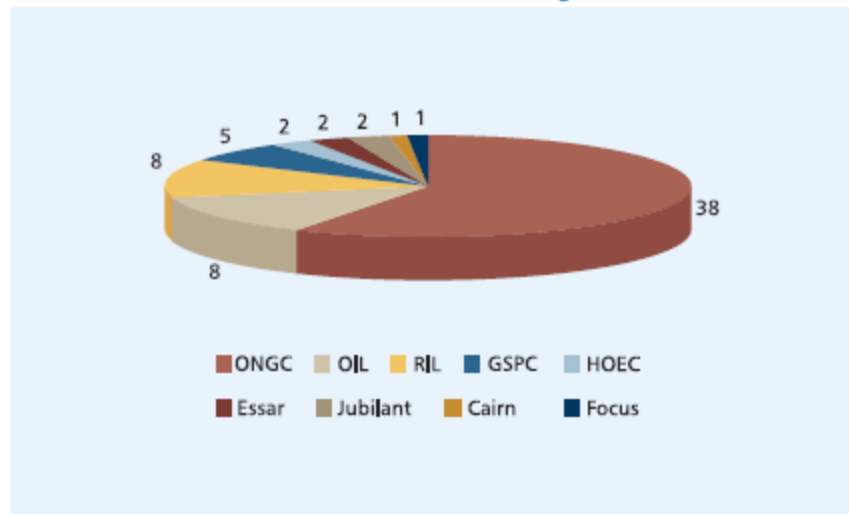
India's first deep water oil block, D-6 in Krishna Godavari Basin (K-G Basin), during September 2008. Natural gas production has also commenced from January 2009 at a rate of 80 MMSCMD from the same block. During FY08, as many as, 67 hydrocarbon discoveries were made, with a maximum number of discoveries being made by ONGC.

With the discoveries of oil & gas being made in various basins, India has emerged as a favoured destination for companies to invest in exploration & production business. Today, in addition to the two NOCs (ONGC & OIL), more than 24 foreign companies are working in exploration & production segment. The foreign companies working in India include global majors such as BG Group, BP Plc, Eni S.p.A., Petrobras SA, Santos Ltd, Cairn Energy PLC and Niko Resources Ltd. Another significant development in recent years is the entry of the downstream companies like IOC and GAIL into upstream segment in association with ONGC & OIL. Nonetheless, due to the huge costs coupled with high risk & uncertainty involved in exploration and production activities, the number of domestic private companies is limited in this segment.

Given the boost in exploration & production activities in India, the production of oil has increased to 33,506 thousand tonnes in FY09 from 32,160 thousand tonnes in FY91. The increase in oil production seems significant in the backdrop of high global oil prices and sustained increase in domestic oil demand.

Currently, ONGC & OIL are the two dominant players in the upstream segment, accounting for around 82% share of the total domestic oil & gas production. The rest is produced by private/joint sector.

Chart 3.3: Number of Oil Discoveries during FY08



Source: Directorate General of Hydrocarbons

Natural Gas

The production of natural gas was almost negligible at the time of independence. However, in the late 1970s with the development of the Bombay High fields, there was a substantial increase in the production of natural gas. The natural gas production experienced further boost in the late 1980s when the South Bassein field in the Western offshore was brought to production. Presently, the production of natural gas has surged to around 87 mn standard cubic metres per day (MMSCMD). Out of this production, around 74 MMSCMD is available for sale to various consumers after internal consumption, extraction of LPG and unavoidable flaring. Much of India's gas reserves are located in the Western offshore area. Apart from this, the onshore fields in Assam, Andhra Pradesh and Gujarat states are other major producers of gas. The dominant players in the natural gas segment are ONGC and OIL. In addition, private parties from some of the gas fields are producing gas under the production sharing contract.

To augment the domestic supply of gas, the Government has adopted multi-pronged strategy, which includes:

- Intensification of domestic economic activities;
- Exploration of unconventional sources like Coal Bed Methane (CBM);
- Underground coal gasification;

- Implementation of National Gas Hydrate Programme (NGHP) for evaluation of hydrate resources and their possible commercial exploitation;
- LNG imports;
- Besides, the Indian Government is pursuing establishment of transnational pipelines

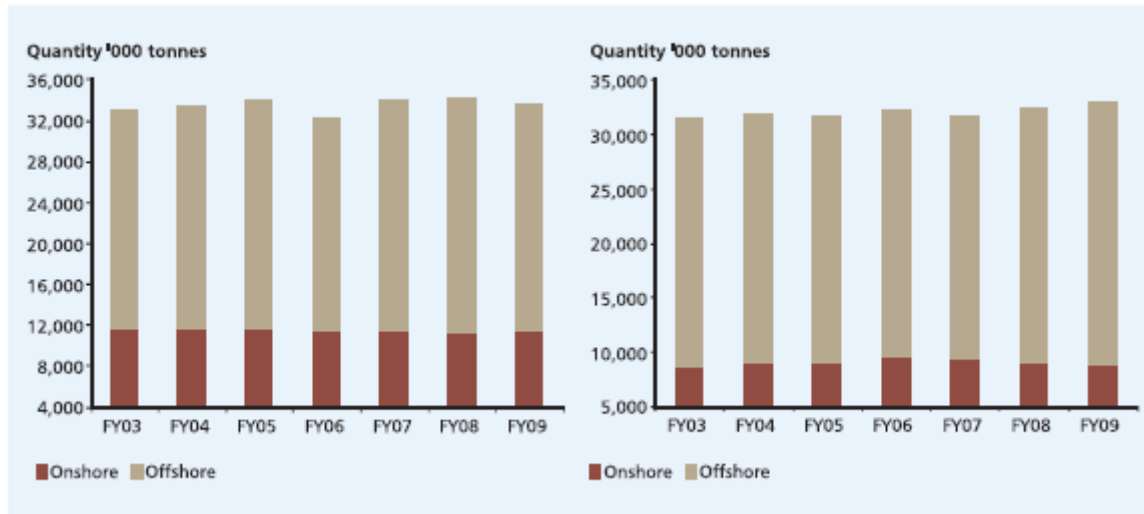
Transnational pipelines that are being actively pursued are:

- Iran-Pakistan-India (IPI) Pipeline Project: This project involves constructing a 2000 km pipeline to bring gas from the fields of Iran to India via Pakistan. While 60 MMSCMD of gas was proposed to be supplied in Phase-I, to be shared between Pakistan and India, 90 MMSCMD of gas was proposed to be supplied in Phase-II to India and Pakistan.
- Myanmar-Bangladesh-India Gas Pipeline Project: OVL and GAIL India Ltd jointly hold 30% stake in offshore block A-I in Myanmar. 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% share of gas in block A-I to GAIL. To transport gas from Myanmar, a transnational 800 km pipeline has been proposed
- Turkmenistan-Afghanistan-Pakistan (TAP) Pipeline Project: There is a proposal to extend pipeline from Daulatabad area of Turkmenistan to transport gas to India.

Further, Petronet LNG Limited (PLL), a joint venture company promoted by ONGC, GAIL, IOCL & BPCL, has been formed in order to import LNG and to set up an LNG regasification plant at Dahej

➤ Demand-Supply Dynamics

Chart 3.4: Production of Crude Oil



Source: Ministry of Petroleum & Natural Gas

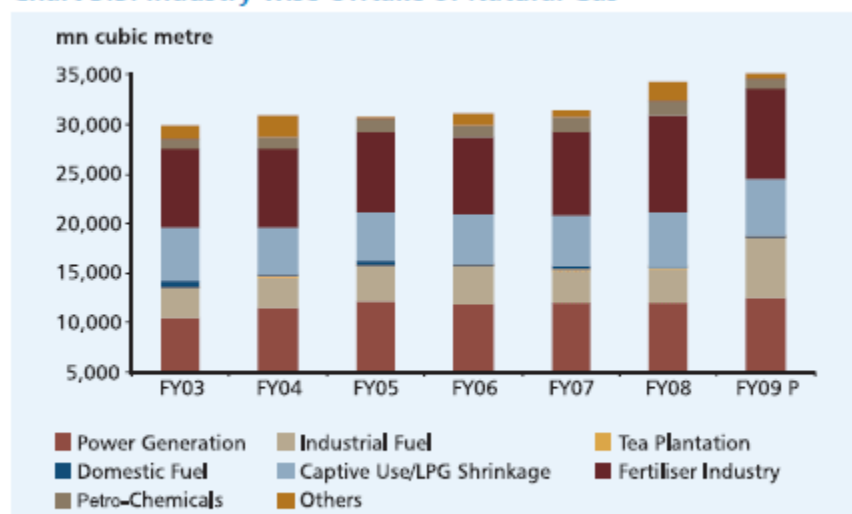
Oil production witnessed a marginal decline during FY09. On the other hand, the production of petroleum products increased by 3.9% in FY09, while production of natural gas increased by 1.4% during the same period.

Oil and gas industry forms the most important sector in any economy since it caters to a wide range of industries including petrochemicals, fertilisers, automobiles etc. Most of the demand for oil comes from the transportation sector. The industrial sector also accounts for a fairly large portion of oil consumption, mostly for use in chemical and petrochemical processes.

Consumption of petroleum products, particularly diesel, witnessed a significant moderation due to a slowdown in the domestic industrial sector, mainly automobile sector and transporters' strike in January 2009. Growth in diesel consumption, which stood at 11.1% during FY08, moderated significantly to 8.4% in FY09. The consumption of petroleum products during FY09 was 133.4 MMT, registering an increase of 3.5% over FY08. The consumption of crude oil, however witnessed some moderation, registering a growth of 3.0% (y-o-y) during FY09 as against a growth of 6.5% (y-o-y) during FY08. The moderation in consumption of crude oil and petroleum products is primarily due to the slowdown in domestic industrial activities.

The major demand for natural gas comes from the power sector (35.1%) followed by fertilizer (28.6%), captive use/LPG shrinkage (16.4%), industrial fuel (9.7%), industrial fuel (9.7%) and petrochemicals (4.2%). Natural gas is currently the source of half of the LPG produced in the country.

Chart 3.5: Industry-wise Offtake of Natural Gas



P: Provisional

Source: Ministry of Petroleum & Natural Gas

Table 3.1 : Major Petroleum Products and their Uses

Year	End Use
LPG	Mainly domestic, also used for industrial application where essential. Now permitted as auto fuel
Naptha/NGL	Fuel for fertilizer units, petrochemical sector and power plants
MS	Fuel for passenger cars, taxis, two and three wheelers
ATF	Fuel for aircrafts
SKO	Fuel for lighting & cooking
HSD	Fuel for transport sector (Railways/Road), Agriculture (tractors, pumpsets, threshers etc.) and Captive power generation
LDO	Fuel for agricultural pumpsets, Small industrial units, start up fuel for power generation
FO/LSHS	Secondary fuel for Thermal Power Plants, Fuel for fertiliser plants industrial units
BITUMEN	Surfacing of roads
LUBES	Lubrication for automotive and industrial applications
Other products, (BENZENE, TOLUENE, MTO, LABFS, CBFS, PARAFFIN WAX etc.)	Fuel for value added products

Source: Ministry of Petroleum & Natural Gas

➤ Basic overview on Downstream

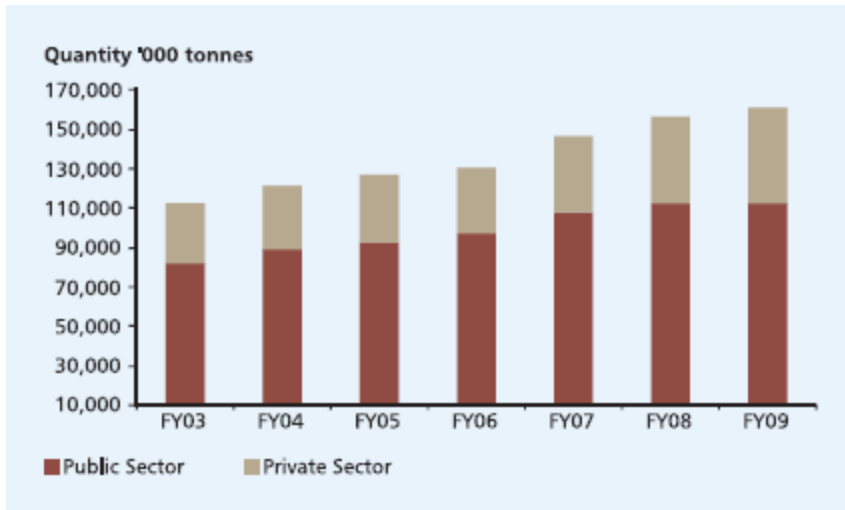
Refining

The Indian refining industry has come a long way since the Mumbai refinery of HPCL was set up post independence. Over the years, the PSU refineries have gradually increased their capacities at existing locations or constructed Greenfield refineries at new locations. Today there are around 20 refineries in the country with an existing refining capacity of about 178 mn tonnes per annum (mtpa)¹⁰. Moreover, even large expansions are being planned by Essar and PSUs like IOL, BPCL and HPCL. The major expansion plans include the Vadinar refinery of Essar, the IOC refinery at Paradeep and the planned refineries at Bina in Madhya Pradesh by BPCL and Bhatinda in Punjab by HPCL-Mittal Energy. This coupled with lower capital costs as compared to other Asian countries are expected to enable India to emerge as the global hub for oil refining. Besides, the ability of the latest refineries to process heavy, low-grade crude as well as India's closeness to other oil-producing regions of the Middle East are expected to further help in this regard.

India already has evolved as the fifth largest economy in the world in terms of refining capacity, with a share of 3% of the global capacity. By the end of the Eleventh Five Year Plan Period (2007-2012), the refining capacity is expected to reach 240.96 MMTPA.

¹⁰ With the commissioning of Reliance Petroleum Ltd (SEZ) Refinery in Gujarat in December 2008, the total installed capacity of Indian refineries increased from 148.97 MMTPA to 177.97 MMTPA by the end of FY09.

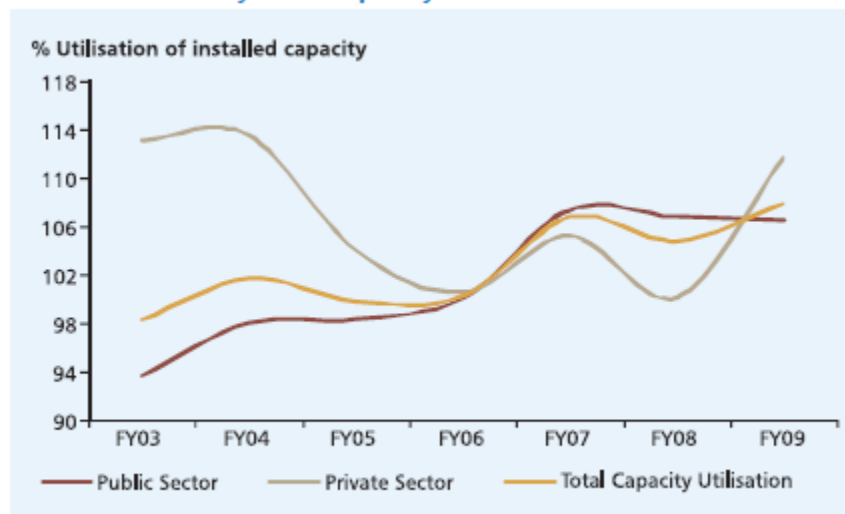
Chart 3.6: Refinery Production (in terms of crude throughput)



Source: Ministry of Petroleum & Natural Gas

During FY09, the refinery production witnessed a growth of 3%, primarily due to the impressive growth of private sector production. The capacity utilisation of the Indian refineries also increased to 107.9% of the total installed capacity in FY09 from 104.8% of the total installed capacity in FY08

Chart 3.7: Refinery-wise Capacity Utilisation



Source: Ministry of Petroleum & Natural Gas

Marketing

In India, PSUs such as IOC, BPCL and HPCL are involved in marketing of refined oil. Decontrolling of the marketing sector from April 1, 2002 facilitated the entry of new private sector players such as Essar Oil, RIL and Royal Dutch Shell Plc. Public Sector Oil Marketing Companies like IOC, BPCL, and HPCL are also engaged in marketing of subsidised LPG in the country under the Public Distribution System (PDS).

The entire length and breadth of the country is covered through an elaborate and extensive network of 35,066 retail outlets as on 01-Apr-09. As on 01-Apr-09, there existed 9,366 LPG distributorships and 6,614 superior kerosene oil/light diesel oil (SKO/LDO) dealerships. An ambitious programme for modernisation of retail outlets to bring them at par with international standards has been initiated by the oil industry. The supply of oil and gas is carried out through railways (40%), pipelines (30%), coastal tankers (12%) and road (18%). Requirements of the industrial units are met through direct supplies. Further, a National Gas Grid is also planned.

Distribution

Distribution of petroleum products and natural gas in India is carried through a vast network of pipeline infrastructure. By FY09, India had a network of 25 product pipelines with a length of 9,893 km and a capacity to carry 63.66 MMTPA of petroleum products and 3 LPG pipelines with a length of 2,124 km and capacity to carry 4.53 MMTPA of products in place. Moreover, there are 4 crude oil pipelines of 5,559 km with a capacity to transport 45.88 MMTPA⁴.

Box 3.2: Impact of global economic crisis on the oil & gas industry in India

Deepening of the global financial crisis during September 08 and consequent slowdown in global economics had dampening impact on the Indian oil & gas industry. The impact of global financial & economic turmoil on the oil & gas industry in India is as follow:

- The reduction in M&A activities in the short term, as companies were finding it difficult to raise funds from the debt and equity market.
- The global financial and economic crisis has led to the decline in valuation of oil & gas companies, which provides Indian companies an opportunity to acquire global assets at cheaper rates or on advantageous terms.
- The global credit crunch coupled with lower global crude oil prices since July 2008 adversely affected the feasibility of expensive ventures such as oil sands and deep-water projects.
- With the drying up of funds from external as well as domestic avenues, financing capex and working capital became key area of concern for Indian oil & gas companies.
- Global oil prices remained highly volatile during FY09. This price volatility has become a major challenge for upstream companies, as it impacts their strategic decision-making and evaluation processes for the execution of new projects.

Source: MoP&NG

➤ **Key Regulatory Policies:**

Over the years various policies have been implemented by the Government to regulate and develop the oil and gas sector. The Petroleum Act to control issues relating to import, transport, storage, production, refining and blending of petroleum was already in place since 1934. Further, the Oil Fields (Regulation and Development) Act, 1948 and the Petroleum and Natural Gas Rules, 1959 provided regulatory framework for domestic exploration and production of Oil & Gas. The Directorate General of Hydrocarbons (DGH) was set up under the administrative control of the Ministry of Oil and Natural Gas in April 1993, as an upstream advisory and technical regulatory body to promote effective management of domestic oil and gas resources keeping in view the environmental safety, technological and economic aspects of upstream activities. In September FY06, the DGH was designated as an authority or agency to exercise statutory powers to carry out its functions under the Oil Fields (Regulation and Development) Act, 1948.

Further, the Administered Pricing Mechanism (APM) has been dismantled from April 2002. The measures announced by the Government for dismantling of Administered Pricing Mechanism include:

- Market determined pricing of petroleum
- Dismantling of Oil Pool Account, which was the balancing tool used under the APM
- Private companies were permitted for retail distribution of petro-products, subject to specified guidelines such as a minimum investment of Rs 20 bn is required in the petroleum sector
- Set up of Petroleum Regulatory Board
- Reduction in subsidies on LPG and Kerosene to 15% and 33% respectively by 1-Apr-02. LPG and kerosene subsidies to be phased out in the next 3 to 5 years

Besides, the process of de-licensing was initiated in 1998 and now, 100% FDI is allowed in petroleum refining, oil exploration in both small and medium sized fields pipelines (both petroleum products & gas) marketing/retail through the automatic route. Moreover, marketing of transport fuels (petrol, diesel & aviation fuel) is also permitted subject to an investment of Rs 20 bn in exploration and production (E&P), refining, pipelines, or terminals. At present 100% Foreign Direct Investment (FDI) is allowed through the FIPB route for both LNG projects and natural gas pipeline projects. Also, Natural Gas Pipeline Policy has been enacted to promote competition. Moreover, the planning Commission's thrust to meet the demand for energy through - safe, clean and convenient forms of energy at the least cost in a technically efficient, economically viable and environmentally sustainable manner - is laid down in the report on Integrated Energy Policy in August 06.

Box 5.1: Foreign Investment Policy – Oil & Gas Sector

The Indian government has announced various policy initiatives in order to attract foreign investment in oil & gas sector. The key initiatives include:

- Indian oil & gas fields are open for investment by domestic private & foreign entrepreneurs under the framework of NELP.
- FDI is permitted up to 100% in discovered small & medium sized fields through competitive bidding.
- Delicensing of refinery industry.
- The refining sector is open to the joint sector (public private partnership) as well as to the private sector for new refineries. In case of private Indian company, FDI is permitted upto 100%.
- For petroleum products & pipeline sector, FDI is permitted upto 100% through automatic route.
- FDI upto 100% permitted for natural gas/LNG pipeline with prior government approval.
- Subject to the policy laid down by the government, marketing of transportation fuels (like MS, HSD & ATF) can be permitted to a company investing or proposing to invest atleast Rs 20 bn in exploration, refining, pipelines or terminals in the oil & gas sector of India.
- FDI is permitted upto 100% on automatic route in infrastructure related to marketing and marketing of petroleum products.
- FDI upto 100% is permitted for purpose of market study and formulation, and for investment/financing.
- For actual trading & marketing, minimum 26% Indian equity is required over 5 years.

Source: Department of Industrial Policy & Promotion

In order to empower the Oil PSU in matters of import, the Government approved the continuance by Indian Oil Corporation Ltd. (IOCL) of the system of direct chartering of ships without going through TRANSCHART in March 2007. Besides, it also allowed BPCL and HPCL to charter ships for oil imports directly, instead of going through TRANSCHART ¹¹.

The introduction of New Exploration & Licensing Policy NELP in 1999 is the key initiative of the Government in terms of Indian oil & gas sector reforms. NELP was formulated to provide a level playing field to both Public and private sector companies in exploration and production of hydrocarbons with Directorate General of Hydrocarbons as a nodal agency for its implementation.

Under NELP, 68 oil & gas discoveries have been made by private/joint venture companies in 19 blocks, thereby adding more than 600 MMT¹² of oil equivalent hydrocarbon reserves. As on April 1, 2009, investment commitment under NELP amounted to about US\$ 10 bn on exploration, while actual expenditure upto April 1, 2009 was approximately US\$ 4.7 bn. In addition, investment worth US\$ 5.2 bn has been made on development of discoveries.

¹¹ TRANSCHART is an agency under the Union Ministry of Shipping and the Shipping Corporation of India for meeting the chartering requirements.

¹² Economic Survey 2008-09

During the ninth round of bidding under NELP, there was an investment commitment of more than USD 827.44 mn. By 2012, the government plans to move towards an Open Acreage Licensing Policy (OALP), wherein oil and gas acreage will be available round the year instead of cyclical bidding rounds launched under NELP.

➤ **Regulatory Agencies:**

- **The Empowered Group of Ministers (EGoM):** It takes decisions on industry issues that have a strong impact on the country's economy and investment climate.
- **The Planning Commission:** It is the nodal agency responsible for building a long-term strategic vision for India and deciding its priorities. It works out sector-specific targets and provides promotional stimulus to the economy to grow in the desired direction. For the hydrocarbon sector, the Planning Commission has formulated policies such as the Integrated Energy Policy, Working Group plans for the sector, etc¹³.
- **The Ministry of Finance (MoF):** It decides on tax and fiscal matters relating to the country's hydrocarbon sector¹⁴.
- **The Ministry of Law (MoL):** It advises on legal issues related to various policies and regimes relating to the hydrocarbon sector.
- **The Directorate General of Hydrocarbons (DGH):** It was established in 1993 under the administrative control of the Ministry of Petroleum and Natural Gas. Its objectives are to promote sound management of the oil and natural gas resources with a balanced consideration for the environment, safety, technological and economic aspects of the petroleum activity. It has been entrusted with several responsibilities such as simple implementation of the New Exploration Licensing Policy¹⁵ (NELP), dealing with production sharing contracts (PSCs) for discovered fields and exploration blocks, promotion of investment in the E&P sector and monitoring of E&P activities including review of reservoir performance of producing fields. In addition, it also engages in

¹³ Available at planningcommission.nic.in

¹⁴ Available at www.finmin.nic.in/

¹⁵ Available at www.dghindia.org

opening up of new unexplored areas for future exploration and development of non-conventional hydrocarbon energy sources such as coal bed methane (CBM) and futuristic hydrocarbon energy resources such as gas hydrates and oil shale.

- **The Petroleum and Natural Gas Regulatory Board (PNGRB):** It regulates midstream and downstream activities, which include refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas.¹⁶ It protects the interest of consumers and entities engaged in specified activities and ensures the uninterrupted and adequate supply of petroleum, petroleum products and natural gas in all parts of the country to promote competitive markets.

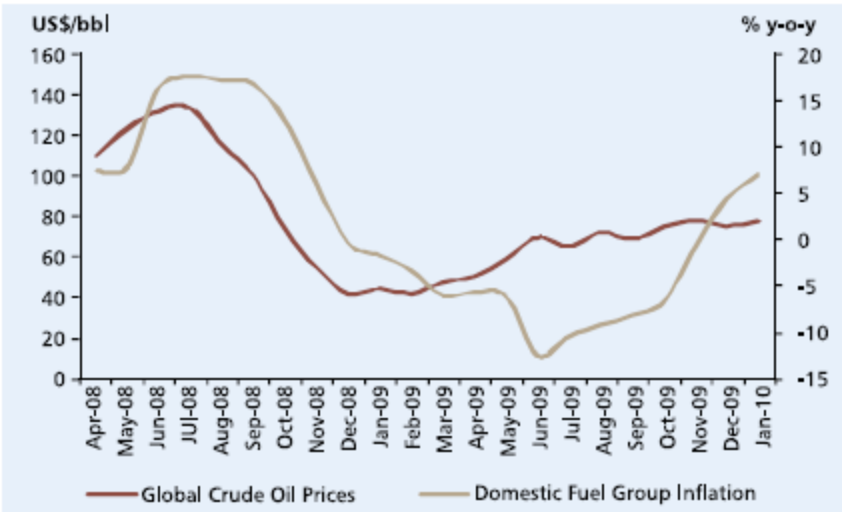
➤ **Oil pricing in India:**

Prior to 2002, pricing of transport and domestic fuels were administered under the Administered Pricing Mechanism (APM). As a step towards free market pricing, the APM was dismantled on April 1, 2002. Further, increasing oil deficit and the need for attracting fresh investments necessitated the process of price deregulation. The key objectives of oil sector deregulation are 1) increasing competition in the industry by allowing entry of more players; 2) attracting private capital; and 3) removing constraints on economic pricing of products and services to enable the industry to earn a reasonable return on investment.

Currently, industrial fuels such as Aviation Turbine Fuel (ATF), kerosene (SKO), Motor Spirit (MS) remain un-administered; while prices of domestic LPG, Kerosene (Public Distribution System), petrol and diesel are administered.

¹⁶Available at www.pngrb.gov.in

Chart 4.1: Domestic Oil Prices trail global oil prices



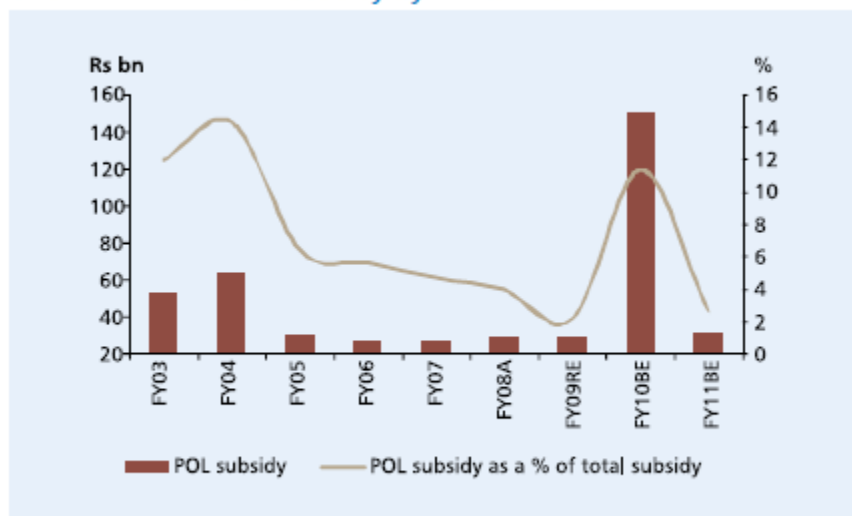
Source: IMF, Ministry of Commerce

International prices of global crude oil and petroleum products have been consistently rising, especially during the last three years. This steep increase in global oil prices and the resultant increase in under recoveries of oil companies and rising fiscal burden due to issuance of oil bonds necessitated the Government to increase the domestic prices of petrol, diesel & LPG twice within a span of five months. The Central Government decided to increase domestic fuel prices first in Feb 08 (February 14, 2008) and then subsequently in Jun 08 (June 4, 2008) when the prices of international crude oil crossed US\$ 100 and US\$ 130 per barrel mark, respectively. Prices of industrial fuels such as naphtha and bitumen, (which are not subsidised) also soared. These developments led the WPI inflation in fuel group to surge from 3.8% in Jan-08 to 16.3% in Jun-08. From Aug-08, global oil prices started receding and plunged to US\$ 41.5 per barrel during Dec-08 from a peak of US\$ 147.0 per barrel during Jul-08. With declining global oil prices, prices of imported minerals oils, particularly aviation turbine fuel (ATF), naphtha and furnace oil (which are not administered) also witnessed a substantial decline. Further, with the substantial fall in global crude oil prices and cut in prices of petrol & diesel by the Government during Dec-08, the fuel group inflation plummeted to a territory of deflation during Dec-08. Fuel group has been witnessing deflation since last ten months. Although fuel group continues to witness deflationary trends primarily due to the high base effect, the rate of decline in fuel group prices has witnessed considerable moderation since Jun-09. With a rise in global crude oil

prices, inflation in fuel group turned positive, after a gap of almost 1 year to 4.3% during Dec-09.

In India, oil remains largely subsidized. The subsidy provided for PDS Kerosene and Domestic LPG is shared by the Government and the OMCs. This mechanism for sharing the loss was formulated by the Government in the financial year 2003-04.

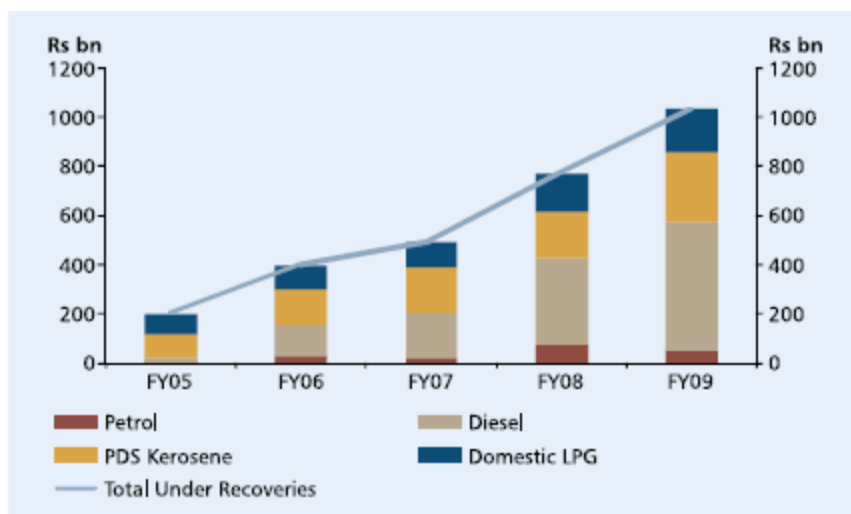
Chart 4.2: Petroleum Subsidy by the Central Government



Note: A: Actuals, RE: Revised Estimates, BE: Budget Estimates
Source: Directorate General of Hydrocarbons

Owing to the misalignment between domestic selling prices of oil and prevailing international crude prices, the Indian oil companies incurred huge under-recoveries to the tune of Rs 458.25 bn on a gross basis in PDS kerosene and domestic LPG and Rs. 574.67 bn in petrol and diesel in FY09. The gross under-recoveries of the PSU OMCs on the sale of sensitive petroleum products, i.e., Petrol, Diesel, PDS Kerosene and Domestic LPG in FY09 are estimated to be approximately Rs 1,032.9 bn. In order to reduce the losses suffered from marketing sensitive petroleum products by the OMCs in a manner that did not exacerbate the fiscal deficit, the Government resorted to issuance of oil bonds in lieu of subsidies. Special bonds amounting to Rs 5,904.0 mn (1.8% of GDP) were issued to oil marketing companies and fertilizer companies during FY09 to cover their under recoveries. Although these bonds are considered to be ‘off-budget’ or ‘extra-budgetary’, they would lead to considerable burden on the fiscal front and have long run implications.

Chart 4.3: Under Recoveries of Petroleum Products



Source: Petroleum Planning & Analysis Cell

➤ **Key challenges and future outlook of oil and gas sector in India¹⁷**

Despite surging global oil prices, the global demand for liquid fuels & other petroleum¹⁸ is expected to increase from 85.0 mn barrels per day in 2006 to 106.6 mn barrels per day in 2030¹⁹. Non-OECD Asian countries, mainly China & India, are expected to witness significant increase in the demand for oil & gas. The demand for petroleum products in India is estimated to grow at an annual rate of around 6% to reach the level of 370 Mtoe per annum in 2025 owing to high GDP growth rate, rapidly growing vehicle population and better road infrastructure.

Table 6.1: Projected Energy Requirement for India, 2030 (Mtoe)

Fuel	Range of Requirements	Assumed Domestic Production	Range of Imports#	Imports (%)
Coal including lignite	632-1,022	560	72-462	11-45
Oil	350-486	35	315-415	90-93
Natural Gas including CBM	100-197	100	0-97	0-49
Total commercial primary Energy	1,351-1,702	-	387-1,010	29-59

Note: # Range of imports is calculated across all scenarios by taking the minimum requirement & maximum domestic production as the lower bound and maximum requirement & minimum domestic production as the upper bound
Source: 11th Five Year Plan (2007-2012)

¹⁷ Available at <http://www.dnb.co.in/IndiasEnergySector/outlook.asp>

¹⁸ Liquid fuels & other petroleum include all petroleum products, natural gas liquids, bio-fuels and liquids derived from other hydrocarbon sources. Not included are compressed natural gas (CNG), liquefied natural gas (LNG) and hydrogen.

¹⁹ Source: International Energy Outlook, 2009

On exploration & development front, given the recent exploration & development efforts under way in India (like the commencement of production from RIL's KG Basin fields, the scheduled commencement of Cairn India's production and the potential development of the discoveries announced by GSPC & ONGC), crude oil production is likely to increase by over 30% in the next five years. On the other hand, natural gas production is expected to more than double from the current level of about 90 MSCMPD by 2012. Moreover, the considerable activity in the exploration & production sector is expected to attract more foreign players. Nonetheless, the global economic slowdown and the consequent cut-back in capital expenditures by some oil exploration companies might have some dampening impact on the exploration & production activities.

Given that tremendous opportunity for investment exists in refining & marketing segments in the coming years, private sector companies including the foreign companies are likely to set up their projects in these segments. Further, the closure of small refineries in North America and Europe due to high compliance costs along with difficulties in obtaining permits for Greenfield refineries in these regions due to environmental concerns is expected to result into large capacity additions in emerging countries like India. While the total investment in refining is estimated at around US\$ 60 bn by 2025, the investment in marketing infrastructure during the same period is estimated to be around US\$ 32.0 bn.

Tax as well as other fiscal incentives (such as providing SEZ status) provided by the government to new refineries are also expected to have a positive impact on the Indian refining industry. However, the muted export demand due to global economic slowdown will continue to affect the refining sector in the current fiscal.

Further, the development of RIL's KG Basin and other fields that are expected to supply the requisite volumes of gas for gas transmission and city gas distribution activities will help in accelerating growth of gas transmission & distribution activities in India. The fuel retailing business is also likely to witness some improvement in growth on the back of lower global crude oil prices.

The consumption of crude oil is expected to rise at a higher pace in the years to come. In contrast, the supply of crude oil might lag behind that of demand, leading to a widening demand-supply gap in the medium term. This, in turn, would increase India's dependence on imported crude oil.

With a substantial increase in domestic exploration & drilling activities, the demand for drilling services has exceeded its supply. The shortage of drilling rigs has adversely affected the exploration & drilling activities of domestic oil companies as they are finding it difficult to complete their minimum work programme in their respective blocks allotted under NELP rounds. The shortage of drilling rigs coupled with volatility in global crude oil prices have also resulted into high raw material costs and service costs for Indian upstream companies.

Furthermore, some uncertainty on freedom to market oil & gas and the applicability of tax concessions for the production of natural gas are expected to be key concerns for exploration & production companies

Besides, there exist few more concerns which need to be addressed by the oil & gas industry in order to grow at the strong pace. The issue/challenges for the Indian oil & gas industry are:

- Ensuring sustained oil and gas supplies amidst volatile international prices.
- Demand management of petroleum products and gas.
- To sustain as a net exporter of petroleum products
- Rational pricing in view of uncontrollable global prices.
- Creation of market competition in distribution and retail business.
- Improving the administration of subsidies in kerosene, LPG, petrol & diesel.
- Improvement in energy efficiency and conservation and environmental management.
- Absence of statutory framework in the upstream industry
- Transnational gas pipelines facing uncertainty

In order to meet these challenges, the Government is promoting exploitation of alternative fuel sources such as coal bed methane (CBM), gas hydrates, hydrogen fuel cell and blending of bio-fuels. Moreover, maintenance of existing strategic reserves in oil and petroleum is required.

New Exploration Licensing Policy (NELP) was formulated by the Government of India, during 1997-98 to provide a level playing field to both Public and Private sector companies in exploration and production of hydrocarbons with Directorate General of Hydrocarbons (DGH) as a nodal agency for its implementation. Government of India's commitment to the liberalization process is reflected in NELP, which has been conceptualized keeping in mind the immediate need for increasing domestic production. To attract more investment in oil exploration and production, NELP has steered steadily towards a healthy spirit of competition between National Oil Companies and private companies. This has been a landmark event in the growth of the upstream oil sector in India. The foreign and Indian private companies are invited to supplement the efforts of National Oil Companies in the discovery of hydrocarbons. The development of E&P sector has been significantly boosted through this policy of Government of India, which brought major liberalization in the sector and opened up E&P for private and foreign investment, where 100% Foreign Direct Investment (FDI) is allowed. Under NELP, which became effective in February 1999, acreages are offered to the participating companies through the process of open competitive bidding. The terms and conditions of this open and transparent policy rank amongst the most attractive in the world.

Chapter 2: Pre- NELP Scenario:

Prior to the NELP, the Oil fields (Regulation and Development) Act, 1948 and Petroleum and Natural Gas Rules, 1958 regulated the issue of license and PSU's. Under the industrial policy prevailing at the time, exploration blocks were offered for exploration and production only to national oil companies. ONGC and OIL were the only public sector companies involved in exploration and production till 1997 while IOCL was the primary entity concerned with refining and processing oil after extraction.

The earliest effort to attract foreign companies was in the mid 1970's under the Union Minister for Petroleum H.R.Gokhale.²⁰ To raise the interest of foreign companies in the E&P Sector, the Government decided to award some small and medium fields for development to the private and joint sectors, respectively, and came out with two rounds in 1992 and 1993.

The factor responsible for the revision of Exploration policy are :

- The introduction of policies of liberalization and reforms and termination of the policies of controls and licenses in Indian economy since 1991
- The implementation of policies of liberalization and reforms in India's petroleum sector.
- The need to attract increasingly higher level of investment in India's petroleum sector.
- Only 30 per cent of India crude oil requirement of crude oil comes from domestic production, whereas 70 percent has to be imported from abroad. This resulted as huge burden on Indian economy and thus urgent requirement for augmenting the domestic source of production.
- The high growth in Indian economy and consequently high growth in consumption of oil and gas were expected to future aggravate the oil and gas deficit in Indian economy. Thus, need arose for E & P activities to be paid urgent.
- The existed significant scope of locating fresh oil and gas reserve in deep offshore areas.

²⁰ Paper on Review of E&P Licensing Policy, Petrofed

- The E & P investments carry high risks, and it is highly capital as well as technology intensive. This required a drastic revision in the exploration policy.
- Thus, there is a urgent need to attract foreign investment and FDI in upstream activity in India's petroleum industry.

These rounds evinced tremendous response from foreign players. Also, in order to upgrade the information on the Hydrocarbon potential of India's unexplored sedimentary basin, the government of India offered blocks for geophysical survey during 1993 to 1995.

Pre-NELP contractors were not liable to pay signature or production bonus or any royalty or cess on production and were fully exempted from payment of customs duties and other taxes on imports required for petroleum operations. Further they would enjoy income tax holiday for seven years from the start of commercial production. The ownership of the data vested in NOCs in the capacity of a lessee or licensee under the earlier PSC.

➤ **Introduction of NELP:**

The Union Cabinet announced NELP in 1997-1998 budget. It took 2 fiscal years and 2 successive governments to finalize. The tax incentive promised to prospective investors. After several go and halt signs by GOI, NELP finally got Underway in 1999. The Government offered 48 blocks in 1999 under the NELP for bidding by the domestic and foreign companies. Thereafter a large number of blocks have been offered under various rounds of bidding. "The discoveries made under the NELP have resulted in in-place hydrocarbon reserve accretion of a staggering 642 million tonnes of oil and oil equivalent gas, a total of 87 oil and gas discoveries have been made in 26 blocks under NELP during this period.²¹

The NELP was announced in a federal government resolution on 10 February 1999.²² The main statement of the resolution read:

²¹ Available at <http://www.thehindubusinessline.com/blnus/03151301.htm>

²² Available at <http://petroleum.nic.in/newgazette/goi1.pdf>

In order to attract private investment in oil sector, Government of India had been offering exploration blocks to private companies from time to time. There have so far been nine rounds of exploration bidding and Government of India has entered into contracts for exploration by private companies through Joint venture arrangements. The demand for petroleum is expected to rise rapidly and it is necessary to step up the level of investment in exploration to hasten the pace of reserve accretion, which can serve as a base for higher levels of domestic production. (GoI, 1999).

The NELP contained two sets of significant reforms. The first applied to the fiscal terms of the regime, which was based on a Production Sharing Contract between the federal government and Exploration Company or consortium.²³ These fiscal terms were ‘progressive’ under the common classification for fiscal systems (Johnston, 2003), in that the system was not front-loaded from the investor’s point of view, and revenue (from the sharing of profits from production between the government and exploration company) began flowing to the government in proportion to the volume of cash flow, with profits beginning to be shared only after companies had recovered their capital costs of exploration.

Royalty rates for crude oil were set at 12.5 per cent for onshore and 10 per cent for offshore areas. Royalty for natural gas was set at 10 per cent. To encourage deep-water exploration, royalty was charged at 5 per cent for the first seven years of deep-water production. Companies were not required to pay signature, discovery, or production bonuses. Profits from production were to be shared with the federal government on the basis of a ‘pre tax investment multiple’ (similar to an R factor scale in the literature on fiscal design).²⁴ Companies were allowed to claim back 100 per cent of exploration (capital) costs prior to sharing their profits from production with

²³ Joint ventures and consortiums required each participating company to hold a minimum of 10% of the equity.

²⁴ This investment multiple was defined as the ratio of cumulative cash flow to cumulative capital expenditure.

Companies were required to share a percentage of profits with the government at each of six tiers of this investment multiple: 1.5 and below, 1.5 to 2, 2 to 2.5, 2.5 to 3, 3 to 3.5 and 3.5 and above. Typically, a higher share of profits would be shared at higher tiers of the investment multiple, or as the company’s production (and therefore cash flow) grew in proportion to its capital expenditure.

the federal government. A seven year tax holiday was granted from the start of production.²⁵ Fiscal stability was guaranteed during the contract period and contracts were subject to the Conciliation and Arbitration Act (1996). Companies, including the NOCs, were to be paid international prices for crude oil.²⁶ They were also given the contractual ‘freedom to market’ their production within the domestic (Indian) market, although this provision has been controversial in practice.²⁷ There was no mandatory state participation and no carried interest of the state.

The second set of reforms under the NELP pertained to the procedure for allocating exploration acreage: a system of first price sealed bid auctions was introduced, which continues to be used to date. Acreages are carved and identified into onshore, offshore shallow-water and offshore deep-water “blocks” by the Directorate General of Hydrocarbons, which announce bidding rounds and make data packages (with estimated production profiles and price estimates on these blocks) available for purchase of potential bidders. These packages are used, along with their own estimates on geology and operating and capital expenditure, by potential bidder to prepare their bids. A first price sealed bid auction is conducted in which bidders typically submit their sealed bids for individual blocks within the deadline four or five month after the bidding round is announced. Bids are publicly opened within a few hours of submission deadline. The system aims to minimize discretion in the identification of the winning bids. The time period taken to the actual signing of contract has then varied, often taking several months. Nine bidding rounds have been conducted under NELP since 1999.

➤ **Reason for introduction of NELP and its Salient features:**

In view of the inherent risk of hydrocarbon exploration and the huge financial investment associated with such risky exploration ventures, it has been felt that the efforts of the two upstream National Oil Companies (NOCs) may not be adequate to achieve the set mandate.

²⁵ This was applied differently for oil and natural gas, as there were debates over the definition of ‘mineral oil’ in Production Sharing Contracts (Jain, 2011).

²⁶ There was a separate price discovery mechanism for gas. Jain (2011) and Sen (2012) provide an analysis of gas pricing in India.

²⁷ Jain (2011) provides a detailed analysis of the government’s ‘Gas Utilisation Policy’

Hence opening up of the acreages for active exploration by private or joint venture companies, in addition to the efforts of the NOCs, was considered necessary. NELP has introduced a level playing field for public as well as private sector players. NOCs are also required to compete with the private and joint venture companies in acquiring exploration acreages in Indian sedimentary basins.

The New Exploration Licensing Policy (NELP) was launched by the Government for accelerating the pace of hydrocarbon exploration in the country. The most important step that the Government took in the process of stepping up E&P activity in the country is the new exploration and licensing policy, commonly called NELP. The development of E&P sector has been significantly boosted through this policy of Government of India, which brought major liberalization in the sector and opened up E&P for private and foreign investment, where 100% Foreign Direct Investment (FDI) is allowed.

Prior to establishing NELP, 11% of Indian sedimentary basins area was under exploration. With the conclusion of seven rounds of NELP, the area under exploration has increased to about 50%. During XI Plan period, the total sedimentary basin area to be brought under exploration coverage is being targeted at 80%.²⁸

➤ **The main features of NELP:**

- Fiscal stability provision in the contract.
- Finalization of contract on the basis of model production sharing contract.
- Petroleum tax guide to facilitate investors.
- Possibility of seismic option in the first phase of the exploration period.
- NOC's to compete for acreages.
- Non-payment of signature, discovery or production bonus.
- No custom duty on imports required for petroleum operations.

²⁸Available at <http://www.indianelpviii.com/content/About/about.jsp>

- No mandatory state participation/carried interest by NOCs.
- Freedom to sell crude oil and natural gas in domestic market at market related price.
- Biddable cost recovery limit up to 100 percent.
- 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.

➤ **Bidding Rounds:**

NELP I

Under the First round of New Exploration Licensing Policy²⁹, Government of India invited bids on 8th January 1999 for 48 blocks for exploration of oil and natural gas. Of these, 12 blocks were deepwater (beyond 400m isobath), 26 shallow offshore and 10 were onland blocks. The PSC's were signed for 24 exploration blocks comprising 7 deepwater, 16 shallow offshore and 1 onland. At present 9 exploration blocks are under operation and 15 blocks have been relinquished. India's Reliance Industries Limited, in partnership with Niko Resource of Canada, was the largest winner in this round of bidding by winning tenders to the 12 blocks. India's public sector undertaking ONGC was awarded with 8 blocks, of which 3 are awarded in partnership with other Indian sector undertaking. British independent Cairn Energy, Russia's Gazprom, and the US firm Mosbacher Energy and Geopetrol of France were awarded with one block each in partnership with Indian firm. The bid closing date was 18th August 1999.

²⁹ Available at http://www.business-standard.com/article/economy-policy/government-unveils-10th-round-of-nelp-114011200652_1.html

NELPII

Under the second round of New Exploration Licensing Policy, Government of India invited bids on 15th December 2000 for 25 blocks for exploration of oil and natural gas. Of these, 8 blocks were deepwater (beyond 400m isobath), 8 shallow offshore and 9 were onland blocks. The PSC's were signed for 23 exploration blocks comprising 8 deepwater, 8 shallow offshore and 7 onland. At present 4 exploration blocks are under operation and 19 blocks have been relinquished. The bid closing date was 31st March 2001. ONGC was awarded with 16 blocks. Of the remaining tenders, Hardy Oil of United Kingdom, in partnership with Reliance Petroleum, successfully bid for the four blocks. The other blocks were either awarded to smaller independent firms or failed to receive bids.

NELP III

Under the third round of New Exploration Licensing Policy, Government of India invited bids on 27th March 2002 for 27 blocks for exploration of oil and natural gas. Of these, 9 blocks were deepwater (beyond 400m isobath), 7 shallow offshore and 11 were onland blocks. The bid closing date was 28th August 2002. The PSC's were signed for 23 exploration blocks comprising 9 deepwater, 6 shallow offshore and 8 onland. The exploration activities are going on in all the 23 awarded blocks. ONGC was successful in winning 13 blocks, which included five offshore and eight onshore, while the consortium of Reliance Industry Limited and Hardy Exploration and Production received Nine blocks. The Gujarat state Petroleum Corporation was successful in winning one block.

NELP IV

Under the Fourth round of New Exploration Licensing Policy, Government of India invited bids on 8th May 2003 for 24 blocks for exploration of oil and natural gas. Of these, 12 blocks were deepwater (beyond 400m isobath), 1 shallow offshore and 11 were onland blocks. The PSC's were signed for 20 exploration blocks. At present 19 exploration blocks are operating, comprising 9 deepwater and 10 onland. The exploration activities are going on in all the 19 awarded blocks. The bid closing date was 30th September 2003.

India's Public sector undertaking once again successful in winning majority of blocks in this round of bidding. Out of 20 oil and gas blocks awarded, 14 are won by ONGC and its

Partners. ONGC bagged with five deep sea oil and gas blocks on the East and West coasts. Whereas, ONGC with Hindustan Petroleum Corporation Limited (HPCL), combined received two blocks in Kerala-Konkan basin. ONGC, HPCL and Oil India consortium won one block in Krishna Godavari (KG) and Mahanadi basins. The Oil India and ONGC together received two on-land oil and gas blocks in Assam and one in Rajasthan. ONGC and BPCL won a blocks in Tamil Nadu, while Gas Authority of India Limited (GAIL) and its partners received two, one in Assam and another in Tamil Nadu. Crain Indian of United Kingdom won a Ganga Valley inland block on its own, it also won an onshore block in Cambay basin of Gujarat in partnership with ONGC. In this round of NELP Coal bed Methane (CBM) blocks were also awarded. ONGC and partners bagged five of these, while Reliance Industry Limited won the remaining three.

NELP V

Under the Fifth round of New Exploration Licensing Policy, Government of India invited bids for 20 blocks for exploration of oil and natural gas. were deepwater (beyond 400m isobath), 2 shallow offshore and 12 were onland blocks. ONGC bagged itself with both the shallow water blocks. While ONGC in partnership with ENI (Italy's biggest oil and gas company) and Crain Energy of United Kingdom, bagged another six blocks. Reliance Industry Limited bagged two deep waer blocks and Cambay on-land blocks on its own. RIL with Hardy of UK won Krishna-Godavari deep sea blocks, while RIL and Niko Resource of Canada bagged Mahanadi basin block. Oil India and HPCL combined got Assam-Arakan on-land block. Niko Resources awarded with one on-land block. While one block in Rajasthan, went to the combination of Phoenix Overseas and Birck Beck Investment.

The PSC's were signed for all 20 exploration blocks. The exploration activity is going on in all the 20 awarded blocks.

NELP VI

A total of fifty five blocks (55) were offered during the NELP VI round for exploration of oil and natural gas in 16 prospective sedimentary basins consists of 25 Onland, 6 Shallow Water and 24 Deep Water blocks. 165 bids from 68 E &P companies (36 foreign and 32 Indian) had participated in the bidding process as consortium/individually.

The PSC's were signed for 52 exploration blocks comprising 21 deepwater, 6 shallow water and 25 onland. The exploration activities are going on in all the 52 awarded blocks.

NELP VII

A total of fifty Seven blocks (57) were offered during the NELP VII round for exploration of oil and natural gas in 18 prospective sedimentary basins consists of 29 Onland, 9 Shallow Water and 19 Deep Water blocks. On 22nd December 2008 Contracts were signed for 41 blocks out of which 11 blocks in Deep Water, 7 blocks in Shallow Water and 23 Onland blocks.

NELP VIII

Under the eighth round of New Exploration Licensing Policy (NELP-VIII), Government has signed 31 production sharing contracts on 30th June 2010. There are 8 deepwater blocks, 11 shallow water blocks and 12 onland blocks which are in the states of Assam (2), Gujarat (8), Madhya Pradesh (1) and Manipur (1).

NELP IX

Under the ninth round of New Exploration Licensing Policy (NELP-IX) Government has signed 13 Production Sharing Contracts on 28th March, 2012 for 2 shallow water blocks and 11 onland blocks which are in the states of Assam (2), Gujarat (6), Madhya Pradesh (2) and Rajasthan (1) and in the basins of Gujarat-Kutch (2), Assam-Arakan (2), Cambay (6), Rajasthan (1) and Vindhyan (2)

Table 5.1 New Exploration & Licensing Policy Rounds

NELP Rounds	Details
NELP I	Bids were invited for 48 exploration blocks of oil and natural gas on 8-Jan-99. Of these, 24 exploration blocks comprising 7 deepwater, 16 shallow offshore and 1 onland blocks were signed. Currently, 9 exploration blocks are under operation and 15 blocks have been relinquished.
NELP II	Bids were invited for 25 exploration blocks (comprising 8 deepwater blocks, 8 shallow offshore blocks and 9 onland blocks) on 15-Dec-00. Of these, 23 exploration blocks were signed comprising 8 deepwater, 8 shallow offshore and 7 onland blocks. At present 4 exploration blocks are under operation and 19 blocks have been relinquished.
NELP III	Bids were invited on 27-Mar-02 for 27 exploration blocks of oil & natural gas. Of these, 23 exploration blocks comprising 9 deepwater, 6 shallow offshore and 8 onland blocks were signed. The exploration activities are going on in all the 23 awarded blocks.
NELP IV	Under the Fourth round of New Exploration Licensing Policy, Government of India invited bids on 8th May 2003 for 24 blocks for exploration of oil and natural gas. Of these, 12 blocks were deepwater (beyond 400m isobath), 1 shallow offshore and 11 were onland blocks. The PSC's were signed for 20 exploration blocks. At present 19 exploration blocks are operating, comprising 9 deepwater and 10 onland. The exploration activities are going on in all the 19 awarded blocks.
NELP V	Bids were invited for 20 exploration blocks of oil & gas comprising 6 deepwater blocks, 2 shallow offshore blocks and 12 onshore blocks. All the 20 exploration blocks were signed. The exploration activity is going on in all the 20 awarded blocks.
NELP VI	A total of 55 blocks were offered for exploration of oil and natural gas (consists 25 Onland, 6 Shallow Water and 24 deepwater blocks) in 16 prospective sedimentary basins. 165 bids from 68 exploration & production companies (36 foreign and 32 Indian) were received. Of the total offered blocks, 52 exploration blocks comprising 21 deepwater, 6 shallow water and 25 onland were signed. The exploration activities are going on in all the 52 awarded blocks.
NELP VII	A total of 57 blocks (29 Onland, 9 Shallow Water and 19 Deep Water blocks) were offered for exploration of oil and natural gas in 18 prospective sedimentary basins. On 22-Dec-08, contracts were signed for 41 blocks comprising 11 blocks in Deep Water, 7 blocks in Shallow Water and 23 Onland blocks.
NELP VIII	The highest number of exploration blocks is on offer for bidding in the NELP-VIII Round, representing a total of 70 blocks covering a sedimentary area of about 163,535 sq km. The blocks are categorised as: 24 in deepwater, 28 in shallow water, 8 onshore and 10 classed as Type-5. For the first time, a new area has been proposed to be brought under exploration in Western Andaman Sea. Two Type-5 blocks have been defined in Assam for the first time. Of the 10 Type-5 blocks being offered, 8 are in the Cambay Basin, which is a known petroliferous basin. The government has received 76 bids for 36 blocks out of 70 offered under NELP VIII.

Source: Directorate General of Hydrocarbons

➤ Concern of Investors

Although the private foreign bids for Indian oil and gas blocks have increased significantly through the NELP, the success in attracting foreign capital and technology has been slower than originally anticipated. The relatively lackluster performance of NELP is both due to design flaws in the NELP bidding process and due to the perception among international oil companies (IOCs) that India's geology is a poor prospect.

There are many reasons or the concerns of the investors which are somewhere blocking the success rate of the NELP. Hence following are few of the concerns :

1. Production Sharing Contracts

There are different kinds of blocks in NELP i.e. offshore (Shallow and Deep Water) and onland (S type). There is a serious need for alteration and changes in the production sharing contracts.

There should be different kind of production sharing contract for different kinds of block as the risk involved, and all the other procedures are different for each block. Each block has different requirements, issues, risks which cannot be addressed by one model production sharing contracts. Hence the Investors often find it difficult to cope under such circumstances. There are many issues relating to the interpretation of the Production Sharing Contracts.

2. Tax concerns

Presently there is a Seven years Tax holiday³⁰ in the NELP. But there are number of tax related concern in the NELP which is continuously putting away investors from investing in the NELP. The government has also failed to adopt a clear-cut policy on extending the tax holiday for the oil and gas sector. There is merit in these demands of the oil sector given that contractors have to write off all expenditure incurred in exploration if they fail to make a discovery. Costs are recoverable only when contractors make a commercial discovery.

The oil ministry has identified 34 blocks to be auctioned under the ninth bidding round, or Nelp-IX. Oil minister Murli Deora is visited London to meet potential investors. The move will also settle the issue of granting tax holidays for producing natural gas, two government officials with direct knowledge of the matter said but they still have not disclosed anything regarded the period of tax holiday.³¹

Recently there was another issue when the Finance Ministry's decided to scrap a seven-year tax holiday on NELP gas output (which was implemented before the last licensing round) was one of the key deterrents to investors. India's 2008-09 Finance Bill stated that the definition of "mineral oil" did not include natural gas which led the Finance Ministry to abolish the tax holiday, although it remained in place for crude oil. Given that much of India's acreage is more prospective for gas than for oil, the scrapping of the income-tax holiday had a considerable impact on NELP VIII, particularly on blocks thought to be high in gas potential such as those in the Andaman Sea. Abolishing the tax also meant tinkering with the terms of Production Sharing

³⁰Available at <http://www.indianelpix.com/content/About/about.jsp>

³¹Available at <http://economictimes.indiatimes.com/news/news-by-industry/energy/oil--gas/Nelp-IX-tax-sops-to-be-linked-to-investment/articleshow/6661346.cms>

Contracts (PSCs), creating uncertainty among investors. This created a lot of confusion among the investors.³²

Petroleum and Natural Gas Minister Murli Deora tried to clarify and said:

"The concept is attractive for investors as exploration and production (E&P) is a high-risk business, said Arvind Mahajan, head of energy & natural resources at consulting firm KPMG. "It should also bring (natural)gas on a par with (crude) oil. This confusion is detrimental for the energy security as gas is the future fuel and shale gas is likely to be the game changer," he said.³³ As per the current practice, oil companies get a seven-year tax holiday on their income from selling crude oil from a block, but same is not available for natural gas production. A one-time exception was made for Nelp-VIII."

Hence so many different tax related issue keep companies and investors away and are a major concern.

3. Governmental regulations

Oil and gas companies may also be worried by the government's attempts to dictate marketing terms, and on occasion, prices for oil and gas from major projects. For example, the Petroleum Ministry helped fix the price of gas sold by Reliance Industries from its KG-D6 Block and has repeatedly attempted to dictate who receives the gas and how much they receive. For Cairn India's government-nominated block in Rajasthan, due to produce up to 125,000 b/d of crude by mid-2011, the government is also vacillating over who should purchase output, despite there being just days until the launch of production. The government's actions have undermined the marketing freedom promised under original NELP terms, which could give many companies second thoughts about bidding for acreage under NELP.

Therefore, the recent Supreme Court judgment wherein it was held that the Government of India has a full right to step-in in relation to allocation of gas as well as intervene on the pricing of gas is something which caused a lot of concern to companies because that took away their absolute freedom of marketing the successful discoveries.

³² Available at <http://www.ihsglobalinsight.com/SDA/SDADetail16296.htm>

³³ Ibid

That certainly is an element of concern because some of the larger global giants would look at building integrated projects and integrated supply chain for energy in any jurisdiction that they operate in. They do not look at themselves as pure play explorers. They also want to make sure that they have the ability to build downstream businesses, build midstream businesses and that they can only do if they have full and unfettered right to market the produce.

4. Perception of poor India's geology

Another reason for the limited participation by more international companies in NELP is the perception of a poor Indian geology historically; IOCs have believed that Indian geology does not have promising structures with large hydrocarbon reserves. Lack of accessibility and availability of geo-seismic data for many of the blocks offered during NELP has not helped to dissuade these initial impressions. Indeed, the dearth of essential data has both hindered proper block evaluations by potential investors while also fueling suspicions that GoI is only offering unattractive acreage. However, GoI has found it difficult to learn which rules would be most competitive because it is beholden to the state-owned oil companies that have controlled the sector for many years-in particular, ONGC. While the GoI has its own independent regulatory body (DGH), in practice the functioning of that body has faced several roadblocks during the NELP I through VIII. Even obtaining data from state-owned oil companies has been difficult.

The state-owned oil companies have relied on the weakness of GoI's capacity to frustrate the government's main reform initiative in this area.

The Ministry of Petroleum and Natural Gas planned to reduce the number of blocks to fewer numbers as compared with earlier rounds. The idea is to have fewer blocks with a high quality of data," an oil ministry official said on condition of anonymity. "This will result in higher participation from the exploration and production (E&P) firms."³⁴

➤ The Production Sharing Contracts

The production sharing contracts³⁵ introduced by the Government of India aiming to attract the Private and Foreign Investors having capacity to explore and produce Oil from the blocks. It is

³⁴ Available at <http://www.livemint.com/2010/02/18215731/India-to-offer-fewer-blocks-in.html>.

³⁵ Available at petroleum.nic.in/nelp3.pdf

entered between Government and Contractors for specific blocks, becomes the contractual basis for petroleum operations, cost recovery, profit sharing and other aspects. Most of these contracts may have many Contracting parties with having different shares of Participating Interest. Party holding majority share under such venture is designated as the “operator”. Such a contract is entered with the object of entering into operating agreement for conduct of petroleum operations. This Agreement³⁶ should provide for:

- The appointment, resignation, removal, responsibilities of the operator.
- The establishment of an “Operating Committee” comprising of an agreed number of representatives of the Companies Chaired by representatives of the operator;
- Functions of the operating committee (taking into account PSC provisions), procedure for decision making , frequency and place of meetings; and
- Contribution to costs, default, sole risk, disposal of petroleum, and assignments between the parties to the Operating Agreement.

Some of the main features of NELP PSCs are:

- **Exploration Period and Phase:** The exploration period has three exploration phase for the total of maximum³⁷ 7 years; in the case of deepwater and frontier area, the time can extended to 8 years. (the first phase may be up to 4 years). In each of the exploration phases, the contractor has to commit in his bid the mandatory/minimum work programme (MWP) that he will undertake during the phase in terms of initial surveys (gravity and geochemical survey etc.), seismic programme, and exploration wells (including depth objective). If the MWP is not completed, the contractor will have to carry out additional, substitute or alternative work programme to match the commitment made while bidding or pay back equivalent amount to Government. For entering into the next phase of exploration it is necessary for Contractor to complete the MWP as agreed. After the completion of first phase of exploration contractor can retain 75 percent of exploration area including the development and discovery areas, while after the end of second phase

³⁶ Available at http://www.rulg.com/documents/The_Concept_of_Production_Sharing.htm

³⁷ Available at eac.gov.in/reports/rep_psc0201.pdf

of exploration it may retain up to 50 percent³⁸ of contract area, and at the end of the third phase of exploration he can retain only Development and Discovery Areas.

- **Discovery and Development:** Once the discovery of hydrocarbon is made, the Contractor should intimate the Management Committee and Government, run tests on such discovery and determine whether such discovery made is of potential commercial interest and inform the Management Committee within 60 days. If such discovery identified as having potential of commercial importance, the contractor should within 120 days³⁹ provides a proposed Appraisal Programme to determine whether the discovery is a commercial discovery, and also delineate the Development Area. The Contractor shall within 30 months⁴⁰ of a discovery of crude oil, notify to Management Committee whether it should be treated as Commercial Discovery or not. Within 200 days⁴¹ of declaration of Commercial discovery, the contractor should submit a comprehensive development plan, which should characterize the reservoir, indicates the estimate of reserves in place, possible production magnitude and sustained production rate, outline the production facilities to be installed, and well to be drilled, and estimate the development and production costs. Upon submission of the development plan, the contractor should also submit an application for a Petroleum Mining Lease for the purpose of Development Area. The lease shall be for 20 years with an extension of 5 years. (10 years in case of natural gas)
- **Management Committee:** The Management Committee for each PSC shall have two representatives from GoI and one each from Companies constituting the contractor⁴², the GoI representatives shall be the chairman. If decisions are not unanimous, decisions need majority Participation Interest with the government representative positive vote. The MC has two sets of functions review/ advisory and approval.
 - Review/ Advisory functions:

³⁸ If the development and discovery area exceed the stipulated 75/50 per cent, the contractor can retain the areas to that extent

³⁹ One year in case of Non Associated Natural Gas (NANG)

⁴⁰ 3 Years in case of NANG find.

⁴¹ 1 Year for a NANG find

⁴² If the Contractor continue with one company, it shall have two members on MC.

- ❖ Annual Work Programmes and Budgets for Exploration Operations.
 - ❖ Proposals for surrender/ relinquishment.
 - ❖ Proposals for appraisal programme.
 - ❖ Declaration of discovery/ commercial discovery.
 - ❖ Actual depth objective for each exploration well.
- Approval functions:
- ❖ Annual Work Programmes and Budgets for Development and Production Operations.
 - ❖ Proposed Development Plans; Determination of Development Area.
 - ❖ Yearly Programme Quantity.
 - ❖ Extension of Exploration Phase.
 - ❖ Abandonment of Exploration Drilling on account of geological conditions encountered.
- Government of India Role:
 - ❖ Extension of Exploration Period for Appraisal Programme by 30 months.⁴³
 - ❖ Approval of Development plan, after rejection of MC.
 - ❖ Approval of assignment or transfer of participating interest by a contractor.
 - Accounting and Audit:
 - ❖ Annual audit of accounts shall be carried out by an independent CA firm. The appointment of the auditor and the scope of audit need prior approval of MC.
 - ❖ Further, GoI shall have rights to audit the accounting records of the contractor, within two years from the end of the financial years:
 - ✓ The audit may be undertaken either through its own representatives or through a qualified firm of CAs or a reputed consulting firm.
 - ✓ Any audit exception should be notified to the contractor in writing within 120 days, to which the contractor shall respond within 120 days.
 - ✓ Agreed adjustments resulting from an audit shall be made to the government take within 30 days. For amount claimed but not accepted by

⁴³ 3 Years in case of NANG discovery.

the contractor, the amount shall be deposited in an escrow account⁴⁴, pending decision of the sole expert/ arbitral tribunal.

⁴⁴ The provision relating to depositing the money in escrow account came into effect from NELP-IV onwards.

Chapter 3: Fiscal structure under NELP:

➤ Cost Petroleum and Profit Petroleum under PSCs:

The key feature of PSC is that the contractors bid on the percentage of reward that the GoI receives from the hydrocarbon block. The contractor undertakes the initial contract risks. If no hydrocarbons are discovered, or the quantities are small, the revenue generated may not be sufficient to recover the costs incurred; this risk is borne by the contractor.

These are the three key issues involved under the NELP fiscal structure:

- ❖ **Cost recovery:** The contractor bids for Cost Recovery factor⁴⁵ i.e. the percentage of revenues which he is entitled to take in a year to recover his exploration, development and production costs. The percentage can be up to 100 percent. The higher the cost recovery factor that the contractor bids, the earlier the costs can be recovered; however in such a situation, his fiscal package will be relatively unattractive as part of bid evaluation. The amount of costs recoverable from annual revenues is termed as Cost Petroleum.
- ❖ **Profit Petroleum:** After deducting the recoverable costs from the revenues, the resulting Profit Petroleum is then divided between the Government and the Contractor. The sharing of profit petroleum, which is linked to the pre-tax Investment Multiple of the previous year, is a biddable parameter, and is evaluated as part of fiscal package.
- ❖ **Investment Multiple:** The pre-tax Investment Multiple is the ratio of cumulative Net Cash Income to the cumulative exploration and development costs. The lower the IM, the more the capital-intensive the project. As a part of their bid, the contractor are required to specify the GoI share at different IM slabs e.g. less than 1.5, 1.5 to less than 2.0 etc. Generally the contractor bid for lower GoI share for the lower IM slabs, and the highest GoI share for IM of 3.5 and above (i.e. where net cash income is highest as compared to the capital expenditure.). Also, since capital investment in the initial years will generally be higher and will decrease over time, the IM expected to increase over time from year to year.

⁴⁵ Available at planningcommission.nic.in/aboutus/committee/.../wg11_petro.doc

➤ **Other receipts:**

- **Royalty/Dead Rent:** Royalty is payable by the contractor/lessee either at fixed rate (in respect of oil produced from discovered fields/ pre-NELP exploratory blocks) or the value of “wellhead” oil or gas produced. For offshore blocks, royalty accrues to GoI, while for onshore blocks royalty accrues to the State Governments. No royalty is levied on such area where no oil is produced but it attracts dead rent to be paid on such area covered under mining lease.
- **Cess:** Under the Oil Industry (development) Act, 1974, cess is leviable on indigenous crude oil. The cess⁴⁶ on crude oil produced from fields under PSC’s prior to NELP is limited to Rs. 900/ tone. PSC’s under NELP do not have any provision for levy of cess.
- **Petroleum Exploration License:** For undertaking exploration activities, the Contractor has to obtain a Petroleum Exploration License under the provision of the Petroleum and Natural Gas Rules, 1959:
 - ✓ From the Central Government in respect of offshore blocks; and
 - ✓ From the concerned State Government in respect of onland blocks (with the previous approval of the Central Government)

The PEL fee, which is levied during the exploration period, consist of a security deposit of Rs. 4,00,000, an initial fee of Rs. 1,00,000, and a yearly advance license fee increasing from Rs. 200 to Rs. 4000 per sq. km per year within 5 years.

- **Mining Lease:** For extraction of petroleum, the contractor has to obtain a Mining Lease under the PNG Rules from the Central/State Government. The mining lease fee consists of security deposit of Rs. 8,00,000, an initial fee of Rs. 2,00,000, and dead rent or royalty (whichever is higher).

⁴⁶Available at http://www.ippai.org/articles.aspx?a_id=41

➤ **Comparison of Fiscal Regimes:**

A comparison of the fiscal regimes under discovered fields (e.g. Panna-Mukta and Tapti); pre-NELP exploratory blocks (e.g. RJ-ON-90/1); and NELP (e.g. KG-D6) on key issue are summarized below:

	Discovered fields	Pre-NELP exploratory blocks	NELP blocks
Basis of sharing of profit Petroleum	Post tax Investment Multiple or Post Tax Rate of Return	Post tax Investment Multiple or Post Tax Rate of Return	Biddable Pre-tax Multiple Investment
Recovery of Cost Petroleum	100 percent Cost Recovery	100 percent Cost Recovery	Biddable Cost Recovery Factor upto 100 percent
Liability for payment of Royalty	All constituent of PSCs according to their Participating Interest	100 per cent liability on NOCs irrespective of their Participating Interest	All constituent of PSCs according to their Participating Interest
Rates of Royalty	Rs.481/MT for crude oil; @ 10 per cent of well head value of gas	Rs.481/MT for crude oil; @ 10 per cent of well head value of gas	10 per cent of wellhead value of gas; For crude oil – 12.5 per cent for onland areas, and 10 per cent for offshore areas; For deep water areas, royalty is 50 per cent of applicable rates for first seven years of commercial production
Rate of Cess	Rs. 900/MT of crude	Rs. 900/MT of crude	No cess leviable

	oil	oil	
Tax Structure	Rate of corporate income tax leviable as per the provisions of Income Tax Act for Indian companies.	Rate of corporate income tax leviable as per the provisions of Income Tax Act for Indian companies.	There is an income tax holiday in respect of deep water block for the first 7 years, however, Minimum Alternative Tax is applicable. 100 per cent deduction allowable for all expenditure in respect of exploration and drilling operations. Also, unsuccessful exploration costs in respect of other contracts can also be deducted 100 per cent.
Custom Duty	All equipments imported for petroleum operations exempt from customs duty on the basis of Essential Certificate issued by DGH.	All equipments imported for petroleum operations exempt from customs duty on the basis of Essential Certificate issued by DGH.	All equipments imported for petroleum operations exempt from customs duty on the basis of Essential Certificate issued by DGH.
Marketing of Oil and Gas	First right of GoI on purchase of Freedom to market the crude 100 per cent oil and gas discovered in	First right of GoI on purchase of Freedom to market the crude 100 per cent oil and gas discovered in	First right of GoI on purchase of Freedom to market the crude 100 per cent oil and gas discovered in

	domestic production	domestic production	domestic production
Carried interest of NOCs (without payment by NOCs)	Nil	30 per cent excisable on commercial discovery	Nil
Participating interest by NOCs	40 per cent in case of medium sized field and nil in case of small sized field	Up to 40 per cent	NOCs to compete for acreage on “level-playing fields”; no participation interest reserved for NOCs.

Chapter 4: Draft billon Uniform Acreage Licensing Policy in India:

Government of India has been repeatedly reviewing E&P policies from time to time for intensifying exploration activity and investment in oil and gas sector. In past, there had been a gradual shifting the E&P policy, from nomination acreage to competitive bidding. With increasing demand for oil and gas, foreign exchange constraints, and the massive requirement of resources for expeditiously exploring and developing vast on-land and offshore territories, the Government of India designed the New Exploration and Licensing Policy (NELP) and Coal Bed Methane (CBM) Policy⁴⁷ in late 90s, thereby opening the sector to all global E&P players, including foreign companies, with the aim of attracting private investment and infusing technology from all around the world. These policies were formulated in a framework of progressive de-regulation in the hydrocarbon sector.

NELP was made way back in the year 1997, which has been implemented under nine rounds so far between 1998-2012. 254 blocks have been awarded for exploration, of which 178 are active, while 78 have been relinquished. Although 126 discoveries have been made in 41 of these active blocks, commercial production has commenced in only 3 out of these blocks.

The policy designed 16 years back does not seem to have kept pace with the global dynamics in E & P, and it is essential to review the suitability of this policy in the present circumstances, with due consideration of impediments experienced in implementation. In order to bring uniformity in operations and remove impediments caused due to more than one operator, it is essential that a uniform licensing policy be applied for future contracts in award of exploration and production acreages.

⁴⁷ Available at <http://petroleum.nic.in/comments.pdf>

➤ **REGIMES FOR AWARD OF EXPLORATION BLOCKS**

- **The present two contractual regimes in force for allocation of acreages for E&P operations of hydrocarbons have different fiscal terms and conditions. While PSCs under the New Exploration and Licensing Policy (NELP) for E&P of Oil and Gas, is based on production sharing contract (PSC) where Government take depends on sharing of profit petroleum, based on the Pre-Tax Investment Multiple⁴⁸(PTIM) with cost recovery, contracts under Coal Bed Methane (CBM) Policy provides for revenue sharing based on production linked payment (PLP) without cost recovery. Both PTIM and PLP are biddable parameters.**

During the course of implementation of CBM and NELP, it has been seen that though these two are mutually exclusive contracts, there are overlapping of resources in certain blocks, which cannot be explored due to separate contractual conditions. Further, unconventional hydrocarbon resources such as shale oil and gas, which were not known and considered at the time NELP contracts were awarded, are often present in the same area which is already under exploration albeit in a different horizon and rock structure. It is very difficult to distinguish among shale gas, tight gas and conventional gas once the production takes place, however technology and cost involved in the operation of unconventional hydrocarbon is very different from the conventional hydrocarbon.

As such, for the current blocks under operation, exploration of these new resources interferes with the original bid evaluation criteria of government take, technical competence and minimum work programme committed. As such, the option available is to wait for the block to be relinquished or ML period to get over for exploration of these new resources.

As PSCs have progressed from the exploration stage to the development and production stage through successive NELP rounds, certain constraints have been observed in working of the existing contractual and fiscal model of NELP by both the Government and Contractors. Fiscal Model in the existing PSC comprises two main elements, both of which are biddable:

⁴⁸Ibid

- 100% cost recovery of exploration, pre-development, development, production cost and Royalty paid to the Government
- sharing of profit petroleum, based on the Pre-Tax Investment future PSCs. Accordingly, The Government of India constituted a committee under the chairpersonship of Dr C. Rangarajan, Chairman, Economic Advisory Council to the Prime Minister, to look into the PSC mechanism in petroleum industry, so as to enhance production of oil and gas and the Government's share, while minimizing procedures for monitoring the expenditure of producers. Committee has submitted its report which is in public domain.

NEW REGIME BASED ON RANGARAJAN COMMITTEE RECOMMENDATION

The award of acreages for hydrocarbon exploration and production in future will be brought under a uniform licensing policy covering all categories of hydrocarbons, with new fiscal terms for administration and monitoring of such contracts.⁴⁹ A uniform licensing policy to enable E&P operators to explore and extract all hydrocarbon resources covered under the Oilfield regulation and development (ORD) Act, 1948, and Petroleum and Natural Gas (PNG) Rules, 1959 under one PEL/PML, and one contractual regime will replace the NELP and CBM regime for the Contracts to be awarded in future. This will ensure focus on exploration and accountability of operators being solely responsible for the activities in the awarded acreage. The uniform license will enable the contractor to explore conventional and unconventional oil and gas resources such as shale gas/oil, tight gas, gas hydrates and any other resource to be identified in future which is fit for commercial exploitation, simultaneously under the overall contractual regime applicable from time to time.

⁴⁹ Ibid

➤ **FISCAL TERMS:**

The present basis for production sharing, i.e. PTIM and Cost recovery will be replaced with an incremental production-based sliding scale combined with a fixed, price sensitive scale. Following fiscal components may be in the model:

Royalty: Royalty will be paid to the Government from Gross Revenue⁵⁰. Fixed ad valorem rate of royalty is suggested for the proposed model. The present royalty structure for Onland including CBM blocks would be continued. However, in order to incentivize shallow and deepwater offshore exploration which is highly cost intensive, it is proposed to introduce zero rate of royalty. As revenue sharing proposed here would be net of royalty, part of it can be captured in revenue share.

Revenue Sharing: Revenue, net of royalty, in case of on land including CBM blocks and total revenue in case of shallow and deepwater offshore blocks will be shared between the Contractor and the Government, based on the average daily production in a month for oil, and Gas in a quarter, using a sliding scale calculation methodology. The Contractor will be required to bid the share in percentage terms payable to the Government as per the price-band and incremental production matrix. For the purpose of calculating Government's share of production, the average of oil prices for the month and gas prices for the quarter will be considered for determining the price. The revenue share from production for each cell of the matrix will be biddable, each cell having equal weightage and the winning bid will be determined on the basis of bid evaluation criteria. The bid has to be progressive and in the increments of at least 0.5% for each successive cell with respect to the Government take, i.e., the Government take will be in an ascending order for increases in production and price. The NPV of Government's share in revenue, using the benchmarked production profile for the block, will be one of the deciding criteria for assessing a bid. The numbers specified in each cell of the matrix of the winning bid will be agreed to in the revenue sharing contract (RSC) that will be signed between the Government and the Contractor.

⁵⁰Ibid

The production tranches will be different for various sectors (onland, shallowwater, deep water, and CBM), and price bands will be based on historical and prevailing price trends. Production and price bands will be suitably designed after due deliberation and considering available historical data for Indian geological basins. Any abnormally low bid, especially in case of a single bid for a block, would require close scrutiny to safeguard the Government take.

This model will be applicable for all future contracts, only the production tranches will be changed, depending on historical data available at the time of award of blocks. In order to maintain the sanctity of the contracts already signed and in place, PSCs/ CBM contracts signed by the Government up to the ninth round of NELP and round IV of CBM will be continued with the existing fiscal model.

In the proposed new model, no deductions will be allowed after the incidence of royalty (wherever applicable) and before the petroleum split between the Government and the Contractor. Thus, a major impact of the proposed model would be to provide the Contractor with the incentives for keeping costs down. Pegging the costs down will enhance the Contractor's profitability of operating the project.

Income Tax: As per existing income tax laws, the Contractor will be required to pay income tax on his profit. Seven years' tax holiday from the start of production will be available for both oil and gas fields, except for ultra-deep water blocks (i.e., those blocks for which a significant part of the block is having a depth of more than 1500 metres), where the period of tax holiday would be for 10 years.

➤ **HIGHLIGHTS OF THE PROPOSED CONTRACT:**

The overall bidding parameters of the Minimum Work Programme (MWP) commitment, Technical capability and the fiscal package will remain the same as in present PSC/CBM contract. Only the bid evaluation criteria for the fiscal package will change with the proposed changes in the fiscal model, although its weight in the overall bid will remain the same. The blocks to be bid as an oil/gas block or as a CBM block or for both will be specified at the time of bidding in NIO.

Blocks having potential for oil and gas as well as CBM will have adequate weightage for both in BEC depending upon their relative predominance. This will be required in view of the fact that production tranches are different and substantially lower and quantity of MWP is distinctly different for CBM production.

In the interest of hydrocarbon exploration, Contractors will be allowed to carry out further exploration throughout the Mining Lease (ML) period in the ML area. Other contractual bottlenecks for exploration and exploitation of hydrocarbons will be addressed with suitable amendments in the provisions for the exploration period, flexibility in carrying out the appraisal programme, development of discoveries in deep-water and frontier areas, *force majeure*, etc.

➤ **BENEFITS OF NEW REGIME**

Following are the projected benefits of the proposal:

- Introduction of uniform Licensing policy will ensure that there is uniformity in contractual provisions for exploration and production⁵¹ of all kinds of hydrocarbon, and in individual awarded acreage, operators will be able to explore all types of hydrocarbon resources. This will remove impediments on account of multiple operators, thus, expedite exploration

⁵¹ Available at <http://petroleum.nic.in/>

- As PTIM and cost recovery mechanism is proposed to be dispensed with, issues related to cost, if any, by the Operators and need for the Government to monitor the costs so as to safeguard own share of profit petroleum will not arise.
- Unlike in the existing fiscal model in PSC, where profit petroleum to the Government commences only when all contract costs have been recovered (in case of a 100% cost-recovery bid by the Contractor), share of revenue to the Government will commence from the first day of production in the new system. The proposed changes will lead to a simple and transparent system with easy-to-monitor parameters of production and price.
- With no direct cost recovery, the proposed system would not be directly sensitive to fluctuations in costs, in determining the Government's profit share unlike the existing system. It enhances the incentive for the contractor to keep costs down. It is in line with the Government's broad objectives of efficiency in oil field operations and conserving scarce hydrocarbon resources.
- The new model reduces efforts and time in examining and monitoring by the Management Committee (MC). It will enable greater concentration on monitoring of technical aspects for effective exploration and optimal exploitation of reservoirs. The proposed fiscal model also addresses the issue of windfall profits to the Contractor in case of a price surge. Allowing companies the option of bidding the production share at various production levels and oil price tranches, there should be little complaint about the toughness of the terms, as these will get determined by the marketplace and should allow bidders to factor in the fiscal terms of contract. Moreover, to mitigate the risk of E&P companies, there is no minimum government share prescribed and the bidder is free to bid any non-zero share. The Contractor's cost recovery will be embodied in his share of production, which the Contractor will be free to bid. Further, provision of bidding for rate of royalty starting for zero will provide big incentive for deepwater exploration, which is highly cost intensive and risk prone.

- The proposed system is much more flexible and investor-friendly in comparison with the systems adopted in neighboring countries in Southeast Asia, like Myanmar and Indonesia. These countries, which have a cost-recovery mechanism, follow a more rigid and harsh fiscal regime. Myanmar, for example, has cost recovery, but also has signature, discovery and production bonuses, State participation, domestic market obligation, and various types of fees. Similarly, Indonesia has cost-recovery, and also signature bonus, three production bonuses, State participation, a very high percentage of royalty (20%), domestic market obligation, and a fixed percentage as government share. In contrast, the proposed system does not have any signature or production bonuses, State participation, or domestic market obligation (for oil), and has reduced royalty rates for certain areas and a biddable share of production to the government, without any prescribed minimum government share. There should be no scope of collusion among bidders in a situation of scarcity turning the market into a supplier's one.
- The proposed model is basically a royalty – tax regime, with production level payment. Government share arrived at through competitive bidding has to observe non-linearity with respect to marginal rate of appropriation, increasing with the output and shifting upwards for a price rise, for the government take to capture windfall gains on account of price rise. This model is being followed by a number of countries, with modifications. Columbia, for example, follows a royalty – tax regime, with a biddable “X” factor, i.e., additional biddable government participation in production, after royalty. It also levies an additional profit tax (windfall tax) linked to a base price, based on a formula. Many other countries follow a production linked or a production and price linked system with variations (like cost recovery, bonuses, State participation, windfall tax, and other levies). Few examples are Trinidad & Tobago, Tanzania, Ecuador, and Equatorial Guinea. Royalty Tax regime is also followed in the United States of America (USA).

- It is perceived that prospectivity in offshore blocks along the Eastern and Western coastline is very high and there is enthusiastic response in this regard. These blocks are in ultra-deep waters, which can be anywhere beyond 1,500 metres in depth. The only change in tax benefits proposed in the policy is that such Ultra-deep water blocks, which cover deeper geological horizon and carry higher risk and entail heavy investment will avail of a ten year tax holiday, while for other categories such as onland (including CBM), shallow water and deep water blocks of less than 1500 meter depth, present seven years tax holiday will continue. The change proposed will incentivize exploration of this part of Indian sedimentary basins.

Chapter 5: Conclusion

In conclusion, the basic objective of choosing this topic is to understand the basic intricacies of development of oil and gas sector in India. To cover all the aspect of exploration and production i.e upstream and downstream activities in India and the policies governed by public and private players within the country. India has lots of oil reserves but it falls short when it come for the technical expertise require or the exploration and production and requires foreign players to share their technical expertise so as to enrich the efficiency in exploration and production of oil and natural gas. Meanwhile this would escalate the economy of the country India being the 5th largest consumer of oil and natural gas as a source of energy. The policies implemented by government has to be make more flexible which would allure the giant private players to invest in the market for e.g. introduction of NELP providing 100% of foreign direct investment. Thus such implemented policies have to be improved and government have to bring new policies which would make feasible bidding process and increase competition in the market.NELP was introduced with a purpose to achieve i.e. to include private player in the oil and gas E&P business and to decrease the dependency of crude oil from imports. It has been successful to some extent but there are some loopholes which are to be addressed to actually make the effort work because it has because of the above mentioned issues not been able to deliver the maximum.

Following are the suggestions I would like to make :

- There is lot of perceptions about the poor geology of India. Although steps are taken by the Ministry to spread the success of NELP but they are not enough besides road shows conferences should be held in other countries. The successes should be highlighted.
- The tax position should be made clear, it is duty of the government to clear all confusions regarding taxing matters, and this is the major reason. The investors should be consulted, conferences should be held taking their views. The tax holiday period should be increased from 7 years. Natural gas should also be given 7 years tax holiday to encourage natural gas discoveries.

- The government should not dictate marketing terms, the government has to weigh the interest of the public and the investors and accordingly formulate a plan to allow investors to have market independence.
- Open acreage system should be encouraged; it would encourage foreign participation and utilization of reserves.
- Uniform Acreage Licensing policy should be introduced which is still under pipeline with the reforms required under NELP. It should encourage foreign participation by providing with attractive royalty rates. It should provide uniformity in bidding process so, that the interested investors should bid for blocks at any time yearly without facing any menace.

NELP auctions started in January 1999 to boost oil and gas exploration and reduce India's dependence on hydrocarbon imports. The government allocates rights to explore blocks through auctions under the programme. It is the duty of the Government to boost the oil and gas business in India.

This has no doubt been successful in many aspects two major discoveries as production by Reliance Industries' (RIL) KG-D6 basin and crude oil production in Barmer (Rajasthan) by Cairn India are the result of NELP.

So in the end I would like to conclude by saying that it has not totally failed its purpose but there are still issues which need to be addresses to make it a better success. The above issues clearly are an obstacle to the fullest utilizations of the hydrocarbon reserves. Hence in the end it is the duty of the government to bring reforms and to promote the oil and gas sector in India.

ANNEXURE I