

CHAPTER: 1

PETROLEUM SECTOR PROFILE

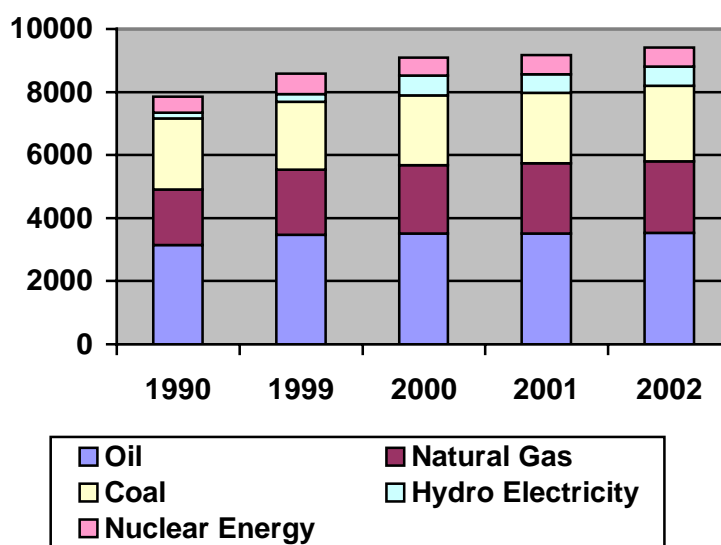
1.1 Introduction

Hydrocarbons i.e. oil and natural gas, are today, the largest conventional source of primary energy in the world. Together with other forms of primary energy viz. hydro electricity, nuclear power and coal it constitutes a critical input for economic growth. In 2002 the world consumption of primary energy was 9,405 million tonne (MMT) of oil equivalent* (OE). The share of primary energy consumption worldwide contributed by the hydrocarbon sector in 2002 was 62 per cent, which makes it clear that the business of exploration, production, refining and marketing of hydrocarbons, generically known as 'petroleum sector' constitutes a very vital sector of global economy. In fact, it is the petroleum sector, which, along with financial sector, assumes the character of a prime mover of global economy.

1.2 Consumption Hydrocarbon

As shown in Graph-1, oil, coal and natural gas form the bulk of primary energy consumption. While the consumption of oil shows a steady increase from 3,135 MMT OE per annum in 1990 to 3,523 MMT OE per annum in 2002, the consumption of natural gas has gone up from 1,771 MMT OE per annum in 1990 to 2,282 MMT in 2002. Hydro electricity consumption has also registered a significant growth from 189 MMT OE per annum in 1990 to 592 MMT OE per annum in 2002.

Graph-1
World Primary Energy Consumption
(In MMT)



1.3 Per capita consumption of Hydrocarbon

Table-1 gives the average percentage of per capita consumption of hydrocarbon during the period 1999-2002, in some developed and developing countries. In India the average per capita hydrocarbon consumption during the above period worked out to 41 per cent of primary energy consumption.

*oil equivalent is a unit of energy based on the approximate energy released by burning of crude oil.

Table-1

Average percentage of per capita hydrocarbon consumption of primary energy

Developed Countries	1999	2000	2001	2002
USA	64.98	64.96	65.32	65.08
Canada	56.97	56.16	57.28	58.63
France	51.75	51.27	51.61	50.81
Germany	62.25	60.95	61.27	61.00
United Kingdom	73.35	73.95	72.85	73.87
Japan	13.18	13.27	13.83	12.81
Brazil	53.92	52.28	56.44	54.90
Poland	32.20	34.06	33.62	33.78
China	29.51	32.79	30.30	25.93
Indonesia	84.09	82.61	81.25	81.63
Malaysia	90.53	92.86	91.09	89.72
India	40.00	40.63	41.94	40.63

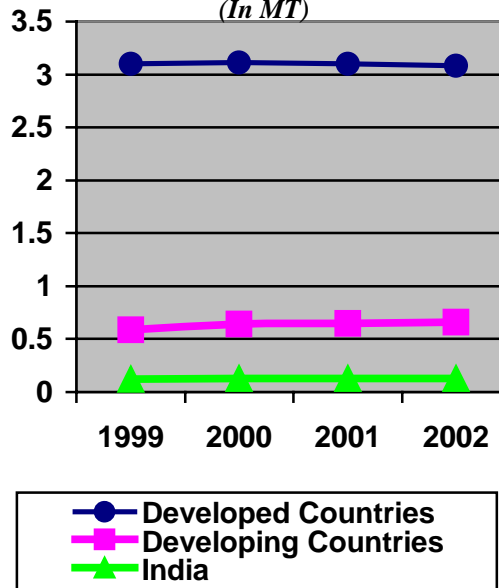
The above figures also indicate that the hydrocarbon dependency and the per capita primary energy consumption in the developed and developing nations has remained static over a period.

The average per capita consumption of primary energy in the developed nations is nearly five times that of the developing nations. India’s per capita primary energy consumption is 0.32 MT OE per annum as compared to the average per capita primary energy consumption of developing countries which is 1.12 MT OE per annum.

In the case of hydrocarbon consumption also a similar picture emerges. As shown in Graph-2 the per capita hydrocarbon consumption in developed nations is 3.09 MT OE per annum, way ahead of the developing nations where the consumption is 0.63 MT OE per annum. India’s per capita hydrocarbon consumption stands at 0.13 MT OE per annum.

Graph-2

Average per capita consumption of Hydrocarbon of developed, developing countries and India (In MT)



1.4 Indian contribution in the world scenario

1.4.1 Oil and gas reserves

Table-2

	Unit		1998	1999	2000	2001	2002
Crude oil	MMT	World	143400	140400	143000	143000	142700
		India	716	660	703	732	741
Natural Gas	Billion Cubic Metres	World	146311	146368	150047	154999	155706
		India	675	648	760	763	751

Table-2 above indicates the reserve position of oil and gas in India vis-à-vis the world. It may be seen therefrom that the reserves of oil and gas in India form negligible part of the world reserves. While there is increase in world reserves of natural gas between 1998 and 2002, declining trend is noticed in respect of crude oil. In India, however, crude as well as gas reserves have gone up marginally during the same period. In 2002 gas reserves in India have dipped slightly as compared to the previous year.

As would be evident from Graph-3 and Table-3 below, the crude oil reserves in India went down from 739 MMT in 1990 to 733 MMT in 2003, with the offshore resources being marginally higher at 394 MMT than the onshore resources that stood at 339 MMT.

Graph-3
Crude Oil Reserves (Proved)
(In MMT)

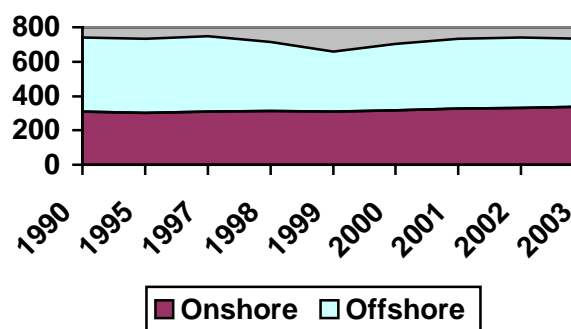


Table-3
Crude Oil Reserves (Proved)

AREA	1990	1995	1997	1998	1999	2000	2001	2002	2003
Onshore	307	301	310	311	308	317	326	332	339
Offshore	432	431	437	405	352	386	406	409	394
Total	739	732	747	716	660	703	732	741	733

Similarly, Graph-4 and Table-4 indicate the reserves of natural gas in India for the period 1990-2003. It is evident therefrom that the natural gas reserves went up from 686 billion cubic metres in 1990 to 854 billion cubic metres in 2003. The offshore reserves formed nearly 62 per cent of the total reserves in 2003.

Graph-4
Natural Gas Reserves (Proved)
(In Billion Cubic Metres)

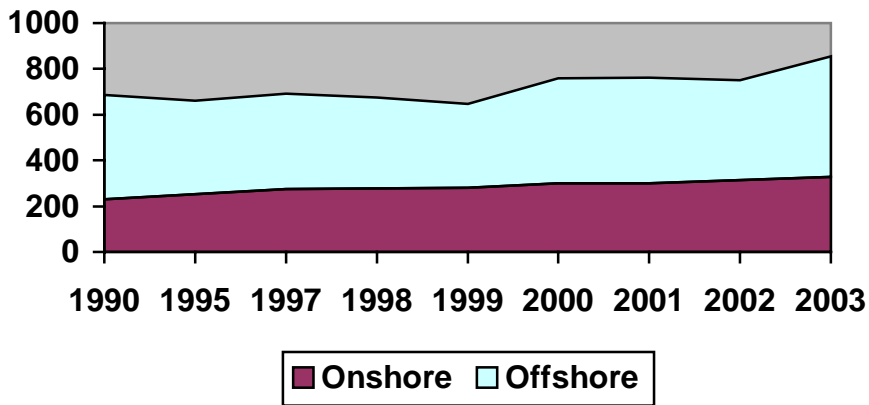


Table-4

(In Billion Cubic Metres)

Area	1990	1995	1997	1998	1999	2000	2001	2002	2003
Onshore	229	253	274	277	279	299	301	315	327
Offshore	457	407	418	398	369	461	462	436	527
Total	686	660	692	675	648	760	763	751	854

Source: MOPNG

1.5 Production of Oil and Natural Gas

1.5.1 Even as the oil and gas reserves did not show any substantial accretion the proportion of oil and gas produced also remained more or less constant. Production of oil and gas during the five-year period ending 2003-04 averaged 32,566 TMT* per annum and 30,197 million cubic meters per annum. Also offshore oilfields continued to remain the major source of both oil and natural gas. ONGC continued to be the dominant producer with a 78 per cent share in the total production. The share of joint venture producers (JVPs) was significant at 15 per cent. This is evident from the Table-5 below:

Table-5

Crude Oil ('000' Tonnes)		1999-00	2000-01	2001-02	2002-03	2003-04	Average per cent share
ONGC	On shore	7921	8428	8635	8445	8384	78
	Offshore	16727	16629	16073	17559	17681	
	Total	24648	25057	24708	26004	26065	
OIL	On shore	3283	3286	3183	2950	3002	9
	Offshore	-	-	-	-	-	

* Thousand metric tonne

	Total	3283	3286	3183	2950	3002	
JVPs/Private	On shore	94	77	71	75	74	13
	Offshore	3924	4006	4070	4013	4240	
	Total	4018	4083	4141	4088	4314	
Natural Gas (Million CM)							
ONGC	On shore	5478	5555	5615	5871	5779	79
	Offshore	17774	18465	18426	18373	17805	
	Total	23252	24020	24041	24244	23584	
OIL	On shore	1729	1861	1619	1744	1880	6
	Offshore	-	-	-	-	-	
	Total	1729	1861	1619	1744	1880	
JVPs/Private	On shore	197	309	624	1111	1307	15
	Offshore	3268	3287	3430	4296	5184	
	Total	3465	3596	4054	5407	6491	

Source: MOPNG Annual Report 2003-04

1.5.2 Cost per tonne of crude

Cost per tonne of crude produced by ONGC and JVPs and cost per tonne consumed by downstream companies for the last two years ending March 2004 are given in Table-6 and Table-7.

Table-6 (In Rupees)		
Upstream sector		
Company	2002-03	2003-04
ONGC	6052	6127
JVPs	1268	1317

Table-7 (In Rupees)		
Down stream Sector		
Company	2002-03	2003-04
IOCL	10520	10217
BPCL	11020	10215
HPCL	10979	10737

It may be seen therefrom that the cost per tonne of crude in the case of ONGC went up, while in the case of down stream companies it has declined. Further, the cost of crude for JVPs is substantially low because of their higher production and absence of levies/ reduced levies.

1.5.3 Refinery's operating cost

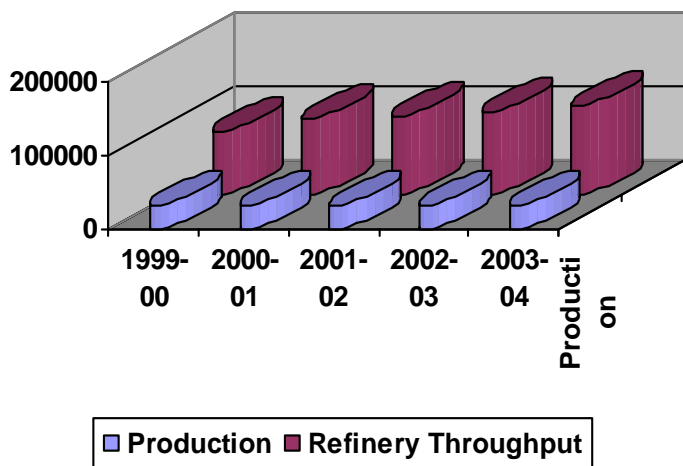
The operating cost per ton of crude oil for the major refineries as reflected in Table-8, shows that HPCL continues to record the lowest operating cost for the last two years, while the highest operating cost per tonne has been recorded by CPCL.

Table-8		
Operating cost (In Rupees)		
Company	2002-03	2003-04
IOCL	329	328
BPCL	413	416
HPCL	274	302
CPCL	583	615
BRPL	716	516
NRL	402	431

Table-9 (In Rupees)		
Marketing cost		
Name of the Company	2002-03	2003-04
IOCL	585	614
BPCL	781	805
HPCL	408	446

The marketing cost per tonne incurred by major oil companies as shown in Table-9 indicates that HPCL incurs the lowest marketing cost per tonne while BPCL incurs the highest.

Graph-5
(In TMT)



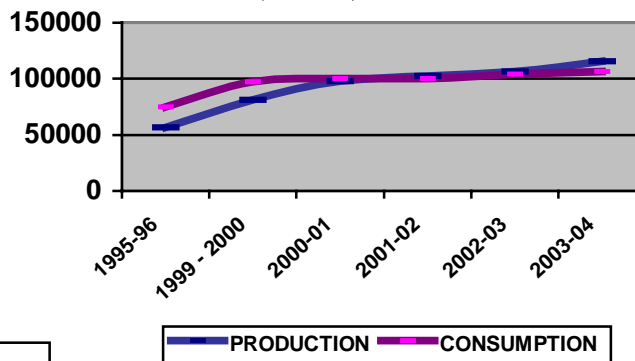
1.5.4 Consumption of crude

It may be seen from Graph-5 that the production of crude continued to be way below the consumption, even as the gap between the two widened from 54,015 TMT in 1999-00 to 88,460 TMT in 2003-04. India was able to meet only 30 per cent of the demand, leading to import of crude for domestic consumption.

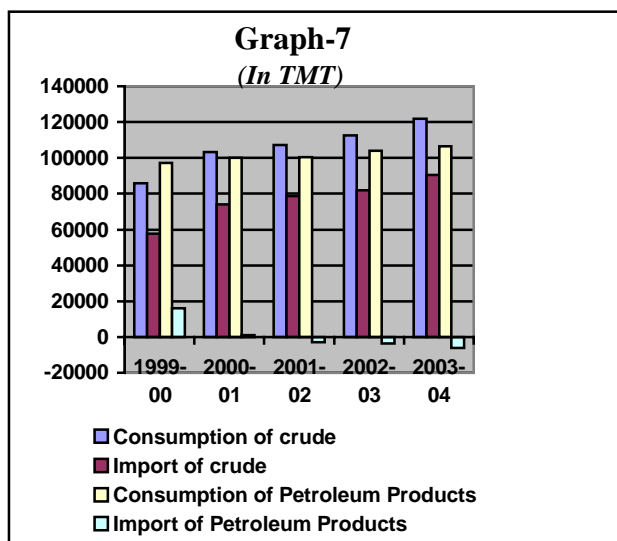
1.5.5 Production and consumption of Petroleum products

It is evident from Graph-6 that the production as well as consumption registered a growth in the period from 1995-96 to 2000-01. The gap between production and consumption narrowed considerably and the trend reversed in the year 2001-02 onwards as production overtook consumption.

Graph-6
(in TMT)



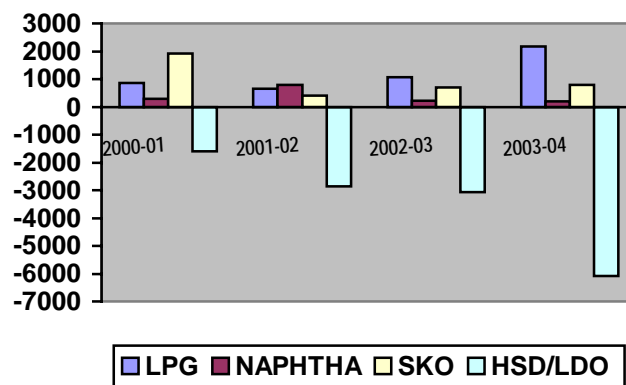
1.6 Import Intensity of Petroleum Products



It is evident from Graph-7 that while the import of crude went up from 57,805 TMT in 1999-00 to 90,434 TMT in 2003-04, in the case of petroleum products India moved from net imports of 15,861 TMT in 1999-00 to net exports of 6,723 TMT in 2003-04.

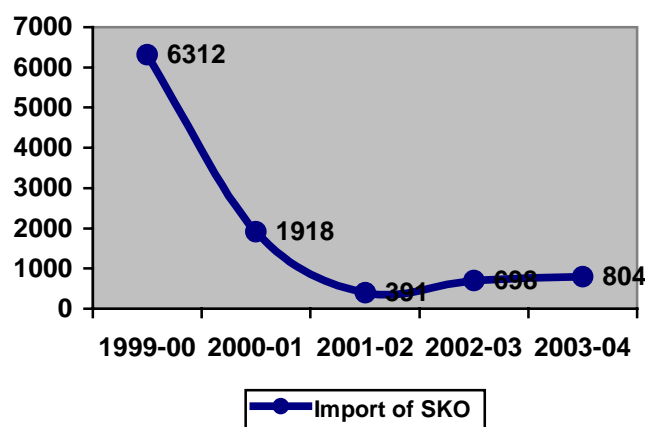
Graph-8 shows the net import profile of some petroleum products in India. While the import of Liquefied Petroleum Gas (LPG) went up from 852 TMT in 2000-01 to 2,182 TMT in 2003-04, the net import of Naphtha went down from 283 TMT in 2000-01 to 195 TMT in 2003-04. On the other hand, the net export of HSD/LDO went up from 1,597 TMT in 2000-01 to 6,085 TMT in 2003-04. The details of consumption, import and export of petroleum products for the last five years ending March 2004 are given in Annexure-1.

Graph-8
(In TMT)

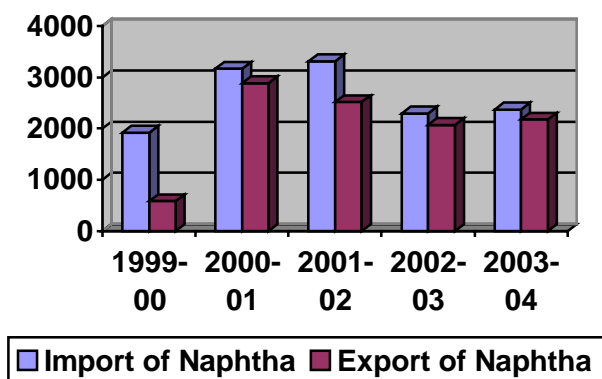


Graph-9 shows the import of Superior Kerosene Oil (SKO) during the last five years ending March 2004. It may be seen therefrom that owing to rise in domestic availability of SKO in recent years the import of SKO has dropped sharply from 6,312 TMT in 1999-00 to 391 TMT in 2001-02, going up only marginally to 804 TMT in 2003-04.

Graph-9
(In TMT)



Graph-10
(In TMT)

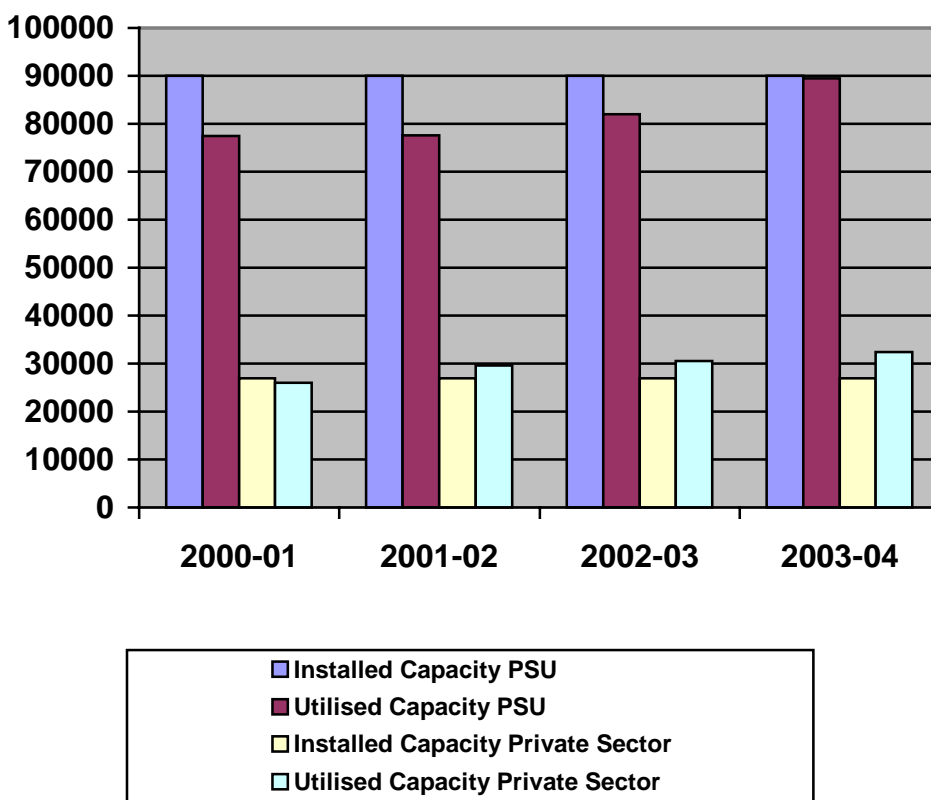


The position of import and export of Naphtha has been given in Graph-10. In the case of Naphtha, both import and export have taken place simultaneously. While non-availability of customer specific product and attractive commercial terms from overseas suppliers leads to import of Naphtha, the domestic oil companies resort to exports as the realisation from exports was better than the domestic prices owing to duty drawback benefits on export of naphtha.

1.7 Refining Capacity Utilisation

There is an improvement in the availability of petroleum products as the refining capacity utilisation has recorded an increase especially after the entry of private players. An analysis of the refining capacity of public sector oil companies in India vis-a-vis the capacity utilisation as indicated in Graph-11 reveals that while the installed capacity remained constant at 89,968 TMT during the period from 2000-01 to 2003-04, the capacity utilisation has steadily increased from 77,411 TMT in 2000-01 to 89,496 TMT in 2003-04. In capacity utilisation variations have been noticed among PSUs with BPCL recording more than 100 per cent utilisation and HPCL recording more than 90 per cent utilisation, while IOC refineries were able to record only 88.33 per cent utilisation. In the private sector the refinery setup by Reliance Industries Limited at Jamnagar exceeded its installed capacity from 2001-02 onwards (details in Annexure-2). Today, India is at a stage where its production of petroleum products has exceeded the demand for them.

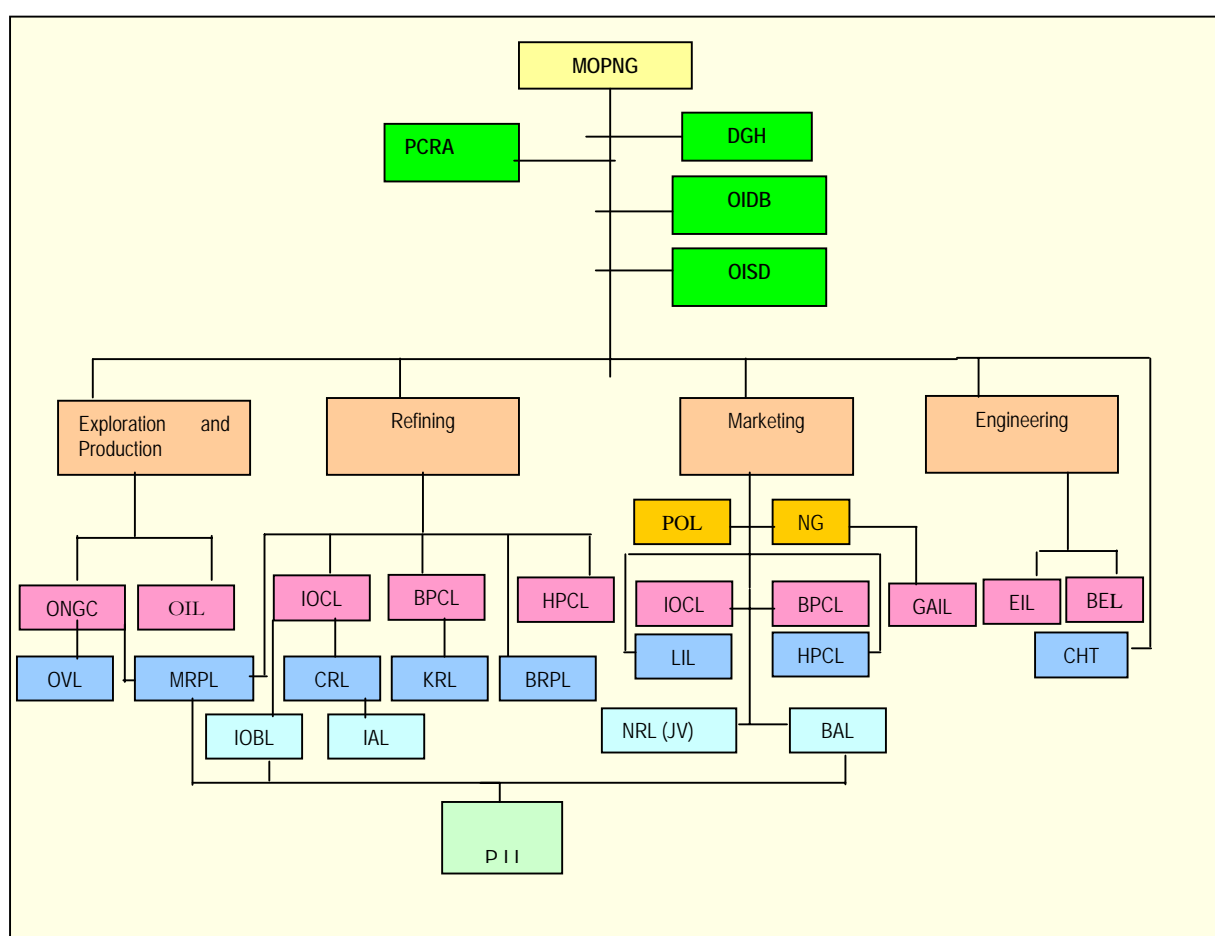
Graph-11
(In TMT)



1.8 Role of Ministry of Petroleum and Natural Gas

The Ministry of Petroleum and Natural Gas (MOPNG) is concerned with the exploration and production of oil and natural gas (including import of LPG) and the refining, distribution and marketing, import, export and conservation of petroleum products. MOPNG gets its authority under item number 53, list I, seventh schedule, Article 246 of the Constitution of India. The Ministry comprises five different wings, viz., Administration, Exploration, Refinery, Marketing and Finance. The chart below shows the organisational setup in MOPNG and organisations and PSUs that come under the Ministry.

Organisational Chart of the Ministry of Petroleum and Natural Gas



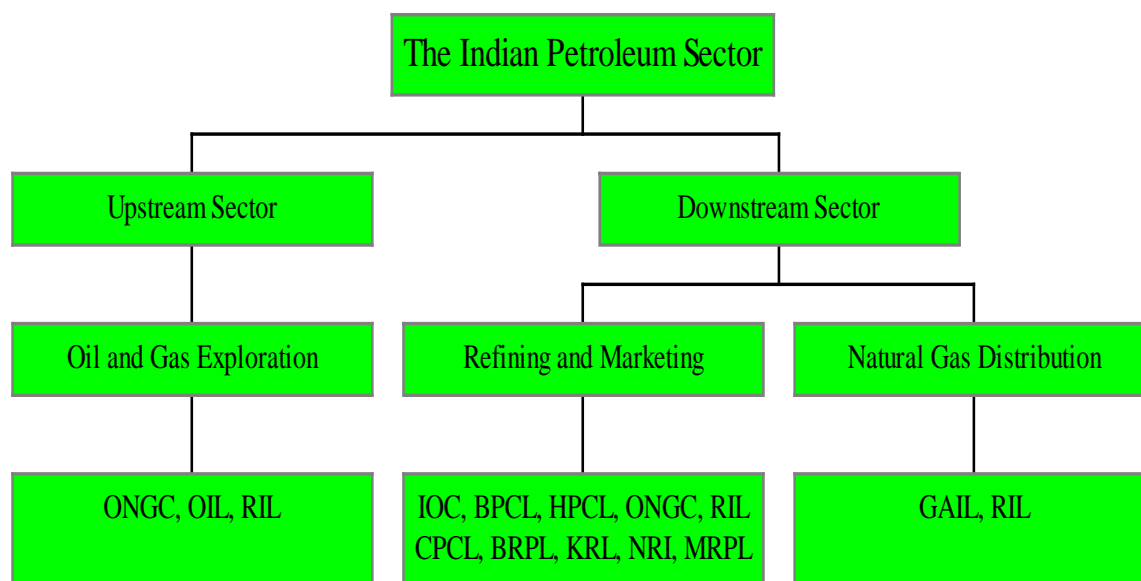
Important areas of work allocated to the MOPNG are to regulate and control:

- Exploration and exploitation of petroleum resources, including natural gas and coal bed methane;
- Production, supply distribution, marketing and pricing of petroleum including natural gas and petroleum products;

- Oil refineries including lube plants;
- Additives for petroleum and petroleum products;
- Lube blending and greases;
- Planning, development and control and assistance to all industries dealt with by the Ministry;
- All attached or subordinate offices or other organisations concerned with any of the subjects specified in this list;
- Planning, development and regulation of oilfield services;
- Public sector undertakings dealing with subjects e.g., Engineers India limited and IBP Company Limited, together with their subsidiaries, except those which are specifically allotted to any other Ministry/Department;
- Administration of various acts enacted for oil related issues.

1.8.1 Public Sector

The structure of Upstream and Downstream oil companies in the Indian Petroleum sector as of now is indicated below:



CPCL: Chennai Petroleum Corporation Limited, KRL: Kochi Refineries Limited, BRPL: Bongaigaon Refinery and Petrochemicals Limited, NRL: Numaligarh Refinery Limited, MRPL: Managalore Refinery and Petrochemicals Limited, RIL: Reliance Industries Limited

The shareholding pattern of the PSUs wherein Government holds majority shares are as follows:

Name of the Company	Percentage of shareholding by GOI
1. Oil and Natural Gas Corporation Limited	74.15
2. Indian Oil Corporation Limited	82.03
3. Hindustan Petroleum Corporation Limited	51.01
4. Bharat Petroleum Corporation Limited	66.20
5. GAIL (India) Limited	57.35
6. Engineers India Limited	90.39
7. Oil India Limited	98.13
8. Biecco Lawrie and Company Limited	57.00

ONGC is the major player in the upstream sector while IOCL is the major player in the downstream sector. A new trend of vertical integration began with the acquisition of MRPL by ONGC, whereby the Company entered the business of refining and marketing. Taking the trend of vertical integration forward the downstream sector is entering the E&P business with IOCL in consortium with other Companies being awarded 11 exploration blocks in New Exploration Licensing Policy (NELP) and two blocks under CBM I. IOCL has also acquired 27 per cent participating interest in the onshore exploration block in Assam and Arunachal Pradesh Region. It has subsidiaries like IBP, BRPL, CPCL, IOBL, Lanka IOC Private Limited, IOTL in the refining and marketing business, while BPCL has KRL and NRL as its subsidiaries. OVL, a wholly owned subsidiary of ONGC, has acquired/discovered producing properties in Vietnam, Russia and Sudan.

1.8.2 Emergence of the private sector

The Government of India has been inviting private investment in exploration of oil and gas in the country since 1980s. However, initial efforts to attract private investment were limited to offshore areas only. Since 1991, the Government of India offered exploration blocks almost on regular basis for both onshore and offshore areas and announced six bidding rounds till 1995. In 1996-97 Government of India reviewed the policy of inviting investment in exploration of oil and gas. A NELP was accordingly formulated in 1997-98, which provides a level-playing field to the private investors by giving the same fiscal and contract terms as applicable to national oil companies for the offered exploration acreage. Under NELP production sharing contracts for 90 exploration blocks have already been signed. The JVs and the private players have contributed 4,314 TMT to the production of crude oil and 6,491 (million cm) to the production of natural gas in 2003-04 which constitutes 14 per cent of the total hydrocarbon production in the country.

In the refining sector Reliance Industries Limited has set up their refinery at Jamnagar, Gujarat with a capacity of 27 MMTPA* in 1999-00. With the commissioning of this refinery the imports of petroleum products have come down from 16.6 MMT in 1999-00

* Million metric tonne per annum

to 7.8 MMT in 2003-04. The export of petroleum products has gone up from 8.36 MMT in 2000-01 to 14.62 MMT in 2003-04.

1.8.3 Emerging Business Strategies

Joint Ventures

Out of a total of 146 Production Sharing Contracts signed during the last 12 years, the production has started only in respect of five mid sized fields (Panna, Mukta, Ravva, Mid and South Tapti and Kharsang) and in 10 out of 24 small sized discovered fields. In the remaining 14 small-sized discovered fields (Mator, PY-1, Wavel, Allora, Amguri, Dholsan, Kanawara, Modhrea, N. Balol, N. Kathana, Sangapur, Unwara, Ognaj and Karjisan) the production has yet to start.

Out of 35 exploration blocks awarded during four to nine rounds under pre-NELP, one block CY-OS-90/1 (PY-3 field) started producing oil during 1997 and two fields Lakshmi and Gauri have started producing oil/gas during November 2002 and March 2004 respectively. As per the details supplied by the Directorate General of Hydrocarbons (DGH) about 28.40 MMT of crude oil has been produced from these blocks/fields during the period 1994 to 2004 as indicated in Table-10 below. The bulk of the production is from five discovered fields originally belonging to NOCs, mainly ONGC.

Table-10

Sl. No	Year	Oil (in MMT)	Gas (in MMSCM)
1	1994-95	0.25	88.02
2	1995-96	0.65	334.06
3	1996-97	1.35	510.00
4	1997-98	2.51	1680.75
5	1998-99	3.04	2874.08
6	1999-00	4.02	3464.64
7	2000-01	4.04	3596.00
8	2001-02	4.14	4053.80
9	2002-03	4.09	4993.34
10	2003-04	4.31	5990.46
	Total	28.40	27585.15

Source: Director General of Hydrocarbons

Various exploration rounds have been initiated in the last two decades under pre-NELP and NELP with policy packages being improved upon in each round so as to attract more private investment in the hydrocarbon sector. However NOCs continue to be the largest investors in this sector. Full details of investments made each year in the sector under various segments of business are given in Annexure 3. It would be observed that in the mid-sized fields the total investment of both private companies and NOCs in the five fields is US\$ 1333 million. In the exploration blocks awarded during Pre-NELP rounds, the total investment is US\$ 897 million. The total investment in the blocks awarded during three rounds of NELP has been US\$ 794.6 million (NELP I-517.9 million, NELP II-US\$ 240.9 million and NELP III US\$ 35.8 million).

The PSC's of various JV provided that profit petroleum should be shared between the Government and JV's. The revenue received by the Government of India as its share of profit petroleum from the seven fields as shown in Annexure 4 till March 2003 was to the tune of US\$ 2328.79 million.

Coal Bed Methane

Coal Bed Methane (CBM) is stated to be an environment friendly and clean fuel similar to Natural Gas. The estimated CBM resources of India are to the tune of 850 billion cubic metres (BCM). To give impetus to its exploration and production the Government has formulated a CBM policy. Contracts have been signed with PSUs/Private Companies for exploration and production of CBM in 13 blocks under two rounds of CBM policy and in three blocks on nomination basis. The estimated investment in these blocks upto 2003-04 has been about Rs.560 crore and commercial production of CBM from some of these blocks is expected to start in 3-4 years.

1.8.4 Pricing of petroleum products

Administered Price Mechanism

In July 1975, Oil Co-ordination Committee (OCC) was set up as per the Government resolution of July 1975 for administering Oil Industry Pool Accounts, based on the interim recommendations of the Oil Price Committee (OPC). In 1976, the OPC recommended the discontinuance of the import parity price. The OPC suggested that the domestic cost of production should be the determining factor for pricing of petroleum products. The Administered Price Mechanism (APM) was evolved on the recommendations of the OPC and came into existence in December 1977. Under this mechanism refineries were allowed to retain cost of crude, refining cost and reasonable return on investment out of the sale proceeds. The same set of principles was extended to marketing and distribution companies as well. Government of India also fixed the price of finished products and the returns of oil companies were de-linked from the price at which the goods were finally sold.

The main objective of the OCC was to ensure uninterrupted supplies of the products and balance the prices of Petroleum Products throughout the country by keeping the selling prices of respective products uniform. For achieving this, the expenditure incurred by the oil companies in excess of the recovery through pricing was reimbursed by OCC and saving in expenditure and extraordinary incomes were recovered from the oil companies. This way, the pool accounts were self balancing and the reimbursements and surrenders were matching.

Main pool accounts operated were:

- (i) Crude Oil Price Equalisation (COPE) Account;
- (ii) Cost and Freight (C&F) Adjustment Account;
- (iii) Freight Surcharge Pool (FSP) Account;
- (iv) Product Price Adjustment (PPA) Account.

As the reimbursement exceeded the surrenders by the oil companies due to non-revision of the prices of petroleum products to consumers in line with the cost of production, the pool account started showing deficit. This gap widened to around Rs.20,000 crore at the time of dismantling of APM from April 2002. Since the funds available with OCC were not sufficient to meet the dues to the oil companies, the Government issued bonds to the oil companies in April 2002 in lieu of the balance due from OCC to these companies.

Dismantling the Administered Price Mechanism

A Strategic Planning Group known as 'R' group appointed by the Government in January 1995 recommended the gradual phasing out of APM in the hydrocarbon sector and introduction of free marketing mechanism. Based on this recommendation the consumer prices of all products except motor spirit (MS), high speed diesel (HSD), aviation turbine fuel (ATF), kerosene for public distribution (PDS kerosene) and LPG used for domestic cooking (domestic LPG) were decontrolled from 1 April 1998. From 1 April 2001 the pricing of aviation turbine fuel (ATF) was also decontrolled.

- On 1 April 2002, all the products were removed from the APM. However, right of fixing retail selling prices of the products LPG (domestic) and SKO (PDS) was retained by the Government. The under recoveries by the oil companies on account of these products are partially reimbursed by the Government through a body called Petroleum Planning and Analysis Cell (PPAC), which came into existence from April 2002 in place of OCC and operates on Government budgetary support. The functions of PPAC are to operate the above two subsidy accounts, settle the dues of the OCC with oil companies and facilitate transition from APM to non-APM regime.
- As regards the pricing of petrol and diesel, post-APM, the oil marketing companies (OMC) entered into agreements with the refineries as per which the former pay to the latter the import parity prices of petrol and diesel, revised on fortnightly basis, taking into account the international prices of these products. The OMC, in turn, review the domestic consumer prices fortnightly. However, the right of revision of the retail selling prices of petrol and diesel was also not given to the oil companies upto July 2004 and even now, remains beyond the OMCs' powers.

Price banding

From August 2004, MOPNG has issued circulars to all the oil companies to fix the retail selling prices of the products within a reasonable price band. The price band is to be based on the average international prices of the previous fortnight provided that the exchange rate adjusted C&F product price was within the band of 10 per cent around the mean of (i) last three months rolling average prices and (ii) last one year's average prices. In case the C&F prices breach the ceiling due to high volatility OMC should keep the prices in the band and approach the MOPNG for revision of prices. Prices in farflung areas should not exceed prices at the nearest supply points. These directives by the Government have reinstalled the controls that were sought to be dismantled with the dismantling of the APM.

1.9 Financial Results of PSUs in the Petroleum Sector

The Financial results of some of the Petroleum sector PSUs for the year 2003-04 are as shown in Table-11 below:

Table-11

(Rs. in crore)

PSU	Investment in Shares by Government	Dividend paid on Government Equity for the year 2003-04	Sales Turnover	Market Capitalisation	Net worth	Profit Before Tax (PBT)	Percentage of PBT to Net worth
ONGC	1,057	2,537	32,526	1,25,432	39,982	13,638	34.11
OIL	210	294	3,145	N.A.	4,029	1,482	36.78
IOCL	959	2,012	1,30,203	57,945	21,998	9,691	44.05
HPCL	173	381	56,333	17,224	7,743	2,904	37.50
BPCL	199	348	52,516	14,378	5,849	2,669	45.63
GAIL	485	388	11,296	1,80,123	7,443	2,812	37.78
Total	3,083	5,960	2,86,019	3,95,102	87,044	33,196	38.14

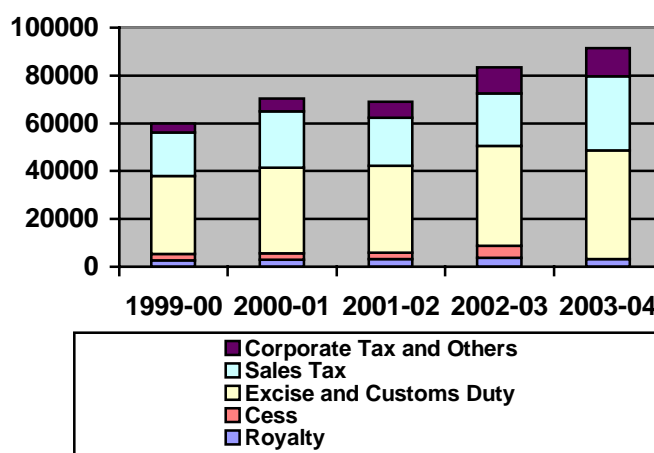
As could be seen from the above, on the equity capital investment of Rs.3,083 crore in these six PSUs the Government received dividend of Rs.5,960 crore, which works out to 193 per cent of the investment. The total sales turnover and profit before tax during 2003-04 were Rs.2,86,019 crore and Rs.33,196 crore respectively. On total networth of Rs.87,044 crore in the above six PSUs the overall percentage of PBT worked out to 38.14 per cent.

Graph-12

(Rs. in crore)

1.9.1 Contribution by Petroleum sector to National Exchequer

The Petroleum Sector contributes to the national exchequer by way of royalty, cess, excise and customs duty, sales tax and corporate tax etc. Of this the maximum contribution comes from excise and customs duty followed by sales tax as may be seen from Graph-12. The overall contribution has gone up from Rs.59,943 crore in 1999-00 to Rs.92,445 crore in 2003-04. The details are contained in Annexure-5.



1.10 Inventory Holding

Table-12 below shows the inventory of stores and spares and raw materials and their consumption by the oil sector PSUs for the period from 1999-00 to 2003-04.

Table-12

(Rs. in crore)

Year	Inventory value of Raw Materials in stock	Inventory value of stores and spares in stock	Consumption of raw materials during the year	Consumption of stores and spares during the year	Percentage of raw materials in stock to consumption during the year	Percentage of stores and spares in stock to consumption during the year.
1999-00	5319.63	2660.27	152277.96	1086.06	3.49	244.95
2000-01	4846.03	2646.35	199310.16	1132.52	2.43	233.67
2001-02	5032.98	2779.34	178183.86	1058.00	2.82	262.70
2002-03	7185.47	2975.12	217882.74	1150.71	3.30	258.55
2003-04	7619.89	3952.14	233006.85	1123.60	3.27	351.74

It may be seen from Table-12 above that the percentage of stock of raw material as compared to the consumption decreased from 3.49 in 1999-00 to 3.27 in 2003-04. On the other hand, the percentage of stock of stores and spares to consumption increased from 244.95 in 1999-00 to 351.74 in 2003-04.

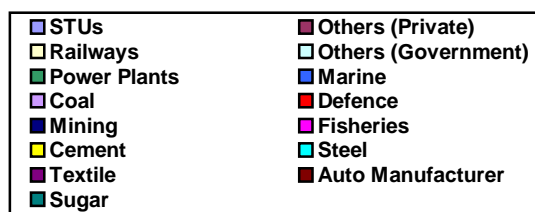
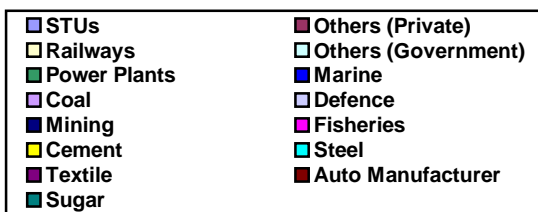
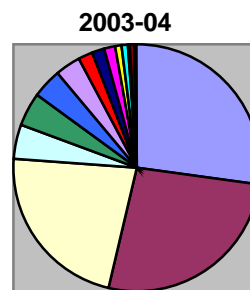
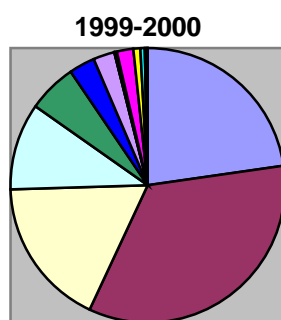
1.11 Sale to bulk consumers

As indicated in Graph-13 and Graph-14 the main bulk consumers of HSD countrywide are Railways, State Transport undertakings (STUs) and major private industrial users. Total consumption of HSD by major consumers showed a declining trend from 8,641.9 TMT in 2000-01 to 7,844.2 TMT in 2003-04.

The main consumers of Naphtha are fertilizer industries, power/steel sector and petrochemical sector. The consumption of Naphtha by the major consumers also declined from 8,075.9 TMT in 2000-01 to 7,069.6 TMT in 2003-04.

Graph-13

Graph-14



Bulk Consumers of HSD

Power and fertilizer industries are the major consumers of natural gas. The consumption of natural gas in the power sector has gone up from 8,714 MCB in 1998-99 to 11,478 HCB in 2003-04. Details of HSD, naphtha and natural gas consumption by major consumers are contained in Annexure-6.

1.12 Employment profile of oil PSUs including indirect employment

The number of people employed in the sector went down from 1.38 lakh in 1998 to 1.3 lakh in 2003. The major chunk of the personnel was employed in the exploration and production activity followed by the marketing field.

Table-13

Activities	1998	1999	2000	2001	2002	2003
Exploration and Production	52909	51656	50942	50049	49540	48237
Refining	25294	37619	27019	27178	25322	26451
Marketing	37943	41806	41110	40852	41865	40561
Pipelines	3782	3803	4180	4196	4094	4092
Research and Development	2832	2869	2858	2723	2797	2330
Others	15249	13580	13293	9990	9992	8256
Total	138009	151333	139402	134988	133610	129927

1.13 Research and Development expenses incurred by the major PSUs

As is evident from Table-14, expenditure on Research and Development (R&D) in IOC and BPCL showed a decline from Rs.90.42 crore in 2002-03 and Rs.18.98 crore to Rs.85.50 crore and Rs.13.83 crore in 2003-04 respectively. However, ONGC and HPCL recorded a rise in expenditure, which stood at Rs.93.83 crore and Rs.2.46 crore respectively in 2003-04. The total expenses on R&D in the four major oil companies recorded a marginal increase from Rs.171.12 crore in 1999-00 to Rs.195.62 crore in 2003-04.

Table-14

(Rs. in crore)

Name of PSUs	Year				
	1999-00	2000-01	2001-02	2002-03	2003-04
ONGC	71.04	82.18	80.28	92.93	93.83
IOCL	77.00	78.00	68.63	90.42	85.50
BPCL	21.70	20.60	37.10	18.98	13.83
HPCL	1.38	1.55	1.05	1.21	2.46
Total	171.12	182.33	187.06	203.54	195.62

1.14 Strengths, weaknesses and opportunities in the Petroleum sector

The Petroleum sector in India has a huge infrastructure in the form of assets and technical knowhow for exploration, production and marketing activities. We also have adequate domestic refining capacity (125.97 MMT as on 1 April 2004) and the availability of petroleum products is adequate to meet present demand (except LPG).

Crude oil security is of particular concern for India with high crude oil import dependency, which presently stands at 69 per cent of the domestic consumption. The gap between domestic crude availability and consumption of crude indicates the vulnerability of the Indian economy to crude oil imports. The increasing international prices of crude would also impact the economy. A matter of concern would also be the absence of any substantial finds of crude oil reserves in the recent years.

Consequent on liberalisation of Petroleum sector, the Government of India is encouraging participation of foreign and Indian companies in the exploration and production activities to supplement the efforts of national oil companies to narrow the gap between supply and demand. Further the Government is encouraging oil sector PSUs to venture abroad to access exploration blocks and oil producing properties for equity oil either on its own or through strategic alliances/joint ventures. These initiatives have provided new opportunities for the petroleum sector. The recent gas found in the Krishna Godavari basin by RIL and in Rajasthan by M/s. Cairn Energy Limited could show the way for emergence of gas as an alternative to petroleum products.