Annual Report
2011-12

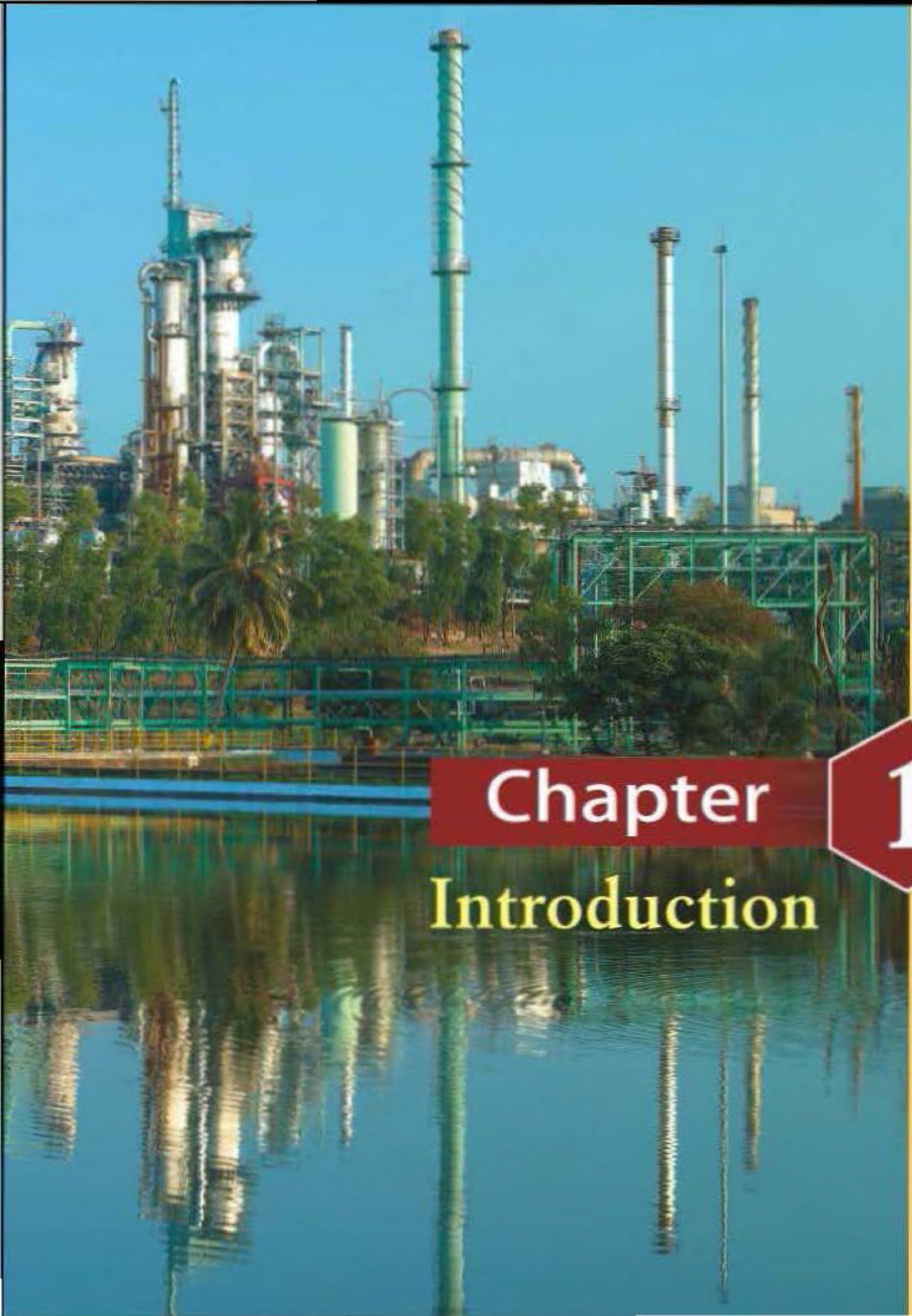
सत्यमेव जयते

Government of India

Ministry of Petroleum & Natural Gas

Hon'ble Prime Minister, Dr. Manmohan Singh dedicates Bina Refinery of Bharat Oman Refineries Limited (BORL) at Bina, Madhya Pradesh to the nation.

Contents



Chapter 1

Introduction

Introduction

1.1 The Ministry of Petroleum & Natural Gas is concerned with exploration and production of oil and natural gas (including import of Liquefied Natural Gas), refining, distribution & marketing, import, export and conservation of petroleum products. The work allocated to the Ministry is given in Appendix -I. The names of the Public Sector Oil Undertakings and other organizations under the Ministry are listed in Appendix- II.

1.2 Shri S. Jaipal Reddy and Shri R.P.N. Singh continue to hold the charge of Minister of Petroleum and Natural Gas and Minister of State for Petroleum & Natural Gas respectively.

1.3 Shri G.C.Chaturvedi, IAS (UP:77) assumed the charge of Secretary in the Ministry of Petroleum & Natural Gas with effect from 4.5.2011.

1.4 Shri S. Sundareshan, IAS (KL:76) held the charge of the post of Secretary in the Ministry of Petroleum and Natural Gas till 2.5.2011.

1.5 Shri P.K. Sinha, IAS (UP:77) held the charge of the post of Special Secretary and Financial Advisor in the Ministry of Petroleum and Natural Gas, in the rank and pay of Secretary till 29.2.2012.

1.6 Shri Sudhir Bhargava, IAS (RJ:79) continues to hold the charge of the post of Additional Secretary in the Ministry of Petroleum and Natural Gas.

1.7 Shri L.N.Gupta, IAS (OR:86) and Shri Vivek Kumar, IAS (WB:90) continue to hold the charge of the post of Joint Secretary in the Ministry of Petroleum and Natural Gas.

1.8 Shri Aramane Giridhar, IAS (AP:88) assumed the charge of the post of Joint Secretary in the Ministry of Petroleum and Natural Gas with effect from 12.1.2012.

1.9 Shri D.N. Narasimha Raju, IAS (KN:84) held the charge of the post of Joint Secretary in the Ministry of Petroleum and Natural Gas till forenoon of 8.1.2012.

1.10 Shri Apurva Chandra, IAS (MH:88) held the charge of the post of Joint Secretary in the Ministry of Petroleum and Natural Gas till forenoon of 8.8.2011.

1.11 Smt. Archana S Mathur, (IES:82) continues to hold the charge of the post of Economic Advisor in the Ministry of Petroleum and Natural Gas.

1.12 PRINCIPAL ACHIEVEMENTS

The important statistical data relating to the physical performance of the oil and gas sector is given in Appendices - III to VII.

1.13 PERFORMANCE OF PETROLEUM & NATURAL GAS SECTOR

Efficient and reliable energy supplies are a precondition for accelerating the growth of the Indian economy. While the energy needs of the country are

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas dedicates BPCL's Expanded Capacity and Modernisation Project Phase II at Kochi Refinery to the nation.

Shri R.P.N. Singh, Minister of State for Petroleum & Natural Gas and Shri G.C. Chaturvedi, Secretary, Petroleum & Natural Gas at the valedictory function of the India Africa Hydrocarbons Conference

going to increase at a rapid rate in the coming decades, the energy resources that are indigenously available are limited and may not be sufficient in the long run to sustain the process of economic development. The Ministry of Petroleum and Natural Gas is mandated to take measures for exploration and exploitation of petroleum resources including natural gas and coal bed methane, and also distribution, marketing and pricing of petroleum products.

1.13.1 Crude Oil Production

Crude Oil Production in 2011-12 up to December 2011 was about 28.699 Million Metric Tonnes (MMT) as against 28.152 MMT in the corresponding period of the previous year, showing a marginal increase of about 1.9%. The maximum crude oil production comes from ageing fields except new fields viz. Rajasthan and Krishna Godavari (KG) deepwater blocks.

1.13.2 Natural Gas Production

Natural Gas Production in 2011-12 up to December 2011 was about 36.197 Billion Cubic Metre (BCM) as against 39.681 BCM in the corresponding period of the previous year, showing a decline of about 8.8%. The decline in natural gas production was mainly on account of lower production from the KG deepwater basin.

1.13.3 Overseas Oil and Gas Operations

In view of the unfavourable demand-supply balance of hydrocarbons in the country, acquiring equity oil and gas assets overseas is one of the important components in enhancing energy security. The Government is encouraging national oil companies to aggressively pursue equity oil and gas opportunities overseas. ONGC Videsh Limited (OVL) is likely to produce about 8.82 MMT of oil and gas equivalent during the year 2011-12 from its assets abroad in Sudan, Vietnam, Venezuela, Russia, Syria, Brazil and Colombia. Oil PSUs viz. OVL, Indian Oil Corporation (IOC), Oil India Limited (OIL), Bharat Petroleum Corporation Limited (BPCL), Hindustan Petroleum Corporation Limited (HPCL) and GAIL (India) Limited (GAIL) have acquired Exploration & Production (E&P) assets in more than 20 countries. It is the endeavour of the Ministry to pursue oil diplomacy aggressively in order to ensure energy security for the country.

1.13.4 New Exploration Licensing Policy (NELP)

New Exploration Licensing Policy (NELP) provides an international class fiscal and contract framework for exploration and production of hydrocarbons. In the first Eight rounds of NELP spanning 2000-2010,

Production Sharing Contracts (PSCs) for 235 exploration blocks have been signed. Under NELP, 104 oil and gas discoveries have been already made by private/joint venture (JV) companies in 34 blocks. The largest natural gas discovery in the country has been made in KG deepwater, from where production has commenced in April 2009.

Investment commitment under NELP is about US$ 11 billion on exploration, against which actual expenditure so far is about US$ 9.016 billion. In addition, US$ 7.491 billion investment has been made on development of discoveries. Thus, the actual investment made by E&P companies under NELP is of the order of US$ 16.507 billion.

With a view to accelerate further the pace of exploration, in the Ninth round of NELP (NELP-IX), 34 exploration blocks were offered and bids were received for 33 blocks. The award of exploration blocks under NELP IX is likely to be finalized in 2012.

1.13.5 Coal Bed Methane (CBM)

Coal Bed Methane (CBM) is an environment friendly clean fuel similar to Natural Gas. 33 CBM contracts were signed for exploration of CBM gas. As of now, about 250 BCM reserves have been established in 5 CBM blocks. CBM gas production is about 2 lakhs cubic metres per day.

1.14 PETROLEUM AND NATURAL GAS REGULATORY BOARD (PNGRB)

The Government of India has enacted the Petroleum and Natural Gas Regulatory Board (PNGRB) Act 2006. The Board was constituted on 1st October, 2007. The Board would regulate refining, processing, storage, transportation, distribution, marketing and sale of petroleum products and natural gas, excluding production of crude oil and natural gas.

1.15 PRODUCTION AND CONSUMPTION OF PETROLEUM PRODUCTS

During the current year 2011-12 (till December, 2011) production of petroleum products from crude oil and natural gas was 147.204 MMT, which is about 5% higher than that produced during the same period in 2010-11.

During the current year 2011-12 (till December, 2011) consumption of petroleum products (in terms of domestic sale) was 109.53 MMT, which is 4% higher than that consumed during the same period in 2010-11.

Year-wise production and consumption of petroleum products during 2004-05 to 2011-2012 (up to December 2011) may be seen in Appendix V and VI. It is evident from this data that both production and consumption of petroleum products have a marked upward trend since 2004-05.

1.16 IMPORTS AND EXPORTS OF CRUDE OIL & PETROLEUM PRODUCTS

During April-December 2011, the import of crude oil was 125.59 MMT valued at ₹ 4,69,994 crore. During the same period in 2010-11, the imports were 121.49 MMT, valued at ₹ 3,16,443 crore. There was thus, an increase of about 4% in quantity terms and increase of 48.5% in value terms during 2011-12 (up to December 2011) over the same period in the preceding year.

Petroleum Products: The quantity of petroleum products imported during 2011-12 (up to December 2011) was 11.26 MMT valued at ₹ 35,131 crore. During the same period in 2010-11, imports of these products were 12.95 MMT valued at ₹ 39,275 crore. Hence, during 2011-12 (up to December 2011), imports of petroleum products decreased by 13.06% in terms of quantity and 10.55% in terms of value, as compared to the same period during the previous year.

During 2011-12 (up to December 2011), a total of 46.220 MMT of petroleum products, valued at ₹ 1,99,932 crore were exported. During the same period in 2010-11, exports of these products were 43.268 MMT valued at ₹ 1,33,236 crore. Exports of petroleum products during 2011-12 (up to December 2011) were as such higher by 6.8% in terms of quantity and 50.06% higher in terms of value, as compared to the same period in the previous year.

1.17 REFINING CAPACITY

The current refining capacity is 193.386 MMT out of which 116.886 MMT is in the public sector, 6 MMT in joint venture and the balance 70.50 MMT is in the private sector. Availability of petroleum products during 2011-12 was more than the domestic demand on overall basis except for Liquefied Petroleum Gas (LPG). In fact, the country is a net exporter of petroleum products and products like Naphtha, Petrol, Diesel and Aviation Turbine Fuel (ATF) etc. were exported during the year.

1.18 LNG IMPORT

Presently, the gap between demand and supply of natural gas is being partly met by way of import of LNG. Currently, two LNG terminals, viz. Dahej terminal of Petronet LNG Ltd. (PLL) and Hazira terminal of Hazira LNG Pvt. Ltd. (HLPL) are operational in the country. During the period April 2011 to December 2011, PLL has imported 7.01 MMTPA of LNG whereas HLPL has imported 1.51 MMTPA of LNG (up to November 2011).

To cater to India's growing gas demand - supply gap, PLL is in constant touch with various potential LNG suppliers. In May 2011, PLL has entered into a MoU with Gazprom Marketing and Trading Singapore Pvt. Ltd. (affiliate of OAO Gazprom, Russia) for sourcing up to 2.5 MMTPA LNG on a long term basis for their upcoming projects such as Shtokman etc. and is pursuing discussions on a LNG Sales and Purchase Agreement.

Presently, PLL is operating its terminal at its full capacity. PLL is in the process of expanding its capacity by another 5 MMTPA, likely to be commissioned by 2015 for which a Detailed Feasibility Report (DFR) is being prepared. PLL is also constructing another LNG terminal at Kochi in the

State of Kerala of 5 MMTPA which is in full swing and the terminal is likely to be commissioned in the fourth quarter of 2012.

PLL is also exploring possibilities of constructing a 5 MMTPA LNG receiving & regasifying terminal on the east coast of India. A Detailed Feasibility Report is being prepared.

1.19 IMPORT OF NATURAL GAS THROUGH TRANSNATIONAL GAS PIPELINES

1.19.1 Turkmenistan-Afghanistan-Pakistan-India (TAPI) Gas Pipeline Project

To settle various issues related to the Gas Sale Purchase Agreement (GSPA), bilateral and multilateral meetings have been held among the four countries and their gas companies participating in the Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline project. Regarding security and safety of the pipeline, suitable provisions have been made in the Inter-Governmental Agreement (IGA) and Gas Pipeline Framework Agreement (GPFA) signed by the Governments of Turkmenistan, Afghanistan, Pakistan and India in December 2010. The discussions relating to the TAPI Project, particularly the Gas Sale Purchase Agreement (GSPA) have reached an advanced stage.

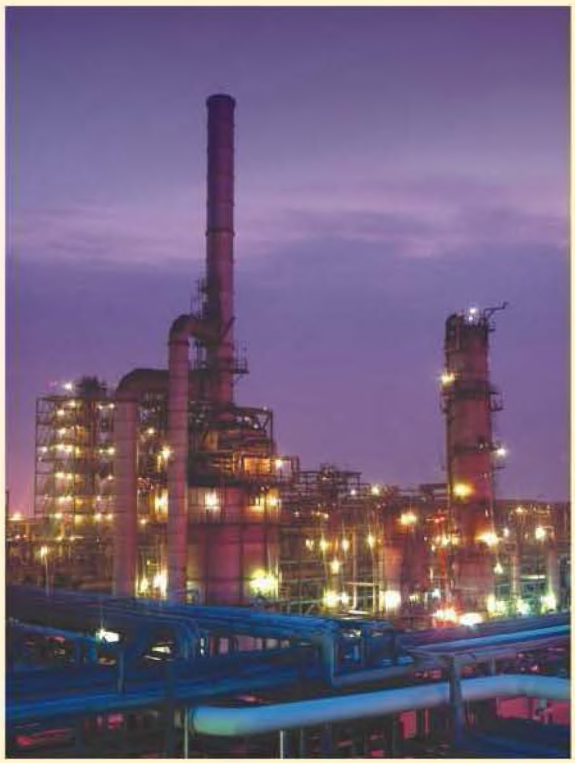
1.19.2 Iran-Pakistan-India (IPI) Gas Pipeline Project

The Iran-Pakistan-India (IPI) Gas Pipeline Project has been under discussion with the Governments of Iran and Pakistan, 60 MMSCMD of gas is proposed to be supplied in Phase-I, to be shared equally between India and Pakistan and 90 MMSCMD of gas is envisaged to be supplied in Phase-II. Several rounds of discussions have taken place, involving the India-Pakistan-Iran Joint Working Group (JWG), India-Pakistan JWG and the India-Iran Special JWG. The matter has also been discussed at the Ministerial level; the last such meeting between India and Pakistan was held in Islamabad on 25.4.2008. Several critical issues, viz. the delivery point of Iranian gas, the project structure, guarantees related to safety of the pipeline and security of supply, besides pricing of gas are yet to be resolved.

1.20 LPG MARKETING BY PUBLIC SECTOR OIL MARKETING COMPANIES (OMCs)

Public Sector Oil Marketing Companies (OMCs) viz. IOC, BPCL and HPCL are engaged in marketing of subsidized LPG in the country under the Public Distribution System. The number of LPG customers enrolled by them has also been increasing over the years. As on 31.12.2011, OMCs are operating 11,154 LPG distributorships and the number of LPG customers served by OMCs through these distributorships was about 1342.7 lakhs. OMCs have released 88.5 lakh new LPG connections during the period from April, 2011 to December, 2011.

In accordance with Vision 2015, it is proposed to raise the country's LPG population coverage from 50% to 75% by releasing 5.5 crore new LPG connections between 2009 and 2015 especially in rural areas and under-served areas.



MRPL Refinery

In order to spread the LPG distribution network in rural areas and under-served areas, a new scheme namely, 'Rajiv Gandhi Gramin LPG Vitaran Yojana' (RGGLVY) for establishing small size LPG distribution agencies, has been launched on 16.10.2009. Advertisements inviting applications for distributorships under the scheme have been released by OMCs in 27 States namely, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Jammu & Kashmir, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Meghalaya, Nagaland, Odisha, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand, West Bengal and Puducherry covering 4342 locations. Letters of Intent (LoI) have been issued for 1557 locations, out of which 896 distributors have already been commissioned. Selection for the rest of the locations is in progress as per policy.

The setting up of LPG distributors in the rural/under-served areas under this scheme will now be a continuous process till all areas of the country deficient in LPG are covered by the LPG network.

The Liquefied Petroleum Gas (Regulation of Supply and Distribution) Order, 2000, has been amended vide Notification dated 10.9.2009 which inter alia provides for one domestic LPG connection for one household instead of per person. The amendment also prohibits

OMCs from providing a LPG connection to a person who is in possession of a Piped Natural Gas (PNG) connection.

The Ministry of Petroleum & Natural Gas has advised OMCs to appoint a Nodal Officer at the headquarter level to collect the updated information with regard to number of domestic LPG connections surrendered by consumers who have availed of PNG connections, and submit to the Ministry by the 10th of every month.

The Ministry has been conducting regular meetings of the City Gas Distribution (CGD) companies and OMCs to collect the data of PNG connections released and improve coordination between the CGD companies and the OMCs. OMCs are carrying out an elaborate exercise of identifying the consumer's address/ household for blocking the LPG connections and appealing to the customers to keep their LPG connections in "safe custody" by surrendering the LPG equipments.

1.21 MARKETING OF 5 KG LPG CYLINDERS BY OMCs

5 kg subsidized Domestic LPG cylinders were launched to fulfill the demand of low income groups in urban, semi-urban and rural pockets, as the deposit for these cylinders is ₹ 350 as compared to ₹ 1250 for 14.2 kg cylinders. This scheme is envisaged to extend the reach to hilly terrain and interior areas on account of convenience of transportation. Since its launch in 2002, Public Sector OMCs have 5 kg domestic LPG customer strength of 3.4 lakh as on 31.12.2011. The present per capita consumption of 5 kg consumers is only 0.5 kgs per month, as compared to around 8.6 kgs per month for 14.2 kg domestic consumers.

Jharkhand and Puducherry have started a scheme for releasing Domestic LPG connections of 5 kg to BPL families, under which around 1 lakh and 0.1 lakh connections respectively have been released, which is around 32% of the total 5 kg customers in the country.

As far as 5 kg LPG cylinders for non-domestic use is concerned, the Liquefied Petroleum Gas (Regulation of Supply and Distribution) Order, 2000, was amended vide Notification dated 26.5.2010 to enable OMCs to market 5 kg cylinders for commercial (non-domestic) uses to enable small vendors to buy and use LPG at affordable prices.

1.22 LPG AS AUTO FUEL

Government has permitted use of LPG, being a clean and environment friendly fuel, as an automotive fuel. For this purpose, MOP&NG along with the other concerned Ministries/Departments has formulated a necessary legislative and regulatory framework for safe usage of LPG as an automotive fuel.

Hon'ble Supreme Court has mandated conversion of old vehicles to LPG/CNG in cities which are equally or more polluted than Delhi and as per Hon'ble Court the critically polluted cities are Ahmedabad, Agra, Bengaluru, Chennai, Hyderabad, Kanpur, Kolkata, Lucknow, Mumbai, Pune, Surat and Solapur. OMCs are at present primarily concentrating on Category-I and Category-II cities and have commissioned 631 Auto LPG Dispensing Stations (ALDS) in 179 cities, as on 31.12.2011.

Auto LPG pricing is market determined and there is no subsidy on Auto LPG. Vehicle manufacturers like Maruti, Hyundai, Tata Motors, Hindustan Motors, General Motors and Bajaj Auto have already started marketing factory fitted LPG cars/3-wheelers with factory fitted Auto LPG kits. Also, approved testing agencies like the Automotive Research Association of India (ARAI), Pune and Vehicles Research & Development Establishment (VRDE), Ahmednagar, have approved more than 30 LPG conversion kit manufacturers for 3-wheelers and 4-wheelers, covering the entire range of petrol-driven vehicles for conversion to LPG. At present, 25 manufacturers of conversion kits for 4-wheelers and 14 manufacturers of conversion kits of 3-wheeler vehicles have been approved by various testing agencies like ARAI Pune, VRDE Ahmednagar and Indian Institute of Petroleum (IIP) Dehradun.

1.23 IMPLEMENTATION OF INTERIM REPORT OF THE TASK FORCE FOR DIRECT TRANSFER OF CASH SUBSIDY FOR PDS KEROSENE AND DOMESTIC LPG

Government has constituted a Task Force in February, 2011 under the Chairmanship of Shri Nandan Nilekani, Chairman, Unique Identification Authority of India (UIDAI) to recommend and implement a solution for direct transfer of subsidies on Public Distribution System (PDS) Kerosene, Domestic LPG and Fertilizers to the intended beneficiaries. As per the terms of reference of the Task Force, they will study the present mechanism of transfer of subsidies on Kerosene, LPG and Fertilizers, challenges and problems in the governance structures and delivery system. They would examine and suggest an implementable solution for direct transfer of subsidies on Kerosene, LPG and Fertilizers to intended beneficiaries with the use of Aadhaar numbers (Unique Identification numbers), Aadhaar enabled transactions and Aadhaar authentication infrastructure of the UIDAI.

The Chairman, UIDAI has submitted the Interim Report of the Task Force on Direct Transfer of Subsidies on Kerosene, LPG and Fertilizers to Hon'ble Finance Minister on 5th July, 2011. The Interim Report of the Task Force envisages phase-wise implementation for transfer of cash subsidy on Kerosene, LPG and Fertilizers. Ministry of Petroleum & Natural Gas is progressing in line with the recommendations of the Task Force in a phased manner.

The recommendations of the Task Force on direct transfer of cash subsidy for PDS Kerosene and LPG

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas inaugurates the new FCCU of HPC refinery at Mumbai.

have been accorded 'in principle' approval by the Empowered Group of Ministers (EGoM) on Under Recoveries of the Oil Marketing Companies.

(I) LPG:

The Government has taken initiatives to launch pilot studies to introduce the changes as proposed in the Interim Report for direct transfer of cash subsidy for Domestic LPG, in Hyderabad (Andhra Pradesh) & Mysore (Karnataka). The pilot study has commenced with collecting details of UID number and bank account details of the customers for appending the OMC customer database with Aadhaar and bank details. A systems integrator has been appointed, who is engaged in designing the network, software and linking of existing transaction software of the oil company with this system. The pilot is executed with active association of UIDAI for requisite technical and specification inputs. Trial for delivery of refill after successful authentication of UID details has been started on 17.11.2011 in Mysore.

(II) Kerosene:

State/Union Territory Governments have been requested to indicate the preparedness of the Public Distribution System (PDS) in the State to undertake this transfer and proposed methodology to be adopted for transferring the cash equivalent of subsidy to the bonafide beneficiaries. The Pilot Scheme for direct transfer of cash subsidy on PDS Kerosene has been launched in Kotkasim Tehsil of Alwar District (Rajasthan) w.e.f. 5th December, 2011.

1.24 STEPS TAKEN TO CHECK ADULTERATION OF PETROL/DIESEL

Checking fuel adulteration is a continuous process and the Ministry of Petroleum & Natural Gas has taken several technological and institutional measures to contain adulteration. The steps taken for controlling and checking adulteration are summarized below:

(i) Essential Commodities Act, 1955: As per the Control Orders issued by the Government to prevent fuel adulteration, under the Essential Commodities Act, 1955, State Governments are empowered to take action against those indulging in adulteration. The Central Government has requested the State Governments/ Union Territory Administrations to take steps to control adulteration.

(ii) Inspections: OMCs undertake regular and surprise inspections of Retail Outlets and also take action under Marketing Discipline Guidelines (MDG) and Dealership Agreements against those indulging in adulteration and malpractices.

(iii) Tamper proof locking system: OMCs have introduced new tamper proof tank-truck locking systems to prevent en route adulteration by transporters.

(iv) Canalization of import of Superior Kerosene Oil (SKO): Keeping in view the misuse/diversion of SKO for adulteration, the import of SKO by private parties has been canalized through OMCs.

(v) Creation of separate enforcement wing: As advised by the Government, OMCs have created a

IGL's CNG Outlet

separate wing to report to a Director other than Director (Marketing), to oversee and monitor all activities and operations to curb adulteration.

(vi) Automation of Retail Outlets: In order to monitor the activities at retail outlets through the latest technological means, MOP&NG has directed the OMCs to complete automation of retail outlets selling more than 200 KL per month, to begin with.

(vii) Monitoring of movement of Tank Trucks through Global Positioning System (GPS): In order to prevent adulteration during transportation, OMCs have been directed to install GPS for complete monitoring of the movement of all the company-owned/dealer-owned/contractor-owned tank trucks.

(viii) Third Party Certification of Retail Outlets: OMCs have been directed to complete third party certification of all the retail outlets selling more than 100 KL per month.

(ix) Marketing Discipline Guidelines: The Marketing Discipline Guidelines (MDG) under which the OMCs take penal actions against the erring dealers have been revised during August 2005 making the penal actions more stringent in case of adulteration. As per MDG, 2005, a dealership is liable to be terminated in the first established instance of adulteration itself.

(x) Toll Free numbers: The OMCs in the Public Sector have introduced toll free numbers for both LPG as well as retail outlets, for registration of complaints by consumers for addressing public grievances, including complaints relating to adulteration of fuel.

(xi) Installation of GPS based VTS on tankers transporting PDS SKO: Some State Governments have started responding to the request of this Ministry for installation of GPS based VTS on tankers transporting PDS Kerosene. OMCs are in touch with the interested State Governments for implementation of the system. Further, OMCs have hosted a public portal where information on PDS SKO such as dispatch time, quantity and vehicle details are available to the general public.

1.25 NATIONAL AUTO FUEL POLICY

The Auto Fuel Policy, approved by the Cabinet in its meeting held on 3.10.2003, gave a roadmap for upgradation of the quality of auto fuels (Petrol and Diesel) to Bharat Stage (BS)-IV in 13 identified cities and BS-III in the rest of the country effective from 1.4.2010. Accordingly, supply of BS-IV Petrol & Diesel commenced on a single day, i.e. on 1st April, 2010, in the 13 identified cities as per the roadmap laid down in the Auto Fuel Policy. However, due to significant increase in the demand for auto fuels, supply constraints and critical logistic issues, including movement of products in large quantities, it was decided to stagger the introduction of BS-III Petrol and Diesel in the rest of the country in a phased manner between 1st April, 2010 to 1st October, 2010 with the further direction that BS-III emission norms in the rest of the country be made effective from 1st October, 2010. In compliance with the decision of the Cabinet, BS-III fuels have been introduced in the country, with the last phase completed on 22nd September, 2010.

Efforts are being made to progressively expand coverage of BS-IV fuels with introduction of these fuels in 50 more cities by 2015. An 'Industry Group of Officers' has been formed with representatives from IOC, BPCL and HPCL. The Group will identify these additional cities considering the pollution levels and the vehicle population. Inclusion of all state capitals and cities with population of more than 1 million will be emphasized while selecting the additional cities for extension of BS-IV auto fuels. In the first phase, the following seven cities have been extended with BS-IV fuels during the year 2011-12:

Name of the city	Date of supplying BS-IV fuels	Remarks
Puducherry City (UT)	01.01.2012	Implemented
Mathura City (UP)	01.01.2012	Implemented
Vapi City (Guj)	01.02.2012	Implemented
Jamnagar City (Guj)	01.02.2012	Implemented
Ankaleshwar City (Guj)	01.03.2012	Implemented
Hissar City (Haryana)	01.03.2012	Implemented
Bharatpur City (Raj)	01.03.2012	Implemented

1.26 CONSERVATION OF PETROLEUM PRODUCTS

Impressive growth rate in the Indian economy has resulted in higher demand for various forms of energy including energy obtained from petroleum products. The growing energy demand, coupled with substantial increase in import of crude oil to meet a large percentage of energy needs, puts pressure on the economy due to high crude oil prices in the international market. With the projected increase in

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas and other dignitaries at the inaugural function of OGCF'12 in New Delhi

the demand of petroleum products of approximately 5% per annum, energy conservation assumes special significance.

The need of the hour is to create an environment where conservation methods/techniques/energy efficient equipments are adopted in the various sectors. Effective energy conservation measures can go a long way to serve the dual purpose of energy conservation and environmental protection.

In our country, an identified scope of reducing energy consumption by 20% to 25% exists in all major sectors through conservation measures. As there are millions of consumers in the country, any savings achieved by individual consumers will cumulatively amount to large quantities and obviate the need to produce or import an equivalent amount of new energy on a recurring basis.

The transport sector has become a major consumer of petroleum products, which has put a heavy pressure on the quality of the environment. Deteriorating ambient air quality in urban areas due to emissions from transport vehicles has been a matter of great concern in recent years. Apart from better quality of existing petroleum fuels, the use of less polluting fuels like Hydrogen and blending of Bio-diesel and Ethanol are some of the steps which have the potential to control the impact on the environment and reduce the burden on the national exchequer.

In association with major national industrial associations, Petroleum Conservation Research Association (PCRA) has initiated steps to approach the small and medium industry clusters where energy consumption is substantial and a large scope for its optimization exists. Through interaction, the areas where Research & Development (R&D) interventions are sought by the industrial clusters are finalized and then, necessary action initiated for required R&D and its implementation.

PCRA has been active in undertaking energy conservation awareness campaigns through the print, electronic and outdoor media. These awareness campaigns, together with various efficient energy utilization measures undertaken by PCRA, have led to improvement in use of petroleum products in all major sectors of the economy viz. transport, industry, agriculture, domestic and commercial. For enhancing the effectiveness and reach of PCRA's efforts, linkages have been developed with the Bureau of Energy Efficiency (BEE) and Confederation of Indian Industry (CII) where several joint programmes are planned for implementation.

The PCRA team executes several activities like energy audits and institutional training programmes for industries, driver training programmes and Model Depot Project studies for the State Transport Undertakings (STUs) and other large fleet operators and conservation / safety workshops for the domestic sector. PCRA also bridges the gap between the users of energy and the energy efficient equipments available in our country, by sharing their features during the technical seminars and workshops, which are conducted for a wide spectrum of industries depending on their requirements. Efforts to showcase the results achieved are taken through participation in national exhibitions targeted for the industries and also through Kisan Melas, where information for the farmers is conveyed through the medium of films and literature.

PCRA's efforts are focused towards sharing and motivating energy users to adopt conservation techniques and practices. This is achieved through various mass media campaigns, seminars, training programmes, printed literature, essay and quiz competitions.

1.27 HYDROGEN AS AUTO FUEL

The Hydrogen Corpus Fund (HCF) was set up by the Government of India for promoting Hydrogen as a transport fuel. Some of the projects initiated by IOC R&D under the HCF and also in collaboration with Ministry of New & Renewable Energy (MNRE) and Society of Indian Automobile Manufacturers (SIAM) are as follows:

- Setting up the first HCNG dispensing station in the country at IOC R&D during the year 2005.
- Setting up of a HCNG dispensing station at Indian Oil COCO station at Dwarka, New Delhi during the year 2009.
- Research project on optimization of HCNG blends in automotive vehicles on a fleet of 3-wheelers, passenger cars and mini buses. Based on the initial findings, the Project Monitoring Committee (PMC) decided to undertake field trials using 18% HCNG blend. Accordingly, vehicle manufacturers optimized engines using 18% HCNG blend. Field trials on some of the optimized vehicles are in progress.
- A fleet of 3-wheelers operating on 18% HCNG is being refueled from HCNG stations of IOC R&D and Dwarka for field trials and the vehicles have completed mileage accumulation up to 20,000 km.
- Facilities for undertaking studies on performance and emission characteristics of heavy duty HCNG engines are being created at IOC R&D Centre. MoC signed with M/s. Ashok Leyland for the supply of optimized HCNG engine for durability studies and two HCNG buses for limited field trials.
- Development of large scale photo-catalytic process using modular reactors for Hydrogen production by IOC R&D in collaboration with BHU, Banaras.

In addition, to the above the following activities have also been undertaken at IOC R&D:

- Development of single step compact steam methane reforming technology for production of HCNG. The demonstration plant has been set up.
- The fourth edition of the Workshop on Safety of Hydrogen and HCNG for Application in Transport Sector was held during December, 2010 with support of US DoE.
- IOC R&D organized a two day Workshop on Hydrogen Production, Storage, Safety and Applications under the aegis of Hydrogen Association of India, at India Habitat Centre, New Delhi during 1-2, December, 2011.

Some automobile manufacturers are planning for demonstration trials on limited number of Fuel Cell or IC engine based vehicles for which supply of Hydrogen from IOC R&D will be sought.

Use of Hydrogen/HCNG as an Auto fuel is under an experimental stage only. Commercial utilization of Hydrogen as such or as HCNG will depend entirely upon the success of various projects under progress, besides cost economics of Hydrogen production, storage, distribution and application.

1.28 BIO-DIESEL PURCHASE POLICY

The Ministry of Petroleum and Natural Gas has announced a Bio-diesel Purchase Policy effective from 1.1.2006. Under this scheme, Oil Marketing Companies would purchase Bio-diesel for blending with High Speed Diesel (HSD) to the extent of 5% at 20 purchase centres identified across the country.

In terms of a National Policy on Bio-fuels, the procurement price of Bio-diesel is periodically being announced by the OMCs. However, suppliers have not come forward to offer Bio-diesel at these designated purchase centres at the declared prices. As such, blending of Bio-diesel with HSD could not be set in motion.

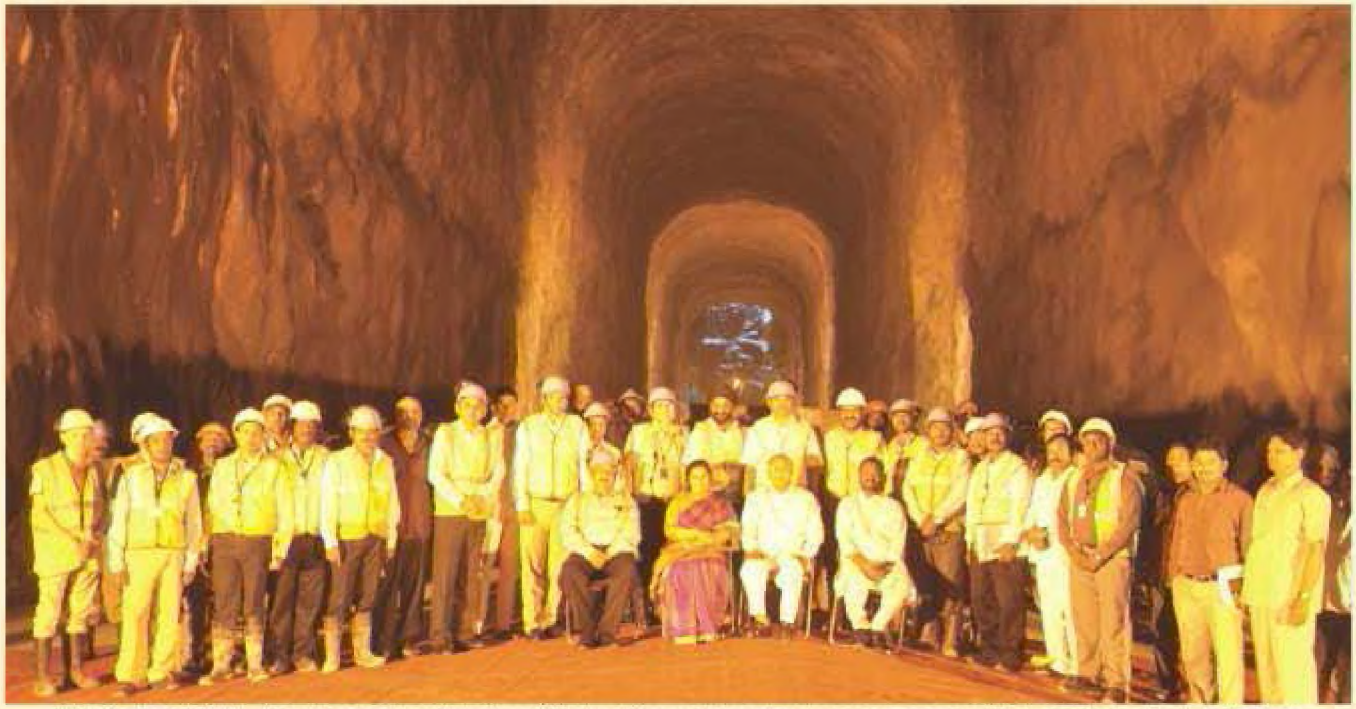
The Government has notified the National Policy on Bio-fuels in December, 2009, which has laid down detailed guidelines for development of Bio-diesel. The National Bio-fuel Policy has superseded the Bio-diesel Policy of MoP&NG.

1.29 ETHANOL-BLENDED PETROL (EBP) PROGRAMME

Ministry of Petroleum & Natural Gas, vide its notification dated 20th September, 2006 directed the OMCs to sell 5% Ethanol Blended Petrol (EBP) subject to commercial viability, as per Bureau of Indian Standards specifications, in the entire country except the north-eastern States, Jammu & Kashmir, Andaman & Nicobar Islands and Lakshadweep, with effect from 1st November, 2006.

Low availability and State-specific issues hindered the progress of the EBP programme. Against the requirement of 180 crore litres of Ethanol for blending 5% Ethanol with Petrol during 2006-09, the OMCs could contract for 146.6 crore litres of Ethanol and the actual procurement was 58.70 crore litres only.

To give a fillip to the EBP programme, the Government took a decision on 16.8.2010 that OMCs would start procuring Ethanol at an adhoc ex-factory price of ₹ 27 per litre. This price would be subject to adjustment with the final price arrived at, based on the recommendations of the Expert Committee constituted for determining the formula/ principles for pricing of Ethanol. It was decided that at this declared price, the entire quantity of Ethanol made available by the manufacturers would be absorbed for the EBP Programme. A Notification to this effect has been issued on 1.9.2010 and accordingly, procurement has started and supply of 5% EBP has commenced since November 2010.



Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas visits crude oil storage cavern in Visakhapatnam, Andhra Pradesh.

From 1.11.2010 to 30.9.2011, against the requirement of 105 crore litres of Ethanol in the entire notified area, 55.87 crore litres was contracted and 36.19 crore litres was supplied by the Ethanol suppliers for the EBP Programme. Accordingly, the programme could be implemented in 13 States and 3 UTs. For the year 2011-12, OMCs have contracted 46.97 crore litres of Ethanol in 12 States against the requirement of 100.8 crore litres for the EBP Programme in the entire notified area.

The Expert Committee for pricing of Ethanol has also submitted its Final Report containing its recommendations on pricing of Ethanol. The same has been submitted to the National Bio-fuel Steering Committee (NBSC) for consideration.

1.30 PLAN OUTLAY

Against an outlay of ₹ 2,29,278.71 crore for the Petroleum and Natural Gas sector in the Eleventh Five Year Plan (2007-12), it is anticipated that actual expenditure would be higher by about 20% at ₹ 2,75,236.98 crore. During 2011-12, there has been some shortfall in anticipated expenditure at ₹ 69,889 crore against the Budget Estimate of ₹ 74,852 crore. This is primarily due to lower utilization of resources in Refinery and Marketing and Engineering activities during the year.

1.31 EARNINGS OF OIL PUBLIC SECTOR UNDERTAKINGS

The Profit Before Tax (PBT) and the Profit After Tax (PAT) earned by Public Sector Undertakings in the Oil Sector during 2010-11 were ₹ 59,817.69 crore and ₹ 41,209.83 crore respectively. Oil PSU wise details are given below:

(₹ in crore)

Name of Oil PSU	Profit Before Tax 2010-11	Profit After Tax 2010-11	% of GOI Holdings as on 31.12.2011
ONGC	27618.97	18924	74.14
OVL	4906.65	2690.55	0
IOC	9095.86	7445.48	78.92
GAIL	5240.01	3561.15	57.35
HPCL	2346	1539	51.11
OIL	4313.2	2887.73	78.43
BPCL	2412.65	1546.68	54.93
MRPL	1737.49	1176.63	0
CPCL	763.52	511.52	0
NRL	414.54	279.26	0
EIL	784	523	80.40
BALMER LAWRIE	181.04	121.09	0
BIECCO LAWRIE	3.76	3.74	99.57
TOTAL	**59817.69**	**41209.83**	

1.32 STRATEGIC CRUDE OIL STORAGE

Taking into account the oil security concerns of India, the Government has decided to set up Strategic Crude Oil Storage with a combined capacity of 5 MMT at three locations in the country viz. Visakhapatnam (1.0

MMT), Mangalore (1.5 MMT) and Padur (2.5 MMT). The capacity of Visakhapatnam site has been enhanced to 1.33 MMT, thus taking the total Strategic Crude Oil Storage capacity to 5.33 MMT.

The proposed Strategic Crude Oil Storages would be in underground rock caverns. A special purpose vehicle, namely Indian Strategic Petroleum Reserve Limited (ISPRL), has been created as a subsidiary of OIDB for implementation and management of the strategic storage of crude oil. Crude oil from the reserves will be released by a Government-appointed High Powered Committee in the event of any short-term disruptions in crude oil supplies, a natural calamity or any unforeseen global event leading to an abnormal increase in prices. The project involves a capital cost of approximately ₹ 2763 crore and crude oil cost of approximately ₹ 20,278 crore (calculated at an average crude oil cost of US$ 110/bbl and exchange rate of 1US$ = ₹ 50). The facility at Visakhapatnam is likely to be completed in 2012.

At present, the physical progress of the Visakhapatnam project is 84.3%, the physical progress of the Mangalore and Padur projects is 42.7% and 38.3% respectively.

As the crude oil requirement in the country has been increasing, the need for additional crude oil storage is being felt. ISPRL has been entrusted with the responsibility of preparation of Detailed Feasibility Reports for 12.5 MMT of strategic storage of crude oil in Phase-II at four sites, namely, Bikaner-Rajasthan (2.5 MMT), Chandikhol in Odisha (2.5 MMT), Rajkot in Gujarat (2.5 MMT) and Padur in Karnataka (5.0 MMT). Engineers India Limited has been awarded the job of carrying out the detailed feasibility study and preparing the Detailed Feasibility Report.

1.33 RIGHT TO INFORMATION ACT - 2005

Right to Information (RTI) Act-2005 has been implemented in the Ministry of Petroleum & Natural Gas as per Gazette Notification of Government of India dated 15th June, 2005. The RTI Act is inter alia designed to promote transparency and accountability in the functioning of public authorities.

As per provisions of Section 5 and 19 of the Right to Information Act, 2005 and in supersession of all the earlier orders issued, with effect from 16th May, 2007, all the Under Secretaries (or Section Officers in the Sections where there is no Under Secretary) in the Ministry of Petroleum & Natural Gas have been designated as Public Information Officers (PIOs) in respect of Sections allocated to them. Accordingly, all the Directors/Deputy Secretary/Joint Adviser in the Ministry of Petroleum & Natural Gas have been designated as Appellate Authorities in respect of their concerned Under Secretary/Section Officers (PIOs). All the PSUs under the administrative control of the Ministry of Petroleum & Natural Gas have also implemented RTI Act, 2005 and PIOs/APIOs and Appellate Authorities have been designated by them. Basic information in respect of the Ministry of Petroleum & Natural Gas and all its PSUs along with details of Appellate Authorities, PIOs & APIOs has been hosted on the websites of the Ministry and Oil PSUs.

During 2011-12 (till December 2011), 6690 applications/receipts including 105 appeals were received under the RTI Act, 2005 in the Ministry. Out of 6690 applications/ receipts, 6580 applications/ receipts including 92 appeals have been disposed off. The remaining applications/receipts and appeals would be disposed off within the time limit prescribed in the RTI Act.

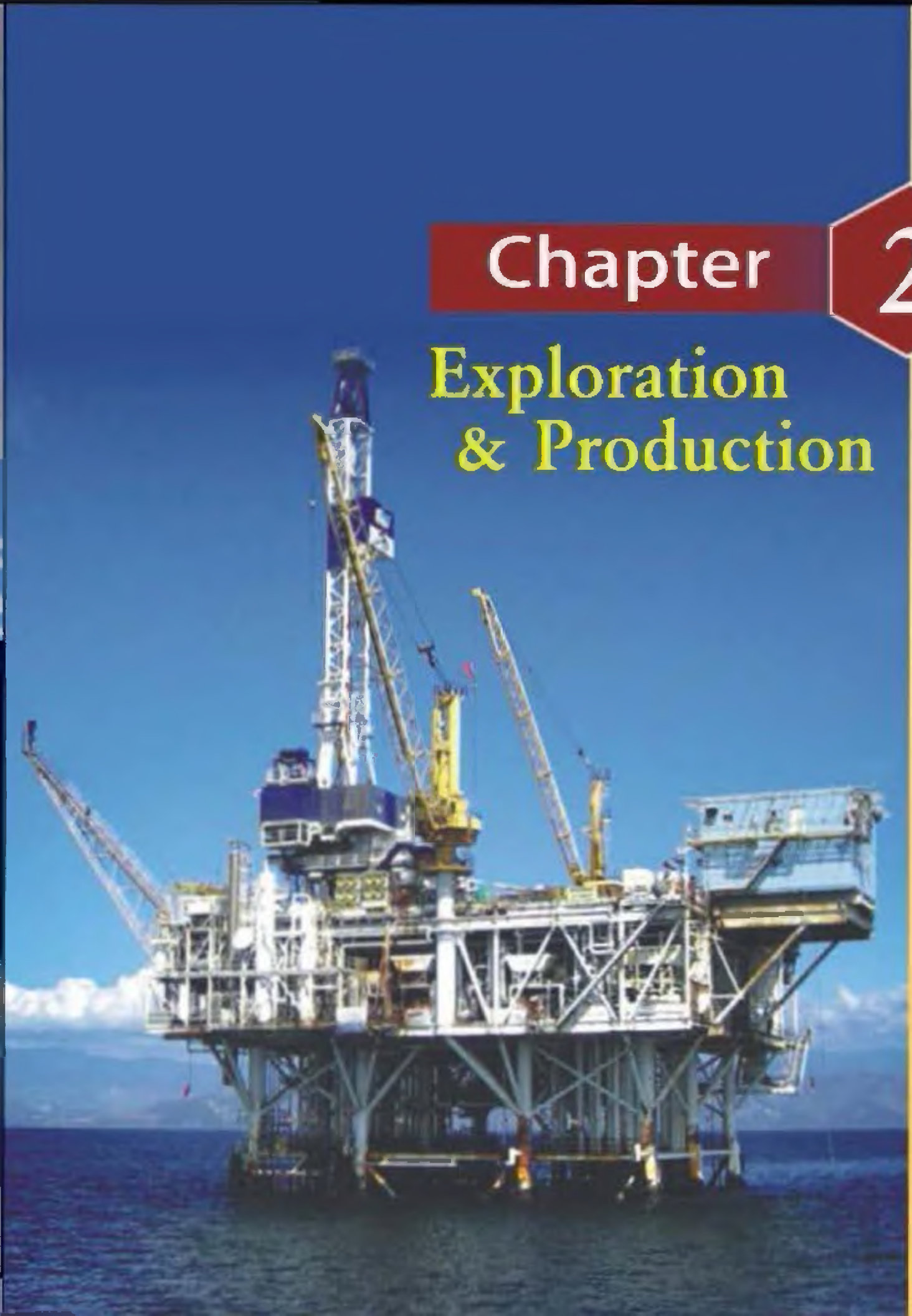
1.34 PUBLIC GRIEVANCE REDRESSAL SYSTEM IN OMCs

With the focus on providing better services to customers, Public Sector OMCs namely IOC, BPCL and HPCL have introduced a common Unique Toll Free number viz. 18002333555 to redress customers' complaints.

1.35 REFILL BOOKING THROUGH SMS/IVRS

OMCs have introduced Short Message Service (SMS) and Interactive Voice Response System (IVRS) booking for LPG refills so that customers can directly book refills through a computerized interface without human intervention. Under this system, there is a facility for confirmation of the refill booking and the time of booking to the customers, along with information on the likely date when the refill will be supplied, leaving no scope for doubt in the minds of the customers.

With the focus on providing better services to customers, the OMCs have adopted Vision 2015 for Customer Satisfaction wherein it is targeted to introduce SMS booking in all towns with population of more than 5 lakh in phases beginning with the metros. Accordingly, IOC and BPCL have introduced the facility of refill booking through SMS/IVRS. HPCL has made it compulsory to book LPG refills on the SMS/IVRS system in Kerala and Delhi.



Chapter 2

Exploration & Production

Exploration & Production

2.1 CRUDE OIL & GAS PRODUCTION

2.1.1 Oil and Natural Gas Corporation Limited (ONGC) and Oil India Limited (OIL), the two National Oil Companies (NOCs), as well as private and joint venture (JV) companies are engaged in the exploration and production (E&P) of oil and natural gas in the country.

Crude oil production by the NOCs during 2011-12 up to December 2011 is about 20.822 MMT. This production is about 72.6% of the total crude oil production up to December 2011 in the country. In addition, crude oil production by the private and JV companies during 2011-12 up to December 2011 is about 7.877 MMT, compared to 7.093 MMT during the corresponding period of the previous year i.e. 2010-11. Thus, total crude oil production in 2011-12 up to December 2011 is about 28.699 MMT, compared to 28.152 MMT during the corresponding period of the previous year, showing a marginal increase of about 1.9%.

Natural Gas Production in 2011-12 up to December 2011 is about 36.197 Billion Cubic Metre (BCM) as against 39.681 BCM in the corresponding period of the previous year, a decline of about 8.8%. The contribution of private / JV companies in natural gas production in 2011-12 up to December 2011 is about 16.915 BCM, as compared to 20.559 BCM during the corresponding period of the previous year, registering a decline of 17.7%. The main reason for lower natural gas production by private/JV companies is due to decline in natural gas production from KG deepwater.

2.1.2 **Measures taken to enhance hydrocarbon reserves and increase production:**

i) Major thrust on exploration in the new frontier areas like deepwater and other geologically and logistically difficult areas and also ensuring continuation of exploration in the existing and unexplored areas.

ii) 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. These projects are being implemented by ONGC & OIL.

iii) Implementation of specialized technologies like extended reach drilling, horizontal drilling and drain hole drilling.

iv) Obtaining the services of international experts, whenever considered necessary.

v) Maintenance of reservoir health through work-over operations and pressure maintenance methods.

vi) Better reservoir delineation through three dimensional (3D) seismic surveys of old fields.

vii) Optimization and redistribution of water injection.

viii) Infill drilling in the unswept areas of the reservoirs.

2.1.3 Consequent upon liberalization in the petroleum sector, Government of India is encouraging participation of foreign and Indian companies in exploration and development activities to supplement the efforts of NOCs to narrow the gap between supply and demand. A number of contracts have been signed with both, foreign and Indian companies for exploration and development of fields on a production sharing basis.

2.1.4 Since 1991, Government of India has been inviting bids on a regular basis with several rounds of bidding carried out till operationalization of New Exploration Licensing Policy (NELP).

2.1.5 In the Ninth round of NELP, Government of India has offered 34 exploration blocks, against which bids for 33 blocks were received. The exploration blocks are likely to be awarded in 2012.

2.2. THRUST AREAS FOR E&P SECTOR

The following thrust areas have been identified in the XIIth Plan for overall development of the E&P industry:

- Shale Gas exploration
- National Data Repository & implementation of Open Acreage Licensing Policy
- Intensifying exploration in non-producing basins
- Level playing field to E&P companies
- Faster development of hydrocarbon discoveries
- Optimize recovery from ageing oil & gas fields
- R&D efforts and feasibility to understand the potential of Oil Shale

2.3 ACQUISITION OF EQUITY OIL ABROAD

Acquiring equity oil and gas assets overseas is one of the important components of enhancing energy security for the country. The Government is encouraging the NOCs to aggressively pursue equity oil and gas opportunities overseas.

ONGC Videsh Limited (OVL)'s share of crude oil and natural gas production in 2011-12 up to November 2011 is about 5.970 MMT of oil equivalent (MMTOE) including 1.556 BCM of natural gas. OVL has a target to acquire 20 MMTPA of O+OEG production by 2020.

2.4 NEW EXPLORATION LICENSING POLICY

Government of India approved the New Exploration Licensing Policy (NELP) in 1997 and it became effective in February, 1999. Since then, 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 Licences (PELs). Eight rounds of bids have so far been invited under NELP, in which 235 exploration blocks have been awarded. In addition, 28 exploration blocks were

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas giving away the Petrofed Oil & Gas Industry Awards 2009-10 for excellence in various categories to ONGC

signed prior to NELP under various bidding rounds with private Indian and foreign companies and NOCs as Licensee. Under NELP, 104 oil and gas discoveries in 34 blocks have already been made.

With a view to accelerate further the pace of exploration, in the Ninth round of NELP (NELP-IX), 34 exploration blocks were offered and bids were received for 33 blocks. The award of exploration blocks under NELP IX is likely in 2012.

2.5 COAL BED METHANE (CBM) POLICY

Coal Bed Methane is a natural gas (Methane) absorbed in coal and lignite seams and is an eco-friendly source of energy. To harness this new source of energy in the country, the Government has approved a comprehensive CBM policy in July, 1997 for exploration and production of CBM gas.

As of now, 30 CBM Blocks have been awarded through competitive international bidding in four rounds of CBM policy, under which blocks are being operated by technically competent companies. Two blocks were awarded on nomination basis and one block through the FIPB route. Thirty-three CBM contracts were signed for exploration of CBM gas. As of now, 8.9 TCF reserves have been established in 5 CBM blocks.

First commercial production of CBM commenced in July 2007 with production of about 6,800 cubic metres per day. The current CBM production from the Raniganj block is about 2 lakh cubic metres per day.

2.6 OIL AND NATURAL GAS CORPORATION LIMITED (ONGC)

Oil and Natural Gas Corporation Limited (ONGC), engaged in exploration and exploitation of oil, natural gas and value added products, was incorporated on 23rd June, 1993 under the Companies Act 1956, pursuant to Government of India's decision to transform the Statutory Commission into a Public Limited Company, through Parliament Act for Oil and Natural Gas Commission (Transfer of Undertaking and Repeal Act, 1993). The authorized and paid up capital of ONGC as on 31.3.2011 is ₹ 15,000 crore and ₹ 4,277.76 crore respectively. ONGC Videsh Limited is a wholly owned subsidiary, of which the entire equity of ₹ 1000 crore as on 31.3.2011 is held by ONGC. Mangalore Refinery and Petrochemicals Limited (MRPL) is another partially owned subsidiary where ONGC has 71.62% equity stake with management control.

2.6.1 Highlights for the Year 2011-12 up to November 2011

- ONGC posted a net profit of ₹ 12,737.13 crore during the first six months (April to Sept. '11) of 2011-12 as compared to the RE target of ₹ 18,321.00 crore for 2011-12.

- Oil and gas production commenced from GS15 field under Eastern Offshore Asset from 31.8.2011.
- Gas production commenced from B22 cluster i.e from BS13A and B22A Well Platforms in the second quarter of 2011-12 under development of new marginal fields.
- Team ONGC received the 'Leading Oil & Corporate of the Year Award' for 2009 and 2010 from Union Minister of Petroleum & Natural Gas, Mr. S. Jaipal Reddy on 10th May, 2011 at New Delhi.
- Hazira Plant has been conferred with the Greentech Environment Excellence Gold Award 2011 for the fifth time in a row.
- As per the recent 'Promoting Revenue Transparency (PRT) Report 2011' by the Transparency International and Revenue Watch, ONGC occupies the top rank (gets 100% score jointly with two other companies BG and BHP Billiton).
- ONGC has achieved Reserve Replacement Ratio (RRR) of more than 1 from its domestic operations during the first four years of the 11th Plan (2006-07 to 2010-11). The RRR reported for the year 2010-11 is 1.76
- ONGC struck Shale Gas for the first time in India at Well RNSG #1 at Icchapur near Durgapur, West Bengal, confirming the presence of gas in Indian Shale.

2.6.2 Physical Performance during 2010-11 & 2011-12

Activity	Unit	2010-11 Actual	2011-12 BE	2011-12 RE	*2011-12 Actuals upto Nov'11	*2011-12 Estimate Dec'11 - Mar'12
Crude Oil Production	MMT	24.419	24.774	23.912	15.934	7.978
Natural Gas Production	MMSCM	23094.57	23536.30	23192.33	15299	7893.33
Natural Gas Sales	MMSCM	18261.58	18530.00	18200.07	11931	6269.07
Value Added Products	KT	3203.16	3358.00	3327.40	2105	1222.4
Development Metreage	KM	500.09	581.41	545.38	364.84	180.54
Wells	Nos.	256	272	267	172	95
Seismic Surveys 2D	GLK/LK	13115.69	4504.0	17816.0	11006	6810
3D	SKM	19354.73	10479.0	15385.0	8558	6827
Exploratory Meterage	KM	384.02	505.865	487.824	237.36	250.464
Wells	Nos.	125	158	165	81	84

Provisional

2.6.3 Financial Performance during 2010-11 & 2011-12

(₹ in Crore)

Parameters	2010-11 Actual	2011-12 BE Target	2011-12 RE Target	2011-12 Actuals * Apr-Sept'11	Projections Dec.-Mar. 2011/12 (Estimates)
Plan Outlay	28,275.54	30,040.47	31,316.00	11,251.22	20,064.78
Total Income (Incl. Interest Income)	72,053.10	68,852.63	77,306.00	41,424.00	35,882.00
Net Profit	18,924.00	15,073.42	18,321.00	12,737.13	5,583.87

*As per board approved H1 results. Results upto Dec 2011 will be available only after approval by the Board.

2.6.4 Progress of Projects

The progress of major projects of ONGC during the year is as under:

Major projects completed during 2011-12 (upto Nov 2011):

Sl.No	Name	Date of completion	Approved Cost (₹ in Crore)
1	C2 – C3 and LPG Recovery from LNG, Dahej	Mechanical completion on 24.02.2011	976.08 (Rev)
2	Integrated Development of G-1 & GS-15 Fields	Part completion i.e. GS-15 was Commissioned on 31.08.2011	2218.01 (Rev)
3	Pipeline Replacement Project - 2	15.05.2011	3796.21 (Rev)
4	Heera and South Heera Re-Development Project	30.11.2011	3005.30 (Rev)

Oil rig in Vietnam

2.6.5 Major Initiatives

I. Strategic goals set for 2020

- Doubling Reserve Accretion to 12 billion Mt O+OEG
- Improving Recovery Factor to the order of 40%
- Production of 20 MMTPA O+OEG equity oil and gas from acquisitions abroad.

ii. Short-term strategy

- Time scheduled exploration activities for prospect recognition and drilling.
- Prioritisation of exploration activities on fast track basis for enhancing reserves accretion.
- Pre-drill 3D seismics in deepwater and blanket 3D in key growth areas.
- Knowledge building in new sectors of producing as well as frontier basins.

iii. Medium-long term strategy

- Further intensification of exploration in the producing basins to realise the hydrocarbon resources to in-place volume conversion.
- Exploration spread in non-producing basins and yet to be explored basins to establish their potential and knowledge building.
- Major shift to deep offshore as the major thrust and contributing sector.

Iv. Strategic initiatives

- Major development projects including IOR/EOR schemes are under various stages of implementation to enhance crude oil and natural gas production.
- In order to increase the oil and gas production, ONGC has taken up development of some of the recent discoveries.
- A new and dedicated business unit viz. Eastern Offshore Asset has been constituted with an aim to put East Coast discoveries on fast track development through an integrated East Coast Hub.
- Substantive decentralization of administrative authorities together with delegation of financialauthorities carried out to empower field executives.
- Best- in-class technology inducted in core areas of E&P activities like
  1. Acquisition, processing and interpretation of seismic data
  2. Drilling and production technology
  3. IT and communication.

v Initiatives in Human Resources

ONGC has always been a pioneer amongst the public sectors for the innovative initiatives it undertakes for improving the effectiveness of HRM. ONGC has adopted some of the best HR practices to enhance their knowledge and skill levels, encourage employee involvement, empowerment and improving the satisfaction level of its people for achieving organisational objectives.

2.6.6 Non-Conventional Sources of Energy

(I) Wind Power Project:

ONGC had set up a 50 MW Wind Farm Project at Motisindoli site, Village Jakhau, Dist. Kutch of Gujarat using 1.5 MW machines installed on 78 meter high towers. The plant, besides being a source of green power, shall also bring a saving to ONGC amounting to ₹ 30 crore approx. per year on electricity charges in Gujarat, considering the present purchase price of electricity. Since commissioning, more than 137 MW electricity has been generated.

(ii) Installation of Solar Thermal Plants:

Solar thermal plants in the ONGC guest house, hospital, academy hostel, officers' club, central workshop, Baroda and colony are already installed. Initiatives have been taken to install the solar water heating system at other locations of ONGC also.

2.6.7 Health, Safety and Environment (HSE)

ONGC has a holistic approach towards Health, Safety and Environment (HSE) Management. Under the integrated management system in place, occupational health and safety of employees and environment protection is taken care of in a proactive manner. ONGC manages HSE by issuing policies, taking up projects, coordinating statutory compliances etc. All environmental aspects and their impacts on the environment have been identified in the environmental management system in place, along with their mitigation measures. Air emissions, effluent discharges and solid wastes are monitored and managed as per statutory requirements. Ambient air quality is monitored, effluent is treated at effluent treatment plants and hazardous oily waste is subjected to the bio-remediation process of treatment. Some of the initiatives taken to address HSE issues of the operational areas are given below:

- Corporate e-Waste Policy: A corporate policy on e-waste has been prepared and issued for handling and management of e-waste from operational activities. The e-waste is to be disposed off through MOEF/ CPCB/ SPCB approved recyclers.
- Oil Spill Response Facility at Mumbai Port: Since crude oil from offshore is being handled at port areas, ONGC is in the process of signing an MoU with Mumbai Port Trust for control of any eventuality of oil spillage.
- Contractors Meet: To ensure safety of contractual workers, a series of contractor meets are being organized involving top management of ONGC with participation of major drilling/other contractors and their representatives.
- Integrated Management System for Environment Management: Operating facilities of ONGC (total 412 nos.) at different work centers are sustaining a third party certified international benchmark management system based on ISO 9001, OHSAS 18001 and ISO 14001 integrating Quality, Occupational Health & Safety and Environment Management.
- Drill site waste management and restoration of drill sites: ONGC drill site activities are carried out in an environmentally sound manner. For collection of drill site effluents and waste, a waste pit covered with a High Density PolyEthylene (HDPE) sheet is constructed at each site. The effluent generated is suitably treated and recycled for drilling as well as for other uses. The abandoned drill site is restored to original conditions through in-house efforts, as well as with the help of outside agencies like North East Institute of Science and Technology (NEIST), Jorhat.
- Process of Environmental Clearance has been streamlined for ONGC projects and efforts have been made for speedy environmental clearance by preparing in-house reports, seeking exception in public hearing etc.
- 15th National Oil Spill Disaster Contingency Plan and Preparedness Meeting (NOS-DCP) was held under the chairmanship of DG - Indian Coast Guard.
- In one of the major initiatives, mangrove plantation has been undertaken by ONGC along the Dhadhar river estuary in Gandhar area of Gujarat to prevent flooding of water and degeneration of nearby land areas. Approx. 12 lakh mangroves have been planted and the second phase of this project is approved.
- Sustaining the fragile ecosystem of the Himalayas is one of the objectives underlined in the National Action Plan on Climate Change launched by Prime Minister. ONGC planted 3 lakh Ringal (dwarf bamboo) to protect the Upper Himalayas. In the second phase, plantation of 4 lakh Ringal saplings is being carried out in 160 hectares area of Upper Himalayas.

2.6.8 Conservation of Energy and Petroleum Products

ONGC is actively pursuing energy conservation measures, which include creating awareness, increasing efficiency, avoiding waste & loss, inter-fuel substitution and using renewable energy. Some of the main measures taken to conserve HSD are listed below:

- Using small DG sets at rigs during lean periods
- Using gas engines in place of diesel engines
- Using energy efficient state-of-the-art technology engines
- Using bi-fuel engines
- Waste heat recovery systems
- Induction of state-of-the-art rigs
- Phasing out of old diesel engines more than 15 years old has been approved by EC with energy efficient engines
- Awareness campaign on use of bio-diesel as alternate fuel
- Carrying out energy audits & implementing the recommendations made therein.

In addition, the new initiatives taken this year include sensitization and training to 20,000 ONGC employees on energy conservation techniques, use of energy efficient lighting all over ONGC, reduction of contract demand and improvement of power factor and use of energy efficient engines.

2.7 ONGC VIDESH LIMITED (OVL)

ONGC Videsh Limited (OVL), a wholly owned subsidiary of ONGC, was incorporated as Hydrocarbons India Private Limited on 5th March, 1965 with an initial authorized capital of ₹ 5 lakh, for the business of international exploration and production.

Round the clock vigil on ONGC's Offshore Platform in the Western Offshore

Its name was changed to ONGC Videsh Limited on 15th June, 1989. The authorized and paid-up share capital of OVL as on 30th November, 2011 is ₹ 1,000 crore. The primary business of the company is to prospect for oil and gas acreages abroad. These include acquisition of oil and gas fields in foreign countries as well as exploration, production, transportation and sale of oil and gas.

OVL presently has participation in 33 E&P projects in 15 countries namely Vietnam (2 projects), Russia (2 projects), Sudan (2 projects), South Sudan (1 project), Iran (1 project), Iraq (1 project), Libya (1 project), Myanmar (2 projects), Syria (2 projects), Cuba (2 projects), Brazil (6 projects), Nigeria (2 projects), Colombia (6 projects), Venezuela (2 projects) and Kazakhstan (1 project) and is actively seeking more opportunities across the world. Out of 33 projects, OVL is Operator in 11 projects and Joint Operator in 6 projects.

OVL is currently producing oil and gas from the Greater Nile Oil Project and Block 5 A in Sudan, Block 6.1 in Vietnam, Al Furat Project in Syria, Sakhalin-I Project and Imperial Energy in Russia, Mansarovar Energy Project in Colombia, San Cristobal Project in Venezuela and Block BC-10 in Brazil.

OVL started production of oil and gas of 0.253 MTOE in the year 2003 and achieved the highest ever oil and gas production (O+OEG) of 9.448 MTOE in 2010-11. The details of production for the period April to November, 2011 along with the last five years are given below:

	April to November, 2011 (Provisional)	2010-11	2009-10	2008-09	2007-08	2006-07
Crude Oil (MMT)*	4.414	6.756	6.513	6.556	6.840	5.804
Gas (BCM)	1.556	2.692	2.357	2.220	1.962	2.148
Total (O+OEG) (MTOE)	5.970	9.448	8.870	8.776	8.802	7.952

** Including Condensate*

OVL proven reserves as on 1st April 2011 stood at 202.908 MTOE (O+OEG) respectively.

The consolidated gross revenue and group profit after tax of OVL for the half year ended 30th September, 2011 was ₹ 12,244 crore and ₹ 2,717 crore respectively.

Further, OVL is pursuing acquisition of various oil and gas exploration and production opportunities in Russia, Central Asia, Latin America, Africa and the Middle East, which are at different stages.

2.8 OIL INDIA LIMITED (OIL)

Oil India Limited (OIL), a Government of India Enterprise under the administrative set-up of Ministry of Petroleum and Natural Gas, is engaged in the business of exploration, production and transportation of crude oil and natural gas.

The President of India, acting through MoP&NG, holds 188,599,560 Equity Shares i.e. 78.43 % Capital of the Company. OIL came up with the Public Issue of 26,449,982 nos. shares during 2009. The objects of the issue were to achieve the benefits of listing and to fund requirements towards (a) exploration and appraisal activities; (b) development activities in producing fields; and (c) purchase of capital equipment and contracts for facilities.

OIL was conferred the status of 'Miniratna' in 1997, has been signing a MoU with the Ministry of Petroleum and Natural Gas since 1991-92 and has been consistently rated between 'Excellent' and 'Very Good.' OIL has been accorded the 'Navratna' status from the first quarter of 2010-11.

OIL's present in-country operational areas are spread over the states of Assam, Arunachal Pradesh, Mizoram, Bihar, Andhra Pradesh, Puducherry, Andaman and Rajasthan. OIL is now operating in 20 nominated Petroleum Mining Leases (PML) and 8 nominated Petroleum Exploration Licenses (PEL). OIL, up to the end of NELP - VIII bidding round, is holding Participating Interest (PI) in a total of 30 NELP blocks with the right of Operatorship in respect of 10 onshore blocks and 1 shallow water block. Besides, OIL is Joint Operator in 1 deepwater block. OIL is currently holding PIs in the range of 10% - 90% in the remaining blocks with other consortium partners. In addition, the Company holds PIs in another three Pre-NELP JV blocks in India and Production Sharing Interest in one Joint Venture Contract with other partners in Arunachal Pradesh.

OIL is currently holding overseas exploration blocks and PI in other business ventures in nine countries, viz. Venezuela, Libya, Gabon, Iran, Nigeria, Yemen, Sudan, Timor-Leste and Egypt, pursuing various upstream E&P activities. In addition, the Company is continuously scouting for suitable E&P opportunities in other countries like Syria, Indonesia, Oman, Kazakhstan, Russia etc., either alone or with suitable partners.

OIL holds 3.5% PI in two of the Venezuelan Heavy Oil producing property in Carababo-1, North & Central, joining hands with OVL, IOC, Spanish major RAPSOL and Malaysian NOC, PETRONAS to pick 40% stake in a mixed company from the Venezuelan NOC, PDVSA.

OIL owns and operates a trunk crude oil pipeline in the north-east region of the country for transportation of crude oil produced by OIL as well as ONGC to feed Numaligarh, Guwahati and Bongaigaon refineries. OIL also owns and operates a branch line to feed Digboi refinery. OIL continues reverse pumping of Ravva crude to Bongaigaon refinery through its existing Barauni-Bongaigaon trunk pipeline.

The natural gas produced in Assam is sold to different customers, viz. BVFCL, APGCL, NEEPCO, IOC (AOD), and APL and over two hundred nearby tea gardens. OIL commenced supply of natural gas to Numaligarh Refinery Limited (NRL) from March, 2011. The non-associated gas produced by the Company in Rajasthan is sold to Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL). The Company also produces LPG in its Plant at Duliajan, Assam.

OIL holds 26% stake in NRL, Assam, 10% stake in Brahmaputra Cracker and Polymer limited (Assam Gas Cracker Project) and 23% PI in the Duliajan - Numaligarh Gas Pipeline (DNPL) of M/s Assam Gas Company Limited. OIL also holds 10% stake in the 741 km long product pipeline in Sudan, completed in 2005.

In view of the opening up of the hydrocarbon sector, as well as to keep pace with the changing petroleum scenario, the Company formulated its Strategic and Corporate Plan, which is presently under implementation.

2.8.1 Physical Performance:

Parameters	Unit	2010-11 (Actual)	2011-12		
			Target	Actual upto 31.12.2011	Anticipated (2011-12)
Seismic Survey :					
Onshore 2D	GLKM	1,149.45	2,090	313.97	1,100
3D	SQKM	758.92	1,767	1,003.52	1,870
Aero-Magnetic	SQKM	-	4,299	-	6,165
Drilling ;					
Exploratory	'000 Mtr.	49,548	104.9	40.97	51
Well	No.	11	34	12	15
Development	'000 Mtr.	71,253	92.6	50.44	70
Well	No.	16	34	17	22
Crude Oil Production	MMT	3.586	3.76	2.89	3.84
Natural Gas Production	MMSCM	2,352.72	2,633	199.83	2,633
Natural Gas Sale	MMSCM	1,808.4	2,126	1,595	2,126
LPG Production	'000 Tonnes	45.01	44.95	39.90	46.0

2.8.2 Financial Performance

(₹ in Crore)

Parameters	2010-11 (Actual)	2011-12		
		Target (BE)	Achievement Up to 30.09.2011	Anticipated (RE) (2011-12)
Plan Outlay	1,742.76	3,180.33	970.16	2,262.68
Total Income	9,549.21	9,524.59	6,621.30	10,922.68
Net Profit	2,887.73	2,775.30	1,988.13	3,183.22

2.8.3 Other Achievements:

- Crude oil production of 3.84 MMT during 2011-12 is expected against the production level of 3.586 during 2010-11.
- OIL has made 6 hydrocarbon discoveries in Assam during 2010-11 and 3 discoveries up to December, 2011 during 2011-12.
- OIL has enhanced the Natural Gas production potential from 6.0 MMSCMD to approx. 7.8 MMSCMD during the current year till December, 2011.

2.8.4 Progress of Overseas Projects:

OIL is currently holding overseas exploration blocks and participating interest in other business ventures in nine countries viz. Venezuela, Libya, Gabon, Iran, Nigeria, Yemen, Sudan, Timor-Leste and Egypt. In addition, OIL also holds a stake in a 741 km long pipeline in Sudan. All these overseas blocks are at various stages of exploration and development.

2.8.5 E&P - Initiative

OIL has initiated a number of measures in its main producing fields in Assam and Arunachal Pradesh to increase productivity in these producing fields, which are as under:

- A number of geo-scientific studies like integrated basin modelling studies, revitalization of old fields, Jorajan redevelopment, thrust belt prospects, stratigraphic trap prospects, non-associated natural gas field development, pilot study for carrying out seismic reservoir characterization of Eocene reservoirs, post-drill analysis of exploratory wells, audit and certification of oil and gas reserves etc. were carried out in the recent past with the help of internationally reputed consultants and their recommendations like infill drilling, work-over, enhancement in water injection etc. are being implemented.
- Various IOR/EOR measures which have been implemented/intensified are enhancing water injection, MEOR technique by using micro-organisms, optimization through artificial lift methods, use of electric submersible pumps, jet-pumps etc. for bringing shut-in wells into production.
- Drilling of horizontal and J-bend wells
- Augmenting drilling efforts by charter hiring additional rigs for increased number of exploratory wells including extension wells, infill wells etc.
- To seismically cover logistically difficult terrain such as riverine areas, swampy / marshy areas including the Brahmaputra river bed, rugged hilly terrain in the belt of Schuppen, nearby township areas etc.
- Intensification of 3D seismic survey in delineating field extensions and identifying subtle structures as well as hitherto explored/unidentified prospects at deeper levels.
- Continue exploratory drilling in the deeper prospects in the south bank of river Brahmaputra, particularly in view of the discoveries in Moran, Barekuri, Baghjan, Mechaki areas etc.
- Exploratory drilling in the NELP/JV Blocks in Assam, Arunachal Pradesh, Mizoram, Rajasthan, Andhra Pradesh, Puducherry and other areas in the country.
- Purchase of drilling rigs to supplement the in-house rigs and also to intensify drilling operations.

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas in discussion with C&MD, Oil India Limited

2.9 GAIL (INDIA) LIMITED

2.9.1 Introduction

GAIL (India) Ltd. (GAIL), is India's principal Natural Gas Company with activities ranging from gas transmission and marketing to processing (for fractionating LPG, Propane, SBP Solvent and Pentane); transmission of LPG; production and marketing of Petrochemicals like HDPE and LLDPE and leasing bandwidth in Telecommunications. The Company has extended its presence in Power, LNG

regasification, City Gas Distribution and Exploration & Production through equity and joint venture participation.

GAIL has been awarded as the world no 1. downstream Company for the year 2011 at the 2011 Platts Global Energy Awards. GAIL is one of the leading public enterprises with a consistently excellent financial track record. Turnover and Profit After Tax during the last ten years have shown a compounded annual growth rate of 14% and 12% respectively. The Company recorded a Turnover of ₹ 32,459 crore and Profit After Tax of ₹ 3,561 crore in the year 2010-11.

2.9.2 Major Business Segments Of Gail

2.9.2.1 Natural Gas

GAIL owns and operates a network of around 8,700 km of Natural Gas high pressure trunk pipeline with a capacity to carry 175 MMSCMD of Natural Gas across the country.

2.9.2.2 LPG and other Liquid Hydrocarbons

GAIL, which is the first company in India to own and operate pipelines for LPG transmission, has a 1,900 km LPG pipeline network, 1,300 km of which connects the western and northern parts of India while 600 km of network is in the southern part of the country. The LPG transmission system has a capacity to transport 3.8 MMTPA of LPG.

2.9.2.3 Petrochemicals

GAIL owns and operates a gas based integrated petrochemical plant at Pata, Uttar Pradesh with a capacity of producing 400,000 TPA of Ethylene and 410,000 TPA of Polymers i.e. HDPE and LLDPE. Capacity expansion of the plant to 500,000 TPA is under progress, which will be further expanded to 900,000 TPA in the next three years. GAIL is setting up a 280,000 TPA Petrochemical Complex at Lepetkata, Dibrugarh, Assam at an investment of ₹ 9258.04 crore, through a Joint Venture, Brahmaputra Cracker and Polymer Limited. GAIL has also taken equity in ONGC Petro Additions Limited (OPaL), which is setting up a greenfield petrochemical project at Dahej with a capacity of 1.1. MMTPA Ethylene.

2.9.2.4 City Gas Projects

GAIL was the first company to introduce City Gas Projects in India and has set up a subsidiary company, GAIL Gas Limited to pursue City Gas Distribution and CNG corridor projects. GAIL has formed eight Joint Venture companies for supplies to households, commercial users and for the transport sector in 8 cities (Delhi, Mumbai, Hyderabad, Tripura, Kanpur, Lucknow, Agra and Pune). On the global front, GAIL has established its CNG and City Gas presence in Egypt through equity participation in Fayum Gas, Shell CNG and Natgas, Egypt. It has also acquired stake in China Gas Holdings for CNG opportunities in mainland China.

2.9.2.5 Telecommunication

Leveraging on its pipeline network, GAIL has built up a strong 12,200 km OFC network for leasing of bandwidth as a carriers' carrier. GAIL's telecom business unit, GAILTEL offers highly dependable bandwidth for telecom service providers across 175 locations in ten states.

2.9.2.6 Exploration and Production

In a move towards integration along the energy chain and for sourcing supply, GAIL has entered into the area of Exploration & Production. At present, GAIL has participating interest in 27 E&P blocks, of which 2 blocks are in Myanmar.

Hydrocarbon discoveries are in place in 7 E&P blocks. The production of crude oil in the Cambay onland Block in Gujarat is in progress, where the company holds 50% participating interest. There have been efforts to improve the production in the block by drilling of two development wells and by reconfiguration of the artificial lift method.

In two offshore blocks viz. A-1 and A-3 Myanmar, Myanma Oil and Gas Enterprise (MOGE) has exercised the option to 'back-in' and accordingly, GAIL's share in these blocks has reduced to 8.5%. The Field Development Plan (FDP) has been approved by MOGE and currently, the development activities are in progress. 4 development wells have been drilled in block A-3 which will be hooked up to the offshore platform currently under construction.

Declaration of commerciality has been approved in two blocks viz. MN-OSN-2000/2 (Mahanadi offshore) and CB-ONN-2003/2 (Cambay Onland - Ankleshwar). Development activities will be taken up in these two blocks. Drilling of Appraisal well is in progress in block AA-ONN-2002/1 (Tripura Onland).

GAIL is the Operator in two onland blocks viz (i) in Rajasthan Basin awarded during NELP-VI bidding round and (ii) in Cauvery Basin awarded during NELP-VII bidding round. Two wells have been drilled in the Rajasthan onland block during the year 2011-12 and drilling of further wells is in progress. Acquisition of 3D seismic data has started in the Cauvery onland block.

Exploration activities are in progress in the other 18 E&P blocks. Out of these, ONGC is the Operator in 13 blocks (in deepwater offshore - 5 in KG basin, 6 in Cauvery and Cauvery Palar basin and 2 in Andaman Nicobar basin), GSPC in two blocks (one in Mumbai offshore and one in KG onland), Eni, Italy in one block (in Andaman deepwater offshore), Petrogas, Oman in one block (in Mumbai offshore) and Jubilant Oil and Gas Private Limited in one block (in Golaghat onland).

2.9.3. Performance:

The physical and financial parameters for the years 2010-11 & 2011-12 (projected) are given below:

A) Physical:

Parameters	Units	Actual 2010-11	Performance in 2011-12 upto Sept.'11	Projected Performance in 2011-12 (As per RE)
Gas Transportation	MMSCMD	117.90	117.90	120.51
Liquid Hydrocarbon Production	'000 MT	1369	729	1351.733
Petrochemical Production	'000 MT	420	220	422.00
LPG Transportation	'000 MT	3337	1613	3256.00

B) Financial:

Description	Units	Actual Performance in 2010-11	Performance in 2011-12 upto Sept.'11	Estimated Performance in 2011-12 (RE)
Profit Before Tax	₹ Crore	5240.00	3011.00	5107.00
Profit after Tax	₹ Crore	3561.00	2079.00	3472.00
Petrochemical Production	₹ Crore	4211.00	2458.00	4204.00

2.9.4 Projects:

2.9.4.1 Major Pipeline Projects Completed during 2011-12

Sl.	Project Name	Project Length / Dia
i	Agra Ferozabad Expansion	12"x54 km & 10"x17 km
ii	Spurline to CJPL (SNPL) : Consumer Connectivity	4"/8" x 34 km
iii	Dahej Vijaipur Pipeline Ph-II	Dahej to Sherpura: 48"x169 km (Gujarat) Jhabua to Vijaipur: 48"x342 km (MP)
iv	2nd & 3rd Compressor at Jhabua	40 MMSCMD
v	Meerut Connectivity	10"x27 km
vi	Karanpur Moradabad Kashipur-Rudrapur Pipeline	Karanpur-Moradabad Section:12"x52.5 km Connectivity to Siti Energy:8"x23 km

2.9.4.2 Major Projects approved and anticipated to be completed during 2011-12

Sl.	Project Name	Project Approved Cost (₹ Crore)	Project Anticipated Cost (₹ Crore)	Remarks (Likely to get completed)
i.	Karanpur Moradabad Kashipur-Rudrapur Pipeline	252	204	Moradabad- Kashipur Section: 12"x49.5 km
ii.	Kcheruvu- GVK-Vemagiri Pipeline Project	91	56	20" X 41 Km
iii.	Dahej Vijaipur Pipeline Ph-II	4355	2340	Sherpura to Jhabua Section: 48"x100 km
iv.	HRSG Vaghodia	70	51	-
v.	Installation of LPG Pump at Vijayawada (VSPL)	40	24	From 0.8 MMTPA to 1.33 MMTPA
vi.	Kochi Koottanad Pipeline Ph-I	348	261	30" x 16 Km, 18" / 8"/ 4" x 27 Km
vii.	BNPL	1816	1385	36"/30"/24" x500 km
viii.	VKPL Spurline	463	331	Viajipur to Boreri Section:18" x 110 Km
ix.	Mainline Compressors at Kailaras	596	398	54 MMSCMD
x.	Mainline Compressors at Chainsa	596	400	54 MMSCMD
xi.	Wind Energy	616	580	100 MW

2.9.4.3 Achievements during FY 2010-11

i. Last leg of 41 km from Chainsa to Dadri of Vijaipur-Dadri P/L (48"x 498 km) project completed in Jan'2011.

ii. Focus Energy pipeline (10" x 88 km) project completed in June'2010.

iii. Installation of 2 compressors each at Jhabua and Vijaipur completed.

iv. Kandla-Samakhiali LPG pipeline (10" x 60 km) completed in Mar'2011.

v. Sultanpur-Neemrana pipeline (Spurlines of Chainsa-Jhajjar P/L) completed connecting the industrial regions of Gurgaon, Manesar, Khushkera, Neemrana, Daurhera & Bhiwadi.

vi. Last mile connectivity of around 42 consumers (for 8.4 MMSCMD) completed in NCR, MP regions, KG Basin & Mumbai/ Pune regions.

vii. Capex achievement ₹ 4382 crore against budgeted amount (RE 2010-11) of ₹ 4146 crore (106% achievement).

viii. Around 225 orders placed worth ₹ 3624 crore.

2.9.4.4 Major On-Going Projects Pipeline Projects 2011-12 (as on 30.11.2011):

Sl. No.	Project Name	Approved Cost (₹ Crs)	Anticipated Completion	Present Status	
				Physical Progress as on 15.11.11 (%)	Financial Progress (as on Nov'11) (%)
1	Dahej - Vijaipur Pipeline-II	4403	510 km out of 610 km commissioned. Balance by Dec'11	98.25	98
2	Compressor stations at Jhabua & Vijaipur (Phase I & II)	1434	Apr'12(standby M/c at Vijaipur)	Mainline M/c commissioned	90
3	Compressor stations at Kailaras & Chainsa	1167	Jan'12(Mainline M/c)	87.7	83
4	Bawana - Nangal Pipeline	1816	Mar'12	92.5	73
5	Dabhol - Bangalore Pipeline, Phase I	4508	Aug'12	80.2	61
6	Dabhol - Bangalore Pipeline, Phase II	486	Dec'12	-	-
7	Kochi - Koottanad - Bangalore - Mangalore Pipeline, Phase I	348	Mar'12	78.4	67
8	Kochi - Koottanad - Bangalore - Mangalore Pipeline, Phase II	2915	Sep'13	20.4	9
9	Karanpur - Moradabad - Kashipur - Rudrapur Pipeline	252	Karanpur-Moradabad commissioned, Moradabad-Kashipur Jan'12 Kashipur-Rudrapur Apr'12	93.2	71
10	BNPL spurlines	541	Ph I:Jun'12 Ph II: Mar'13	75.5	36
11	VKPL spurlines	463	Vijaipur-Boreri Mar'12 Boreri-Chittorgarh Aug'12	75.5	52
12	Jagdishpur Haldia Pipeline	7596	36 months from first 3(i) notification	M/s Tractabel Engg appointed as PMC. Project activities to be synchronized with the start of Gas supply and readiness of downstream consumers	
13	Jhajjar Hissar Pipeline	281	24 month from firm customer tie-up	M/s Mecon appointed as PMC.Pipeline execution aligned with readiness of downstream consumers.	

2.9.5 POLICY INITIATIVES UNDERTAKEN

Initiatives taken by GAIL in the area of HR/HRD during the year 2011-12 are :

i. Review of general terms and conditions of deputation/posting of employees on foreign assignments.

ii. Whistle blower mechanism

iii. Review of age of employees from extant 40 years to 35 years for periodic medical check-up under GAIL Medical Attendance Rules.

iv. Verification of post-qualification experience certificates of candidates on joining GAIL.

Hon'ble Prime Minister, Dr. Manmohan Singh, dedicates GAIL's Dahej-Vijaipur-Dadri-Bawana-Nangal-Bhatinda cross country pipeline at the inaugural ceremony of the 7th Asia Gas Partnership Summit

v. Introduction of Workplace Policy on HIV/ AIDS Prevention and Control in GAIL.

vi. Rationalization of existing entitlements of employees for House Building Advance (HBA).

vii. Enhancement of limits under Group Insurance coverage of GAIL employees for outstanding House Building Advance and Conveyance Advance including CNG Conversion Kit Advance.

ix. Enhancement of coverage limit under Group Insurance Scheme in lieu of EDLI in case of death/ total permanent disablement to ₹ 1.35 lakh.

x. Review of working pattern of various Work Centres/ Offices of GAIL.

2.9.6 Control of Pollution, Energy Conservation and Environmental Initiatives

GAIL has always been focused on taking care of the environment by undertaking various initiatives to mitigate/reduce environment concerns as well as sustainable and eco-friendly growth of the organization. The major plants of GAIL have ISO 9001, ISO 14001 and OHSAS 18001 accreditations. GAIL is committed towards creating, maintaining and ensuring a safe and clean environment. For the last few years, all the three systems have been integrated into a single Integrated Management System.

New initiatives under the Integrated Management System (covering QMS, EMS and OHSAS) are being taken as Environment Management Programs (EMPs), which help in mitigating environment concerns in process and plant areas like phasing out Halon systems, reduction in energy & water consumption, phasing out use of asbestos sheets etc.

Hazard and operability (HAZOP) studies have been conducted for each plant to assess the potential sources of hazards and their impact on life and the environment. Accordingly, corrective measures as required are incorporated in the design. Gas leak detection and warning systems are provided to detect the source of hydrocarbon leakage from potentially hazardous areas and accordingly, activate/actuate plant trips and effect automatic safety measures, including activation of fire fighting facilities as required to overcome the situation. Elaborate microprocessor based instrumentation is provided in the complex to take care of process offset conditions to trip the plant as required. The hydrocarbon storages are installed and operated as per the best engineering practices around the world, thereby practically nullifying the risks associated with any such storage. All storages at GAIL sites are operated under the licenses and guidelines from the Chief Controller of Explosives.

The various measures undertaken for Control of Pollution, Conservation of Natural Resources and other Environment Initiatives are as under :

(a) Water Management

All process plants at GAIL have always strived to conserve natural resources. 'Water is life' and this is inculcated in every employee of GAIL in letter & spirit.

Rainwater harvesting measures have been implemented in major buildings in various GAIL process plants. Water demands are met by surface water, thereby reducing/eliminating the use of precious groundwater.

Comprehensive wastewater management facilities at GAIL process plants have been set up primarily to ensure that our wastewaters are treated so as to maintain the river water quality at the discharge point. There has been 100% compliance on treated wastewater discharge as far as meeting the statutory stipulations are concerned during the current year.

The comprehensive wastewater management facilities comprise oil removal facilities, chemical treatment and biological treatment facilities with extended aeration process. The treated wastewaters are being recycled and used for horticulture and firewater make up purposes within the plant. Continuous efforts are made to maximize recycle of treated wastewaters. Treating wastewaters to the best quality ensures conservation of this precious resource and in turn, develops sustainability.

(b) Ambient Air Quality Management

The ambient air quality is consistently maintained much below the national stipulated norms.

The salient features of Air Quality Management are:

a) Use of Natural Gas for feedstock as well as fuel requirements

b) Use of low oxides of Nitrogen (NOx) burners in furnaces and utility boilers

c) Provision of adequate stack height to achieve effective dispersion of air pollutants

d) Flare stack designed for smokeless burning

e) Creation of green belt around the plant area

f) Continuous monitoring of ambient air quality and stack air quality by state-of-the-art online analyzers.

The gaseous emissions such as hydrocarbon releases from various process plants and storages are collected and flared at one point. Complete burning of the heavier hydrocarbon gases is ensured before discharge to the atmosphere at high points for proper dispersion of contaminants, if any. The flare system is designed for smokeless burning for all normal venting & flaring Apart from these, the following precautionary measures to reduce gaseous emissions to the atmosphere are taken :

- All safety valves, pressure controlled valves etc. discharging hazardous substances are connected to a highly reliable flare system where the relieved gases and liquids will be burnt at controlled safe points.
- Sour process gases are absorbed in caustic solution generating spent caustic stream.
- Loading facilities with vapour return circuits.
- Seal oil leaving the compressors is degassed in special equipment, from where the gaseous hydrocarbons are led to the flare system.
- Special construction of furnace burners results in low NOx concentrations in the flue gas.
- Installation of gas detection system to ensure quick detection of a gas leak.

(c) Increasing Green Cover

All GAIL plants have continually endeavored towards sustainable development in line with the corporate philosophy. Hence, the area in and around many of the process plants has been transformed from a barren infertile land into a green oasis.

(d) Hazardous Waste

For the generation and disposal of hazardous waste like waste oil & empty Ethyl Mercaptan drums, authorization has been obtained from State Pollution Control Board for the used oil to be sold to CPCB / MOEF authorized vendors. Empty Mercaptan drums are treated with 2% Sodium Hypochlorite, cut from the sides and used in-house as tree guards.

(e) Solid Waste Management

The solid wastes in GAIL plants are collected, stored and handled in a manner which has no detrimental effects on the groundwater or other environment. Care is taken even for aesthetics. A secured land fill is identified for disposing of oily sludge from wastewater management facilities in a secured manner.

(f) Biodegradable Waste

Compost pits are being developed to treat the waste generated from in-plant vegetation to produce manure.

(g) Noise Pollution Monitoring

Noise levels are monitored in GAIL process plants as well as residential area around the plant area. They are maintained well within prescribed limits. Noise levels are displayed and use of PPE's is ensured in identified high noise areas in the plant.

(h) Emphasis on Reducing Energy Consumption and using Renewable Energy

GAIL has taken various measures for energy reduction at various locations, with the basic premise that pollution starts when conservation fails. GAIL is committed to efficient and optimal use of energy resources in all its applications and services through effective energy management with focus on productivity, cost effectiveness, environment and a better tomorrow. Various resource conservation measures have been taken at GAIL to reduce consumption. Few of them are:

i) Installation of variable frequency drives in the plant area

ii) Retro-fitting of old burner systems by more energy efficient and safe burner management system.

iii) Installation of solar water heaters.

iv) Permanent Star conversion of motors.

v) Replacement of old incandescent lamps by CFL and LED lighting.

Shri G.C. Chaturvedi, Secretary, Petroleum & Natural Gas, releases the first Sustainability Report of GAIL

vi) Replacement of motors by more energy efficient motors.

vii) Power factor improvement measures.

viii) Laying of LPG pipeline to nearby Bottling Plant for LPG transfer resulting in reduction in tanker movement and pollution.

ix) Operation of flare gas recovery system.

x) Switch over of fuel from rich gas to lean gas.

xi) Installation of aerodynamic more energy efficient blades in cooling tower fans.

xii) Vapor recovery system for use during statutory inspection of Propane spheres.

GAIL recognizes the importance of all the national and international regulations and ensures 100% compliance at all times.

GAIL units have won awards in the prestigious National Energy Conservation Awards, constituted by Bureau of Energy Efficiency (under Ministry of Power, Govt. of India) as a testimony of best practices in energy management.

2.9.7 Corporate Social Responsibility

The sentiment that Social Responsibility is an integral part of the wealth creation process - and when managed properly can enhance the competitiveness of business and maximise the value of wealth creation to society, has found resonance in the core philosophy of GAIL and hence the CSR agenda has received due focus in the Company. The CSR systems and processes of GAIL have been honed to ensure that all activities undertaken under the CSR umbrella are aligned to the Government guidelines on the subject and contribute positively towards enabling a sustainable impact on the targeted social segment.

Having allocated 2% of its net Profit After Tax (PAT) of the previous financial year for CSR activities annually, the Company has targeted its CSR efforts in seven identified major thrust areas encompassing the domain of education, skill development/ empowerment, community development, infrastructure, healthcare/medical facility, drinking water/ sanitation and environment protection. For the year 2011-12, ₹ 83 crores (approx.) have been committed towards CSR activities and several significant and high impact projects have been undertaken by GAIL in and around its major Work Centres.

Though CSR projects are undertaken in all the thrust areas, based on the needs identified for the various geographical locations, the focus is in the domain of infrastructure/community development, education and skill development for livelihood generation. Some of the notable programmes which have received appreciation, both from the direct beneficiaries as also other stakeholders, include Project 'Swavalambh' (Self Reliance) which is a flagship programme initiated by GAIL in partnership with IL&FS Clusters, under which skill schools are set up to impart skill training to the unemployed rural & semi-urban youth. In the current year, three such skill schools have been taken up in Madhya Pradesh, Gujarat & Andhra Pradesh. GAIL has also taken up another project with an NGO under the Public Private Partnership (PPP) model in collaboration with the Ministry of Rural Development under the Swarnajayanti Gram Swarozgar Yojana

(SGSY) Scheme. Project 'Garima' (Honour) is yet another initiative for imparting vocational training skills like cutting, tailoring, embroidery and handicraft making to young women/mothers of slum children who attend the non-formal Education Centres set up by GAIL under its project 'Padho Aur Badho.'

In the domain of healthcare, GAIL has partnered with M/s. Wockhardt Foundation for a Mobile Health Outreach Programme for giving free primary healthcare to a target population of 2.25 lakh in this year itself, in identified villages of UP & MP.

Education has always been given due importance under the CSR banner of GAIL with several projects being implemented across the company's work centres for supporting & upscaling the cause of education. Under 'Project GAIL Utkarsh,' free coaching for the entrance examination to the coveted IIT/JEE and other competitive exams for the engineering discipline is rendered to underprivileged students. Project 'Padho aur Badho' taken up in collaboration with a Delhi based NGO AROH, is an effort to rehabilitate slum children and bring them to the mainstream by providing them with basic education through non-formal training. Another successful programme in the education sector is Project 'E-Shiksha' wherein computer labs, set up in a self sustained, power equipped mobile vehicle along with a qualified instructor and teaching aids extends basic computer education to students of government schools.

Apart from these flagship programmes, GAIL has been consistently taking up programmes which have benefitted the poor and marginalized sections of society which include construction and renovation of rural infrastructure, augmenting drinking water facilities by means of bore-wells, tube-wells, hand-pumps, overhead tanks as well as storage facilities and water harvesting structure etc., installation of solar lights etc. In addition, GAIL along with other Oil PSUs is contributing towards provision of LPG connections to BPL families under Rajiv Gandhi Gramin LPG Vitrak Yojana. GAIL's commitment towards the environment forms an implicit part of its vision statement and through its CSR initiatives, it has promoted the cause through specific environment-friendly programmes such as afforestation measures, rainwater harvesting, water recharging and groundwater reuse system. Congregating environment and hygiene factors together, GAIL is also installing Sulabh Shauchalaya & Bio-gas Plants and development of environment parks for thousands of poor labourers living in urban slums. GAIL's support to wildlife is visible in the form of contribution towards conservation of animals of rare species and protection of forest trails. GAIL has been supporting wildlife through support to Mobile Veterinary Service units in the north-east, WWF and other organisations.

GAIL, as a responsible corporate citizen, has been striving to demonstrate its commitment by operating its core business in a socially responsible way and complements it by investing in communities to produce an overall positive impact on society.

2.9.8 Joint Venture Projects of GAIL

GAIL has formed a number of Joint Venture Companies for city gas distribution as also in other sectors. GAIL has plans of developing CNG infrastructure across the country as well as abroad. The domestic Joint Venture Companies are as under:

2.9.8.1 Mahanagar Gas Limited (MGL)

MGL, a Joint Venture with British Gas (BG) and Government of Maharashtra, was incorporated in May 1995 and has its operations in Mumbai and its suburbs. GAIL holds 35% stake in the Company.

2.9.8.2 Indraprastha Gas Limited (IGL)

IGL, a Joint Venture with Bharat Petroleum Corporation Limited (BPCL) and Government of National Capital Territory (NCT) of Delhi, was formed in December 1998. GAIL holds 22.5% stake in the Company, with an investment of ₹ 31.50 crore. IGL has its operations in Delhi, Ghaziabad, NOIDA and Greater NOIDA.

2.9.8.3 Bhagyanagar Gas Limited (BGL)

BGL is a Joint Venture with Hindustan Petroleum Corporation Limited (HPCL), incorporated in August 2003. GAIL holds 22.5% stake in the Company. BGL presently has its operations in Vijayawada, Hyderabad and Rajahmundry. It is also implementing a city gas distribution project in Kakinada.

2.9.8.4 Tripura Natural Gas Company Limited (TNGCL)

TNGCL is a Joint Venture of Tripura Industrial Development Corporation and Assam Gas Limited. GAIL acquired 29% equity stake in TNGCL in August 2005. TNGCL has its operation in Agartala.

2.9.8.5 Central UP Gas Limited (CUGL)

CUGL is a Joint Venture of GAIL and BPCL. It was incorporated in February 2005 for implementation of city gas distribution projects in Kanpur and other cities of Central UP. GAIL has 22.5% stake in the Company. CUGL has its operation in Kanpur and Bareilly.

2.9.8.6 Green Gas Limited (GGL)

GGL is a Joint Venture of GAIL and Indian Oil Corporation Limited (IOC). It was incorporated in October 2005 for implementation of city gas distribution projects in Agra & Lucknow. GAIL has 22.5% stake in the Company.

2.9.8.7 Maharashtra Natural Gas Limited (MNGL)

MNGL is a Joint Venture of GAIL and BPCL. It was incorporated in January 2006 for implementation of city gas distribution projects in Pune and other cities of Maharashtra (excluding Mumbai). GAIL has 22.5% stake in the Company.

2.9.8.8 Avantika Gas Limited (AGL)

AGL, a Joint Venture with HPCL, has been incorporated in June, 2006 for City gas distribution projects in the state of Madhya Pradesh. GAIL has 22.5% stake in the company. AGL has its operation in

Deep-sea drilling by Pacific Explorer for the BPRL consortium

Indore and Ujjain; subsequently, project implementation shall be taken up in Gwalior and other major cities of Madhya Pradesh.

2.9.8.9 Brahmaputra Cracker and Polymer Limited (BCPL)

Brahmaputra Cracker & Polymer Limited (BCPL) is setting up a 2,80,000 TPA polymer plant at Lepetkata, District of Dibrugarh, Assam and project execution is in progress.

It is a GAIL led Joint Venture with 70% equity participation and remaining 30% equity is shared equally among OIL, NRL and Assam Industrial Development Corporation (Government o between BCPL and all the three suppliers, viz. ONGC, OIL and NRL. M/s. EIL has been nominated as the EPMC for the Project. Financial closure for the project has been achieved. Construction activities in the plant complex have progressed significantly. Civil, structural, mechanical and piping works for all the process units as well as utilities and offsites are under progress.

CCEA in its Meeting held on 16th November, 2011 has accorded approval for a revised project cost to the tune of ₹ 8920 crore and revised project schedule with mechanical completion by July, 2013 and commissioning by December, 2013. Overall physical progress achieved is 61.8% against cumulative target schedule of 61.4% as on 15.1.2012. The cumulative expenditure as on 31.1.2012 is ₹ 3800.09 crore.

2.9.8.10 Ratnagiri Gas and Power Private Limited (RGPPL)

RGPPL is a Joint Venture between GAIL, NTPC, financial institutions and MSEB, with GAIL and NTPC holding 28.33% equity each. The capacity of the Ratnagiri Gas & Power Station is 2,150 MW. At present, RGPPL is producing 1,660 MW of power at Ratnagiri, which would be ramped up to 1,900 MW by March 2012. RGPPL is also operating an LNG terminal at the site in a joint venture and would be importing LNG for Power Plants.

2.9.8.11 Petronet LNG Limited (PLL)

PLL, formed for setting up of LNG import and regasification facilities, currently owns and operates a LNG regasification terminal of 10 MMTPA capacity located at Dahej, Gujarat. PLL has a long term LNG supply contract with Ras Gas, Qatar for import of 7.5 MMTPA of LNG. Further, PLL is constructing a LNG regasification terminal at Kochi, Kerala with an initial capacity of 2.5 MMTPA, expandable up to 5 MMTPA and is scheduled for commissioning in early 2012. PLL has entered into a long term LNG supply contract with ExxonMobil for the supply of 1.5 MMTPA of LNG for the Kochi Terminal. The Company has 12.5% equity stake in PLL along with BPCL, ONGC and IOC as equal partners.

2.9.8.12 Gail Gas Limited

GAIL (India) Limited has incorporated a wholly owned subsidiary in the name of GAIL Gas Limited on 27th May 2008, as a limited company under the Companies Act, 1956, for undertaking city gas distribution projects in India and abroad. GAIL has identified 230 cities contiguous to existing and proposed pipelines for city gas distribution in a phased manner. The projects shall be implemented through the subsidiary company. The subsidiary will distribute and market CNG as a fuel for vehicles, piped natural gas for households, industrial and commercial establishments besides the business of LPG as an auto fuel for automobiles in various cities of the country.

The setting up of the subsidiary is part of the compliance requirement of separating the gas marketing business from gas transmission. GAIL may transfer its natural gas marketing business to this new subsidiary in future. The equity held by GAIL in all City Gas JVCs is proposed to be transferred to GAIL Gas in due course of time.

The cities where CGD is under implementation by GAIL Gas Ltd. is Sonipat in Haryana, Kota in Rajasthan, Meerut in Uttar Pradesh & Dewas in Madhya Pradesh. As on date, 9 CNG Stations have been commissioned. It is estimated that approximately 8,225 vehicles run on CNG through existing outlets. PNG domestic connections released in the above 4 cities so far is 8776 and industrial connections are 50. The Agra & Firozabad Gas Business of GAIL India Ltd. has been transferred to GAIL Gas Ltd. There are 347 customers from the Agra- Firozabad region to whom Gas is being supplied.

Recently, two more JVs with State Government Entities have been formed by GAIL Gas Ltd. :

1. Kerala GAIL Gas Ltd., a JV with KSIDC (Kerala Govt. undertaking) in the State of Kerala with the aim of pursuing CGD activities in the state with a shareholding pattern as follows : GAIL Gas Ltd. - 26%, KSIDC-24% and FIs/SIs- 50%. The JV has been incorporated and has started functioning.
2. GAIL Gas Ltd. has been taken as a partner in APGDC (a subsidiary of APGIC, Andhra Govt. undertaking) in Andhra Pradesh with a shareholding pattern as follows : of GAIL Gas Ltd.- 25%, APGIC-25% and FIs/SIs-50%, which effectively makes it a JV of GAIL Gas Ltd. and APGIC. APGDC has already started functioning.

2.9.9 International Cooperation and Engagements Abroad

GAIL is pursuing overseas business opportunities in the Natural Gas sector with objectives to secure gas supplies for the energy security of the country, to establish a foothold in resource rich countries, to explore opportunities for technology transfers, strengthen and complement its domestic business. GAIL made strategic investment in the Natural Gas related projects in Myanmar, Egypt, China and USA.

GAIL established its wholly owned subsidiary, GAIL Global (USA) Inc. in September 2011 for participation in Shale Gas Assets in USA, to monitor investments made by this subsidiary and to explore other business opportunities related to the Natural Gas sector in North America. GAIL Global (USA) Inc. formed a JV with Carrizo Oil & Gas Inc. to acquire 20% stake in Carrizo's Eagle Ford Shale acreage.

GAIL's wholly owned subsidiary, GAIL Global (Singapore) Pte. Ltd. (GGSPL) opened its office in Singapore with the primary purpose of sourcing LNG for the Indian market and trading in LNG, petrochemicals and related products.

In order to have a long term association with China Gas and also to expand business in the fast downstream Chinese gas sector, the Joint Venture will pursue opportunities in CNG, City Gas, Pipeline, CBM, LNG and E&P projects. GAIL is pursuing business opportunities in regions such as South / South-East Asia, West Asia, Russia and Central Asian Republics and the African continent in the areas of exploration and production, gas transmission, CNG and city gas distribution, LNG and petrochemicals.

Investment made during the year

S.No	Particulars	Investment made in (₹/Cr)
1	E&P Blocks in Myanmar (Development Expenditure for A1 & A3 Blocks)	199.65
2	US Shale Gas Assets	179.172

Import/Export of POL and Natural Gas

GAIL has signed a short term LNG deal with Marubeni for 3 years (2011-2013) in Nov. 2010. One firm cargo and one optional cargo per quarter with cargo quantities between 2.9 Tbtu - 3.7 Tbtu per cargo; Spot LNG and 3 long term LNG cargoes have been procured during April-Nov. 2011.

Agreements/ MoU signed during the year

a. HoA and Term Sheet (Nonbinding) executed on 18.7.2011 with Macquarie Energy for sourcing of 2 MMTPA LNG on long term basis.

b. Basic Framework Agreement was executed in May 2011 with Gazprom for sourcing of 2.5 MMTPA LNG on long term basis.

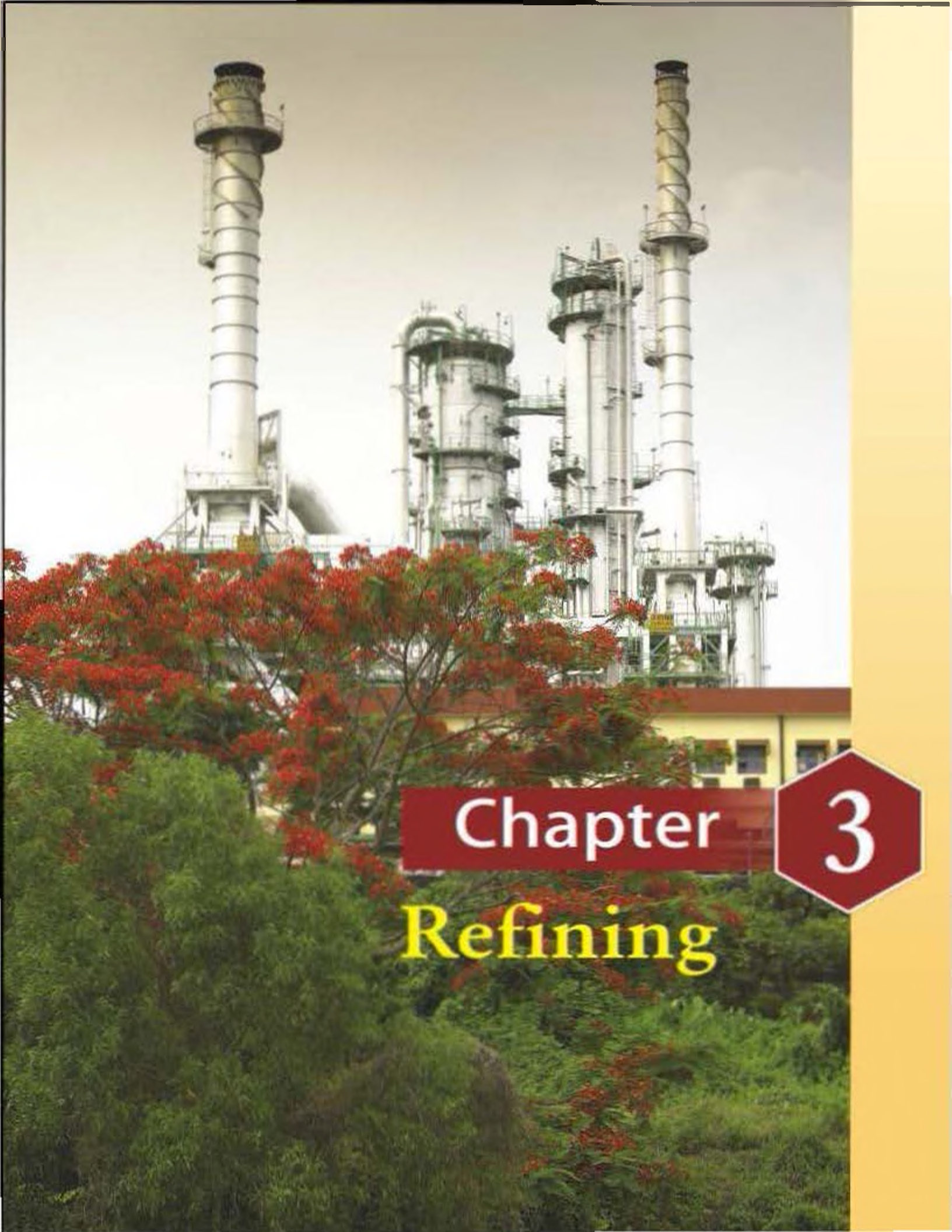
c. Sale Purchase Agreement with Sabine Pass Liquefaction, LLC, USA executed on 10.12.11 with Macquarie Energy for sourcing of 3.5 MMTPA LNG on long term basis.

Achievements for the preceding Financial Year 2010-11

a. GAIL under the aegis of the Government of India is actively pursuing sourcing of gas from Turkmenistan via the Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline project. The Inter-Governmental Agreement (IGA) and Gas Pipeline Framework Agreement (GPFA) were signed during December, 2010 among the participating countries. These agreements are important milestones for implementation of the project.

b. GAIL had taken 4% in the JV Company formed for the implementation of the Myanmar-China gas pipeline.

c. In order to participate in business opportunities in the resource rich countries of Africa, GAIL opened a representative office in Egypt which will also pursue gas sector opportunities in Africa and the Middle East regions.



Chapter 3

Refining

Refining

3.1 REFINING CAPACITY

The present refining capacity is 193.386 Million Metric Tonnes Per Annum (MMTPA) comprising 116.886 MMTPA by PSUs, 6 MMTPA in Joint Ventures (JV) and 70.50 MMTPA in the private sector. At present, there are 21 refineries operating in the country, out of which 17 are in the public sector, 3 in the private sector and one is a JV. Out of the 17 public sector refineries, 8 are owned by Indian Oil Corporation Limited (IOC), 2 each by Chennai Petroleum Corporation Limited (CPCL), a subsidiary of IOC, Hindustan Petroleum Corporation Limited (HPCL), Bharat Petroleum Corporation Limited (BPCL) and Oil and Natural Gas Corporation Limited (ONGC) and 1 by Numaligarh Refinery Limited (NRL), a subsidiary of BPCL. The private sector refineries belong to Reliance Industries Limited and Essar Oil Limited.

Availability of petroleum products during 2011-12 was more than the domestic demand on an overall basis except for Liquefied Petroleum Gas (LPG). In fact, the country is a net exporter of petroleum products and products like Naphtha, Petrol (MS), Diesel (HSD), Aviation Turbine Fuel (ATF) etc. were exported during the year.

3.2 CHENNAI PETROLEUM CORPORATION LIMITED (CPCL)

Chennai Petroleum Corporation Limited (CPCL) (formerly known as Madras Refineries Limited) was formed as a joint venture of the Government of India (GOI), Amoco India Inc., USA and National Iranian Oil Company (NIOC), Iran with the initial equity contribution in the ratio of 74:13:13. The company was incorporated on 30.12.1965 as a Public Limited Company. Amoco Inc. disinvested its equity holding in favour of GOI in 1985. Later, Govt. of India transferred its equity share of 51.89% to IOC.

The Manali refinery was originally designed for processing 2.5 MMTPA of imported Darius crude from Iran. The construction of the refinery was completed in a record time of 27 months at a cost of ₹ 43 crore without any cost or time overrun. The Manali refinery was commissioned in 1969 and CPCL has been making profits from the second year of its operation.

CPCL has two refineries with a total capacity of 11.5 MMTPA (Manali Refinery 10.5 MMTPA and Cauvery Basin Refinery 1.0 MMTPA). The Manali Refinery in Chennai is one of the most complex refineries in India with fuels, lubes, wax and petrochemical feedstock production facilities. CPCL started producing HSD and MS meeting Euro-IV requirements as per the roadmap of MOP&NG.

CPCL came out with a premium public issue in March, 1994, which was oversubscribed by a record 38 times. Govt. of India disinvested its entire holding in CPCL (51.89%) to IOC on 29.3.2001; the Naftiran Intertrade Company has 15.40% stake in CPCL; Financial Institutions, Insurance Companies, FIIs, NRIs and the public, including employees and others hold the remaining 32.71%.

3.2.1 Physical Performance

The company processed 10.748 MMT of crude oil in 2010-11 and up to Sept' 11, CPCL processed 5.158 MMT of crude oil.

3.2.2 Financial Performance

During the year 2010-2011, the turnover was ₹ 33,107 crore and up to Nov'11 is ₹ 29,412.05 crore. The details of physical and financial performance are given below:

PHYSICAL & FINANCIAL PERFORMANCE

	2010-11	2011-12 (till Nov. '11)	2011-12 (Projected)
Crude Thru'put in TMT	10748	6496.5	10830
Total Distillate %	68.5	69.5	69.4
Turnover (₹ Cr.)	33107	29412.05	39685
Lube	186	111.5	200
Wax	27	16.3	27
Profit Before Tax (₹ Cr.)	763.59	(482.96)	(156.71)
Profit After Tax (₹ Cr.)	511.52	(50.27)	170.39*

** PAT includes the reversal of Income Tax provision made in the earlier years based on favorable order obtained in an appeal during the current year.*

3.2.3 Projects Completed During The Year 2011-12

Refinery-III Capacity Expansion by 1.0 MMTPA

In order to produce additional value added products like LPG, Naphtha, SKO and HSD, meeting the latest fuel norms, the existing capacity of Refinery-III at Manali was expanded from 3 MMTPA to 4 MMTPA. This project was completed by Q1 of 2010-11 and the plant is in operation. The total cost of the project was ₹ 200.41 crore.

Revamp of existing Naphtha Hydro-treating / Catalytic Reforming Unit

To produce high quality Motor Spirit (with higher Octane number) meeting Euro-IV specifications, the existing Naphtha Hydro-treating / Catalytic Reforming Unit with semi regenerative cycle was revamped to higher capacity with continuous catalyst regenerative cycle at an estimated cost of ₹ 272.77 crore. The plant was commissioned in Q1 of 2010-11.

3.2.4 Major Projects Under Implementation:

a) Euro-IV Preparedness on Auto Fuels

As per the Auto Fuel Policy of the Government of India,

Hon'ble Prime Minister, Dr. Manmohan Singh is shown a model of Bina Refinery by Shri R.K. Singh, C&MD, BPCL

production of MS/HSD meeting Euro-IV specifications for Chennai/Bangalore and Euro-III equivalent specifications for the rest of the locations from April, 2010 onwards is to be met. Hence, an Auto Fuel Quality Upgradation Project was undertaken at an estimated cost of ₹ 2,615.69 crore in Manali Refinery. All the process units are commissioned and in operation since January 2011. The offsite/utility augmentation packages are in advanced stage of completion and expected to be on-stream in the year 2011-12.

The status of the major units is given below:

(i) The Naphtha Hydro-treater unit of 0.2 MMTPA capacity and Isomerisation unit of 0.14 MMTPA capacity, with Axens as the process licensor was commissioned in January, 2011 for production of MS.

(ii) The Diesel Hydro-treater (DHDT) unit of 1.8 MMTPA capacity with Axens as the process licensor was commissioned and producing Diesel since May, 2011.

(iii) A new Hydrogen Generation Unit of 21,000 TPA capacity with Haldor Topsoe as the process licensor is underway to augment the existing Hydrogen Generation capacity. The unit reached mechanical completion by December 2011 and is expected to be commissioned by February 2012.

(iv) Other utilities and offsite packages are in various stages of progress and are expected to be completed by 2011-12.

b) Revamp of existing CDU/VDU-II from 3.7 to 4.3 MMTPA:

As per Euro-IV Diesel specifications under the Diesel Quality Improvement projects (the production of Diesel confirming to ASTM D 86 to have 95% (vol) recovery at a temperature of 360°C (max) and also to enhance unit capacity from the existing 3.7 MMTPA to 4.3 MMTPA, a project is being implemented. EIL has been appointed as Project Management Consultant (PMC) for design, engineering, procurement and execution of this project. The cost of this project is ₹ 333.99 crore. The project is expected to be completed by Q2 of 2012-13.

c) CBR 20" Crude Oil Pipeline

20" interconnecting crude oil pipeline is planned between Karaikkal Port and CPCL-CBR's Chidambaranar Oil Jetty. A MoU has been signed with M/s. Karaikkal Port Pvt. Ltd. (KPPL) for utilizing their facility to receive crude of economic parcel size. IOC, Pipelines division has been engaged as EPCM contractor for executing the project, which is expected to be completed by January 2012.

3.2.5 Future Plans:

a) Resid Upgradation Project

To improve the distillate yield and to process high sulphur bearing crudes at Manali Refinery, a Resid Upgradation Project has been conceived.

The major units of the project are as follows:

(i) A delayed coker unit of capacity 2.2 MMTPA with Lummus as process licensor.

(ii) Two trains of sulphur recovery unit each of capacity 100 tons per day with Siirtec Nigi as process licensor.

(iii) Coker LPG unit of capacity 8.8 tons per hour with EIL as process licensor.

(iv) Sour water stripping unit of capacity 60 tons per hour & amine regeneration unit of capacity 250 tons per hour with EIL as process licensor.

(v) Revamp of OHCU unit from its current capacity of 1.85 MMTPA to 2.25 MMTPA with Chevron Lummus Global as process licensor.

(vi) Additional utilities and offsite facilities to augment the existing capacities.

The PMC job has been awarded to M/s. Jacobs Engineering India Pvt. Ltd. for design, engineering, procurement and execution. The process packages for all the process units have been completed. The final DFR is completed and investment approval has been obtained. Anticipated completion of the project is 33 months from the date of environmental clearance. The estimated project cost is ₹ 3110 crore. Environmental clearance is awaited.

b) New Crude Oil Pipeline

To overcome the risk associated with transportation of crude oil through the ageing existing 30" crude oil pipeline, laying of a new 42" Crude Oil Pipeline as a replacement, from Chennai Port to Manali Refinery along the route of the proposed port, connectivity road is planned. The entire implementation of this pipeline is planned at a cost of ₹ 126 crore. Coastal Regulatory Zone clearance is awaited for this project. IOC (PL) is awarded the job of PMC. All engineering activities have been completed.

c) 6 MMTPA Refinery Expansion Project:

An expansion is proposed to increase the capacity of Manali Refinery to 17.5 MMTPA by installing a 6 MMTPA unit with matching secondary processing facilities. The process configuration for this refinery is under finalization and the preparation of a Pre-Feasibility Report is in progress.

3.3 NUMALIGARH REFINERY LIMITED (NRL)

Numaligarh Refinery was set up as a grass roots refinery at Numaligarh in the District of Golaghat (Assam) in fulfillment of the commitment made by the Government of India in the historic Assam Accord, signed on 15th August, 1985 for providing the required thrust towards industrial and economic development of Assam. Both the Refinery and its adjacent Marketing Terminal were completed within the approved project cost of ₹ 2,724 crore. Commercial production in the refinery commenced from 1st October, 2000. NRL was conferred the status of 'Category-I' Miniratna PSU by the Government of India on 31st October, 2003. Authorized capital of NRL is ₹ 1,000 crore and paid up capital is ₹ 735.63 crore. Shareholding pattern of the Company as on

NRL's Refinery illuminates the landscape at night

Shri G.C. Chaturvedi, Secretary, Petroleum & Natural Gas in a review meeting at HPCL's Vizag Refinery

30.11.2011 was BPCL (61.65%); OIL (26.00%) and Government of Assam (12.35%).

3.3.1 Physical Performance

During 2010-11, Numaligarh Refinery processed 2.25 MMT of crude with distillate yield of 84.70%. During the period April-November, 2011, NRL's crude throughput was 1.926 MMT and distillate yield was 90.84%.

3.3.2 Financial Performance

During 2010-11, NRL recorded the highest ever Sales Turnover at ₹ 8,972.19 crore, Profit After Tax (PAT) was recorded at ₹ 279.26 crore and Gross Refining Margin (GRM) at $15.39 per barrel. During the period April-November, 2011, NRL's provisional Sales Turnover was ₹ 9,241.21 crore while PAT and GRM were ₹ 142.34 crore and $12.47 per barrel respectively. Physical and financial performance data is tabulated below:

Physical and Financial Performance

	2010-11	2011-12 (Apr-Nov'11)	2011-12 (Projected)
Crude Throughput (TMT)	2250.23	1926.40	2800.00
Distillate Yield (%)	84.70	90.84	91.65
Specific Energy Consumption (MBN)	69.0	59.3	61.0
Sales Turnover (₹ crore)	8972.19	9241.21	13619.39
Profit Before Tax (₹ crore)	414.54	212.54	213.54
Profit After Tax (₹ crore)	279.26	142.34	146.52

3.3.3 Projects

3.3.3.1 Projects Completed

Diesel Quality Upgradation Project

During the first quarter of 2010-11, NRL had successfully commissioned a Diesel Quality Upgradation Project within the approved project cost of ₹ 435 crore. The project involved major revamp of process units. Implementation of the project has enabled NRL to produce Euro-III and Euro-IV grades of HSD at 100% capacity utilization of the refinery. Post implementation of the project, capacities of the Hydrocracker, Hydrogen and Sulphur Recovery units have been augmented.

3.3.3.2 Projects Under Implementation

(i) Wax Project

The Wax Project envisages production of high value Paraffin and Micro-Crystalline Wax utilizing inherent properties of north-east crude. The project was approved for implementation in June 2010 with a project cost of ₹ 577 crore. As on 15.11.2011, overall progress of the project was 6.9% against a schedule of 6.8% and 21 milestones were achieved as against 20 scheduled milestones. Cumulative expenditure against the project as on 30.11.2011 was ₹ 17.35 crore with financial commitment of ₹ 106.08 crore. The project is scheduled for completion by December, 2013.

(ii) Naphtha Splitter Project

NRL is setting up a Naphtha Splitter Unit within the refinery premises at an estimated cost of ₹ 87 crore in

AOD, Digboi

order to supply 160 TMTPA of petrochemical grade Naphtha to the Assam Gas Cracker Project. The project is scheduled for completion by May, 2012.

3.3.4 Joint Ventures

NRL has participating interests in two joint venture projects, viz. the Assam Gas Cracker Project and the Natural Gas Pipeline Project from Duliajan to Numaligarh in Assam.

(i) Brahmaputra Cracker & Polymer Limited (Assam Gas Cracker Project)

A joint venture company, M/s Brahmaputra Cracker & Polymer Limited (BCPL) was incorporated on 8.1.2007 for implementing the Assam Gas Cracker Project in Dibrugarh District of Assam. NRL's equity contribution with 10% shareholding in the JV is estimated at ₹ 127 crore out of which ₹ 104 crore has been paid. In addition, NRL has committed to supply 160 TMTPA of petrochemical grade Naphtha to the Gas Cracker as feedstock, subject to availability of 3 MMTPA of crude oil for processing in the refinery.

(ii) DNP Limited (Natural Gas Pipeline from Duliajan to Numaligarh)

A joint venture company, M/s. DNP Limited was incorporated on 15.6.2007 for implementing the Natural Gas Pipeline Project for transporting Natural Gas from Duliajan to Numaligarh Refinery at a project cost of ₹ 346.93 crore. NRL's equity contribution in the JV with 26% shareholding is ₹ 35.08 crore, which has been paid fully. The Natural Gas Pipeline Project was commissioned by M/s. DNPL in February, 2011. Since commissioning of the pipeline, NRL is utilizing natural gas in its refinery.

3.4 MANGALORE REFINERY & PETROCHEMICALS LIMITED (MRPL)

Mangalore Refinery and Petrochemicals Limited (MRPL), the first joint venture petroleum refinery in India, was formed in 1987 by Hindustan Petroleum Corporation Limited, a public sector company and M/s. Indian Rayon and Industries Limited and its associate companies (A.V. Birla Group). The Refinery is located on the western coast of India close to Middle East and Far East crude and product markets. The refinery was primarily conceived to maximize middle distillates and fuel oils which were then in short supply in India. The Refinery is designed to process light to heavy and sour to sweet crude. It is connected to a major port, New Mangalore Port, which is an all weather port. It has developed on user funded basis two dedicated berths for handling import and export of crude oil and products.

Due to dismantling of the Administered Pricing Mechanism (APM) for refineries, coupled with low Gross Refining Margins internationally during 1999-2001, lower capacity utilization, high depreciation and high interest cost due to Phase II implementation, the Company started suffering heavy losses and was on the verge of becoming a sick company in early 2003. In March 2003, Oil & Natural Gas Corporation Limited (ONGC), the premier upstream oil and gas major, acquired the entire 37.39% of equity capital held by M/s. Indian Rayon and Industries Ltd. and its associates (A.V. Birla Group) in MRPL, and also sought a Debt Restructuring Package (DRP) for the

loans of MRPL. As a part of DRP, it infused equity capital of ₹ 600 crore, thereby increasing ONGC's equity holding to 51%, resulting in it obtaining management control of MRPL. It subsequently bought the equity holding allotted as a part of DRP to Financial Institutions / Banks raising its equity holding in MRPL to the present level of 71.62% in June/July 2003. Thus, MRPL became the first private sector Company to become a public sector Company. The Company thereafter made a turnaround from a loss making to a profit making Company in just over one year.

3.4.1 Physical and Financial Performance of MRPL

The refinery throughput achieved during 2010-11 was 12.64 MMT as against 12.50 MMT for FY 2009-10, achieving a capacity utilization of 107% based on revised installed capacity. The PAT was ₹ 1,177 crore in FY 2010-11 as compared to ₹ 1,112 crore in FY 2009-10. Similarly, the turnover increased from ₹ 36,141 crore in 2009-10 to ₹ 43,800 crore during 2010-11.

The refinery remained the second largest exporter of petroleum products (largest exporter amongst PSUs). About 42% of the products were exported, which included term supply contracts with State Trading Corporation, Mauritius and with Emirates National Oil Company (ENOC). The total petroleum product demand of Petrol, Diesel, ATF & FO of Republic of Mauritius is being met by MRPL since August 2006. The Company continues to be accredited with Premier Trading House status (till March 2012) by Director General of Foreign Trade, Govt. of India based on export performance.

The ISOM units enabled MRPL to commence supply of BS-IV Grade Petrol and Diesel w.e.f. January 2010 in line with the industry implementation programme. MRPL was the first refinery to produce Euro III grade as well as Euro IV grade Petrol & Diesel well ahead of the stipulated target.

Key performance parameters of MRPL for last 5 years are given in the following table:

Year	2011-12 Up to Sept.'11	2010-11	2009-10	2008-09	2007-08	2006-07
Physical Performance						
Throughput (MMT)	6.37	12.639	12.496	12.586	12.547	12.535
Exports (MMT)	2.72	4.90	4.32	4.46	4.83	5.35
Total Distillates	72.7%	72.68%	72.80%	71.94%	71.67%	72.75%
Fuel & Loss	6.73%	6.85%	6.51%	6.42%	6.71%	6.54%
Specific Energy Consumption (MBN)	56.47	58.13	58.27	59.07	61.55	63.13
Capacity Utilisation	108%	107%	106% *	130%	129%	129%
Financial Performance						
Turnover (₹ Crore)	26943	43800	36081	42719	37339	32377
Exports (₹ Crore)	10580	14604	11041	11636	11141	11615
Net Profit (₹ Crore)	197	1177	1112	1193	1272	525
GRM ($/bbl)	2.22	5.96	5.46	5.33	6.9	4.8

* Nameplate capacity considered 11.82 MMTPA against 9.69 MMTPA in earlier years

3.4.2 Major Projects Under Implementation

Refinery Expansion and Upgradation

The Company has taken up implementation of Refinery Upgradation and Expansion Project (Phase III Refinery Project) costing ₹ 13,964 crore including a Polypropylene Unit with the following objectives :

- Increase the distillate yield and elimination of Black Oil.
- Additional facility to meet Euro-III/Euro-IV norms for total HSD production.
- Capability to process sour, heavy and high TAN Crude which have a price advantage
- Supplement existing secondary processing facilities
- Production of Polypropylene (440 TMT) to add further value to Propylene which will be produced from the PFCC Unit.
- Additional 3 MMTPA CDU/ VDU taking the capacity expansion to 15 MMTPA

The project progress is progressing well with order commitments of approximately ₹ 11,479 crore. The physical progress is around 89.3% up to 15.11.2011 and is scheduled to be progressively completed/ commissioned by February, 2012. The cumulative expenditure up to 31.3.2011 of ₹ 5,562 crore has been funded from internal resources. The balance of the project commitment will be funded by loans from ONGC, OIDB & market borrowings.

SPM Facility

The Company has taken up a Single Point Mooring facility with an estimated cost of ₹ 1,044 crore for facilitating import of crude oil through Very Large Crude Carriers (VLCCs), thereby enabling MRPL to benefit from lower freight as well as usage of cheaper

crude available only through VLCC. The contract has been awarded, engineering work has been completed and delivery of material has commenced.

3.4.3 Joint Ventures

MRPL has entered into joint ventures viz. Shell-MRPL Aviation Fuels and Services Pvt. Limited (with Shell BV, Netherland, an international oil major) and Mangalam Retail Services Limited (with Ashok Leyland Project Ltd. (Hinduja Group). The Joint Venture Agreements for these JVs have been signed by MRPL on 5.2.2008 and 20.3.2008 respectively. The commercial operations of Shell MRPL Aviation Fuels & Services Pvt.Ltd. have commenced from July 2008. The commercial operations of Mangalam Retail Services Limited are yet to commence as MRPL is not aggressively pursuing with the Retail Marketing Plan of transportation of fuel oil as they are not being considered for oil bonds to compensate under-recovery arising on sale of Petrol & Diesel.

3.4.4 Strategic Investment

ONGC Mangalore Petrochemicals Limited (OMPL) is a SPV jointly promoted by ONGC & MRPL, with equity contribution of 46% & 3% respectively. The balance equity will be offered to strategic investors/Financial Institutions/Banks/IPO.The objective of this project is value addition to the surplus naphtha streams of MRPL by converting it into Paraxylene (PX) and Benzene. The estimated capacity is approximately 900 TMTPA and 270 TMTPA respectively. The project is being implemented at Mangalore SEZ at an estimated capital cost of ₹ 5,750 crore.

3.4.5 Direct and Retail Marketing

The Company continued to expand its marketing network in south India in the year 2010-11 and retained its market leadership position in its region of operation. Significant inroads have been made for new products such as Mixed Xylene with primary targets being major paint manufacturers. Mixed Xylene sales increased to 3693 MT in FY 2010-11 from 436 MT in 2009-10. ATF sales increased by 23% to 66,525 MT in FY 2010-11 from 54,084 MT in 2009-10. Total sales value/ turnover of direct marketing products was ₹ 2,291 crore in FY 2010-11. MRPL entered into an agreement with State Trading Corporation, Mauritius on 1st July 2010 for supply of 1.1 MMTPA liquid petroleum products. In view of Government declaring deregulation of MS pricing in June 2010, MRPL has initiated plans to expand its retail network with primary focus on markets in the MRPL refinery zone.

3.4.6 Research and Development Efforts

The Company is establishing a well equipped Research and Development Cell. It carries out research in areas of wastewater treatment, methods and quality improvement of effluent, close monitoring of emission standards and improvement in air and water pollution, spent caustic treatment using microbial cell technology, study on florescence characteristics of petroleum fractions having different boiling range, study on salt content of various crude and desalting performance of desalter units. It also carries out process improvement research by carrying out crude assay evaluation using TBP apparatus and a study on additive degradation in used lubricating oils using FTIR. The basic research on Bio-fuel and Bio-diesel is being undertaken.

3.4.7 HR Initiatives

The Company has a single recognized Employee Union which is not affiliated to any political party. Bimonthly meetings with collectives are regularly held

Wet Air Oxidation Plant, MRPL

The Ambulance caters to the medical needs of the community

resulting in an excellent IR climate, based on a climate of trust and camaraderie. Resultantly, the Company does not have any industrial disputes or Court cases or any legal issues pending relating to Employee Union disputes. Annual open house titled as 'Interface' is held for enhancing a direct dialogue by the employees with the top management.

3.4.8 Energy Conservation

Energy conservation is accorded the highest priority in MRPL by best design practices, operating the refinery units at their optimum energy efficiency levels on a continuous basis and also by implementing several energy conservation measures.

MRPL was the winner of the Second Prize in the prestigious 'Jawaharlal Nehru Centenary Award' for Energy Performance among Indian PSU Refineries' for the year 2009-10, instituted by the MoP&NG, through CHT. MRPL has bagged the Petrofed 'Refinery of the Year' Award honouring performance in refining of petroleum in India during the year 2009-10. This recognizes leading performance in production and operational efficiency in refining operations. Continuing the good performance, MRPL has achieved the lowest ever Energy Index (MBN) of 58.13 in the year 2010-11, which is lower than the previous benchmark of 58.27 achieved by MRPL in the year 2009-10. The major contribution for the reduction in MBN is from the higher refinery complexity utilization and energy optimization & schemes implemented in the year 2010-11.

3.4.9 Environment

- The Company has commissioned a Sulphur Pastillation Unit to reduce dust emissions while loading of sulphur.
- Wet air oxidation unit is under commissioning which will enable it to eliminate the localized odour of spent caustic.
- Continuous ambient air quality monitoring system is in place to monitor air quality.
- Secondary seals are provided in floating roof tanks for reducing fugitive emissions.
- Environment awareness programmes are organized in the neighbouring villages.
- The refinery is certified with ISO 14001: 2004 for Environment Management Systems by TUV Rheinland.

3.4.10 CSR Initiatives

The Company, as a responsible corporate citizen, is committed to facilitating sustainable development in the areas around its commercial operations. MRPL's CSR programme "Samrakshan" is fired by missionary zeal to "bring smiles to lives" and in line with DPE guidelines, the Company earmarks 0.5% of PAT for a range of schemes covering education, health care and management, enabling interventions for women and SC/ST, care and protection of natural resources, water management and preservation and promotion of live elements of culture and cultural artifacts.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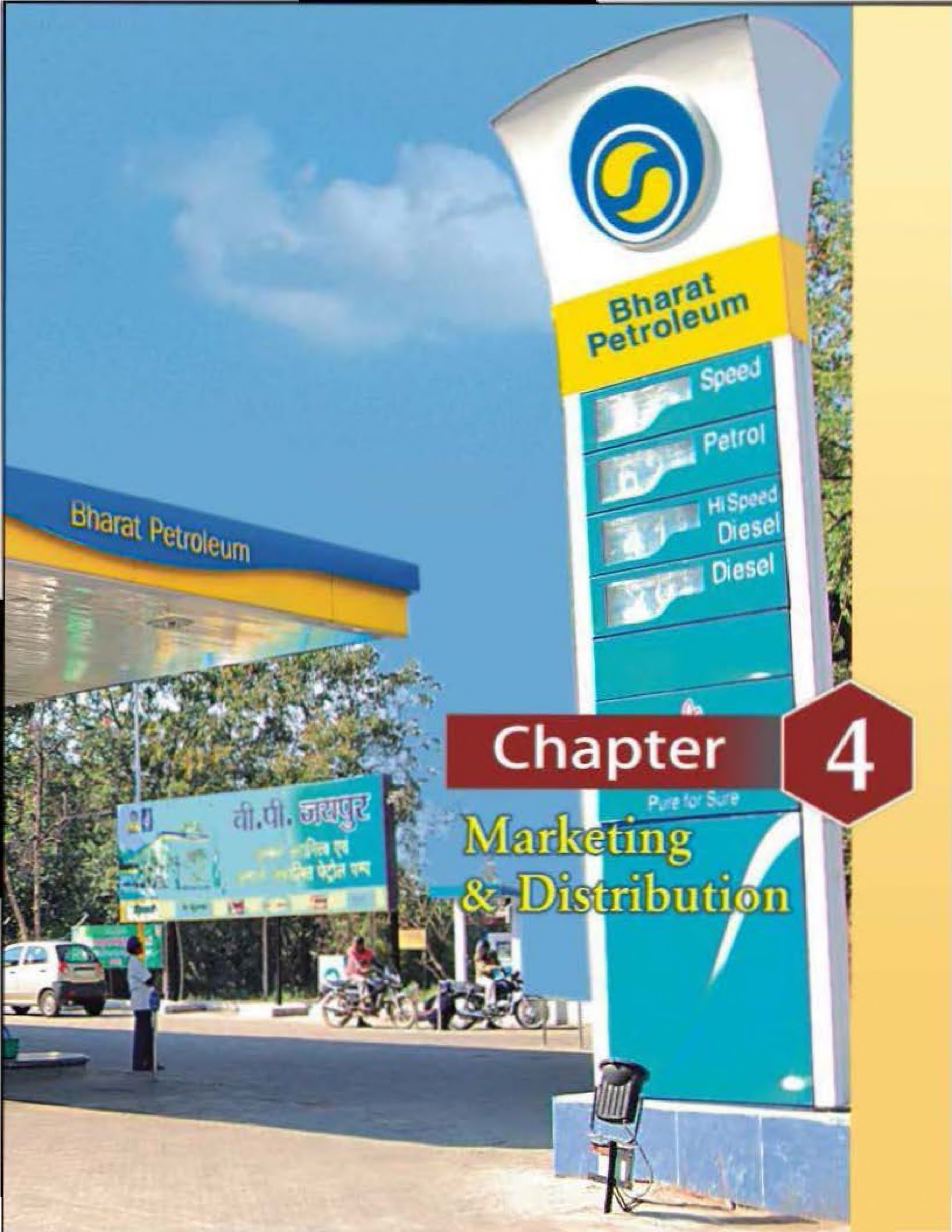


Chapter 4

Marketing & Distribution

Marketing & Distribution

4.1 INDIAN OIL CORPORATION LIMITED (IOC)

IndianOil is India's flagship national oil company with business interests encompassing the entire hydrocarbon value chain - from refining, pipeline transportation and marketing of petroleum products to exploration & production of crude oil and gas, marketing of natural gas and petrochemicals. With a corporate vision to be the 'Energy of India,' it is currently the largest commercial enterprise in the country in terms of sales with a turnover of ₹ 3,28,744 crore (US$ 72,125 million) and profit of ₹ 7,445 crore (US$ 1,633 million) for the year 2010-11. It is the highest ranked Indian company at the 98th position in the latest Fortune listings. The IndianOil Group is the market leader in refining and marketing with a vast network of cross-country crude and product pipelines and marketing network to serve customers across the length and breadth of the country. With an over 34,000 strong workforce, IndianOil has been helping to meet India's energy demands for over five decades now.

Over the years, since its beginning in 1964, it has grown and evolved from a pure petroleum refining and marketing company to a full-fledged energy company of India expanding its tentacles to Refineries, Pipelines, Marketing, R&D and Business Development - E&P, Petrochemicals and Natural Gas. Having set up subsidiaries in Sri Lanka, Mauritius and the United Arab Emirates, IndianOil is simultaneously scouting for new business opportunities in the energy markets of Asia and Africa. In order to meet the new found challenges and emerging opportunities and meet the aspirations of its stakeholders, the vision of the Corporation was revisited and adopted in 2009, capturing the aspirations for the future. The new vision envisages IndianOil to become the energy of India and a globally admired company.

Shri L.N. Gupta, Joint Secretary, MOP&NG reviews the progress of IOC's Paradip Refinery

Born from the vision of achieving self-reliance in oil refining and marketing for the nation, IndianOil has gathered a luminous legacy of more than 100 years of accumulated experiences in all areas of petroleum refining by taking into its fold, the Digboi Refinery commissioned in 1901. IndianOil controls 10 of India's 21 refineries. The group refining capacity is 65.7 Million Metric Tonnes Per Annum (MMTPA) or 1.30 million barrels per day, the largest share among refining companies in India. It accounts for about 34% share of national refining capacity. IndianOil refineries have an ambitious growth plan with an outlay of about ₹ 40,000 crore for capacity augmentation, de-bottlenecking, bottom upgradation and quality upgradation. Major projects under implementation include a 15 MMTPA grass roots refinery at Paradip (Odisha), major pipelines and marketing locations among others.

4.1.2 Physical Assets

IndianOil's business development initiatives continue to be driven by emerging opportunities and are guided by its corporate vision of becoming a diversified, transnational, integrated energy company. Its business strategy focuses primarily on expansion across the hydrocarbon value chain, both within and outside the country, synergizing all its operations.

IndianOil Group of companies owns and operates 10 of India's 21 refineries with a combined refining capacity of 65.7 million metric tonnes per annum with 34% share in refining capacity, the highest in the country, as on 31st Dec 2011.

IOC's cross-country network of pipelines, spanning over 10,899 km with total capacity of 75.26 MMTPA of crude & finished products and 10 MMSCMD of gas being the largest in the country, helps in meeting the vital energy needs of consumers in an efficient, economical and environment-friendly manner.

IndianOil reaches precious petroleum products to millions of people every day through an unmatched countrywide massive infrastructure network of above 37,000 touch points, which correspond to about 55% of the industry infrastructure. IOC operates the largest and most extensive network of retail outlets,

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas and Smt. Sabitha P., Minister for Home, Andhra Pradesh at the launch of IOC's Mobile Healthcare Service.

numbering more than 20,000. It reaches Indane cooking gas to the doorsteps of about 65.7 million households through about 5731 Indane distributors. These efforts are backed by supplies from 139 terminals & depots, 96 aviation fuel stations and 89 Indane bottling plants. More than 7700 bulk consumer pumps are also in operation for the convenience of large consumers, ensuring product and inventory at their doorstep.

IndianOil has maintained its leadership position in promoting Auto LPG business in a big way in the country. 15 Auto LPG Dispensing Stations (ALDS) were set up during 2011-12 (Apr- Dec'11) taking the total to 331.

It has continued with its thrust on rural format through (a) Kisan Seva Kendras (KSKs) and (b) LPG distributorships under Rajiv Gandhi Gramin LPG Vitaran Yojana (RGGLVY), widening its reach to cover most of rural India (as on 31st Dec. 2011, 4002 KSKs and 346 RGGLVYs are in operation). The KSKs and RGGLVYs represent a satisfying success story for IndianOil in its efforts for inclusive development in the rural hinterlands of India. The facilities at KSKs inter alia include availability of seeds, pesticides, fertilizers, provisions, farm equipment, medicines, Nutan stoves, banking help including rural ATMs, communication etc. under one roof.

The year wise position of IOC's marketing network is indicated below:

Description	As on 31.3.2009	As on 31.03.2010	As on 31.03.2011	As on 31.12.2011
Petrol/Diesel stations (Retail Outlets)	18278	18643	19463	20181
Terminals & depots	167*	140	140	139
Aviation fuel stations	101	98	96	96
LPG (Indane) bottling plants#	89	88	89	89
LPG (Indane) bottling capacity ('000 TPA)	4259	5137	5517	6000
LPG (Indane) distributors	4999	5095	5456	5731
Towns with Indane (Markets)	2693	2764	2947	2996
Indane customers (Million)	53	57	61.8	65.7

** Following merger of IBP with IOC, the terminals & depots of the two entities were rationalized to remove duplication and improve efficiencies.*
 # Include CPCL & OIL bottling plants

4.1.3 Policy Initiatives Undertaken

In today's dynamic business environment, which has been changing over the years, several policy initiatives have been taken by the Corporation where it has been in the forefront to adapt and adjust itself to face those challenges. Accordingly, it has taken several policy initiatives to improve its operational efficiency, its competitiveness and growth in the changing business environment to maintain its leadership position. These include the following :

- Continuous upgradation of refining facilities to improve yield and reduce energy consumption.
- To make the goals a reality as well as to achieve sustainable growth, IndianOil carried out a Benchmarking Study for IOC Refineries as well as for its Petrochemical Plant at Panipat.

- Utilization of Natural Gas at Gujarat, Mathura and Panipat Refineries as a greener substitute for liquid fuel used in captive power plants and in hydrogen generation units for a cleaner input material substitute. Maximization of high sulphur crude and processing of heavy crudes for realizing cutting edge economics of operational costs. Akpo Blend: Nigeria, Saxi Blend: Angola, Djneo: Congo, Okono: Nigeria, Castilla: Columbia, Vasconia: Columbia, South Blend: Columbia etc. are some of the new crudes additionally processed in its refineries during the year.
- Processing of Mangala crude which is very heavy, highly waxy and difficult to handle is being successfully processed at Panipat Refinery. Commissioning of facilities for injection of this crude in the Viramgam-Koyali crude pipeline for processing in Gujarat Refinery is scheduled during the last quarter of the current financial year.
- GRM improvement through stream sharing among group company refineries to utilize respective spare capacity and remove bottlenecks.
- Ethanol Blended Petrol (EBP) programme for the year 2011-12 has started on an industry basis. The industry has received an offer of 607,400 KL against a total industry requirement of 1,016,616 KL i.e. 60%. IOC has issued a Letter of Intent (LOI) for 257,522 KL for the states of Punjab, Haryana, Delhi, UP, Uttarakhand, Bihar, Gujarat, Maharashtra, Goa, AP, Karnataka and Kerala. The supply of Ethanol has started from the last week of December 2011. It would help the country to preserve and save its precious foreign exchange.
- Improved automation and vehicle tracking system for satisfying the needs and wants of customers in terms of quality, quantity and delivery of products and services. Till 31st December 2011, 2014 ROs have been automated and for vehicle tracking, Vehicle Mounted Units (VMU) have been installed in 18,491 Tank Trucks (TTs).
- In order to protect business interests in the aviation sector, the three oil marketing PSUs (IOC, BPCL & HPCL) currently providing aviation fuelling services at Mumbai Airport, joined hands with Mumbai International Airport Pvt. Ltd. (MIAL) for the formation of a new Joint Venture Company for setting up and operating an integrated fuelling facility. An MoU to this effect has been signed on 30th Sept. 2010 with equal stake for all the four partners in the new JVC. The new integrated facility is expected to come up by 2014. Similarly, for Delhi Airport, the new T3 terminal is now fully operational. Post-formation of JV with Delhi International Airport Pvt. Ltd. (DIAL) and BPCL, fuelling activities are being undertaken by IndianOil Skytanking Ltd. (IOSL), another JV of IndianOil.
- First Company to successfully conduct an Aadhaar enabled LPG delivery system testing as a pilot to pave the way for direct subsidy transfer to customers
- Individual customers consuming subsidized domestic LPG with their name, address and no. of cylinders consumed are displayed on a 'Transparency Portal' hosted on www.indane.co.in site for public display and scrutiny. It is aimed at providing a powerful reconciliation and social audit mechanism
- Globalization efforts through its subsidiaries in downstream marketing of petroleum products in Mauritius, Dubai and Sri Lanka, exploration & production, exports of Petrochemicals etc.
- To broaden the energy portfolio in a sustainable manner, venturing into alternative sources of energy like wind, solar and now into nuclear.

4.1.4 Performance

The physical performance of IndianOil during the financial year 2010-11, was spectacular with the refineries achieving more than 100% capacity utilization for five consecutive years in succession, improvement in terms of distillate yield, energy efficiency (lowest energy consumption) and quality of product. During the year 2010-11, all the refineries completed BS IV/III Grade MS / HSD quality improvement projects in line with the National Auto Fuel Policy. With the expansion of Haldia Refinery from 6.0 to 7.5 MMTPA and Panipat Refinery from 12 to 15 MMTPA during the year, IndianOil's group (including CPCL) refining capacity has enhanced to 65.7 MMTPA from 62.7 MMTPA, thereby becoming the largest refiner of the country.

Pipelines registered a highest ever throughput of 68.32 MMT of crude and products together, an increase in throughput by 5.4% over the previous year. It has already transported 55.9 MMT of crude and product till 31st Dec. 2011 and is expected to transport 71.96 MMT during the year 2011-12, up from 68.5 MMT transported during 2010-11. It also transported 469 MMSCM of gas during Apr-Dec.2011 for its own refinery at Panipat and the outlook for transportation of R-LNG is 600 MMSCM for 2011-12.

IndianOil sold 65.3 MMT of petroleum products in the domestic market during the year 2010-11, the highest ever, registering a growth of 3.6% over last year. This year, it has already sold 52.206 MMT of petroleum products (excluding LNG) till Dec.2011.

4.1.5 Financial Performance

During Apr-Sept'11, IndianOil achieved a gross turnover of ₹ 193,925 crore and made a net loss of ₹ 11,204 crore.

It made a substantial contribution of ₹ 39,658 crore to the Central Exchequer during 2010-11 vis-à-vis ₹ 26,541 crore made during 2009-10. Details of some of the major financial highlights are tabulated on the next page.

Shri R.P.N. Singh, Minister of State for Petroleum & Natural Gas inaugurates a new Kisan Seva Kendra

(₹ Crore)

Parameter	2008-09	2009-10	2010-11	Apr-Sept .'11
Gross Turnover	285398	271095	328744	193625
Profit Before Tax	4329	14106	9096	(-)11204
Profit After Tax	2950	10221	7445	(-)11204
*Earnings Per Share	12.15	42.1	30.6	(-)46.15
Dividend Declared	910	3156	2307	

** Earnings per share for all the periods have been calculated after considering Bonus Issue in line with AS-20- "Earning Per Share".*

4.1.6 Physical Performance (As of December 2011)

The details in respect of the performance in the past and the current year are tabulated below.

(MMT)

S. No.	Description	2008-09	2009-10	2010-11	2011-12 (P) (Apr-Dec)
A)	Refining - Throughput	51.4	50.7	53.0	41.5
B)	Pipelines - Throughput				
i)	Crude	38.3	41.48	42.5	35.4
ii)	Product	21.6	23.53	26.1	19.7
	Total – B (i+ii)	59.9	65.01	68.5	55.1
	Gas (MMSCM)			344.0	469.0
C)	Marketing – Product Sales				
i)	Domestic				
	POL	60.89	63.03	65.3	52.2
	Gas	1.67	1.68	1.6	2.1
ii)	Exports	3.62	4.450	5.0	2.5
	Total – C (i+ii)	66.17	69.21	71.9	56.8

(P) 2011-12 (Apr-Dec) Figs are Provisional

IndianOil commissioned its first Gas pipeline during the financial year 2010-11 from Dadri to Panipat to supply Regassified - LNG for its Panipat Petrochemical complex.

The IndianOil group imported about 37.92 MMT crude oil & 4.66 MMT products valued at US$ 34,040 million and exported 2.48 MMT valued at US$ 2,061 million (excluding sales to Nepal Oil Corporation) during the period Apr-Dec'11.

4.1.7 Safety, Health And Environment

Emphasis in IndianOil is on sustainable development and it is committed to providing a safe workplace and enriching the quality of life of employees, customers and the community. Comprehensive safety, health & environment management systems are in place, under which the facilities are periodically reviewed and upgraded from time to time for better performance.

All IndianOil refineries have environmental management systems certified under ISO-14001. Reuse of treated effluent is extensively practised at all refineries. IndianOil is the only petroleum company in India with ISO accreditation for over 60 of its units, which include refineries, pipelines, aviation fuel stations, quality control laboratories, LPG bottling plants and tap-off terminals.

Major initiatives on Pollution Control, Safety and Occupational Health for the period April-December 2011

- As a commitment towards reducing emission of Greenhouse Gases (GHG) responsible for global warming, all IndianOil refineries completed GHG emission inventory as per ISO 14064-1:2006.
- Verification of CDM Projects - for obtaining issue of CER by UNFCCC - has been carried out by the Verifier, M/s. TUV India Ltd. for the following projects:

- 'AVU Energy Optimization' at Digboi Refinery
- 'Flare Gas Recovery' at Haldia and Barauni Refineries
- Rainwater harvesting schemes implemented at Refineries, Marketing and Pipelines, installations and the R&D Centre.

Safety & Environment Protection Awards

Refineries

- Panipat and Bongaigaon Refineries have won the Gold Award of the 10th annual Greentech Safety Awards 2011 constituted by Greentech Foundation, New Delhi. Barauni Refinery won the Silver Award in the same category.
- Mathura, Bongaigaon, Gujarat, Barauni and Haldia Refineries have won the Gold award at the 10th Annual Greentech Environment Awards 2011 constituted by Greentech Foundation, New Delhi.
- Panipat Refinery won the Suraksha Puraskar (Bronze Trophy) of the Safety Awards 2010 under the manufacturing sector by National Safety Council, India. Under the same category, Mathura Refinery has received a 'Letter of Appreciation' in the same category.

Marketing

- 37 locations received Safety awards from DGFASLI, under Ministry of Labour & Employment.

Pipelines

- Northern Region Pipelines received the Golden Peacock Award 2011 in Occupational Safety & Health.

4.1.8 Research & Development

IndianOil has world-class R&D facilities and competencies and is perhaps Asia's finest. It has undertaken pioneering research in lubricants formulation, refinery process, pipeline transportation and alternative fuels, and is also the nodal agency of the Indian hydrocarbon sector for ushering in a Hydrogen fuel economy in India. The total number of patents filed till date are 374 out of which the number of active patents are 218 as on 31.12.2011, of which 118 are in India and 100 are overseas.

Some of the in-house technologies, processes and catalysts developed by IndianOil R & D are as under :

Refinery Technologies & Processes

Some of the technologies which have been commercialized during the year are:

- **IOC-EIL "DHDT Process Technology" Commercialization at Bongaigaon Refinery:** IOC R&D along with EIL licensed a grass roots 1.2 MMTPA DHDT (Diesel Hydrotreating) unit to Bongaigaon Refinery for producing diesel meeting Bharat Stage-IV specifications, which will enhance end use efficiency as well as reduce pollution. The unit was commissioned, stabilized and is running successfully during the year.
- **Light Naphtha Isomerisation Unit at BGR**

  IOC R&D jointly with EIL provided the technology know-how, for retrofitting the existing Xylene Isomerization unit to a Light Naphtha Isomerization unit (0.154 MMTPA) with catalyst from M/s. Sud-Chemie, Germany for producing Euro-III/IV MS. The unit was commissioned and stabilized during the year.
- **Demonstration of Propylene mode operation in Guwahati Refinery(GR) INDMAX unit to Integrated Refinery & Petrochemical Complex Public Co. Ltd. (IRPC) Thailand**

  Maximum propylene run demonstrated in GR INDMAX unit to IRPC in presence of Lummus (joint licensor of INDMAX technology) representatives. Process conditions along with catalyst formulation modified for maximum propylene mode operation at site. Propylene yield of 17.1 wt% demonstrated on fresh feed basis without recycle using a heavy feed of density 0.943 gm/cc and CCR content >5 wt%.
- **Needle Coke Production at NRL and Bongaigaon**

  Approx. 900 MT of Green Needle Coke (GNC) produced and calcined in Dec'11 at NRL and 1200 MT of Green Needle Coke produced at Bongaigaon, which is of superior quality for better value.
- **Use of i-Max Premium & RUA in GR INDMAX**

  R&D's i-Max Premium is in use at Gujarat Refinery INDMAX since Jan'11. Order for 10 MT of R&D's Resid Upgrading Additive (RUA) placed and plant trial planned in Mar'12. Expected benefits are improved LPG and MS.

Refinery Catalysts & Additives

- A high active Co-Mo based DHDS catalyst recipe developed in lab scale which performs better than INDICAT-DH-IV under identical DHDS conditions. It would improve Cetane in HSD by about 4 units.
- Low cost metal passivator additive developed for upgradation of heavy ends.

Pipelines & Crude Transportation

- **Pipeline Transportation of Crude oil**

  Laboratory simulation studies based on rheological properties were conducted to ascertain the feasibility for transportation of Mangla crude blends with Arab Mix, Kuwait Mix and Bonny Light crude through Viramgam - Koyali (VK) and Mundra Panipat (MPPL) pipelines The studies indicated that pumping of 15% Mangla blend in Arab Mix crude is feasible through VKPL in summer months (12% in winter months). Up to 12% Mangla crude blend is feasible in MPPL even in summer months (10% in winter months).

Fuel & Fuel Additives

- Developed Diesel MFA with Combustion Improver for Servo DMFA (ME) developed for mainline engines at pipelines. Formulation passed on to Marketing Division for commercial production.
- Developed Indigenous Gasoline MFA. Excellent performance observed at M/s Tickford, UK on MB M 102E engine test @ 400 ppm.

Shri G.C.Chaturvedi, Secretary, MOPNG inaugurates Compact Reforming Hydrogen-CNG Plant at IndianOil's R&D Centre

Lubricant Technology

- **Approval from OEMS:** Some of the important Original Equipment Manufacturer (OEM) approvals were obtained during the year for lubricants such as Servo Pride XL 15W-40- brand approval from Volvo Sweden, Servo Pride Max meeting API CJ-4 Specification from Kamaz Vectra, rust preventive oils from Tata Steel, Tata Motors and Peabody, USA, brake fluid and hydraulic lubricants by Ashok Leyland, Servo Mesh FG series for industrial gear boxes of food processing industry by National Sanitation Foundation (NSF), USA Servo RP 180 ES & Servo RP 190 ES from M/s. Ravarini Castoldi, Italy, Servosynco E-68 from NTPC, Ramagundam for use in Atlas Copco Compressors, Timken Premium Mill Grease from Timken etc.
- **Synthetic Aviation Lubricants :** A Synthetic Aviation Lubricants development project was undertaken by IOC-R&D Centre in collaboration with Indian Institute of Chemical Technology (IICT), National Aerospace Laboratories (NAL), Hindustan Aeronautics Limited (HAL) and Gas Turbine Research Establishment (GTRE). The indigenously developed oils SVS-11(equivalent of OX-27) and SVS-21(equivalent to OX-38) have received provisional clearance for utilization in military aircrafts by Centre for Military Airworthiness and Certification (CEMILAC). This marks a major milestone in the overall indigenization program for the defense aviation lubricant business by IOC.
- **Mosquito Larvicidal Oil :** The first batch of 53 KL new Servo MLO Super was supplied to BMC, Maharashtra for controlling mosquito breeding.
- **OiliVorous,** a bioremediation product, produced 805 kg and dispatched to various marketing and refinery locations for reclamation of oil contaminated soil.

Biotechnology

- **Advanced Bio-energy Research Centre**

  IOC signed a Memorandum of Agreement with the Department of Biotechnology (DBT), Government of India, to set up a DBT-IOC Centre for Advanced Research on Bio-energy in August 2011. The Centre will carry out research in the development of second and third generation bio-fuels. This research centre will be set up at IndianOil's R&D complex, Faridabad.

Petrochemicals and Polymers

Commissioning of Petrochemicals and Polymer Research Facilities at R&D Centre, Faridabad which would facilitate research in catalyst synthesis, characterization & evaluation laboratories, polymerization laboratories, polymers etc.

Awards Won by R&D Centre

- R&D Centre won two Petrofed Awards in the category of 'Innovator of the Year' (Team) and 'Woman Executive of the Year' in the oil & gas sector for 2010. The awards were given away by Petroleum Minister on 10th May, 2011.
- R&D Centre won second position in the Rajbhasha Shield Competition for implementing the official language - Hindi (2009-10) in the PSU category, organised by Town Official Language Implementation Committee (TOLIC), Faridabad.

4.1.9 Project Implementation

Major projects commissioned during the year 2011-12 (Apr-Dec'11):

- Diesel Quality Upgradation (DHDT) project at Bongaigaon at a cost of about ₹ 1646 crore in Aug. 2011.
- MSQ Quality Upgradation (MSQ) project at Bongaigaon at a cost of about ₹ 294 crore and commissioned in Sept. 2011.

Major projects costing ₹ 100 crore and above approved during Apr-Dec'11

Project	Approved Cost (₹ crore)	Approval In
Resitement of Tatanagar and Ranchi Depots	132.38	April 2011
Augmentation of Paradip-Haldia-Barauni Pipeline	586	August 2011

Projects under Implementation: Projects worth about ₹ 39,000 crores are under various stages of implementation. The details of the major ongoing projects are tabulated below.

Project	Approved Cost (₹ crore)	Commissioning
		Actual / Anticipated
15.0 MMTPA Grassroots Refinery at Paradip, Odisha	29,777	Apr-Jun'13
Revamp of FCC Unit at Mathura	1000	Jan'13
Butadiene Extraction Unit (BDEU) at Panipat	341.5	Jan'13
Branch Pipeline from KSPL, Viramgam to Kandla $	349.00	Jan-12
Construction of tanks & blending facilities at Vadinar @	267.00	Mar.2012
Paradip-Raipur-Ranchi Pipeline	1793.00	@@
De-bottlenecking of SMPL#	1584.00	Aug'2013
Integrated crude oil handling facilities at Paradip (2 SPMs & Subsea Pipeline at Paradip)	1492.33	Jun-12
Paradip-Haldia-Durgapur LPG Pipeline#	913.00	Dec-13
Augmentation of Paradip-Haldia-Barauni Pipeline#	586.00	Feb-14
New Marketing Terminal at Ennore (Tamil Nadu)	171.83	36 months after resolving the land dispute/ receipt of statutory approval
600 TMTPA LPG Import Facility at Kochi (Kerala)	170.00	The project is kept on hold due to uncertainty regarding LPG jetty development. Will be revised after the Jetty issue is resolved.
New Marketing Terminal at Eastern Sector Refinery	199.75	36 months from the date of last statutory clearances.
Chittoor Terminal on CBPL (Andhra Pradesh)	126.60	Mar'13
LPG Facilities at Paradeep (Odisha)	158.91	30 months from the date of Board approval/ manpower positioning /statutory clearance, whichever is later
Resitement of Bilaspur & Bisramgarh Depots to Korba	108.18	24 months from the date of statutory clearance.
Resitement of Tatanagar & Ranchi Depots to Khunti (Jharkhand)	132.38	24 months from the date of statutory clearance.

$ 30 months after receipt of environment & forest clearance (Received on 9.9.2010).

'@ 30 months after receipt of statutory clearances (Last clearance was received on 16.3.2010).

@@ Project is likely to be delayed due to non-receipt of forest clearance. Period of delay shall be known upon receipt of 1st stage forest clearance for the project.

30 months after receipt of statutory clearances.

4.1.10 Widening Horizons

To be a globally admired Company, IOC is spreading its wings and extending its expertise in the core sectors of its business through a well laid out plan in the form of export of services and training & consultancy services.

Export of Services

- **Consultancy and Manpower Secondment Services**

  IndianOil entered into a Technical Services Agreement (TSA) and Manpower Secondment Agreement (MSA) with Emirates National Oil Company (ENOC), Dubai since 1997 and 1998 respectively. Under the MSA, during the year 2011-12, IndianOil deputed 30 of its experts for providing shutdown / start-up assistance to ENOC Refinery for their naphtha hydrotreater, continuous catalytic reformer, splitters, merox, offsite, steam / power generation units etc. The assignment was carried out by the IndianOil team successfully.

- **Training and Consultancy Services**

  IndianOil has been accredited as a certified Training Provider to Kuwait Petroleum Corporation (KPC), Kuwait in the downstream hydrocarbon

IOC's Retail Outlet takes 'Xtra Care' of its customers

sector, since 2009. So far during the period Apr-Dec 2011, IndianOil bagged orders for providing five training programmes (six sessions) to KPC officials in Kuwait. IndianOil continues to get further enquiries from KPC regularly for conducting training programmes at KPC, Kuwait.

4.1.11 Exploration & Production (E&P)

IndianOil is mainly a downstream major in the country with main focus on expansion of its core business. However, taking into account its large dependence on imports to meet the crude oil requirements of its refineries, IOC has entered into the upstream sector with the objective of getting equity oil and gas. Towards this end, IndianOil has been making continuous efforts to expand its E & P portfolio domestically as well as overseas, in collaboration with experienced consortium partners. In all, IndianOil has 23 blocks comprising 13 domestic blocks and 10 overseas blocks. The overseas assets are located in Iran, Libya, Nigeria, Gabon, Yemen, Timor-Leste and Venezuela. As part of a consortium, IndianOil has been awarded Project-1 in the Carabobo heavy oil region of Venezuela.

Domestic

It presently has non-operating Participating Interest (PI) in 8 Oil & Gas exploration blocks awarded under various rounds of New Exploration Licensing Policy (NELP) and 2 Coal Bed Methane (CBM) exploration and exploitation blocks awarded under the first CBM round, in consortium with other Indian E&P companies. IndianOil also has non-operating PI in an onshore exploration block in Assam-Arunachal Pradesh, acquired through a farm-in. Further, IOC has two onshore Type-S blocks in Cambay basin of Gujarat, with 100% PI and operatorship, awarded under the seventh round of NELP.

IndianOil's PI in the above 13 domestic blocks ranges from 15% to 100%. Exploration activities in all these blocks are in various stages of petroleum operations. Commerciality of gas discovery has already been accepted by DGH / MoP&NG for block MN-OSN-2000/2 in Mahanadi basin and farm-in block AAP-ON-94/1 in Assam-Arunachal Pradesh. In addition to these, IOC has been provisionally awarded 2 shallow water blocks in Kerala-Konkan basin in partnership with ONGC under NELP IX bidding round.

Overseas

Overseas, IndianOil has PI in 10 E&P blocks, 3 in Libya, 2 in Yemen and 1 each in Iran, Gabon, Nigeria, Timor-Leste and Venezuela. Its PI in these blocks ranges from 3.5% to 50%. Nine of these blocks are in various stages of exploration. The project in Venezuela (Carabobo Heavy Oil Project-1) is a development project.

Pursuant to the oil & gas discoveries made in the Farsi block in Iran, a Master Development Plan has been submitted. Presently, discussions/negotiations between Iranian authorities and the Indian consortium for finalizing a Development Service Contract for discovery are in progress. In Carabobo, Venezuela, a consortium of Repsol, Petronas, ONGC Videsh Limited (OVL), IOC and OIL, which was awarded a development project in the Orinoco Heavy Oil Belt in Venezuela, known as Carabobo Heavy Oil Project-1, project activities are in progress.

Boost to IndianOil's growth in the upstream sector

A state-of-the-art interactive interpretation centre, "Anweshan", with workstations and associated

facilities, has been commissioned. The centre will enable the E&P group to carry out in-house interpretation of G&G data in both operated and non-operated blocks. The centre has been provided with the versatile Geoquest Petrel and Techlog software of Schlumberger to supplement the existing geographix software of Halliburton. The new system, combined with the earlier geographix system, will provide IndianOil's geoscientists an opportunity to develop technical skills and capabilities.

4.1.12 Petrochemicals

The petrochemical industry of today is an indispensable part of the manufacturing and consuming sectors and has a positive linkage with growth in GDP. Leveraging the strength in feedstock and marketing infrastructure, IndianOil's Petrochemicals vision is steadily taking shape, both in terms of creation of state-of-the- art facilities and market foray - with logistics and marketing channels firmly in place and three overseas commission agents - one each in Nepal, Pakistan and Bangladesh. IndianOil's petrochemical products are not only gaining popularity in the domestic market, but earning valuable foreign exchange as well. IndianOil has implemented petrochemical projects worth approximately ₹ 20,000 crore (US$ 4.5 billion) by the year 2011 and the way forward, has envisaged to implement diverse petrochemical projects.

IndianOil's petrochemical units are well integrated with its refineries and enjoy synergies in terms of assured feedstock availability, absorption of return streams, cost saving through sharing of facilities and optimization of configuration and savings in the supply chain. IndianOil commissioned the world's largest single train Linear Alkyl Benzene (LAB) at Gujarat Refinery in August 2004, with UOP DETAL technology and though designed to produce 120 TMTPA, consistently operates more than 100% capacity utilization.

IOC's integrated Paraxylene (PX)/Purified Terephthalic Acid (PTA) plant, commissioned at Panipat Refinery in June 2006 based on UOP's Paraxylene & DuPont's (Invista) PTA technology. The half a million tonne PTA plant is currently operating near full capacity. The grass roots Naphtha Cracker complex of IOC, commissioned in March 2010 at Panipat, is the largest operating cracker capacity in India. The Naphtha cracker is designed to produce over 857 TMTPA of Ethylene, and 650 TMTPA of Propylene to produce a host of 'Propel' brand of high quality polymer products. The Ethylene produced is fully consumed in the downstream plants to produce High Density Polyethylene (HDPE), Linear Low Density Polyethylene (LLDPE), Mono/Di/Tri Ethylene Glycol (MEG/ DEG/ TEG). Propylene is consumed fully to produce Polypropylene (PP) from two production lines with capacity of 300 TMTPA each and is capable of producing homo polymers, bloc co-polymers and random co-polymers, and achieved import substitution of polymers through introduction of several grades: LBM grade (010DB52), Super impact grade (5080 MG), High flow LL grade(500M24A) etc.

IOC is now established as a key player in Petrochemicals with good market acceptability. Under the umbrella brand, Propel, IndianOil offers a full product slate covering all segments of Petrochemicals viz. LAB, PTA, PX, MEG, DEG,TEG, PP, LLDPE, HDPE etc.

The sales performance of IndianOil Petrochemicals are as under:

	Sales (TMT)	FY 2010-11	Apr. - Dec. '11
1	LAB	123.9	67.6
2	PTA	446.9	371.4
3	GLYCOLS (MEG/DEG/TEG)	153.8	174.5
4	Polymers	217.0	431.4
5	Benzene		10.0
	Total Petrochemicals	947.6	1054.9

(Apr-Dec 2011: Provisional)

In its pursuit to expand its petrochemical business, LAB is now being exported to 20 countries. It also has 3 overseas commission agents - one each in Nepal, Pakistan and Bangladesh. Imports of PP, PE (LLDPE, HDPE) & PTA by road to Pakistan via the Wagah border is allowed by the Pakistan Government effective 28th December, 2011. This would result in boosting exports to Pakistan. IOC is now the largest supplier of Mono Ethylene Glycol (MEG) in the domestic market with monthly sales between 16,000-22,000 MT.

To consolidate IOC's position further in the polymer business and add value to the existing stream of Propylene to be available from the INDMAX unit (high severity FCC designed with IOC R&D technology) at the new refinery at Paradip, IOC proposes a 680 KTA Polypropylene plant by 2015, for which a detailed feasibility study is currently in progress. Also, IOC is exploring project viability of a 1 MMTPA Acetic Acid plant with British Petroleum (BP) using guarded technology in a Joint Venture in Gujarat based on Petcoke gasification. This project will help in meeting the growing domestic demand and save foreign exchange.

To improve its market presence in petrochemicals and remain in mutually beneficial and enriching engagement with customers, an interactive web portal "CARE" (Customer Acquisition, Retention and Enrichment) has been launched to extend ERP beyond the boundaries of the Corporation. The portal has been awarded the prestigious EDGE Award 2011 in the Enterprise Applications Category by Infoweek. The award has been instituted by EDGE-Information week's annual initiative to identify, recognize and honour end user companies in India that have demonstrated the best use of technology.

SBR project in JV and Butadiene Extraction Unit of IndianOil at Panipat

With a view to integrate into downstream petrochemicals for improving the hydrocarbon value chain and for import substitution, a world scale Styrene Butadiene Rubber (SBR) plant (India's first), with a capacity of 120 TMTPA, based on the potential Butadiene streams available from the Panipat Naphtha Cracker Complex (PNCC), is being implemented at Panipat in a Joint Venture. As a linked project, a 140 KTA Butadiene Extraction Unit (BDEU) is being commissioned within the Panipat Naphtha Cracker Complex (PNCC). The SBR project would be the first state-of-the-art plant in India, envisaged to be implemented in joint venture with TSRC, Taiwan and Marubeni Corporation, Japan. The SBR project is being implemented by the Joint Venture Company in the name of Indian Synthetic Rubber Limited (ISRL). SBR is primarily used for manufacture of automotive tyres, rubber parts/gaskets, adhesives, conveyor belts etc. With rapid development of India's automotive industry, SBR annual demand is growing at a rate of about 15%. The SBR plant is expected to be on-stream by Q4 2012 and help in import substitution.

4.1.13 GAS

Gas Infrastructure

Natural Gas has emerged as the preferred fuel of the 21st century. With commercialization of new gas discoveries and coming up of LNG terminals in India, Natural Gas has come to the fore as a preferred source of energy contributing to the energy security of the country. Towards this end, IndianOil has been forging ahead with a carefully drawn action plan.

Gas Sales

IndianOil's total Gas sales grew by 28.15% during April-Dec. 2011 over the same period last year.

Gas Tie-up

IndianOil is one of the promoters of Petronet LNG Limited (PLL) and markets 30% of RLNG imported by PLL, amounting to 2.25 MMTPA, from PLL's terminal at Dahej. In addition, IndianOil purchased approximately 683 MMSCM short term RLNG from Petronet LNG during April-Dec.2011 for consumption in IOC refineries. IndianOil also has 30% share in Kochi Terminal of PLL presently under construction, amounting to 0.43 MMTPA out of the contracted quantity.

Gas Pipeline

IndianOil commissioned its first Gas Pipeline between Dadri and Panipat and Gas supply to Panipat Refinery was commenced in July, 2010. Current supplies are 1.9 MMSCMD, which shall be gradually increased to 2.5 MMSCMD during 2012.

A consortium of IndianOil along with GSPL, BPCL & HPCL have been authorized to build the following three Natural Gas pipelines:

- Mallavaram-Bhilwara and Vijaipur Pipeline (76 MMSCMD)
- Mehsana-Bhatinda Pipeline (77 MMSCMD)
- Bhatinda-Jammu-Srinagar Pipeline (42 MMSCMD)

Project activities have started to build the three pipelines.

It has been decided to set up a 5 MMTPA LNG Import Terminal at Ennore in Tamil Nadu to increase its gas marketing portfolio. FEED has been awarded in October 2011. The study is expected to be completed by June 2012.

LNG at Doorstep

IOC, having successfully implemented the innovative project "LNG at Doorstep" for distributing LNG through cryogenic tankers directly to customers, for industrial / captive power applications, has delivered more than 40,300 MT till date. During April-Dec.'11, 8,708 MT LNG has been delivered. IOC has signed a contract with PLL for expanding the LNG loading capacity at Dahej from the existing 20,540 MT to 25,675 MT for 2011, 45,000 MT for 2012 and 80,000 MT from 2013.

City Gas Distribution (CGD) Projects

Green Gas Ltd., a Joint Venture Company of IOC and GAIL for city gas distribution in Agra and Lucknow, has been operating with two CNG mother stations, one online CNG station, three daughter booster stations, one daughter station in Lucknow and one CNG mother station, one online station and two daughter booster stations in Agra.

4.1.14 Renewable Energy And Sustainable Development

Progress on Sustainability & Renewable Energy

In its endeavour towards a sustainable energy solution for the nation, IndianOil is diversifying its energy portfolio and focusing on sustainable business. As part of this effort, a Renewable Energy and Sustainable Development department has been created in 2010 to look into these initiatives. It has already ventured into wind power generation, solar PV power under JNNSM, bio-fuels and solarisation to get experience and understand the business aspects.

The status of these initiatives is as follows-

Sustainable Development

Ecological footprinting exercise: In order to have Sustainable Development, IOC targets to have minimum/optimum footprints in the areas of Greenhouse Gases (GHG), water and waste. Following the principle of "measure before we can manage" it was decided to undertake an "as is" assessment of GHG, water and waste footprints of the Corporation. The ecological footprinting exercise i.e. GHG, water & waste mapping exercise, has been completed for 7 representative locations (IIPM, R&D Centre, Punjab SO Chandigargh, Loni Bottling Plant, Panipat Mktg Terminal, Viramgam PPL Terminal,

Panipat Refinery). GHG inventory verification of all 8 refineries is already completed as per ISO-14064. This fiscal, IOC plans to cover 20 more locations under the ecological footprinting exercise. Gradually, the scope will be expanded to cover all locations across IndianOil.

Sustainability Awareness Development Workshops: IOC has taken the initiative to make its employees aware of the need to pursue sustainability practices in all spheres of life. 22 such workshops have been conducted across IndianOil so far, out of which 18 have been conducted this year. So far, more than 600 officers have been covered.

Carbon Neutral Events: In order to spread the importance of reduction of emissions, flagships events are being made carbon neutral by tree plantation. So far, 8 (3 in 2010-11 & 5 in 2011-12) such major events have been made carbon neutral and this fiscal, 5 more events are targeted to be made carbon neutral.

Rainwater Harvesting Projects: Keeping in view the fact that water is an invaluable non-renewable resource, IOC has plans to develop such projects across Divisions. 73 rainwater harvesting projects were commissioned as on 31.03.2011. This fiscal, it is targeted to develop 45 such projects, out of which 18 have already been commissioned till Nov. 2011.

Sustainability Report: IndianOil publishes a GRI-G3 compliant Sustainability Report annually since 2007-08. The sustainability report for the year 2010-11 'Inclusive Offerings' has also been published.

Renewable Energy

Solar Energy

Grid Connected : IndianOil is the only CPSE to have won the bid in 2010-11 to put up a 5 MW Solar-PV power plant in Rajasthan under the Jawaharlal Nehru National Solar Mission, Phase 1, Block 1. The Power Purchase Agreement was signed in January 2011. This project, which is being developed on a turnkey basis with BHEL, is expected to commence power generation by January 2012.

Off Grid : IndianOil has initiated action to install solar systems at retail outlets to provide power to operate dispensing pumps and lights with a view to prevent/reduce the use of DG sets and thereby, reduce diesel consumption and the resultant GHG emissions. In 2010-11, 12 ROs were solarised and in 2011-12, 54 ROs have been solarised till Nov. 2011 against a target of 100. IndianOil plans to further step up the initiative in the coming years. IndianOil has also launched the initiative of selling solar lanterns through its extensive retail network across the country. More than 30,000 solar lanterns have been sold during the inaugural year 2010-11.

Wind energy

IndianOil's first wind power farm of 21 MW is operating in Kutch, Gujarat and since its commissioning in Jan. 2009, it has generated 8.5 crore units equivalent to a revenue of ₹ 39.5 crore till 31.3.2011. The project has been registered as a CDM project under UNFCCC and is expected to generate about 34,000 CERs annually. Additional wind power capacity of 48.3 MW is under implementation in Andhra Pradesh and is scheduled to be commissioned by March 2012.

Nuclear Energy

In its endeavor to broaden its energy portfolio while becoming an integrated energy major and especially to partner low-carbon energy business, a JV company has been formed by the name NPCIL-IndianOil Nuclear Energy Corp. Ltd. with Nuclear Power Corporation of India Limited. The JV is putting up a 2x700 MW Power Plant at Rawatbhata, Rajasthan, with Pressurised Heavy Water Based Reactor (PHWR) technology.

4.1.15 Initiatives in Bio-Fuels

IndianOil has been at the forefront of the initiatives in the country to develop and commercialize Bio-fuels. It has taken the lead in developing feedstock through energy crop plantation for Bio-diesel production in the states of Chhattisgarh, Madhya Pradesh and Uttar Pradesh.

In Chhattisgarh, a Joint Venture Company, IndianOil-CREDA Biofuels Ltd., has completed Jatropha curcas plantation on 5889 ha of revenue wastelands in 8 districts as of December 2011. In MP, Jatropha curcas plantation has been completed on 293 ha of revenue wasteland in Jhabua. In Uttar Pradesh, in partnership with M/s. Ruchi Soya Industries Ltd., IndianOil Ruchi Biofuels LLP has facilitated plantation on 1670 ha of Panchayat wastelands in 5 districts as of December 2011. The total man-days generated through IndianOil's efforts are approximately 4.5 lakh.

4.1.16 Innovation & Technical Excellence

Technical innovation is given high priority in the strategic decision making process and as such, it has led to bringing out the best in employees. The Corporation also helps in providing a very congenial working environment. Some of the major innovative schemes/systems implemented, leading to better performance by cutting down capital and/or operating costs, and system improvement which ultimately led to substantial savings for the company, are described below.

New designs developed and implemented: A unique scheme has been devised by PDEC to de-bottleneck the MR vacuum column. This unique design to de-bottleneck the VDU column at Mathura Refinery for augmenting its crude processing capacity has been implemented and commissioned in November, 2011.

Cutting edge technologies adopted

Developments in APC/ Automation : First ever APC implementation by IOC in a Petrochemical complex is in progress at Gujarat refinery at its Linear Alkyl Benzene (LAB) complex. Commissioning of front end portion of LAB unit was completed in September 2011.

IOC's Aviation Fuelling Station at Leh

Back-end units APC commissioning will be completed by January 2011. At Panipat Refinery, Post P-15 revamp APC remodeling of AVU-1 and OHCU controllers was completed in September 2011. Model-based Multi Variable APC was implemented with in-house expertise at Prime-G unit (FCC gasoline desulphurization unit) of Mathura refinery in August 2011.

System Improvement: Standard Maintenance Procedure for Breech-lock Exchangers was developed by M&I to serve as a reference for all aspects of overhauling and maintenance of this critical high-pressure equipment in all refineries, with detailed step-by-step instructions and photographs. An improved design disassembly fixture for the screw plug (or Thread Lock ring) of High Pressure Breech-lock Exchangers was developed in coordination with the OEM, L&T, Mumbai and successfully deployed during maintenance at VGO-HDT at Gujarat Refinery and DHDT at Mathura Refinery. This was designed to be more robust and the inclusion of hydraulic jacks enhanced the rotational torque imparted by the fixture, resulting in smoother and faster opening of the screw plug.

Partial Discharge Testing: A new technique in diagnostic testing of electrical equipment, Partial Discharge Testing, was implemented at Mathura and Barauni Refineries. This was implemented in HT switchgears to detect abnormalities and condition assessment by detecting tracking/ corona discharge which are a consequence of local electrical stress concentrations, contamination etc. which can result in consequent insulation failure.

Widening of Crude Basket : Besides procurement and processing of four new crudes as mentioned above during the year, further four new crudes were evaluated and included for trial processing in IOC Refineries : Okoro (origin: Nigeria), Castilla (origin: Columbia), Vasconia (origin: Columbia), South Blend (Origin: Columbia)

Processing of Rajasthan Crude to IOC Refineries : The rate of injection of Mangla crude gradually increased to 14% in regular HS crude in MPPL since the last week of Sept.'11. Installation of facilities for injection of Mangla crude into the V-K section of SMPL have been completed.

SABF system in all Units/RHQ: A web-based application hosted by RHQ was implemented for tracking of the individual SABF fund.

Server2Server (S2S) mode of e-Payment system : e-payment system was implemented in Refineries Headquarters and Mathura, Haldia, Gujarat and Panipat Refineries. This has resulted in benefits e.g. transmission to bank server through a secured interface, payments even to inter-bank payees, real-time updation of payment status through reverse file generation, intimation of payment details to employees & vendors through email and SMS alerts, thereby bringing customer delight.

New SAP Applications : SAP Payroll system has been successfully implemented for the first time at Mathura and Haldia Refineries during the year. A system of regular updation of 'finished products' transactions with required checks in SAP has been implemented at all Refineries.

Initiatives in Energy Conservation

IOC is committed to all-round conservation of energy and continuous reduction of hydrocarbon loss in all its refineries through in-house process monitoring and implementation of various energy conservation

schemes coupled with operational improvement through advanced technology and adoption of best practices. These sustained efforts have brought down the Energy Index in terms of MBTU/BBL/NRGF of IOC refineries to 57.1 in April-Dec.'11 period of 2011-12 against 60.1 achieved during the corresponding period of 2010-11. These initiatives also resulted in potential savings of 42,000 MT of oil equivalent in April-Dec.'11.

4.1.17 Quality Assurance

With a view to provide value added products and services by improving quality assurance, various initiatives have been undertaken by IOC. Some of the important ones are listed as under.

Automation of Petrol/Diesel Stations (Retail Outlets)

IOC has embarked upon a plan of automating 2357 retail outlets. 2014 Retail Outlets have already been automated up to 31.12.2011.

Vehicle Tracking System (VTS) through Global Positioning System (GPS)

In order to ensure that quality product reaches the customer at retail outlets, monitoring movements of tank trucks (TTs) through GPS is under implementation by IndianOil. As on 31.12.2011, 18,491 TTs out of a total of 18,968 MS/HSD TTs have been covered.

Check & Fill Campaign

To reassure customers regarding quality and quantity of products at the retail outlets, a special Check & Fill campaign was launched wherein customers were invited to check the quality and quantity of fuel at the retail outlet.

4.1.18 Corporate Social Responsibility

IndianOil strongly believes that CSR is a Company's commitment to operate in an economically, socially and environmentally sustainable manner while recognizing the interests of its stakeholders. This commitment is beyond statutory requirements. CSR extends beyond philanthropic activities and reaches out to the integration of social and business goals. As a responsible corporate citizen, IndianOil has been supporting innumerable social welfare and community developmental initiatives in the country since its inception in 1964.

Currently, the organization has an avowed policy of setting aside up to 2% of its Retained Profit of the previous year towards CSR activities, which are taken up in a planned manner, based on the local communities' requirements. IndianOil contributes 20% of 2% of the Net Profit of the previous year towards the following schemes:

- Provision of Common LPG Kitchen facilities in villages
- Release of one-time grant to Below Poverty Line (BPL) families in the rural areas for release of new LPG connections under Rajiv Gandhi Gramin LPG Vitaran Yojana (RGGLV Yojana)

The IndianOil Foundation (IOF) is working to protect, preserve and promote our national heritage, in collaboration with ASI and NCF of the Government of India.

The Community Development Program adopts a multi-disciplinary approach incorporating health, family welfare, education, drinking water and sanitation, empowerment of women and other marginalized groups in the vicinity of its major installations. While utilizing the community development funds, more emphasis is laid on the projects for providing clean drinking water, health & medical care and education. Out of the total allocation under the Community Development Program, about 25% is spent under the Special Component Plan (SCP) and Tribal Sub-Plan (TSP) for improving the quality of life of the people of SCs and STs.

IndianOil Educational Scholarships are awarded to meritorious students belonging to families with less than ₹ 1 lakh as the gross joint annual income of the family. During the year 2010-11, management has increased the number of scholarships awarded from 450 to 2600. 50% of the scholarships are earmarked for students belonging to SC/ST/OBC categories, 25% scholarships in each category/sub-category are earmarked for the girl child and 10% for the physically challenged.

Under the IndianOil Sports Scholarship Scheme, 150 scholarships are granted in 10 games/sports (cricket, table tennis, badminton, tennis, chess, hockey, golf, billiards/snooker, carrom and athletics) to upcoming junior players in the age groups of 15 to 19 years. The scholarship amount varies between ₹ 9000 and ₹ 14000 per month based on the performance of the scholar and year of scholarship ($1^{st}/2^{nd}/3^{rd}$). The amount towards purchase for kit items is ₹ 5000 per annum. The Corporation also provides assistance towards travel and lodging etc. for scholars in individual games.

Development of North-Eastern Region

As a responsible corporate citizen, IndianOil has been making substantive contributions every year to social welfare and community development programmes throughout India including the north-east, particularly in the vicinity of its major units/installations to improve the quality of life of people.

The following initiatives have been taken in the community development programme of IndianOil in health, family welfare, adult education, vocational training, environment protection, drinking water and sanitation, empowerment of women and other marginalized groups:

a. **200 bed hospital set up by Assam Oil Division, IOC at Digboi, Assam:** IndianOil has set up and runs a 200 bed hospital at Digboi with ultra-modern medical facilities for the benefit of the people of the area. Besides serving the employees of IndianOil, the hospital also serves as a tertiary referral

IOC's Kisan Seva Kendra outlet

hospital in the districts of Tinsukia and Digboi and parts of Arunachal Pradesh, right up to the areas bordering Myanmar. The hospital doctors, along with paramedical staff, also visit the nearby villages for providing health care services to the villagers. The medical care services provided by the hospital are heavily subsidized. The Corporation incurs an expenditure of approximately ₹ 3.25 crore per annum on account of non-employee patients.

b. **Assam Oil School of Nursing, AOD, Digboi:** Assam Oil School of Nursing, established in the year 1986, offers a three year diploma course in General Nursing and Midwifery, recognized by the Indian Nursing Council, where local girls are trained to be professional nurses. 20 students per year are awarded a Diploma by the Nursing School and till date, 298 girls have obtained a Diploma in Nursing and Midwifery courses. The entire cost of training is borne by the Corporation and the students are also paid a monthly stipend during their training. The Corporation incurs an expenditure of approximately ₹ 25 lakh per annum towards the Nursing School.

4.1.19 Subsidiaries

Chennai Petroleum Corporation Limited (CPCL)

Chennai Petroleum Corporation Limited (CPCL), formerly known as Madras Refineries Limited (MRL), was formed as a Joint Venture in 1965 between the Government of India (GOI), AMOCO and National Iranian Oil Company (NIOC), having a shareholding in the ratio 74%: 13%: 13% respectively. As a part of the restructuring steps taken up by the Government of India, IndianOil acquired equity from GOI in 2000-01. In July 2003, NIOC transferred their entire shareholding to Naftiran Intertrade Company (NICO), an affiliate, in line with the Formation Agreement, as part of their organizational restructuring. Currently, IOC holds 51.89% while NICO holds 15.4%.

CPCL has two refineries with a combined refining capacity of 11.5 MMTPA. The Manali Refinery has a capacity of 10.5 MMTPA and is one of the most complex refineries in India with Fuel, Lubes, Wax and Petrochemical feedstock production facilities. CPCL's second refinery is located at Cauvery Basin at Nagapattinam. This unit was set up in Nagapattinam with a capacity of 0.5 MMTPA in 1993 and it was later enhanced to 1 MMTPA. The main products of the Company are LPG, MS, SKO, ATF, HSD, Naphtha, Bitumen, Lube Base Stocks, Paraffin Wax, Fuel Oil, Hexane and Petrochemical feedstocks.

Lanka IOC PLC (LIOC)

Lanka IOC PLC is an overseas venture of IOC, serving the Emerald Isle. The main objective of this overseas subsidiary of IndianOil is downstream marketing of petroleum products and operation of the Trincomalee tank farm. It's a public quoted Company with limited liability, incorporated in Sri Lanka on 29th August, 2002 under the provisions of the Companies Act No. 17 of 1982 and re-registered under the Companies Act No. 07 of 2007 on 21st July 2008.

LIOC has 158 petrol & diesel stations and 2 consumer pumps in Sri Lanka along with storage terminal, laboratory and lube manufacturing set up. It has also

entered Bitumen marketing and has already captured a sizable market.

LIOC commenced its business in Sri Lanka in August 2002 and was listed on the Colombo Stock Exchange in the year 2004. In a short spell, LIOC has performed well to achieve the top amidst the volatility of the oil market due to crude oil price fluctuation during the year.

The China Bay tank farm, of World War II vintage, is of historic and strategic significance, being the largest tank farm located between the Middle East and Singapore. The tank farm connects to the Trincomalee harbour, which is the 5th largest all-weather, non-tidal natural harbour in the world, with a 56 km shoreline, making this tank farm most effective for fuel receipt, storage and supply. The tank farm, formerly operated by CPC, has a total of 99 tanks, each with a capacity of 12,000 Kl. Currently, only 15 of these tanks are operational. LIOC has invested significantly in developing the tankage and has drawn up ambitious plans to make Trincomalee an important industrial site.

IndianOil (Mauritius) Ltd. (IOML)

IOML, a wholly owned overseas subsidiary of IndianOil in Mauritius, which commenced operations in 2004, holds around 24% of the market share in POL products in Mauritius. It has a port terminal at Port Louis with storage capacity of 24,000 MT, the first full-fledged petroleum products testing laboratory in Mauritius, a network of 17 ROs and also has a presence in aviation as well as the bunkering business.

During the period April-December 2011, IOML achieved a sale of 146 TMT and a turnover of MUR 4.84 Billion (US$ 164.4 Million). Net profit (before tax) for the period April-Dec.'11 is around US$ 2.63 Million. The Company has gross assets worth US$ 24.48 Million approx. and working capital of around US$ 18.74 Million as on 30.12.2011, which have been fully financed by internal accruals. All bank loans (without IOC's guarantee) have been paid back. IOML is maintaining its status as a "zero debt" company having IOC's equity of US$ 16.58 million and reserves of US$ 19 million.

IOML is ranked at the 12th position amongst the 'Top 100 Companies' of Mauritius in the year 2010-11 based on turnover. Its current market share of 38% in the Aviation Business is the highest in the industry. IOML has recently entered a high growth segment of offshore bunkering by launching a 640 MT capacity barge for bunkering marine vessels on the high seas. The Company is consistently paying dividend for the last three financial years.

IOC Middle East FZE, Dubai, UAE

IOC Middle East FZE was incorporated on 1st May 2006 at Jebel Ali Free Zone, UAE. The operation of IOC Middle East FZE includes manufacturing of high grade lubricating oil in UAE and marketing in various GCC countries in addition to facilitating direct export of lubricants from India to these countries. IOC Middle East FZE undertakes trading of base oils in a restricted manner, subject to availability of exportable surplus from IndianOil's base oil manufacturing refineries.

For the year ended 31.3.2011, the company achieved a turnover of AED: 62.84 Million (₹ 77.4 crore) with a net profit of AED: 2.19 Million (₹ 2.71 crore) as against last year's turnover of AED 37.19 Million (₹ 48.34 crore) and a net profit of AED 1.05 Million (₹ 1.37 crore). IOC Middle East FZE registered a growth of 41.3% in finished lubricant sales (current year's volume of 3767 KL against last year's 2665 KL). Base oil trade registered a growth of 25.5% (current year's volume of 12,732 MT against last year's 10,146 MT).

After formation of the Company, Servo was officially launched in Oman in December 2008, followed by Qatar in January 2010. The Company has garnered around 7-8% market share in Oman and around 4-5% in Qatar. During January, 2011 M/s. Al Mana Enterprises was the regular distributor in Bahrain. Servo was officially launched in Bahrain on 14.9.2011 by Director (Marketing) in presence of the Indian Ambassador to Bahrain.

During 2010-11, IOC ME exported products to Nigeria, Ghana, Mauritius and Nepal, in addition to marketing finished products in GCC countries. Four premium grades, namely, Servo Xee SL 5W30 (semi-synthetic), Servo Xee SL 5W40 (fully synthetic) Servo Pride XL 10W40 (semi-synthetic), Gear Super 75W90 (synthetic) were introduced in the GCC market for high end Nissan SUVs, Renault, Toyota & Kia vehicles replacing MNC products which are hitherto not blended by IOC for any market globally. During April-December 2011 finished product sales have grown by over 35% as compared to the same period last year.

IndianOil CREDA Biofuels Limited

It is a group company of IndianOil set up with the noble objectives of facilitating production of green fuel like Bio-diesel from energy crop plantations by utilizing wasteland and contributing towards the energy security of the nation. The main objective of the Company is to carry out cultivation of crops like Jatropha, the seeds of which are used for production of Bio-diesel. The plantation project, apart from providing social benefits, would also help in development of the rural economy, carbon sequestration, prevent soil erosion and reduction of global warming, environmental pollution and greenhouse gas emissions. IOC (74%) and Chhattisgarh Renewable Energy Development Agency (CREDA) (26%) are the promoters of this venture. It has completed Jatropha plantation in an area of around 5889 Ha in 8 districts of Chhattisgarh till Dec. 2011. Jatropha Plant population to the tune of 32 lakhs coupled with 3.8 lakh man-days worth of rural employment have been generated till Dec. 2011.

IOC Sweden AB

A consortium of Repsol (Spain), Petronas (Malaysia), ONGC Videsh Limited with Participating Interest of 11% each in the project and IOC and OIL with Participating Interest of 3.5% each has been awarded "Project-1" in the bidding round conducted by Government of Venezuela to construct heavy oil production facility, upgrading facility and associated

infrastructure under the Carabobo Heavy Oil Project. The Mixed Company consists of consortium partners having 40% interest and PDVSA (National Oil Company of Venezuela) holding 60% interest. In order to ensure tax efficiency and security of investment in the project, a 3-tier structure has been put in place - IOC Sweden AB (100% subsidiary of IOC), IOC Cyprus Limited (a subsidiary of IOC Sweden AB) incorporated in Cyprus and Indoil Netherlands BV (a Joint venture of IOC Sweden AB and Oil India Sweden AB) incorporated in the Netherlands. IOC Sweden AB was recently incorporated in Sweden on 26th February, 2010.

4.1.20 Major Accolades

IOC, as a leading energy player, has been the recipient of numerous awards and accreditations for sustained deliverance of value added quality products and services. Some of the major distinctions achieved by the company are listed below.

- IndianOil, India's flagship energy corporate, has once again outshone other Indian corporates to lead the pack in the prestigious Fortune 'Global 500' listing of the world's largest companies by sales for the year 2011 by breaking into the top 100 ranks for the first time. It has been ranked at the 98th place in 2011, which is an improvement by 27 places over last year.
- IndianOil has been ranked third in the Refining and Marketing category globally and ninth in overall performance in Asia in the Platts 250 Global Energy Company rankings for the year 2010.
- IndianOil has once again made it to the list of the Forbes Global 2000, compiled by Forbes magazine for the year 2011. Ranked at the 243rd position, IndianOil stands in the top ten of the 57 Indian companies figuring on the list.
- IndianOil has once again featured in the top ten of BT 500 India's Most Valuable Companies - Public Sector Rankings for the year 2011.
- Maintaining its iconic image, IndianOil has once again topped the charts in the ET 500 rankings of India's biggest companies. The Corporation has the largest revenue base in the country and is backed by an asset base of ₹117,406 crore.
- IndianOil has been honoured with the SCOPE Award for Excellence and Outstanding Contribution to the Public Sector Management in the Institutional (Maharatna and Navratna) PSE category for the year 2009-10. The Corporation has been declared as the joint winner along with NTPC Ltd.
- IndianOil has been ranked among the Top 50 companies to work for in India in a study conducted by the Economic Times and the Great Places to Work Institute in the annual survey - 'India's Best Companies to Work For.'
- Acknowledging its excellent performance on several key parameters, IndianOil has been honoured with the India Pride Gold Award in the Oil & Gas category.
- IndianOil has won three prizes at the 6th Employer Branding Awards given away at the World HRD Congress in a ceremony held in Pune on 17th December, 2011.
- Bongaigaon Refinery has become the first establishment in the country to be certified with ISRS 8th edition.
- Digboi Refinery won the 'First Prize', while Gujarat Refinery was conferred with a 'Certificate of Merit' in the Refinery Sector of the coveted National Energy Conservation Awards - 2011 instituted by Ministry of Power.

4.2 HINDUSTAN PETROLEUM CORPORATION LIMITED (HPCL)

4.2.1.1 HPCL is a mega Public Sector Undertaking (PSU) integrated oil Company in India, with Navratna status. It has two refineries producing a wide variety of petroleum products - fuels, lubricants and specialty products; one in Mumbai (west coast) having a capacity of 6.5 MMTPA and the other in Visakhapatnam (east coast) with a capacity of 8.3 MMTPA. The Corporation holds equity stake of 16.95% in Mangalore Refinery & Petrochemicals Limited, a state-of-the-art refinery at Mangalore with a capacity of 9.69 MMTPA. HPCL, in collaboration with M/s Mittal Energy Investment Pte. Ltd. Is also setting up a state-of-the-art 9 MMTPA capacity greenfield refinery at Bathinda in Punjab.

4.2.1.2 HPCL owns and operates the largest Lube Refinery in the country producing Lube Base Oils, having a capacity of 335,000 MT, contributing over 40% of the country's total Lube Base Oil production. Besides, the Corporation owns six Lube Blending Plants (2 in Mumbai and 1 each at Budge Budge, Ramnagar, Chennai & Silvassa) and a Lube Oil pipeline for evacuation of base oil from Mumbai Refinery. Presently HPCL is producing over 300 grades of lubes, specialties and greases.

HPCL's LOBS quality upgradation plant

4.2.1.3 To succeed in the competitive environment, the Corporation has taken up initiatives such as a Business Process Re-engineering exercise, creation of Strategic Business Units, ERP implementation, HR initiatives such as organizational transformation, balanced scorecard, competency mapping, benchmarking of refineries and terminals for product specifications / safety, ISO certification of Refineries/ Marketing / Pipeline operations, branding of fuels, supply chain management for improving logistics, customer focussed approach, upgradation and modernization of facilities.

4.2.2 Marketing initiatives undertaken during 2011-12 (April-November 2011)

A. Marketing Profile at a glance as on 30-11-2011:

The supply and distribution infrastructure of HPCL has been continuously strengthened over the years, which as of November 2011 comprise:

Retail Zonal Offices	7	LPG Distributorships	2776
Retail Regional Offices	50	LPG Customers (lacs)	350.8
Retail Outlets	10723	LPG DBC Holding (lacs)	173
Terminals / TOP's	33	CNG Outlets	151
Inland Relay Depots	69	Aviation Fuel Stations	33
SKO / LDO Dealerships	1638	Pipeline Capacity (MMTPA)	14.05
LPG Zonal Offices	6	Direct Sales Regional Offices	19
LPG Regional Offices	32	Lube Blending Plants	7
LPG Bottling Plants	44	Lube Distributors	172
LPG Import Facilities	2	Commissioning & Fwdg. Agents	83
LPG Bottling Capacity (TMTPA)	3475	Exclusive Lube Depots (COLD/COD'S)	23
Auto LPG Dispensing Stations	212		

B. Significant Highlights & Initiatives In Marketing April-Nov 2011

Retail:

Retail SBU has bagged the prestigious "Forecourt Retailer of the Year Award" 2011, instituted by Star Retailer Awards, for designing business strategies to maximise the potential in forecourts so that the stations ultimately become an attractive retail space rather than a traditional petrol pump.

With a rapidly expanding network of retail outlets running under NANO (No Automation No Operation), developing an effective health monitoring system was essential, with a view to ensuring maximum uptime of the system, thus avoiding loss of sale for related reasons. A state-of-the-art Control Centre has been set up at all the Retail Zonal Offices to remotely keep track of the events that take place at the automated retail outlets, with regard to each of the components of the retail automation system. The Control Centre covers all existing automated outlets and shall also cover additional outlets that may come up under the retail outlet automation project in future. In line with the corporate philosophy of leveraging technology, setting up of control centres has been identified as one of the focus areas to ensure effective Q&Q to the customers with an ultimate objective of increasing footfalls and sales towards enhancing its market share.

LPG:

Introduced a new product category into the ARB basket - Cylinder trolleys with locking wheel mechanism. This is a safer version of the commonly used product, having an additional safety feature of anti-skid locking mechanism on wheels and made of high grade plastic - polypropylene for strength and longevity.

Launch of Transparency Portal on the Corporate Website in August'11. The Transparency Portal is developed in line with the requirements of MOP&NG and UIDAI and is aimed at providing citizens of India information about the number of LPG consumers at a particular distributor and number of subsidized refills consumed by the individual consumer from April 2011 onwards.

As per the Oil Sector Infrastructure Protection Plan, each petroleum installation should have an integrated Security Plan to effectively deal with security threats. To facilitate various locations in quickly preparing their Security Plans, a Model Security Plan was released on 23rd May 2011. This Model Security Plan covered all significant issues and would be of assistance in handling emergency situations effectively and ensuring the security and safety of men, machinery and property of the installation.

HPCl has tied up with 2 new vendors - M/s GCIT for marketing a range of HTE stoves and M/s Siddhi Vinayak Products for spices, through the LPG distribution network.

Direct Sales:

Inauguration of new TT Gantry Facility at Kolkata Terminal I, in Aug.'11. The new TT Gantry is unique in many ways and has been benchmarked for standardization for future projects in the Corporation.

Launch of HP Cruise 15W 40 on 26.4.2011. This Engine Oil is the latest in the series of Tata Genuine Oils in the company's bouquet, and has been approved by the prestigious OEM after stringent testing procedures. It is specially designed for the Tata Nano car.

Aviation:

Mangalore ASF fixed facility was commissioned in August 2011. New Varanasi on-wheel facility commissioned in Sept. '11. This is the 33rd ASF pan India. With the objective of achieving operational excellence and customer delight, the Aviation SBU has brought out "Aviation Training Handbooks" which aptly cover topics such as maintenance, aviation safety, stock accounting, statutory requirements, budgeting, procurement & asset management. These

Shri R.P.N. Singh, Minister of State for Petroleum & Natural Gas presents documents to HPCL's LPG customers

handbooks will be very handy for officers working at Aviation Fuelling Stations and also form part of the Aviation SBU's E-learning Competency Development Program -"Daksh" which has been undertaken to enhance the knowledge levels of officers working at ASFs.

Operation & Distribution (O&D)

O&D and HR (Mktg) department have partnered in development of a unique module called Har Din Har Pal - Swasth aur Suraksha for training workmen at POL locations, since they are the first respondents to emergency situations and interface with their esteemed customers & stakeholders.

The two-day training sessions were conducted by their own internal HR. The programme covered a wide range of topics viz. health, live fire handling, personal grooming & smartness, emotional intelligence, facing emergency situations etc., with the help of videos and live demonstrations. A total of 76 programs were conducted across the zones to cover 1195 employees in a record time of 4 months. The above initiative is a first of its kind in the industry.

A unique initiative branded as "O&D Datamine" was launched by the O&D department, to make optimum use of information technology for the creation of systems that bring about greater efficiency in operations. HPCl's consumers are increasingly exposed to world class infrastructure and rapidly emerging technological change across the value chain. To meet these expectations, O&D department has been striving for operational excellence through world class infrastructure and by leveraging technology.

QC and R&D:

Mangalore QC Lab was awarded the prestigious NABL accreditation in July, 2011 making it the 10th NABL accredited lab in HPCL Marketing. Continuously endeavouring to develop new products to meet market needs, four new products were developed and a patent obtained on "New ways of complexing Lithium grease". R&D has obtained approvals from many OEMs for the products it has developed, prominent among them being approval of CI-4+ engine oil from M/s Escorts, Letter of "Worthy of field trials" from M/s Wartsila, Finland, Shock absorber oil UG from M/s Gabriel and Super tractor oil Universal from M/s TAFE.

Collaborative Research Work:

In order to meet the ever increasing market demands, R&D has undertaken collaborative projects with premier, leading educational institutions for development of high performance products meeting customer requirements.

Indian Institute of Science Bangalore - Study of Effect of Nano Particles in Lubricants

Project involves conducting laboratory testing of nano particles on lubricating properties. This also involves a mechanistic study of inorganic nano particles and testing of base oil and lubricants to analyze the effect of nano based additives.

Gitam University - For Implementation of Nano Technology Additives in Coolants and Gear Oils

The project involves the selection of efficient nano particles for lubricants. This nano based lubricant will be tested for its physical properties after which it will be

introduced to a four-stroke engine for conducting bench scale tests on real engines.

Nit Calicut - For Implementation of Nano Technology Additives in Diesel and Biodiesel Fuels

The project involves the selection of cerium nano particles for fuels. This nano based fuel will be tested for its physical properties after which it will be introduced to a four-stroke engine for conducting lab bench trials at IIT Chennai and then for on-road experimentation.

Bio-Diesel / Bio-Jet Fuels:

MOU with GB Pant University of Agriculture & Technology, Pantnagar, Uttarakhand.

For plantation and to identify high yielding variety of Jatropha for propagation & evaluate seeds for oil contents.

Indo-Canadian Collaborative Project on Bio-jet Fuel

Collaborative R&D project on development of Bio-jet fuel for Aircraft engines.

Projects & Pipelines:

Launched security improvement initiatives for cross-country pipelines in Nov. 2011. HPCL is the first company in the oil & gas sector to introduce and implement state-of-the-art technology and modern concepts like On-line Security Tracking System, Centralized Toll Free Number and Security Index in its Pipelines.

4.2.3 Refineries Highlights 2011-12 (Apr-Nov. 2011)

Mumbai Refinery

- Civil construction of Satellite Rack Room (SRR) was completed in time as per MoU.
- GRS additive was successfully used in OFCCU to overcome Prime G processing capacity for directly blending LCN from OFCCU for Euro III MS production.
- Around 7 TMT of Extract was upgraded to cat-feed, resulting in saving of ₹4.4 crore.
- Online chemical cleaning in F-101 furnace was carried out, resulting in estimated savings to the tune of ₹7.10 lakh.
- Recycled 38,169 M3 of treated water from IETP against the MOU target of 30,000 M^3/month.

Visakh Refinery

- Achieved the highest ever thru'put of CDU II and FCC-NHT during October '11.
- Achieved the highest ever production of LPG and MS during October '11.
- DHT reactor internals installation has been completed in time as per MoU.
- Facility for treating effluent from ATP-ETP in ETP IV commissioned.
- Online connectivity to APPCB servers established.

4.2.4 Awards / Recognition:

HPCL has received the following awards / recognitions in different fields as under:

- HPCL had a ranking of the 336th position in 2010-11 in the prestigious list of Fortune Global 500.
- HPCL was awarded the prestigious Balanced Scorecard collaboration Hall of Fame Award 2010. This award honours organisations that have achieved execution excellence through the use of the Balanced Scorecard (BSC), the world's preeminent strategy and performance management system.
- HPCL West Zone has been conferred with the Shetriya Rajbhasha Puraskar by Govt. of India, Ministry of Home Affairs - Rajbhasha Vibhag, Regional Implementation Office, for the year 2009-10 under the PSU category for excellent performance in 'B' Region among 1200 enterprises.
- HPCL Visakh Refinery has been presented with the "CII Environmental Best Practices Award" for its most innovative environmental project "Sweetening of Refinery Fuel Gas for Internal Fuel".
- HPCL has bagged the best "Customer Loyalty Program Award" for its Drive Track Plus card programme and "Marketing Campaign of the Year" award for the product promotion campaign "HP Happy Wheels" for power and petrol at the Asia Retail Congress 2011.
- HPCL received the SCOPE Gold Trophy Meritorious Award for Corporate Social Responsibility & Responsiveness for 2009-10 from Her Excellency, the President of India, Smt. Pratibha Devisingh Patil.
- HPCL received the 'Golden Peacock Award for Corporate Social Responsibility' for the year 2011 during the 6th International Conference on Corporate Social Responsibility organized at Delhi on 29th April, 2011.
- HPCL's service brand, Club HP has been conferred with the Gold award for the 6th consecutive year at the 13th Reader's Digest Trusted Brand survey 2011.
- HPCL has been conferred with the "Excellence in Quality" award by M/s BOSCH for supplies of Lubricants for their Aftermarket Sales. This award is the result of consistent performance in meeting the customer's requirement on quality & delivery.
- HPCL has been conferred with the "Golden Peacock HR Excellence Award" for the year 2011. This is awarded to organizations that follow excellent Human Resources practices and strategies which directly contribute to the business.
- HPCL has been conferred with the Indira Gandhi Rajbhasha Puraskar by Govt. of India, Ministry of Home Affairs - Rajbhasha Vibhag for the year 2009-10 under the PSU category for excellent performance in "B" Region for the fourth consecutive year.
- HPCL bagged the "CIO 100" Award for the sixth consecutive year in recognition of using information technology in innovative ways to deliver business value, whether by creating competitive advantage, optimizing business processes, enabling growth or improving

relationships with customers. HPCL received the award for B2B Integration for Oil Exchange with other oil companies.

- HPCL bagged six Safety awards and certificates from National Safety Council-Maharashtra Chapter for its six LPG plants under West Zone and Usar LPG plant has been declared the winner for the year 2010, for the second consecutive year.
- HPCL has been conferred with the prestigious National Award for 'Significant Achievement in Employee Relations' by Employers' Federation of India (EFI). This award is conferred on organizations which have excelled in the field of Industrial Relations through commitment, tireless efforts and focused strategies and have implemented policies, systems and procedures that create and sustain productivity along with industrial peace and harmony.
- HPCL has won the prestigious IBM award "The Great Mind Challenge for Business 2011" for the most innovative solution in Health and Life Sciences, Natural Resources, Manufacturing and the Industrial sector using IBM Software.

4.2.5 Performance

The performance for the year 2010-11 (full year), Period from April-November 2011 (Actual) & Dec'11 - March'12 (Forecast) and 2011-12 (Estimated) are as follows:

4.2.5.1 Physical Performance

Refineries

	2010-11 (Actual)	Apr.-Nov '11(Actual)	Dec'11-March '12 (Forecast)	April-March '12 (Estimated)
Mumbai Refinery				
Crude Thru'put (MMT)	6.55	4.88	1.91	6.8
Distillates (Wt. %)	72.4	72.6	71.1	72.2
Fuel & Loss (Wt. %)	7.7	8.1	8.1	8.1
Visakh Refinery				
Crude Thru'put (MMT)	8.1	6.08	2.9	9.0
Distillates (Wt. %)	71.5	74.4	74.5	74.4
Fuel & Loss (Wt. %)	7.3	7.3	7.9	7.5

4.2.5.2 Marketing

	2010-11 (Actual)	April-November' 11(Actual)	Dec'11-March 12 (Forecast)	April-March 12 (Estimated)
Total Sales (w/o exports) (MMT)	25.74	17.93	9.44	27.37
Commissioning :-				
Retail Outlets	1086	512	288	800
SKO/LDO Dealerships	0	0	0	0
LPG Distributorships	220	143	37	180
New LPG Enrolment (Lacs)	28.91	22.67	2.33	25.00

4.2.5.3 Finance

(All figures in ₹ Crores)

	2010-11 (Actual)	April-Sept' 11(Actual)	Oct'11-March 12 (Forecast)	April'11-March 12 (Forecast)
Sales Turnover (including other receipts)	143740	83765	93615	177380
Net Sales after Pool Account adjustments (including other receipts)	134842	78384	89281	167665
Increase /(Decrease) in Inventory	3439	231	-	231
Operating Expenses	133644	83689	83792	167481
Profit before Depreciation, Interest & tax (PBDIT)	4637	-5074	5489	415
Depreciation	1407	804	809	1613
Interest	884	567	933	1500
Profit Before Tax	2346	-6445	3747	-2698
Tax	807	0.07	0	-
Profit After Tax (PAT)	1539	-6445	3747	-2698
Dividend (incl. Tax on dividend)	551	-	-	-
Retained Profit	988	-6445	3747	-2698
Internal Resources Generated	2786	-5641	4556	-1085
Value Added	10018	-678	9048	8370
Contribution to Exchequer	28864	14834	14408	29242

Note:

1. Estimated Oct 2011-Mar 2012 has been calculated considering RE 2011-12 as per Annual Plan 2012-13 less Actual for Apr-Sept 11.
2. Inventory for April'11-Mar '12 estimate has been considered at Sept'11 level.
3. Gross /Net Under-recovery is as considered in AP 2012-13

4.2.6 Exploration and Production:

HPCL ventured into the upstream business for vertical integration and to emerge as a fully integrated Oil and Gas Company. During the past 5 years, HP-E&P has not only acquired a minority stake in 19 domestic offshore & onshore blocks, but has also set its footprints overseas by acquiring minority stakes (8% to 25%) in 4 exploration blocks in prospective basins of Oman, Australia and Egypt.

HPCL intends to leverage and consolidate its current position and implement "Target Shikhar" Strategy for the E&P business based on opportunities, both within and outside India, with successful Operators. It is envisaged that these steps would help in sustaining corporate profitability and even out cash flows from the upstream and downstream divisions of its business.

To strengthen the E&P base, the Corporation has engaged experienced & qualified expert consultants and has also recruited entry level geoscientists from reputed institutions & experienced middle level managers. Further, HP-E&P is in the process of recruiting senior level experienced geoscientists to ensure building of a strong technical team and in addition, full time Advisors having expertise and experience in Geology & Geophysics. Also, a full-fledged office infrastructure has been developed with all required facilities such as a fully equipped workstation, state-of-the-art Training Centre, library etc. HP-E&P plans to conduct advanced technical training modules through world renowned consultants and experienced industry members for developing competencies of the G&G team. For the XIth Plan period (2007-08 to 2011-12), an outlay of ₹ 2,000 crore has been earmarked for existing blocks and for expansion of this business line.

Currently, HPCL is operating two parallel divisions for carrying out the E&P related business - a separate E&P SBU within HPCL and M/s Prize Petroleum Company Ltd. (PPCL) - a JV of HPCL. HPCL holds 50% of the equity share capital in PPCL. The balance 50% is being held by ICICI Bank Ventures and HDFC Bank. Recently, HPCL management has decided to form a 100% subsidiary company by merging Prize Petroleum and HP-E&P. The merger will result in bringing in more focus for the upstream business.

4.2.7 Projects

Major Projects Completed During 2010-11 and 2011-12 (as of November 2011)

- **HPCL Biofuels Ltd**

  HPCL Biofuels Limited, a wholly owned subsidiary Company of HPCL, is setting up fuel ethanol plants for addition into petroleum fuels, through setting up of integrated sugar, ethanol & co-gen power plants at two locations i.e. Sugauli, District East Champaran and Lauriya, District West Champaran. The project was approved on 26th May, 2010 with a total cost of ₹ 727.88 crore and the project has been mechanically completed in September 2011. Commissioning is in progress.

- **Guru Gobind Singh Refinery Products Evacuation Project**

  The objective of the project is to evacuate POL Products (MS, HSD, SKO & ATF) produced by GGS Refinery. The total cost of the project is ₹605.40 crore and the project has been mechanically completed in December 2010.

LPG Plants:

- **Bulk Storage Capacity Augmentation at Ajmer:** This entails setting up of 2100 MT additional Bulk LPG storage at Ajmer LPG TOP & Bottling Plant, which was approved by the Executive Council (M) at a total cost of ₹21.27 crore. The scope of project includes putting up 3x700 MT mounded storage facilities, asphalted road around mound, associated firefighting and gas monitoring system at existing spare land and hooking up the same to existing storage of similar capacity. The project has been completed in March 2011.

- **Bulk Storage Augmentation at Raipur**

  This setting up of 1500 MT additional storage at Raipur was approved by Executive Council (M) in June 2007 with a total cost of ₹15.84 crore and with a completion schedule of 15 months. The project was mechanically completed in February 2011.

- **Bathinda LPG Terminal**

  The project for setting up a 44 TMTPA LPG Bottling Plant along with Tap-off point at Bathinda was approved by the Board in July 2009 with a cost of ₹117.64 crore. The project envisages evacuation of LPG through a dedicated 3 km long pipeline from GGSRL and facilities for Bottling and Tap-off. Tank truck loading and bulk storage facilities are also provided as part of the GGSRL LPG evacuation plan. The project was completed in September 2011.

Major Projects Approved During 2010-11 and 2011-12 (as of November 2011):

Uran-Chakan LPG Pipeline

Approved Amount ₹154.91 crore (HPCL Share). Total project cost ₹309.82 crore. Project being executed by HPCL. Physical progress is 22.5%. Applied to MoEF for Environment Clearance in October 2011. Gazette notification 3(1) released for ROU acquisition for 34 villages (out of 89 villages). Design basis & detailed engineering completed. Procurement initiated for line pipes. Approvals for roads/rivers/drains/nalas/canals crossings initiated. Anticipated completion is 24 months from the date of Environmental Clearance from MoEF.

Hubli LPG Storage Augmentation

Approved amount ₹24.20 crore. Soil Investigation completed. PO placed for pump and compressor. CCOE construction approval obtained. Applied for Environmental Clearance. Anticipated date of project completion: Dec. 2012

Club HP e-fuel station celebrates a future full of energy

Solapur LPG Plant

Approved amount ₹ 82.60 crore. The project is for augmentation of Bulk storage by providing 2x1000 MT capacity mounded storage. Purchase activities in progress. Physical land acquisition in final stages. 50% of land premium paid to MIDC. Preference of sites for allocation submitted to MIDC. Anticipated date of project completion: 18 months from the date of Environmental Clearance.

Major Ongoing Projects

- **Diesel Hydrotreater Project at Mumbai Refinery (DHT-MR)**

  HPCL is setting up Diesel Hydrotreater facilities at Mumbai Refinery to meet Euro-IV specifications for Diesel. As per the latest Auto Fuels Policy, Euro-IV quality norms are to be met for MS and HSD to be supplied to metro cities from April 2010. The project cost is ₹ 2174 crore (revised) with a completion schedule of May 2012.

- **Diesel Hydrotreater Project at Visakh Refinery (DHT-VR)**

  HPCL is setting up Diesel Hydrotreater facilities at Visakh Refinery to meet Euro-IV specifications for Diesel. The total project cost is ₹ 2730 crore (revised) with a completion schedule of March 2012.

- **Resitement of Marketing Installation at Visakh**

  The objective of the project is to modernize facilities like White Oil, Black Oil & LPG terminal and close existing facilities to hand over approximately 65 acres of plot to HPCL Visakh refinery for setting up a new Diesel Hydrotreater unit for Euro-IV Diesel production and bottom upgradation facilities. The total cost of the project is ₹ 756 crore. Completion schedule of the project is as below:

  Black Oil Terminal: Commissioned in Sept. 2010

  LPG Terminal: Mechanically completed in June 2011

  White Oil Terminal: February 2012

- **Construction of New Terminal at Ennore, Chennai**

  The objective of the project is to facilitate modernization of operations through automation and enhanced product tankage and also bring in greater flexibility in Logistics for receipt and dispatch of various petroleum products through road/rail/port. The Terminal will be a southern hub, enabling HPCL to meet the requirements of various locations under SZ. Also, the existing Terminal at Tondiarpet is congested and unable to meet the safety norms and hence, resitement to Ennore will greatly improve the safety aspects of operations. The total project cost is ₹ 299 crore (revised) and it is expected to be completed by January, 2012.

- **LPG Plants:**

- ***Bangalore :*** The project for setting up a 88 TMTPA LPG bottling plant at Bangalore was approved in October 2006 with a total cost of ₹ 145 crore with a completion schedule of 24 months. Identified a site & application submitted to KIADB for acquisition of land at Yediyur on the Bangalore Mangalore Highway. 100% payment towards tentative cost of land deposited to KIADB. Corrected final notification for 63 acres has been issued on 17.9.2011. Final notification for 11 acres pending. Date of completion: 18 months from land takeover. Environment Clearance received in March 2011. Project is anticipated to be completed by March 2013.

- ***Anantpur:*** The project for setting up a 44 TMTPA LPG bottling plant at Anantpur was approved by CFD in March 2007 with a total cost of ₹ 43.45 crore and a completion schedule of 24 months. Land

acquisition was completed through Andhra Pradesh Industrial Infrastructure Corpn. Ltd. (APIICL). 100% land was acquired in March 2011. All major equipment, pipeline and cables are at site. The project is anticipated to be completed by June, 2012.

- **Bulk Storage Augmentation at Nashik LPG Plant**

  The project of setting up 1000 MT additional Bulk LPG Mounded Storage at Nashik LPG Plant was approved by Executive Council (M) in Aug 2009 with a total cost of ₹15.89 crore. The project was mechanically completed in December 2011.

- **New LPG Bottling Plant at Hazira**

  The project of setting up a 88 TMTPA LPG bottling plant at Hazira was approved by CFD in Sept. 2009 with a total cost of ₹ 60.13 crore. Physical progress : 90%. Finishing works in progress for all buildings. Mounded storage works, carousel & conveyor erection nearing completion. Pumps, compressors, fire engines & control panels installation completed. The project was mechanically completed in December 2011.

4.2.8 Policy Initiatives Undertaken:

HPCL has undertaken a path of high growth in keeping with national priorities. The ambitious plans include furthering the synergies and participating in the oil industry's growth by vertically integrating the upstream and downstream sectors. The policy initiatives undertaken also include growth and diversification ventures in the following sectors:

4.2.9 Joint Ventures / Subsidiaries

HPCL-Mittal Energy Ltd (HMEL)

HPCL-Mittal Energy Ltd (HMEL) is a Joint Venture between HPCL and Mittal Energy Investments Pte Limited (MEI), Singapore, an L.N Mittal Group Company, for implementation of the Guru Gobind Singh Refinery, a greenfield refinery project located at Bathinda, Punjab. Both partners hold 49% equity stake in HMEL and the balance 2% is held between IFCI Limited and State Bank of India.

The refinery is designed to process 9 MMTPA of Arab Heavy Crude with flexibility to process other heavy / sour / acidic crudes. The configuration of the refinery includes primary units and secondary process units viz. CDU/VDU, VGO-HDT, FCC, NCU/ISOM, HGU, DHDT, SRU, DCU and Polypropylene manufacturing facilities. Other facilities include utilities such as CPP, steam generation, effluent treatment plant, product storage etc.

The Single Point Mooring (SPM), Crude Oil Terminal (COT) and Pipeline have been commissioned. Along with the CDU/VDU, the LPG Treating Unit, Amine Regeneration Unit, Sour Water Stripper Unit and offsite facilities have also been commissioned. The Captive Power Plant is partially commissioned. 'Crude in' was taken on 29.8.2011 in the CDU/VDU and the first products were received in September 2011.

As of end November 2011, the cumulative commitment achieved is about ₹ 17,700 crore and expenditure is about ₹ 17,200 crore. While part of the refinery has already started functioning, all units are expected to be commissioned during the current financial year.

HPCL Biofuels Ltd (HBL)

In line with Government's policy for blending of ethanol, a wholly owned subsidiary company, HPCL Biofuels Ltd. (HBL) was incorporated on 16th October, 2009 to produce ethanol for blending into petrol.

The integrated plant(s) being set up by HBL has crushing capacity of 3,500 TCPD with distillery of 60 KLPD capacity for manufacturing ethanol and co-gen power plant of 20 MW capacity, one each at Sugauli (East Champaran District) and Lauriya (West Champaran District) in the State of Bihar. The cost of the project is ₹ 728 crore, being financed with a debt equity ratio of 57:43. (Equity: ₹. 313 crore, Debt: ₹415 crore)

During 2011-12, the sugar units at Sugauli and Lauriya were commissioned. "Water trials' & 'steam trials' have been completed for the Ethanol Plants at Sugauli and Lauriya. In physical and financial terms, the project is almost completed and nearing commissioning.

CREDA-HPCL Biofuel Ltd (CHBL)

CREDA-HPCL Biofuel Ltd (CHBL) was incorporated on 14th October, 2008 as a subsidiary company for promotion of alternate fuels, with equity shareholding of 74% by HPCL and 26% by Chhattisgarh State Renewable Energy Development Agency (CREDA) for cultivation of Jatropha plants on land leased by the State Government of Chhattisgarh. HPCL will have exclusive rights on the entire produce of Jatropha seeds and for producing and marketing bio-diesel and byproducts from the produce.

CHBL has started acquisition of land for cultivation of Jatropha and as of November 2011 had acquired 11,285 hectares of land. Acquisition of the balance land is in progress and the plantation on the same will be undertaken in a phased manner. Cultivation and maintenance of Jatropha is completed on 2,386 hectares of land. The tender process is completed for another 1,000 hectares of land. During 2010-11, the Company generated more than 1,52,880 man-days of employment. The process has also been initiated to develop nurseries at Murpar and Hardi. HPCL will have exclusive rights on the entire produce of Jatropha seeds and for producing and marketing Bio-diesel and byproducts from the produce. The first commercial batch of Jatropha seeds is expected by 2013-14.

South Asia LPG Co Pvt. Ltd (SALPG)

SALPG, a Joint Venture Company with Total Gas and Power India (a wholly owned subsidiary of Total, France) has commissioned a 60,000 MT storage capacity underground cavern and associated receiving & dispatch facilities at Visakhapatnam in

Sugar Mill at Lauriya, Bihar

December 2007. This cavern is the first of its kind in south and south-east Asia and ranks among the deepest caverns in the world. The commercial operations at SALPG commenced in January 2008.

During 2010-11, SALPG received 777,773 MT of LPG into the cavern through 70 vessels [including 37 VLGCs (Very Large Gas Carriers) and achieved a turnover of ₹ 137.14 crore and profits (PAT) at ₹ 64.22 crore. The Company declared dividend of 50% for the second consecutive year 2010-11. For the period April-Nov 2011, SALPG handled 35 vessels and received 5,33,185 MT of LPG into the cavern. The Cavern-cum-Marine Terminal has achieved 10,47,855 safe man-hours since the commencement of operations in January 2008 without a lost time accident. To enlarge its operations, SALPG is contemplating setting up another cavern at Mangalore.

Hindustan Colas Ltd (HINCOL)

HINCOL was incorporated in partnership with Colas SA of France for producing and marketing Bitumen Emulsions with HPCL's equity participation of 50%. In addition to Bitumen Emulsions, HINCOL is successfully marketing a wide range of value added Bitumen products like Modified Bitumen, Cut Back Bitumen etc.

During 2010-11, HINCOL achieved a turnover of ₹ 357.97 crore and net profit (PAT) of ₹ 28.38 crore. The highest ever dividend of 125% was declared by HINCOL for 2010-11. For the period April-Nov 2011, the turnover achieved was ₹ 220 crore with net profit (PAT) of ₹ 13 crore.

A new plant has been commissioned on 19.8.2011. With this commissioning, HINCOL has 8 plants under its operations at Navi Mumbai, Bahadurgarh, Irungattukottai, Savli, Visakhapatnam, Mangalore, Jhansi and Haldia.

During the current financial year, HINCOL has developed new formulations of Bitumen with both VG10 and VG30. Also, it has started manufacturing of RoadBond at Thane, Vashi and Savli Plant. Further, a new efficient automatic system of drum sealing started at Bahadurgarh. "Dynamic Shear Rheometer" was installed to evaluate rut and fatigue resistant properties of bituminous binder and to grade the binders as per performance grading standards. HINCOL is the first non-R&D institution to have installed this state-of-the-art testing equipment. The R&D project for complete mapping of the finished product behavior based on changes in the proportions of the input materials started to develop new formulations. Also, the Emulfix process commenced at Jhansi Plant and sale of Emulsion commenced from Haldia Plant.

Prize Petroleum Company Ltd (PPCL)

HPCL had incorporated this Joint Venture E&P Company with ICICI and HDFC for participating in exploration and production of hydrocarbons. PPCL is also providing consultancy services related to E&P.

PPCL had signed a Service Contract with ONGC for development of the Hirapur Marginal Field in Cambay Basin with 50% holding in the consortium. PPCL is the Operator for the field and M/s. Valdel Oil & Gas Private Ltd is the Associate Contractor. PPCL had also entered into a Production Sharing Contract (PSC) with 50% Participating Interest in Sanganpur Block as Joint Operator. During 2010-11, PPCL produced 39,006 barrels and 1,041 barrels of crude oil from the Hirapur and Sanganpur fields respectively. For the period April-Nov, 2011, 29,199 barrels of crude oil (cumulatively 2,69,187 barrels since inception) were produced by PPCL from the Hirapur field and 221 barrels of crude oil (cumulatively 11,963 barrels from inception) were produced from the Sanganpur field.

PPCL was awarded the South Rewa Block in Madhya Pradesh under NELP-VI, which is the biggest onshore exploration block with 13,277 sq km area. PPCL is the Operator for this block. During 2010-11, seismic data

acquisition was completed by Geofizyka Torum. A geochemical survey was completed by NGRI and IERP of Russia. With this, field surveys, which are part of the committed work program are completed. Processing and interpretation of data is in progress for preparation of the drilling program.

PPCL bagged an onshore exploration block (401sq. kms area) in Tripura along with a consortium partner, ABG Energy Limited (ABG) in the recently concluded bids round for NELP IX. PPCL is the Operator for this block with a participating interest of 20% and will be "carried" during the initial exploration phase. In the event of commercial discovery and consortium entering the development phase, PPCL will pay only 10% for the past cost (which will be recovered by ABG from 'profit petroleum') and will continue to hold 20% participating interest. The process of converting PPCL to a wholly owned subsidiary of HPCL is in progress.

Petronet MHB Ltd (PMHBL)

HPCL, along with Petronet India Limited (PIL) promoted PMHBL for construction of the Mangalore-Hassan-Bangalore product pipeline (362 km) at a cost of ₹ 667 crore with debt equity ratio of 3:1. Initially PIL & HPCL each contributed 26% towards equity. ONGC joined as a strategic partner in PMHBL by taking 23% equity in April 2003. Post debt restructuring of PMHBL, the equity holding of HPCL and ONGC increased to 28.77% each. This product pipeline is meeting the requirements of various consumption zones of Karnataka.

During 2010-11, PMHBL achieved throughput of 2.58 MMT. Revenue generation was at ₹ 77.29 crore. For the period April-Nov. 2011, a throughput of 1.76 MMT was achieved by the company and revenue of ₹ 53.97 crore was generated. During April-Nov. 2011, pigging of the pipeline (Mangalore-Hassan) has been carried out. CCTV camera installation and telecom system upgradation was completed. GPRS survey for the entire pipeline and hardware installation was completed.

Bhagyanagar Gas Ltd (BGL)

BGL was incorporated as a Joint Venture Company by GAIL and HPCL for distribution and marketing of environment friendly fuels (green fuels) viz. CNG and Auto LPG for use in the transportation, domestic, commercial and industrial sectors in the State of Andhra Pradesh.

In Nov. 2011, BGL commissioned 1 City Gas Station (CGS) cum Mother Station, 2 APSRTC Bus Depots and 4 CNG Stations, all at Hyderabad. With this commissioning, BGL is operating 22 CNG (Vijayawada-8; Hyderabad-12; Rajamundry-1; Kakinada-1) and 3 Auto LPG stations at Tirupati. At present, more than 300 buses of APSRTC are operating on CNG.

During 2010-11, BGL achieved a turnover at ₹ 52 crore and recorded Net Profits (PAT) of ₹ 0.16 crore. For the period April-Nov, 2011, turnover was at ₹ 30 crore and Net Profits (PAT) of ₹ 0.56 crore.

Aavantika Gas Ltd (AGL)

AGL has been incorporated as a Joint Venture Company by GAIL and HPCL for distribution and marketing of environment friendly fuels (green fuels) viz. CNG In July/Aug 2011, AGL commissioned 2 online stations. With this commissioning, AGL is now operating 1 Mother station (at Indore), 7 daughter stations (5 in Indore and 2 in Ujjain) and 3 online stations (2 in Indore and 1 in Gwalior).

During 2010-11, AGL achieved a turnover of ₹ 20.01 crore with volume of CNG/PNG of 6,556 MT. For the period April-Nov 2011, AGL recorded a turnover of ₹ 28.19 crore with volume of 8,335 MT of CNG/PNG. At present, more than 13,200 vehicles are operating on CNG.

4.2.10 CSR Activities

HPCL's CSR model has been based on "Creating Shared Value". The shared value model is based on the concept that corporate success and social welfare are interdependent. HPCL's approach has been the triple bottom line approach of "People, Planet and Profit." They have totally integrated their CSR policies with their Business Plans so that they are always aligned.

Their CSR activities are twofold:

At the Field Level

The field personnel in the periphery of their function identify the needs of the community there and schemes are implemented to bridge the gap of community needs within their area of business. It has been their experience that these projects create a very strong bond between the community and the Company where they have business operations.

The broad categories of the projects undertaken under this methodology are primary education, scholarships for graduation and post-graduation studies, drinking water facilities, health care, income generating schemes / vocational training, rehabilitation of persons with disabilities and other welfare activities. Since HPCL's operating locations are across the country, their programs have a far reach pan India.

At the Corporate Level

The projects with specialized NGOs/implementation partners focus on health, education and child care. Senior officers have volunteered to be these Project Heads in addition to their own responsibilities. These projects also have pan India coverage.

Major Projects

Swavalamban **:** This project has been under implementation since 2005-06 and is partnered with Confederation of Indian Industry (CII), New Delhi, for vocational training to unemployed youth including school dropouts at various locations like Bathinda, Chandigarh, Guwahati, Visakhapatnam, Loni and Hyderabad. The skills imparted are basic electrical, refrigeration, AC, fabrication, plumbing, basic IT, computer and beauty culture and skin care. During the

A panoramic view of Guru Gobind Singh Refinery, Bhatinda

year 2011-12, about 3575 beneficiaries were covered under this project.

Unnati : This project has been under implementation since 2005-06 and is partnered with NIIT Limited for promoting computer education with allied facilities like MS Office, LAN and Internet. During the year 2011-12, the project is implemented in 30 schools in different parts of India covering 5500 students.

Muskan : This program has been under implementation since 2005-06 and is partnered with Prayas-Juvenile Aid Center (JAC) Society, New Delhi taking care of street/runaway children and placing them in shelter homes of Tughalakabad and Jahangirpuri to bring back their lost childhood. During the year 2011-12 about 220 children have been provided with basic needs like food, clothing, shelter, health care, counselling, non-formal education and vocational training for their overall development, enabling them to stand on their own feet.

Nanhi Kali : This program has been under implementation since 2005-06 and is partnered with K.C. Mahindra Education Trust (KCMET), Mumbai for focusing on education of girl children at Paderu and Mehboobnagar in Andhra Pradesh, Sheopur and Ratlam in Madhya Pradesh, Udaipur in Rajasthan and Mumbai in Maharashtra. The program provides quality education to girls from economically disadvantaged families through a sponsorship designed to deliver academic support that empowers them to make a success of their schooling experience, material support including uniforms etc. to attend school with dignity and social support by sensitizing the community on gender equity. During the year 2011-12 about 9168 girl children are being benefitted from Standard I to X. A majority of these families are daily wage labourers, vegetable vendors, rickshaw pullers and other economically backward groups.

Navjyot: This project has been under implementation since 2005-06 and is partnered with Navjyoti India Foundation, New Delhi for supporting a "Child Health and Welfare" program at Resettlement Colony at Bawana in Delhi. The residents are provided health care facilities, referral services through regular health check-up camps, rehabilitation for slum families and training programs, which include family planning. During the year 2011-12 the beneficiaries are 5100 children.

Bal Haq- Ek Sthayee Parivartan: This project is partnered with CRY (Child Rights & You), which is an Indian organization operating with various non-profit community based organizations in villages and slums. The objective is to make a permanent change in the lives of underprivileged Indian children and their communities and address the root causes that impact children's lives - gender, caste, displacement, livelihood etc. This project is implemented in 2010-11 in Naupada and Kendrapara districts of Odisha and in Rajkot district of Gujarat for marginalized communities and children. During the year 2011-12 this project is covering about 58 villages.

Suraksha: To protect the truck drivers and cleaners and their family members from the risk of getting affected by HIV/AIDS, this program 'Suraksha' was initiated. Two 'Khushi' Clinics were set up at Highway Retail Outlets, one at Ravulapalem in Andhra Pradesh and the other at Shoolagiri in Tamil Nadu for STI diagnosis and treatment as well as creating awareness on safe practices. During the year 2011-12 two new clinics are planned in Satara and Kanpur districts.

Children with Special Needs: This program will support the education and therapy needs of children

with disabilities, attempt to bring them into the mainstream schools and give them equal opportunities for education and growth. It is being implemented through ADAPT (Abled Disabled All People Together) for support of educational service for Children With Special Needs (CWSN) in Mumbai. This project is implemented from 2011-12 and 305 such children are benefitted.

Mid-Day Meals for Govt. Schools: This program, implemented during the year 2011-12, provides direct access to food for underprivileged children by providing mid-day meals in Visakhapatnam and Guwahati for 5000 children. Food distribution vehicles and vessels are provided at Medak dist., A.P., through Akshaya Patra, which works in partnership with various State Governments of India. This wholesome meal is often the only nutrition they get to have during the day. The food lab therefore strives to ensure that the meals are palatable to children, while also meeting the requirements of a growing child. The Foundation's centralized kitchens, some of the largest in the world, use innovative technology to cook hundreds of thousands of meals in a few short hours. The decentralized kitchens reach out to children in the remotest areas of India while also creating employment for hundreds of women.

Health care in Rural Areas: This program is implemented during the year 2011-12 and it provides free health services for poor people in the rural areas through mobile vans at their doorstep in Bihta dist. Bihar through Wockhardt Foundation. Each van fitted with a GPRS system covers around 25 villages in weekly cycles. A doctor is attached to each van which is hired. Besides the medical checkup and health support, the doctors also spread awareness on hygiene and health care.

Employability for Youth in Urban Slums: This program is implemented during the year 2011-12 in a new center at Jaipur and 3 existing centers at Chennai, Chandigarh and Bhopal. SMILE Twin e-learning Programme (STeP) is a national level program of Smile Foundation, working towards creating a pool of independent youth living with dignity from the marginalized section through skill enhancement in tandem with market requirements. The project aims at preparing urban underprivileged (adolescent youths) with skills in English proficiency, basic computer education and soft skills for enhancing their prospects of employment in fast expanding sectors like retail, hospitality and BPO. The total no. of beneficiaries this year is 240 youth.

Lighting a Billion Lives (LaBL): This project is in the initiation stage to set up solar charging stations in 3 energy poor villages in Madhya Pradesh. TERI has a vision to work for global sustainable development and has undertaken the initiative of LaBL to bring light into the lives of rural people with solar lighting devices. The LaBL program sets up solar charging stations in villages that offer certified, bright, solar lanterns for rental to the local people. The charging station consists of 50 solar lanterns and charging panels. A trained local entrepreneur operates and manages the charging station and leases the solar lanterns every evening for a very affordable fee.

Rasoi Ghar: Rasoi Ghar is about providing Common LPG Kitchen facilities in villages. The concept is to make cleaner fuel accessible to rural women and give them better health, hygiene and safety, reduce deforestation and improve the climate. Free LPG connections without security deposit are provided to BPL families under the Rajiv Gandhi Gramin LPG Vitrak Yojana.

Sushrut Hospital: "Sushrut Hospital", a multispeciality hospital, a charitable institution at Chembur is being supported by HPCL for the past many years.

OIDB Drought Relief Trust - Rainwater Harvesting: In order to alleviate water scarcity in selected villages, the rainwater harvesting project is initiated in Dapti Village, Thane district, Maharashtra in co-ordination with Impact India Foundation. This project is implemented under the scheme of OIDB Drought Relief Trust.

4.2.11 Pollution Control And Other Environmental Initiatives

HPCL is committed to environment protection, as a responsible corporate citizen, and constantly endeavours to ensure its increasing scale of operations does not lead to environment degradation and emissions are within the prescribed limits of Central and State Pollution Boards. HPCL, in line with the "Environment Policy" adopted, is committed to conduct all its operations in such a manner as to be compatible with the environment.

Refineries : Both the Refineries of HPCL at Mumbai and Visakhapatnam have systems and procedures in place for attaining compliance with national standards and other statutory stipulations. Drastic reduction in SO2 emissions have been achieved in both Refineries in spite of significant increase in crude throughput. SO2 emissions have been brought down from 60 TPD in 1984 to less than 25 TPD now. This has been achieved despite combined capacity increase from 4.5 to 14.8 MMTPA, addition of various secondary processing facilities and expansion of Lube manufacturing facilities. These significant reductions have been achieved essentially by firing low sulphur fuels in the furnaces, providing sulphur recovery units and installing gas desulphurization facilities.

HPCL has been one of the first to adopt eco-friendly technologies such as changeover from Phenol to NMP solvent in three lube extraction units and also changeover Oleum to NMP in the Hexane Treating Plant. These initiatives have been widely appreciated and have won for HPCL some national and international awards/citations.

Marketing:

Other than DG sets, there is no equipment that can

cause air pollution at any of the marketing locations. Any spillages or leakages during the day-to-day operations are routed to the oil water separator/ effluent treatment plant and it is ensured that only safe water is let out in the environment. Solid waste generated during cleaning of storage tanks is treated or disposed off to authorized treatment, storage & disposal facilities in line with state pollution control norms.

Specific measures taken by HPCL to check/ abate environmental pollution are given below:

- **Diesel Desulphurisation Project:** To combat and improve air pollution, Diesel Desulphurization facilities have been installed in both the Refineries to reduce the sulphur in diesel from 1% to less than 0.05 % and then to 0.035%, to conform to BIS 2000/Euro II/Euro-III norms respectively. HPCL has undertaken a "Green fuels" project in its Refineries for de-bottlenecking and process upgradation for the production of Euro III/Euro IV diesel and petrol, to be in line with the Auto Fuel Policy of GOI. This project is basically an air pollution control project, as it improves the quality of automobile fuels and thereby, results in improvement in ambient air quality at regional and national levels.
- **Effluent Treatment Plants:** To comply with the MOE&F/Central Pollution Control Board revised effluent norms for petroleum refineries, state-of-the-art Effluent Treatment Plants were set up at HPCL Refineries for continuous monitoring and treatment of effluent quality. A new Integrated Effluent Treatment Plant with the latest technology like cyclic activated sludge treatment followed by membrane bio-reactor & reverse osmosis was commissioned at Mumbai Refinery. All LPG plants and major oil marketing terminals have Effluent Treatment Plants for treating the effluent water before it is released to the environment.

  (All 44 LPG plants and major terminals have been provided with ETP. All other POL locations have oil water separators)
- **Continuous Stack Monitoring Facilities:** Continuous Ambient Air Monitoring Stations and Online Stack Monitoring Stations have been installed at both the refineries for monitoring gaseous emissions at source. Ambient Air Monitoring Stations have been upgraded to measure respirable suspended particle matter.
- **Groundwater monitoring:** Both at refineries and marketing locations, bore well water samples are tested regularly for assessing the ground water quality.
- **Reduction in SO_2/ CO_2 Emissions:** Liquid fuel firing has been replaced with Natural Gas firing at its Mumbai Refinery, which has again resulted in significant reduction of SO_2 & CO_2 emissions. These significant reductions have been achieved essentially by firing low sulphur fuels in the furnaces, putting up Sulphur Recovery Units and installing gas desulphurization facilities.
- **Mechanical Oil Recovery from Oily Sludge:** To meet the applicable stringent statutory stipulations of "Hazardous Waste Rules 1989" (including recent amendments to Hazardous Waste Management Rules) on the oil industry, the oily sludge needed to be processed by evolving a sustainable management practice. HPCL Refineries had employed a technology namely 'Mechanical Oil Recovery from Oily Sludge' at both the Refineries and the entire oily sludge was processed in a time bound manner.
- **Bio-Remediation:** After the 'Mechanical Oil Recovery' of oil from the sludge processing plant, the leftover cake containing oil content less than 10% is stored at designated areas to carry out bio-remediation at all the HPCL Refineries and Marketing locations. HPCL has provided funds to TERI for development of a Bio-reactor for manufacturing "Oil Zapper", the bio-enzyme required to treat the oily sludge.
- **Hazardous Waste Disposal:** In order to comply with the "Hazardous Wastes Mgmt. & Handling Rules, spent catalysts/ old chemicals/ discarded chemicals/ paint and oil sludge/ insulation waste etc. are being disposed to the registered "Common Hazardous Wastes Treatment Storage Disposal Facility" (TSDF) as well as to the SPCB/CPCB approved Recyclers. HPCL Refineries & Marketing locations have entered into agreements with such approved TSDF facilities.
- **VOC Study/ Vapour Extraction Systems:** Volatile Organic Compounds study has been completed at both the Refineries to address the revised environmental norms. Leak detection & repair program has been put in place to quantify the VOC emissions and take preventive measures. Vapour extraction system pilot projects for retail outlets and tank truck loading gantries are under implementation and it has been implemented at 418 ROs. A new pilot project for the tank truck loading gantry is under implementation at the new terminal at Tikri Kalan.
- **Renewable Energy Initiatives:** As a promoter of clean energy & technology, HPCL has embarked on a Wind Power project of 100 MWH. During Phase I of this project, 50 MWH capacities have already been installed at Dhule in Maharashtra and Jaisalmer in Rajasthan. Phase I has been commissioned and electricity is fed to the state electricity grid. Phase II of the project (50 MWH) is under implementation.

  Solar energy panels have been installed at many retail outlets to tap solar energy. 91 retail outlets have been provided with solar panels and many LPG plants are using solar panels for street lights.
- **Energy saving initiatives:** Reduced energy consumption results in reduced pollution, which

otherwise would have been caused by production of such energy. As a part of initiatives taken by HPCL for reducing energy consumption, marketing locations have been provided with "Variable Frequency Drives" (VFDs) for motor load and Energy Saving Devices for lighting load. About 100 POL locations have been provided with VFDs for tank truck loading pumps.

- **Promoting eco-friendly products:** Auto LPG and CNG are considered to reduce the pollution levels of densely populated cities significantly. HPCL has been contributing in promoting eco-friendly fuels by marketing of Auto LPG and CNG. HPCL has developed Racer 2, a low smoke 2 stroke engine oil for use in 2/3 wheelers. The smoke index of this oil is 85 against a smoke index of 45 for earlier products, available in the market. This has helped to reduce exhaust smoke from 2/3 wheelers by over 50%.
- **Climate Change Policy:** HPCL has evolved a 'Climate Change Policy', highlighting the vision statement and formation of a Steering Committee with objectives to reduce the carbon footprint and incorporate a green perspective in all the key organizational initiatives and processes. The 'Climate Change Policy' has been released on 15th July 2010, HPCL's 'Foundation day'.
- **Carbon Footprinting:** As a way forward to 'Climate Change Policy', a benchmark assessment study of the 'Carbon footprint' has been carried out at both Visakh and Mumbai Refineries in May 2010.
- **Rainwater harvesting:** A rainwater harvesting dam at BARC hills, constructed in HPCL's Mumbai Refinery, is operational. The water from the dam is being used in the refinery for various purposes. Rainwater harvesting projects have been implemented at many marketing locations.
- **Tree Plantation:** Tree plantation initiatives have been implemented at refineries, marketing locations and housing colonies. Locations have been receiving awards for "garden maintenance and tree plantation" from local Municipal authorities.

Certifications and Awards: To promote a green culture and to popularize various environmental initiatives, HPCL has been encouraging Refinery and Marketing Locations for ISO 1400 certification and participation in various national and local level awards in the field of environmental management. Both HPCL's refineries and many marketing locations have received several awards like "Greentech Environmental Excellence" and "Golden Peacock Environment Management awards.

4.2.12 Conservation of Petroleum Products

HPCL accords the highest priority to energy conservation and has undertaken several Encon measures by implementing operational improvements

BPCL's Beyond LPG initiative.

& Encon projects. Most of the refinery processes are energy intensive & themselves use part of the finished products produced in the refinery to derive their energy requirements. Thus, any reduction in consumption of energy directly results in higher availability of finished products.

Initiatives for Energy Conservation:

Mumbai Refinery:

- Installation of secondary seals and sleeves on the gauge column on low volatile tanks to reduce the tank emission
- FRE CDU/VDU modification for increasing CIT, replacement of rotary APH in CDU, conversion of natural draft to balance draft furnace in VDU, VDU hot well off gas firing
- Increasing furnace preheat to increase CIT in SEU furnaces
- Replacement of GRP fan blades with hollow FRP energy saving fan blade assembly in 3 CT cells for power reduction
- Recovery of the flare gas and utilization of gas in furnaces
- Implementation of Propane gas recovery system in LR (1st stage)
- Usage of energy efficient LED tube lights & down lights
- Anti-foulant injection to crude preheat exchangers in FRE
- Leak detection survey for fugitive emission benchmarking
- Compressed air leak audits & steam leak audits

Visakh Refinery:

- Periodic on-line cleaning of furnaces in process units to improve operating efficiencies.
- Periodic cleaning of fouled heat exchangers in process units.
- Replacement of turbine drives for main air blower & wet gas compressor with motors in FCCU-II.
- Anti-foulant injection to crude preheat exchangers.
- Deployment of hydrokinetic decoking in furnaces in the place of steam-air decoking.
- Implementation of condensate recovery schemes in CDU-II and FCCU-II.
- Periodic steam leak and steam trap surveys.

4.3 BHARAT PETROLEUM CORPORATION LIMITED (BPCL)

4.3.1.1 BPCL is an integrated oil company in the downstream sector engaged in refining of crude oil and marketing of petroleum products. It has also diversified into production and marketing of petrochemical feedstock.

BPCL has refineries at Mumbai and Kochi with a combined refining capacity of 21.5 MMTPA. The Refineries are certified for ISO 9001, ISO 14001 and OHSAS 18001 reflecting the continuing commitment towards quality, environment, health & safety.

4.3.1.2 BPCL has a robust distribution network comprising of 114 storage depots, 12 major installations, 49 LPG bottling plants, 1933 km cross-country pipelines (including 292 km pipeline set up by its joint venture company), 9598 retail outlets, 2564 LPG distributorships and 2 lubricant blending plants. The Corporation's employees presently number 13,460.

4.3.1.3 The Authorized Share Capital and Paid up Capital of the Company as on 30.11.2011 was ₹ 450 crore and ₹ 361.54 crore respectively. The shares of BPCL are listed on the Bombay Stock Exchange and National Stock Exchange of India Ltd.

4.3.1.4 During 2011-12 (April - Nov.11), the two refineries at Mumbai and Kochi achieved a combined throughput of 14.78 MMT and are estimated to achieve a combined throughput of 21.75 MMT by 31.3.2012.

The details of production at BPCL (Mumbai and Kochi) refineries are as follows:

The estimated crude throughput during the year 2011-12 is 21.75 MMT and the details are as follows:

Description	Units	2010-11	2011-12		
		(Actual)	April - Nov. 2011	Dec'11 - Mar.'12 (Estimated) d	Apr.'11 – Mar.'12 (Estimated) d
Physical					
Crude Throughput	MMT	21.78	14.78	6.97	21.75
Distillates					
Total Distillates	% wt. on Crude	80	79.29	76	76

4.3.1.5 During April- November 2011, 528 new ROs have been commissioned and 172 are expected to be commissioned during the period December 2011 - March 2012. The total number of retail outlets by 31.3.2012 is estimated at 9989.

4.3.1.6 During April- November 2011, 147 LPG distributorships (inclusive of 127 rural distributorships) have been commissioned. The total number of distributorships by 31.3.2012 is estimated at 2682.

4.3.2 Financial Performance

The financial performance of the Corporation during the years 2010-11 and 2011-12 (estimated) is as follows:

Description	Units	2010-11 Actual	2011-12		
			April-Sept. '11 (Actual)	Oct. -March 12 (Anticipated)	Estimated 2011-12
Profit /(Loss) before tax	₹ Crore	2413	-5791	5766	-25.00
Profit /(Loss) after tax	₹ Crore	1547	-5791	5766	-25.00

Financial results during April - September 2011 have been adversely affected on account of high international crude oil and product prices which could not be fully passed on to the consumers in the case of sensitive petroleum products like HSD, SKO (PDS) LPG (Domestic cylinders). The Company reported a loss of ₹ 5791 crore.

It is estimated that there may not be any reportable profits for the year 2011-12 unless compensation for total under-recoveries incurred are reimbursed by MOP&NG as was done in the year 2008-09, in view of high level of under-recoveries on sale of sensitive petroleum products, increase in interest cost due to higher borrowings to meet working capital requirements, rupee deterioration against US dollar resulting in foreign exchange losses.

4.3.3 Project Implementation

Major Projects Completed

1. Refineries

Capacity Expansion cum Modernisation Project at Kochi Refinery

The project envisaged setting up of facilities for production of environment friendly auto fuels meeting Euro III/IV specifications and expansion of the refinery capacity to 9.5 MMTPA. The project has been commissioned.

2. Marketing

a. Bina Despatch Terminal

The Terminal with appropriate storage, distribution and other infrastructure facilities, set up adjacent to the refinery complex at Bina was commissioned at an approved cost of ₹ 639.11 crore.

b. Bina Kota Pipeline

The project envisaged laying of an 18" dia, 257 km long cross-country product pipeline from Bina to Kota for economic evacuation of MS, HSD, SKO and ATF.

The designed capacity of the pipeline is 2.8 MMTPA and the approved cost is ₹ 405.82 crore and the project has been commissioned in September 2011. The pipeline is connected to the existing multi-product pipeline Mumbai-Manmad-Manglya-Piyala-Bijwasan at Kota to facilitate distribution of Bina Refinery products to northern region markets.

ONGOING PROJECTS

1. Refineries

a. Hydrocracker Revamp and setting up new CCR at Mumbai Refinery

The project is being undertaken to increase production of Euro IV grade MS and HSD at Mumbai Refinery. The project involves revamping of the Hydrocracker Unit to increase the capacity from 1.75 MMTPA to 2 MMTPA and setting up of 1.2 MMTPA Continuous Catalytic Regeneration Reformer (CCR) unit at a total project cost of ₹ 1827 crore. The overall physical progress as on 1.12.2011 is 48.67% and it is scheduled for completion in April 2013.

2. Marketing

b. Refrigerated LPG storage and Handling facility (2 X 8000) at JNPT Jetty and Uran LPG Plant

The project envisages development of LPG import facilities at Jawaharlal Nehru Port Trust (JNPT), installation of marine unloading arms with associated facilities, laying of 12" pipeline from JNPT to Uran LPG plant and development of refrigerated storage at Uran at an approved cost of ₹ 304.4 crore. The project is mechanically complete and pre-commissioning activities are in progress.

c. Pipeline for transfer of LPG from BPCL & HPCL refineries at Mumbai to Uran

The project envisages laying of a submarine pipeline of 10" diameter and 28 km length from BPCL and HPCL Mumbai refineries to Uran LPG Plant at an approved cost of ₹ 206 crore. The project will be developed on equal cost sharing basis with HPCL. Additional 2700 MT LPG storage facilities are planned at Uran at an estimated cost of ₹ 40 crore. As on 1.12.2011, the project has achieved an overall physical progress of 68% and is scheduled for completion in June 2012.

4.3.4 Joint Venture Projects / Subsidiaries

Bharat Oman Refineries Ltd. (BORL)

Bharat Oman Refineries Ltd. (BORL), promoted by BPCL and Oman Oil Company (OOC) have set up a 6 MMTPA grass roots Refinery at Bina, in Madhya Pradesh, with crude oil import/supply system consisting of a Single Point Mooring System (SPM), Crude Oil Storage Terminal (COT) at Vadinar and a 935 km long cross-country Crude Oil pipeline from Vadinar to Bina. The approved cost of the project is ₹ 12,208 crore (as built) and BPCL's investment works out to ₹ 2,347.6 crore (50% equity investment). All Units of the Refinery have been commissioned. The Refinery was inaugurated and dedicated to the nation by Hon'ble Prime Minister of India in May 2011.

Petronet LNG Limited (PLL)

Petronet LNG Ltd. (PLL) was formed in April 1998 for importing LNG and setting up of LNG Terminals at Dahej and Kochi with facilities like jetty, storage, regasification etc. to supply Natural Gas to various industries in the country. PLL was promoted by four public sector companies viz. BPCL, IOC, ONGC and GAIL who contributed 12.5% each to the equity. The balance equity was raised over a period of time from Gaz de France - 10%, Asian Development Bank - 5.2% and 34.8% was raised from the public in March 2004. The PLL shares are listed on the Stock Exchanges, Mumbai and the National Stock Exchange of India Ltd. BPCL has invested ₹ 98.75 crore as equity contribution in the company.

PLL has set up LNG receipt and regasification terminal facilities at Dahej with a capacity of 10 MMTPA and they are being further expanded to 12.5 MMTPA. The work on a Greenfield Terminal at Kochi has already commenced and would be commissioned by 31st December 2012.

Indraprastha Gas Ltd. (IGL)

Indraprastha Gas Limited, (IGL) a joint venture with GAIL, was set up in December 1998 with an Authorized Capital of ₹ 220 crore for implementing the project for supply of CNG to household and automobile sectors in National Capital Region, Delhi. BPCL has invested ₹ 31.50 crore in IGL being 22.5% share of the equity capital. IGL shares are listed on the Stock Exchange, Mumbai and National Stock Exchange of India Ltd. IGL has commissioned over 278 CNG stations in Delhi.

Central UP Gas Ltd. (CUGL)

Central UP Gas Ltd. (CUGL) a Joint Venture Company with authorized capital of ₹ 60 crore was set up in March 2005, with GAIL as the other partner. CUGL is implementing the project for supply of CNG to household, industry and automobile sectors in Kanpur. BPCL's investment in this project is ₹ 15 crore, being 25% share of the equity capital. GAIL has contributed 25% and balance 50% contribution would be from ADB, IDFC &ILF&S. CUGL has commissioned 11 CNG stations in Kanpur and one in Bareilly. CUGL is now spreading to Rai Bareilly and has carried out techno-commercial and market feasibility studies.

Maharashtra Natural Gas Ltd. (MNGL)

Maharashtra Natural Gas Ltd. (MNGL) was set up in January 2006 as a Joint Venture Company with GAIL as the other partner for setting up facilities for distribution of CNG to the household and automobile sectors in the city of Pune and adjacent areas in Maharashtra except Mumbai, New Mumbai and Thane. The authorized capital of MNGL is ₹ 100 crore. BPCL and GAIL have contributed ₹ 22.5 crore each

towards the equity capital. The balance is contributed by Maharashtra Government (5%), Financial Institutions and others. The company has set up 14 CNG stations so far.

Sabarmati Gas Ltd. (SGL)

Sabarmati Gas Limited (SGL) a Joint Venture Company promoted by BPCL and Gujarat State Petroleum Corporation. Ltd (GSPCL) was incorporated in June 2006, with an authorized capital of ₹ 100 crore, for implementing the City Gas Distribution Project for supply of CNG to the household and automobile sectors in the city of Gandhinagar, Mehsana & Sabarkantha Districts. BPCL's investment in this project is 25% share of equity participation along with GSPC contributing equally, the balance 50% share is offered to Financial Institutions. BPCL's investment is ₹ 50 crore & equity closure is complete. SGL has set up 19 CNG stations to meet the CNG requirement of vehicles.

Petronet CCK Limited (PCCKL)

BPCL has 49% equity in Petronet CCK Limited (PCCKL) with an investment of ₹ 49 crore. The company has set up a 292 km Kochi-Karur pipeline, which commenced operations in September 2002. BPCL has decided to take over PIL shareholding in PCCKL subject to completion of formalities.

BHARAT STARS Services Private Limited (BSSPL)

BSSPL, a Joint Venture Company promoted by BPCL and ST Airports Pte Limited, Singapore was incorporated on 13.9.2007 with an authorized capital of ₹ 10 crore which has now been enhanced to ₹ 20 crore for providing Into Plane Fuelling Services at Bengaluru International Airport. BPCL and ST Airports Pte Limited have each subscribed to 50% of the equity capital of the JVC. The company commenced operations in May 2008 with the opening of Bengaluru International airport for traffic. BPCL's investment in this project is ₹ 10 crore. BSSPL has also been issued a Letter of Award for ITP Services at Delhi International Airport. A new wholly owned subsidiary was formed for undertaking ITP operations at Delhi T3 terminal at India Gandhi International Airport & has commenced its operations in November 2010.

Matrix Bharat Marine Services Pte Limited (MBMSPL)

A new Joint Venture Company was incorporated in Singapore on 20th May 2008 between BPCL & Matrix Houston affiliate of Mabanaft GmbH & Co. KG, Hamburg to carry out the bunker and fuel business. The authorised capital of this company is US$ 4 million equivalent to ₹ 20 crore with equal contribution from BPCL & Matrix Singapore (affiliate of Mabanaft). BPCL's investment in this project stands at US $ 2 million.

BPCL's Mumbai Refinery

Bharat Renewable Energy Limited (BREL)

A new Joint Venture Company was incorporated on 17.6.2008 between BPCL and Biomatrix Ltd., Hyderabad for production, procurement, cultivation, plantation of horticulture crops such as Jatropa and Pongamia, trading, research and development and management of all crops and plantations including Bio-fuels in the state of Uttar Pradesh, with an authorized capital of ₹ 30 crore.

The company has been promoted by BPCL with Nandan Biomatrix Ltd, Hyderabad and Shapoorji Pallonji Company Limited through their affiliate. All the partners have contributed equally to the capital of the new company. The project envisages plantation of Jatropa in 1 million acres of waste & fallow land which has the potential of creating 1 million jobs and 1 million tonnes of Bio-diesel with an investment of ₹ 2200 crore in the next 10 years.

BREL is presently working in 32 districts of Uttar Pradesh this year and has signed agreements for land usage for Bio-fuel plantation up to 39,800 acres until now. The project has provided livelihood to a large number of rural men and women, who have willingly participated in the project implementation, owing to which community goodwill has accrued to this project. They feel that BREL's community based approach to the project would help them to transform their lives. This is a social gain that the project has received. To mitigate the risks, this year BREL has started the plantings from July itself as also diversifying the plant species to include Pongamia in its portfolio of crops. Last year it was only Jatropha. BREL has crossed more than 5000 acres of plantation so far. BPCL's investment in this project is ₹ 2.25 crore as on date.

Delhi Aviation Fuel Facility Pvt. Ltd. (DAFFPL)

BPCL participated in the Joint Venture incorporated along with IOC and Delhi International Airport for providing infrastructure and Hydrant Facility at Terminal 3 at Delhi Airport. BPCL's contribution is 37% of total share capital of ₹ 164 crore, amounting to ₹ 60.68 crore. BPCL's onsite assets of the Aviation SBU have been transferred to this JV which has now become operational.

Numaligarh Refinery Ltd. (NRL)

NRL, a wholly owned subsidiary company of BPCL, was incorporated on 22nd April, 1993 as a Public Sector Enterprise with an authorized capital of ₹ 1000 crore. It has set up a 3 MMTPA refinery at Numaligarh, Assam. BPCL holds 61.65% of the paid up equity amounting to ₹ 453.55 crore in NRL. NRL has been conferred "Mini Ratna" status.

Bharat PetroResources Ltd. (BPRL)

Since incorporation of Bharat PetroResources Limited (BPRL), a wholly owned subsidiary company of BPCL in October 2006, for carrying out the upstream oil & gas business of BPCL, BPRL and its subsidiaries/joint ventures have been making investments in the various exploration blocks in India and abroad. The company was incorporated with an authorized share capital of ₹ 1000 crore which has been now increased to ₹ 3000 crore. The subscribed and paid up share capital share was ₹ 1100 crore which was entirely held by BPCL.

BPRL currently has participating interests in 26 exploration blocks in consortium with various partners in India and abroad. BPRL has participating interest in these blocks directly/ through wholly owned subsidiary companies. Out of these 26 blocks, 9 blocks are located in India and the balance 17 blocks are in foreign countries. Indian blocks were acquired under various NELP bid rounds and foreign blocks were acquired through bidding/farm in process. BPRL has blocks in Australia, Brazil, East Timor, Indonesia, Mozambique and United Kingdom.

BPRL's total acreage in all these blocks is around 81,000 sq.km of which 90% is offshore acreage. The operators have announced hydrocarbon discoveries in the Campos basin in Brazil, Rovuma basin in Mozambique and Tarkan basin in Indonesia. All the blocks are in an exploratory phase excepts blocks where discoveries have been announced, which are in the appraisal stage.

4.3.5 Policy Initiatives Undertaken

4.3.5.1 Strategic Initiatives identified are:

a) Customer focused approach.
b) Build on product sourcing capabilities.
c) Brand building.
d) Strengthening retail network security and development.
e) Building international trading skills.
f) Investments in R&D and technology.
g) Adopt an integrated online ERP solution.
h) Focused initiatives in LNG, Power, Petrochemicals and E&P.
i) Development of clean and renewable energy e.g. wind power, solar power and Bio-diesel.

BPCL has taken the initiative to reinvigorate and prepare the company for its next phase of growth and face new challenges. For this strategy, initiatives in the following areas have been taken:-

- Detailing of long term strategic initiatives in various areas and prioritization of initiatives, finalizing execution plan, including year-wise KPIs with targets, capex plan for various SBUs & Entities
- Exploring opportunities in new business areas, carrying out detailed study in select areas and strategy development for the same.

The Corporation has also drawn up a comprehensive long term infrastructure development programme for the company to meet its future business requirements in tune with its aspirations in a competitive scenario.

4.3.5.2 Renewable energy

BPCL has taken steps to develop non-conventional /

Jatropha Plantation at BPCL's Paradeep Installation

renewable sources of energy and has undertaken various initiatives in tapping non-conventional energy sources like bio-diesel, wind energy, solar energy and fuel cells. BPCL has started adopting new technologies and has taken initiatives in the following areas:-

Bio-diesel

BPCL has been exploring the possibility of promoting green fuel, with a view to protect the environment by reducing pollution and dependence on imported fuels. Towards this end, huge tracts of unproductive, barren and non-cultivable land are proposed to be used for the growth of Jatropha and Karanje plants. The plantations would be a contribution towards environment protection, prevention of soil erosion and a feedstock for manufacturing Bio-diesel while promoting sustainable development.

BPCL has taken the following initiatives in the field of Bio-diesel :

a) BPCL has already created Bio-diesel handling facilities including storages etc. at its 5 depots viz. Sanganer, Karur, Panewadi, Borkhedi, Kandla.

b) Jatropha plantation has been arranged in the vacant land at storage locations in 700 acres and work is in progress in an area of 300 acres.

c) BPCL has incorporated Bharat Renewal Energy Ltd. (BREL), a Joint Venture between BPCL along with Nandan Biomatrix Ltd. and Shapoorji Pallonji, who have contributed towards equal stake in the equity capital for undertaking production, procurement, cultivation and plantation of horticulture crops like Karanj, Jatropha, Pongamia, trading, research & development and management of all crops and plantation including bio-fuels in Uttar Pradesh.

BREL has started its activities in the field for Bio-fuel plantation in UP and the latest status is : Wasteland Identified for 130,143 acres, Jatropha/ Pongamia Plantation achieved in 7450 acres and pits ready for Plantation in 8036 acres.

BPCL had discussion with various State Governments to set up the Bio-diesel Value Chain project. The Government of Uttar Pradesh has approved the project under 'Jeevan Jyoti', a scheme of the Government which has benefit of release of funds under the Mahatma Gandhi National Rural Employment Guarantee Scheme. On approval from the UP State Govt., a Bio-diesel Value Chain has been initiated in the state. The project envisages plantation of Jatropha in 1 million acres of marginal land which has potential of generation employment/self-employment for 1 million people and producing 1 million tonnes of Bio-diesel with an investment of ₹ 2,200 crore over the next 10-15 years. BREL has currently undertaken plantation activity in 3000 acres of land in Uttar Pradesh.

d) Jatropha plantation has been arranged on 10 acres of land at BPCL's R&D Centre, NOIDA. The saplings for this plantation have been sourced from different locations with a view to study their growth. The effects of irrigation / pruning / fertilizers etc. are being studied for yield pattern.

e) BPCL has obtained a consent letter to set up a Green Fuel Retail Outlet (GFRO) at Technology Park, Hassan, wherein the Bio-diesel produced by Govt. of Karnataka will be supplied to BPCL for its blending in the normal diesel for its marketing through this proposed new GFRO. The land for GFRO has been jointly identified inside the premises of the Technology

Park and construction activities of the same will commence shortly.

Ethanol Blended Petrol (EBP)

The MOP&NG had mandated marketing of 5% EBP in 20 states and 4 Union Territories. Public Tenders which were floated for Ethanol procurement for all the notified states and Union Territories in September 2006 have been finalised. Ethanol blending facilities have been provided at all supply locations to ensure upliftment is in line with the quantities contracted in the notified states.

Non-conventional Energy Initiatives

BPCL has taken several steps to develop non-conventional / renewal sources of energy and has undertaken various initiatives in tapping non-conventional sources like bio-diesel, bio-ethanol, wind energy, solar energy etc.

- **Windmills**

BPCL has been the first oil company to successfully utilize non-conventional energy sources by generating 5 MW power through windmills (four of 1.25 MW each) in the hilly range of Kappatguda in Karnataka. Work on the project was completed in July 2007, the windmills are currently in operation and power produced is sold to the Karnataka State Electricity grid. This project has been identified to avail of carbon emission credits under the Kyoto Protocol and was approved by United Nations Framework Convention on Climate Change (UNFCCC) during February 2009. BPCL has accrued the Verified Emission Reductions (VERs) since February 2009.

In addition, Kochi refinery's shore tank farm located in the coastal area of the Puthuvypeen Special Economic Zone has been identified to harness wind energy potential. BPCL has approached the Centre for Wind Energy, Chennai to carry out a feasibility study. Clearance has been obtained from the naval and local authorities for setting up windmills in the shore tank farm.

BPCL proposes to set up windmills in Gujarat, Rajasthan, Maharashtra, Madhya Pradesh and Tamil Nadu depending on availability of land and other commercial considerations.

- **Solar cum Wind Power**

A 5 KVA solar cum wind power generator has been commissioned at one of BPCL's COCO Retail Outlet near Kolkata. Also a 5 KVA Solar power generator has been installed at a COCO Retail Outlet in Bangalore. The performance of these systems is closely monitored and a decision to provide such a facility elsewhere will be taken in due course.

4.3.5.3 Business Initiative

a) Retail initiative

BPCL has a strong retail presence through a nationwide network to meet its customers' aspirations. BPCL has shifted its focus from being purely a purveyor of fuel to a retailer, meeting a wider range of customer needs like convenience goods, banking and communication and has entered into the non-fuel retailing business in a big way by undertaking ventures such as errand malls and e-tailing. BPCL is the first Indian company in the oil sector to launch the pre-paid loyalty scheme called 'Petro Bonus'.

- Retail automation is another key development that enables complete transparency in terms of exact quantity of fuel dispensed, automated receipt and better payment options through smartcard / credit / debit cards.
- In line with BPCL's commitment to deliver value to customers and with a view to strengthen the service and operating standards of the network of 'Pure For Sure' (PFS) retail outlets, 4959 retail outlets have been re-certified under the PFS banner. This initiative is now being taken to the next level of customer service with 'Pure For Sure Platinum'.
- To provide superior customer enablement, BPCL has developed customer- centric business solutions. These solutions focus on different segments of retail customers and provide service offerings which truly enable them. Highway star ROs have been set up to meet the aspirations of highway customers (truckers and motorists.) These new format ROs pack a host of amenities ranging from hygienic restrooms for both segments, laundry, an amphitheatre, kirana store, a fully equipped multi-cuisine restaurant with separate dining areas for truckers and motorists etc. In the urban market, specific solutions have been developed in the form of 'Quick Serve ROs' and for 'Short Distance Commercial Vehicle' customers to enhance customer service.
- BPCL has launched 'In & Out eTraveller', a one stop facility for all travel and hospitality needs of customers. The 'In & Out eTraveller' enables customers' e-ticketing for air and bus tickets, e-booking for railway tickets, and hotel accommodation, brought through a web of alliances with best in the breed service providers.
- BPCL has launched a Financial Inclusion Programme for small distance commercial vehicle customers by joining hands with Corporation Bank and UTI Asset Management Company. The programme helps dealers to build a strong relationship with customers. Select Retail Outlets will work as business correspondents of the Bank to facilitate branchless banking to the trucking customers through biometric smart cards based technology. Micro credit to eligible customers will be given at normal banking rates. BPCL is the first and only oil company in India so far to offer Financial Inclusion services through its Retail Outlets.

b) LPG

Bharat Metal Cutting Gas (BMCG)

BPCL launched Bharat Metal Cutting Gas (BMCG), an ideal fuel developed to replace the conventional

BPCL's employees participating in Project Boond

Acetylene, used for metal cutting and brazing applications in 2004. BMCG has been accredited by leading agencies like Welding Research Institute, Trichy, Research Design & Standards Organization (RDSO), Lucknow and Naval Materials Research Laboratory, Ambarnath.

During 2011-12, BMCG was approved by Automobile Research Association of India (ARAI), Pune as an equivalent brazing fuel to DA. Bhabha Atomic Research Center (BARC) has also certified that flame temperature of BMCG is higher by about 50 to 1200C as compared to commercial LPG. During 2011-12 (April to November), BPCL has marketed 4700 MT of BMCG.

BMCG has found markets in neighboring countries. BPCL has entered into a strategic alliance with Laugfs Gas to market BMCG in Sri Lanka. During April to November 2011, BPCL has marketed 173 MT of BMCG outside India, primarily in Middle East countries.

LPG Next: Integrated Distributor Management System

LPG Next is an external portal application for the LPG Business, introduced in the current year. This application enables preparation of all distributor level customer related documentations on the central server. This has facilitated real time integration of distributor level transactions with SAP which is the backend system in BPCL. This system has streamlined stock accounting and inventory management with deposit accounting systems, supply chain management and launch of customer initiatives.

Customer Grievance Redressal Process

BPCL is addressing customer grievances through a package called a Complaint Redressal System (CORES) that has the following features:

a) Capturing of customer complaints / suggestions at source through all possible convenient modes for the customer to access.

b) Channelizing them to the right persons for redressal - in real time,

c) Redressal in stipulated period.

d) Escalation Matrix embedded to ensure the resolution in time.

BPCL has been awarded with the Star Retailer Award for being the Best in Customer Service in LPG through a well managed CRM system - in our country in 2011-12 by Franchise India Group, a leading publishing group.

'Beyond LPG' initiative

To expand horizons and foray into the Retail business, the LPG business unit has launched the 'Beyond LPG' initiative - a value added service to Bharatgas consumers, by providing a variety of products and services at their doorstep at attractive prices. The products offered through this channel include a range of kitchenware, gas stoves, electrical appliances, solar lighting, pre-paid re-charge vouchers for cellular phones, FMCG products including food and grocery etc. from famous brands. The 'Beyond LPG' basket now consist of 90 products categories with 126 business partners.

Auto LPG

During the year 2010-11, 9 Auto LPG stations have

been commissioned. BPCL has set up 5 Auto LPG stations up to November 2011 and has plans to set up 3 ALDS by 31.3.2012. The total no. of ALDS by 31.3.2012 would be 91.

c) Aviation

During the year 2010-11, BPCL recorded a sales volume of 1129 TMT, achieving the highest growth of 22% amongst the public sector oil marketing companies. BPCL has a presence in 35 airports across India. BPCL has also commissioned the Hydrant Fuelling System at Gwalior airport, which is the first of its kind at any Defence Airport.

In order to tackle the challenging aviation market, BPCL & ST Airport Services Pvt. Ltd (STARS -a member of Singapore Airport Consortium) in partnership have formed the Joint Venture Company "Bharat Stars Services Pvt. Ltd" and had jointly bid for "Into-Plane Service" concession at the new Bengaluru International Airport. The JV Company has been provided the SPRH (Service Provider Right Holder) status for "Into-Plane Services" at the new Bengaluru International Airport. The JV Company which was incorporated in September 2007 commenced its first commercial operations from 24th May 2008 when the new airport at Bengaluru was opened.

d) Industrial and Commercial

During the year 2010-11, the I&C business continued to operate in an extremely challenging and tough environment, due to the increasing trend of crude oil and product prices, large scale import of products by traders and end users, direct imports by end users and trades and aggressive selling of products by private marketing companies, which had an impact on the sales volume. BPCL continues to be focused on remaining competitive by entering new markets and adopting innovative strategies.

e) Gas

BPCL's Gas business was one of the first movers in the emerging gas market in India by becoming one of the promoters of Petronet LNG Ltd. (PLL). BPCL is one of the marketers of LNG which is made available from the PLL terminal at Dahej. BPCL also has a share of 40% in the upcoming LNG terminal at PLL at Kochi.

BPCL has aspirations for having a bigger presence in the country's evolving Gas market. To enter the Gas transportation segment, BPCL has joined hands with other oil companies to form a consortium led by Gujarat State Petronet Ltd.(GSPL). The consortium has been declared the best bidder during bidding conducted by the Petroleum & Natural Gas Regulatory Board (PNGRB) for laying, building and operation of three cross-country natural gas pipelines viz. the 1585 km Mallavaram-Vijaypur- Bhilwara pipeline, 1670 km Mehsana-Bhatinda pipeline and 740 km Bhatinda-Jammu-Srinagar pipeline. BPCL has plans for enhancing its presence in the country's Gas market. Besides participating in the bidding rounds for putting up Gas pipelines, the company is exploring various opportunities for having access to a larger quantum of Gas that can be marketed.

f) Other Business Initiatives

- **Supply Chain Optimisation**

BPCL has established a Supply Chain Optimisation set up for end-to-end supply chain optimization viz. crude oil procurement to product distribution optimization that helps in significant improvement in performance by reducing supply chain costs.

- **Integrated Information Systems**

The Corporation benchmarks itself against the world's best in terms of system capabilities and leveraging those capabilities for better value creation. Towards this end, Information Technology plays an important role. The successful implementation of SAP R/3 at all locations in SBUs and support entities is a testimony to the system and process capabilities possessed by the organization. The R/3 system landscape of BPCL was successfully upgraded to the Enterprise version with extension set 2.0, The Corporation has been inducted in the Oil & Gas Global Industry Advisory Council of SAP for pathbreaking initiatives in SAP R/3 implementation and is looked upon as an industry expert on the same for further system improvements in R/3 architecture. Towards this end, on a regular basis system audits are carried out by both internal & external assessors. BPCL has completed the implementation of Governance, Risk and Compliance solution of SAP, which is an essential step in providing system based controls and risk mitigation mechanism while handling business processes.

A number of initiatives aimed at achieving process improvements were completed. These include the roll out of Planned Delivery Programme solution in retail locations and implementation of B2B solution for transactions with IOC. BPCL has introduced an innovative and indigenously developed state-of-the-art refuelling system known as the Apron Fuel Management System (AFMS) to cater exclusively to the aviation industry. The complete Point of Sale (POS) solution significantly reduces the fuelling time to aircrafts and generates Fuel Delivery Tickets without manual intervention, thereby facilitating electronic exchange of data. BPCL's IT network has been upgraded to Multi Protocol Label Switching (MPLS) involving about 180 locations that help in implementation of new application systems besides improving network uptime and bandwidth.

- **International Trade & Risk Management:**

The existing International Trade department has been restructured into International Trade & Risk Management (ITRM) set-up to meet the new challenges in crude oil procurement. The ITRM business model ensures efficient and timely crude procurement for the group refineries as well as helps in profitable evacuation of products by scouting the best opportunities at home and abroad.

- **Project 'CALIBER':**

The objective of Project CALIBER is to develop a

leadership pipeline, to meet the need for leaders across the organization at all levels, to make a few targeted changes to the Performance Management approach, to reduce cost inefficiencies in HR & Administration and to identify pragmatic solutions to reduce manpower cost. All these initiatives are focused on enhancing value for stakeholders and BPCL is confident of sustaining the past growth trends in profitability in the emerging free market scenario.

4.3.6 Exploration & Production

Bharat PetroResources Ltd. (BPRL):

BPRL, a 100% subsidiary company of BPCL has participating interests in 26 exploration blocks in consortium with various partners in India and abroad. BPRL has participating interest in these blocks directly / through wholly owned subsidiary companies. Out of these 26 blocks, 9 blocks are located in India and the balance 17 blocks are in foreign countries. Indian blocks were acquired under various NELP bid rounds and foreign blocks were acquired through bidding/farm in process.

1. Exploration Blocks Work Program:

Indian Blocks:

BPRL has participating interest (PI) of 10% in Blocks KG-DWN-2002/1 and MN-DWN-2002/1 (offshore) and PI of 40% in Block CY-ONN-2002/2 (onland) acquired under NELP IV bidding round. Seismic surveys and interpretation have been completed in all the 3 blocks. In Krishna Godavari (KG) Basin, drilling of 3 wells completed without any success and further drilling of 1 well is planned in 2012. Similarly, 5 drillable prospects have been identified in Mahanadi basin and 2 wells were drilled. The prospect for the third location is being finalized. In the Cauvery basin, one well has been drilled, but did not result in a commercial find. Two more wells are planned for drilling in the fourth quarter of 2011-12. ONGC is the operator for these blocks.

BPRL also has PI of 10% in Blocks KG-DWN-2004/1, KG-DWN-2004/5 (offshore), PI of 20% in Blocks CY-ONN-2004/1, CY-ONN-2004/2 (onland) and PI of 11.11% in Block RJ-ONN-2004/1 (onland). These blocks were acquired under NELP VI bidding round. Seismic data acquisition, processing and interpretation are underway for Krishna Godavari (KG) blocks. Drilling of 1 well is in progress in CY-ONN-2004/2 block and further drilling of 2 wells is proposed in 2011-12. In the Rajasthan (RJ) block, 2 wells have been drilled and currently, the 3rd well is under drilling. ONGC is the operator for KG & CY blocks and GAIL/GSPC is the operator for the RJ block. Further, BPRL has a PI of 25% in Block RJ-ONN-2005/1 (onland) under NELP VII, where BPRL is the Joint Operator with HOEC. The 2D/3D seismic data acquisition is planned during the fourth quarter of 2011-12.

Foreign Blocks :-

Australia:

BPRL has PI of 20% in Block AC/P 32 (offshore) in consortium with PTTEP Australasia Pty (Operator), Bounty Oil & Gas and Cosmo Energy. In this block in Australia, one well was drilled after BPRL's entry, but there were no Hydrocarbon shows. Post well studies and seismic reprocessing are in progress in the block.

Single Point Mooring of BPCL's Kochi Refinery

BRPL currently holds 8.4% Participating Interest (PI) in the Block WA-388/P in Australia in consortium with Oilex, Apache (Operator), Sasol, Gujarat State Petroleum Corporation Ltd, Videocon Industries Ltd and Hindustan Petroleum Corporation Ltd, after recent partial farm out of its PI to Apache. One exploratory well (La Rocca) was drilled to the target depth in May 2011 and there were no hydrocarbon shows. Post well studies are in progress.

BPRL has PI of 50% in Block TP-15 (Shallow water) in consortium with Westranch Holding Pty (Operator), a wholly owned subsidiary of Norwest Energy NL. In this block, one well was drilled in March 2011, but did not encounter commercial quantity of hydrocarbon. The option for entering into the next term is being evaluated.

BPRL also has PI of 27.80% in Block EP - 413 (onland) in consortium with Norwest Energy NL (Operator) and Australia Worldwide Exploration. This block is being explored for Shale Gas. Drilling of an exploratory well has been completed. At present testing of cores etc is in progress and further vertical fraccing of well is scheduled in 2012.

United Kingdom:

BPRL has PI of 25% in 48/2c (offshore UK) with consortium partners Encore Oil plc (Operator), Bridge Energy and Tata Petrodyne Ltd. Drilling of a well (Cobra) in this block has been completed. The flow rates, however, were sub-commercial due to low permeability and tight reservoir conditions. Well stimulation studies including fraccing studies/gas export option & project economics has been completed by the operator. Currently, field development options are being studied.

East Timor:

BPRL has Participating interest of 20% in Block -JPDA 06-103 - East Timor through its wholly owned subsidiary

Bharat PetroResources JPDA Ltd, in the Joint Petroleum Development Area between East Timor and Australia. The other consortium partners are Oilex (operator), Videocon, GSPC, Japan Energy and Pan Pacific Petroleum. Out of four commitment wells, two wells were drilled in the year 2009-10 & one well indicated presence of hydrocarbon, but was found sub-commercial. 3D seismic studies are in progress to identify further drilling prospects. One more Exploratory well is scheduled to be drilled during the third quarter of 2012.

Brazil:

BPRL and Videocon Industries Ltd., through the medium of their 50:50 joint venture company in Brazil, have acquired from Encana Corporation, Canada, thereby acquiring participating interest in ten deep water offshore blocks, across four concessions i.e. Espirtio-Santo Basin, Campos Basin, Sergipe - Alagoas Basin and Potiguar basin. All the above blocks are at various stages of exploration phase.

In Espirito Santos basin, two exploratory wells have already been drilled without any find of hydrocarbon. In Campos basin, well Wahoo#1, resulted in a discovery of oil. While testing the well, approx. 7500 bbl/d of oil flowed, establishing the capacity of well to flow at 15000 bbl/d. At present the concession is in evaluation phase till 2015. In Sergipe Alagoas basin, drilling of one well (Barra) has been completed and light hydrocarbon of 34mts net pay was encountered while drilling. Drilling of other exploratory & appraisal wells is planned from January 2012. In Potiguar concession, 3D seismic data interpretation has been completed and drilling of one prospect has been finalized and the 1st well is expected to be drilled in 2012.

Mozambique:

BPRL, through its overseas subsidiary, holds 10% participating interest (PI) in the block. The other consortium members in the block are Anadarko 36.5% (operator), Videocon Mozambique Rovuma 1 Limited (10 % PI), Cove Energy Mozambique Rovuma Offshore, Ltd. (8.5% PI) and Mitsui E&P Mozambique Area 1, Limited (20% PI). The balance 15% PI is with Empressa Nacional de Hidrocarbonetos E.P (ENH), the national oil company of Mozambique, who are carried through the exploration phase.

After drilling of the appraisal well Barquentine 3, the operator has declared that the block holds 15 to 30+ Tcf of recoverable Natural Gas resources. Drilling of appraisal wells Lagosta-3 is in progress. The operator is also planning to mobilize the second rig to carry out drill stem test (DST) during the first quarter of 2012. The operator has initiated pre-development studies such as land identification, EIA studies for setting up a two train, 10 MMTPA LNG facilities in Mozambique.

Indonesia:

BPRL has PI of 12.5% through its subsidiary BPRL Ventures Indonesia BV in Nunukan PSC block in the Tarakan basin in consortium with Anadarko 35% (Operator), PT Medco 40% and Videocon Indonesia 12.5%. An exploratory well, Badik-1, drilled in the first phase of exploration, encountered approx. 40 net mts of oil and natural gas pay. 3D seismic data acquisition and processing is completed. The data is being interpreted for identifying the location for drilling of the next appraisal well in 2012.

2. Overseas Acquisition/Anticipated Production:

At present, all the above blocks are in various stages of exploration phase, except certain blocks in Brazil, Mozambique and Indonesia, where the BPRL consortium has encountered hydrocarbon discoveries, which are under appraisal stage. However, BPRL does not envisage any Oil & Gas production during 2011-12 and as of now, BPRL does not have any producing assets in India or abroad.

4.3.7 Research & Development

Research and Development (R&D) is an integral part of BPCL's strategy for achieving sustainable growth and profitability. To enhance R&D capabilities, BPCL is continuously strengthening the infrastructure and manpower resources at its Corporate R&D Centre, Greater Noida, Uttar Pradesh as well as at its Product & Application Development Centre, Sewree, Mumbai and the R&D centre at Kochi Refinery, Kochi. All these in-house R&D Centers are recognized by the Department of Scientific & Industrial Research (DSIR), Ministry of Science and Technology, Govt. of India.

During 2010-11, BPCL commercialized a number of products/processes developed in-house. BPCL has filed 6 patents in India and abroad to protect the IPR generated through their research activities.

BPCL has continued to pursue three collaborative projects with Indian Institute of Science, Bangalore on cutting oils, adsorption of natural gas using nano technology and photo voltaic cells respectively. Likewise, work on CHT/OIDB sponsored projects on clean liquid fuels production in collaboration with EIL and energy efficient hydrogen production, under the hydrogen corpus fund, in collaboration with CSMCRI, Bhavnagar is continued.

BPCL along with TERI has undertaken a three year research program in the area of 2nd generation biofuels. The total cost of this project is ₹ 3.38 crore which is being partly funded by Department of Biotechnology (DBT). On similar lines, BPCL has undertaken a project with Osmania University,

BPCL's Kochi Refinery

Hyderabad and Tamil Nadu Agricultural University (TNAU), Coimbatore, in the area of bio-ethanol and petro-algae respectively. The total cost of the bio-ethanol project with Osmania University is ₹ 43 lakhs whereas the cost of the project with TNAU is ₹ 33 lakhs.

4.3.8 International Co-operation

a) Crude imports

BPCL commenced independent import of crude oil on term as well as spot basis based on MOP&NG guidelines after dismantling of the Administered Pricing Mechanism (APM) with effect from April 2002.

Term Contracts: A major quantity of crude oil requirement is procured through term contracts with national oil companies for security of supplies. Generally, the crude oil is priced at the Official Selling Price (OSP) by the respective national oil company.

Spot purchase: Spot crude oil procurements are through the tender route with registered vendors from time to time, based on processing requirement, inventory position, market conditions etc.

BPCL has always been taking initiatives in enrolling additional sources for crude oil, thereby widening the geographical spread of sources in order to ensure uninterrupted crude oil supply. Country wise crude oil imports for the last four years (actual) and estimated quantity for the year 2011-12 is given below:

(TMT)

Country	2007-08	2008-09	2009-10	2010-11	2011-12 (Estimated)
Abu Dhabi	2205	1899	1801	2449	2660
Algeria	-	263	1700	2391	1993
Angola	125	-	387	125	639
Azerbaijan	865	897	903		
Brunei	267	394	351	273	355
Dubai	207	-	139		
Egypt	-	-			
Iraq	-	278	265		
Iran	721	403		278	948
Kuwait	1985	1965	1987	1774	2724
Libya	677	538	547	964	
Malaysia	1125	591	351	273	276
Nigeria	530	650	1491	2359	2261
Qatar	877	770	511		
Russia	225	-			
Kazakhstan	133	-			
Saudi Arabia	3729	4053	3625	3553	4075
South Korea	-	-	-	134	
Yemen	829	-	345	259	
Total	**14500**	**12702**	**14403**	**14833**	**15934**
No. of Countries	15	12	14	12	9

Note : The above does not include crude oil imported and sold on high sea sale.

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas giving away PetroFed Award to BPCL

b) Initiatives for Import / Export of Crude Oil / Product:

BPCL has taken the following initiatives for import / export of crude oil and products:

During 2011-12, in order to widen the supply sources and enhance crude oil security, BPCL renewed term contracts with National Oil Companies of Saudi Arabia, Kuwait, Abu Dhabi, Malaysia, Brunei and Iran for import of crude oil for its Mumbai and Kochi Refineries. Besides, BPCL also purchased crude oil from Brunei, Nigeria and Angola from the spot market on tender basis from registered traders.

Region-wise & Country-wise import of crude oil envisaged during 2011 -12 is given below:

Region	Country	Estimated Quantity (TMT)			Remarks
		Apr. – Nov. '11	Dec. – March'12	Total	
Gulf Region	Saudi Arabia	2972	1103	4075	Term Supplies
	Kuwait	1777	947	2724	Term Supplies
	Abu-Dhabi	1862	798	2660	Term Supplies
	Iran	415	533	948	Term Supplies
	Sub Total	**7026**	**3381**	**10407**	
Far-East Region	Malaysia	139	138	277	Term Supplies
	Brunei	207	69	276	Term Supplies
	Brunei	80	0	80	Spot
	Sub Total	**426**	**207**	**633**	
Africa Region	Nigeria	1361	900	2261	Spot
	Angola	380	260	640	Spot
	Sub Total	**1741**	**1160**	**2901**	
Caspian Region	Algeria	1466	527	1993	Term
	Sub Total	**1466**	**527**	**1993**	
Grand Total		**10659**	**5275**	**15934**	

Note : The above does not include crude oil imported and sold on high sea sale.

c) Product Exports & Imports

The following are the details of Imports / Exports of crude oil and petroleum products for BPCL during the year 2011-12:

(TMT)

	Apr. - Nov.'11(Actual)	Dec. – March'12 (Estimate)	Total (Estimate) 2011-12
Crude Imports			
Mumbai / Kochi refinery	10,659	5,275	15,934
Total	**10,659**	**5,275**	**15,934**
Product Imports			
LPG	435	145	580
HSD	221	0	221
SKO	25	0	25
MS	316	0	316
Base Oil	3		3
Sub Total	**1000**	**145**	**1145**
Product Exports			
Naphtha	1256	525	1781
Furnace Oil	894	200	1094
Gasoil (1% S)	105	-	105
Gasoline	67	-	67
Bitumen	4	8	12
MS	8	4	12
Lubes	2	0.75	2.75
Base Oil	0	10	10
MTO	0	0.05	0.05
Hexane	0.1	0.05	0.15
Benzene	2.4	0	2.4
HSD	34	16	50
Sub Total	**2372**	**764**	**3136**

Engagements Abroad

Products :

- BPCL has entered into a term contract with Saudi Aramco for import of 292 TMT of LPG during 2011.
- BPCL has entered into a term contract with ADNOC for import of 250 TMT of LPG during 2011 in view of increased demand.
- BPCL commenced trial export of packed bitumen
- In addition to the above, BPCL exported products like Naphtha, Fuel Oil, Bitumen through the spot market to registered traders for intended destinations such as Singapore, Japan, Korea, Myanmar, China, Taiwan and UAE.

Efforts towards diversification of Crude Oil sourcing:

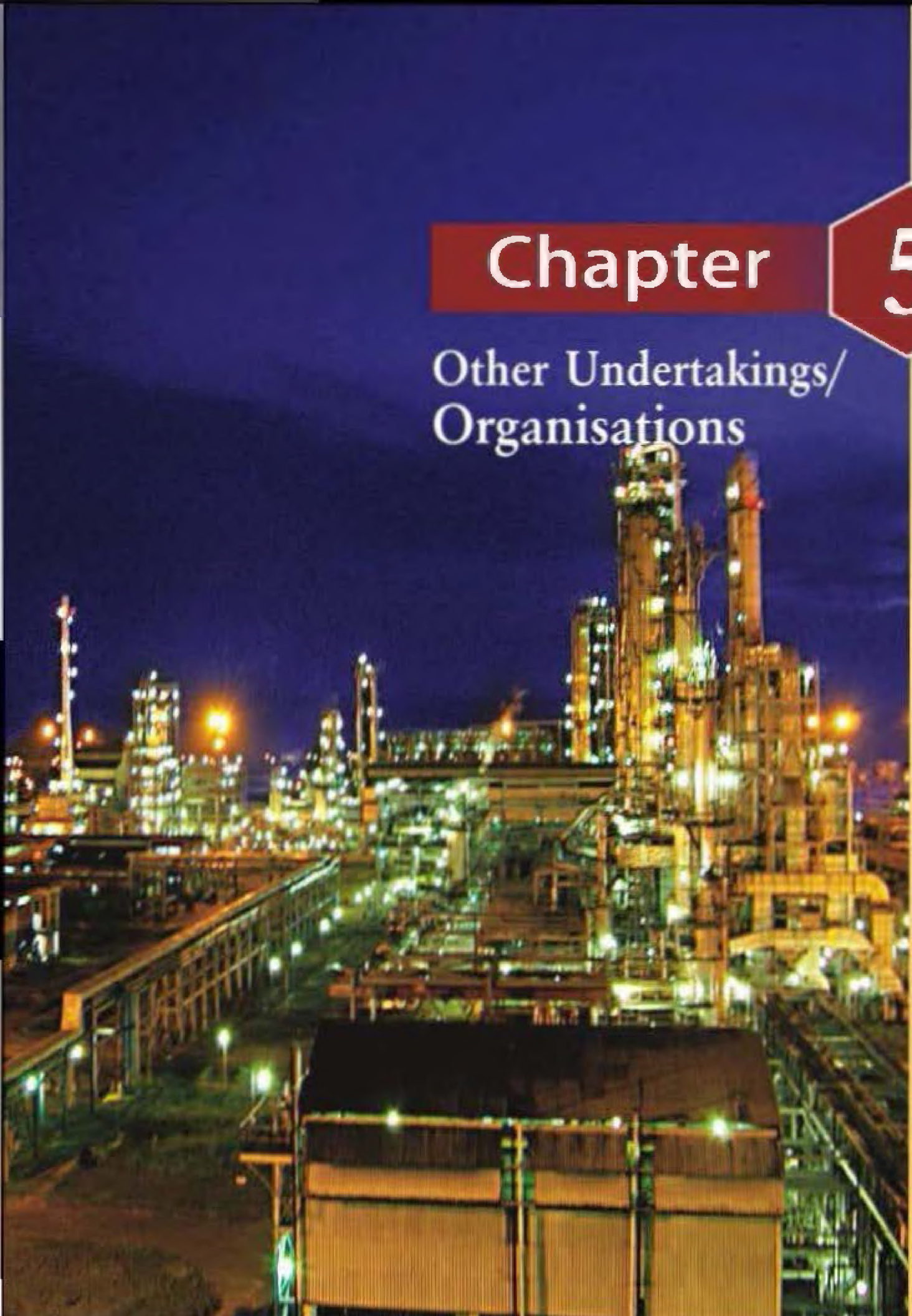
Crude Oil: In order to increase crude oil security and to expand the supply base, BPCL has increased the number of Term Contract Suppliers from four in 2002-03 to seven in 2011-12 as under-

(MMT)

Country	2002-03	2007-08	2009-10	2010-11	2011-12
Saudi	2.00	3.75	4.00	3.10	3.50
BAPCO				0.40	
KPC	2.00	2.00	2.00	2.00	2.50
ADNOC	0.60	1.50	2.00	2.50	2.75
PETRONAS	0.25	0.50	0.25	0.25	0.25
IRAQ			0.25		
IRAN		0.25	-	0.25	1.00
QATAR		0.40	0.50	-	-
BRUNEI		0.25	0.25	0.25	0.25
LIBYA	-	-	0.50	0.50	
Algeria	-	-	-	1.50	1.50
TOTAL	**4.85**	**8.65**	**9.75**	**10.75**	**11.75**

4.3.9 Major Accolades / Awards

- BPCL secured the 272nd position in the prestigious list of Fortune Global 500 companies in 2010-11, as compared to the 307th position in 2009-10. Apart from BPCL, only seven Indian companies have made it to the list.
- For the fifth year in succession, the BPCL brand has featured among the top ten companies, ranking seventh, according to the valuation of India's Top 50 brands undertaken by M/s. Brand Finance. BPCL's brand valuation of 2.94 billion US$ is an improvement of 2.62 billion US$ in the previous year.
- Mumbai Refinery won the Performance Excellence Award of Ramakrishna Bajaj National Quality Award 2010 under the Large Manufacturing category for the fourth consecutive time.
- BPCL has been awarded the 'Aqua Excellence Award 2011' for 'Outstanding Contribution towards cause of water - Public Sector' at the fifth World Aqua Congress held in New Delhi on 17.11.2011.
- BPCL won two SAP Ace Awards 2011 - 'Best Run Supply Chain' Award and 'Best Run Award in Human Capital Management' for empowering employees at all levels with access and responses to their HR queries.
- BPCL won three PetroFed Awards for the year 2009-10 viz. Oil & Gas Marketing Company of the Year Award, Human Resources Management Company of the Year Award & Environmental Sustainability Company of the Year Award presented by Hon'ble Minster, Petroleum & Natural Gas, Shri S. Jaipal Reddy in New Delhi on 11.5.2011.



Chapter 5

Other Undertakings/ Organisations

Other Undertakings/Organisations

5.1 DIRECTORATE GENERAL OF HYDROCARBONS (DGH)

5.1.1 The Directorate General of Hydrocarbons (DGH) was established under the administrative control of Ministry of Petroleum & Natural Gas by a Government of India Resolution in 1993. The objectives of DGH are to promote sound management of oil and natural gas resources, having a balanced regard for environment, technological and economic aspects of petroleum activity. DGH has been entrusted with certain responsibilities concerning the Production Sharing Contracts for discovered fields and exploration blocks, promotion of investment and monitoring of Exploration & Production (E&P) activities including review of reservoir performance of major fields. In addition, DGH is also engaged in opening up of new / unexplored areas for future exploration and development of non-conventional hydrocarbon energy sources. Details of the main activities undertaken by DGH up to December 2011 are given below.

5.1.2 Opening Up Of New Areas For Future Exploration

With a view to open up new areas for exploration, DGH has carried out reconnoitre surveys in poorly explored/unexplored basins, aiming to upgrade geological information of the areas and carve out new blocks for offer under future rounds of New Exploration Licensing Policy (NELP). The following activities were conducted.

i. Data Archival Project: A total of 11,246 data tapes have been archived. The Project was completed.

ii. Processing and interpretation of onland 2D seismic data of the Kutch Basin.

iii. Feasibility studies by way of reconnaissance for carrying out 2D Seismic Survey in Category III & IV Basins and other potential areas of India.

5.1.3 Implementation of NELP

The development of the E&P sector has been significantly boosted through the NELP Policy of Government of India, which brought major liberalization in the sector and opened it up for private and foreign investment, where 100% Foreign Direct Investment (FDI) is allowed. NELP provides a level playing field to the private operators, either Indian or foreign, by giving them the same fiscal and contract terms as applicable to National Oil Companies (NOCs) for the offered acreages.

India has an estimated sedimentary area of 3.14 million sq.km., comprising 26 sedimentary basins, out of which 1.35 million sq.km. area is in deepwater. NOCs viz. Oil & Natural Gas Corporation Limited (ONGC), OIL India Limited (OIL) and Private/Joint Venture companies are actively engaged in exploration and production. Before implementing NELP in 1999, 11% of the Indian sedimentary basin area was under exploration. Under NELP, about 47% of the Indian sedimentary area was awarded to NOCs, foreign and private companies.

Till date, eight rounds of NELP have been concluded and 235 Production Sharing Contracts (PSCs) for onland, shallow water and deepwater blocks have been signed. Investment commitment under NELP is about US$ 11 billion on exploration. The actual investment made by E&P companies under NELP has been of the order of US$ 16.5 billion including US$ 7.49 billion on development of oil and gas discoveries. Under NELP, 104 oil and gas discoveries have been made in 34 blocks. Presently, oil and natural gas production is being made from 3 NELP blocks. Under NELP IX, 74 bids were received for 33 exploration blocks. The award of blocks is likely to be made in 2012.

5.1.4 Monitoring of Production Sharing Contracts

Government of India has signed contracts for 28 discovered fields, 33 CBM blocks, 28 exploration blocks under pre-NELP regime and 235 blocks under NELP regime. DGH monitors the execution of management of these Production Sharing Contracts on behalf of GOI through Management Committees set up for each block / field. This involves in-depth review of the annual work programme, project monitoring, calculation of reserves and production profile, making simulation model of the field, review and approval of development plan, budget and safety management system.

An investment of about US$ 26,578 million investment has already been made by companies on E&P till December 2011. During 2010-11, Private/JV sector produced 9.68 MMT of oil and 26.77 BCM of natural gas. During 2011-12 (April-December '11) Private/JV sector produced 7.877 MMT of oil and 16.914 BCM of natural gas.

5.1.5 Monitoring of the Petroleum Exploration Licenses (PEL) held by NOCs on nomination basis

- DGH reviewed the progress of exploration activities in the 51 (40 ONGC + 11 OIL) Petroleum Exploration Licenses held by NOCs (ONGC and OIL) on nomination basis, on a half yearly basis vis-à-vis committed work programme.
- Different proposals received from NOCs and data has been examined during the period and recommendations have been submitted to MOP&NG, on case to case basis, for extension of PEL period, transfer of PEL to PML and relinquishment of certain PEL areas, wherever required.

5.1.6 Field Development, Reservoir and Production Monitoring (Apr-Nov'11)

Reservoir group of DGH is monitoring the development activities of various fields under the

Production Sharing Contracts such as D-6, MA, Mangala, Aishwariya, Rageshwari Saraswati, Panna-Mukta, Tapti, Ravva, Laksmi, Gauri, Kharsang, PY-3, PY-1, Asjol, Bakrol, Indrora, Lohar, Baola, Dholka, Hazira, NSA-Bheema and North Balol, etc. The activities in exploration blocks with reference to reservoir review of discoveries, Declaration of Commerciality (DoC) and Field Development Plan (FDP) etc. are also carried out.

5.1.7 Monitoring of IOR/EOR projects and performance of NOCs

There are 21 IOR/EOR projects in 15 major fields of ONGC under implementation since 2000. The details of these projects are given below:

1. Western offshore Assets (8) - Mumbai High North (3), Mumbai High South (2), Heera (2) and Neelam(1)
2. Western onshore Assets(10) - Gandhar, Kalol, Sanand, North Kadi (2), Jotana, Santhal (2), Balol and Sobhasan
3. Eastern onshore Assets(3) - Galeki, Rudrasagar and Lakwa-Lakhmani

DGH is continuously interacting with officials of different Assets of ONGC on the performance of 21 major IOR/EOR projects. Different type of geological, production and reservoir data for various fields is obtained / sought from ONGC. The recommendations are made for field implementation and improvement in oil recovery based on the review data provided and mutual discussions are being carried out.

5.1.8 Monitoring the performance of major oil fields of Oil India Limited

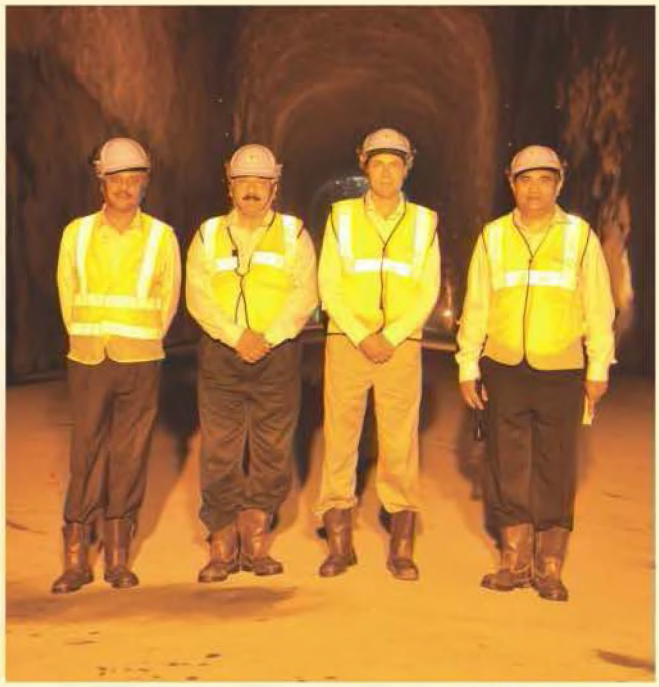
DGH monitors the performance of major oil fields of Oil India Limited. The reservoir data, reports and discussions were analyzed and reviewed by DGH.

5.1.9 Computer System for E&P Activities

Important technical studies, such as reservoir simulation, log interpretation and loading of seismic and other related technical data and seismic interpretation are being carried out on workstations in a networked environment based on client server architecture. Interpretation, marking of key levels, basement assessment and prognostication of hydrocarbon resources for all the 34 NELP IX blocks on offer and docket preparation providing support to viewing were carried out.

5.1.10 Gas Hydrates

Gas Hydrates, generally found in the deep sea, are basically methane molecules trapped in ice. At present, there is no commercial production of Gas Hydrates in any part of the world and the technology is only at the R&D stage the world over. India, USA and Japan are pioneers in the field of Gas Hydrates. In accordance with the roadmap for the National Gas Hydrate Programme (NGHP), India has already acquired core samples with the help of the drill ship,



Shri G.C. Chaturvedi, Secretary, Petroleum & Natural Gas visits the crude oil storage cavern at Vizag

'JOIDES Resolution', USA. The cooperation between the DGH and US Geological Survey (USGS), USA on exchange of scientific knowledge and technical personnel in the field of Gas Hydrates and research with the view of exploiting the potential of Gas Hydrates as an alternate source of energy is in progress.

An MoU was recently signed in the area of Marine Gas Hydrate research & technology development between the Leibniz Institute of Marine Sciences, Germany and DGH for research on methane production from gas hydrates by carbon dioxide sequestration.

A specialized core repository has been constructed in Panvel, Mumbai for storing these cores for future studies. The exploitation of Gas from Gas Hydrates is currently not available anywhere in the world and research to develop it is going on in several countries including India. Pilot test production is planned to be carried out in India after developing a suitable mathematical and simulation model.

5.1.11 Shale Gas Exploration

Shale Gas can emerge as an important new source of energy in the country. India has several Shale formations which seem to hold Shale Gas. The Shale Gas formations are spread over several sedimentary basins such as Cambay, Gondwana, Krishna-Godawari onland and Cauvery.

DGH has initiated steps to identify prospective areas for Shale Gas exploration. A Multi Organizational Team (MOT) of DGH, ONGC, OIL, GAIL has been formed by the Government to analyze the existing data set and suggest methodology for Shale Gas

development in India. Further, an MoU between Department of State, USA and Ministry of Petroleum & Natural Gas has been signed on 6.10.2010 for the assessment of Shale Gas resources in India, imparting training to Indian geoscientists and engineers and assistance in formulation of regulatory frameworks.

During the 12th Plan period, resource estimation, policy framework and offering of Shale Gas blocks are likely to be completed and this is likely to lead to natural gas production from a new and unconventional source. The MOP&NG, in consultation with MOEF and other agencies, would decide on the best practices which can mitigate possible environmental issues like water management treatment and ensure water availability for usage in Shale Gas exploitation. The environmental regulations for Shale Gas field development and production would be put in place in consultation with MOE&F.

5.1.12 Oil Shale

DGH has completed a project in the Assam-Arakan Basin in association with BRGM, France and Mineral Exploration Corporation Limited (MECL), India, to identify and estimate resources in respect of Oil Shale deposits and syncrude potential in the north-east part of India covering an area of about 250 sq.km., spanning 3 blocks. An estimate of syncrude resources has been made by BRGM in the three blocks at 400 MMT (approx.) of oil up to a depth of 500 m.

DGH has taken necessary action to carry out the feasibility study and business model development for exploitation of Oil Shale. An assessment of environmental impact arising out of Oil Shale exploitation is to be made before commercial production.

5.1.13 Status of International & National Cooperation

Cooperation with numerous Institutes and Regulators in various fields are ongoing. Some of the highlights are as under :

- United State Geological Survey, USA:- Gas Hydrate related research programme and cooperation.
- United State Department of Energy, USA: Gas Hydrate related programme.
- IFM-GEOMAR, Germany: Gas Hydrate related cooperation
- MMS, USA: Gas Hydrate related research programme and cooperation.
- JOGMEC, Japan: Gas Hydrate related cooperation
- Department of Industry & Resources, Western Australia: Preventing reservoir depletion, enhanced oil recovery, coal bed methane gas, education and training, joint R&D and any other areas that are mutually agreed upon by both parties.

5.1.14 National Data Repository (NDR):

DGH has initiated the process of establishing a National Data Repository (NDR), which is meant for storing and maintaining hydrocarbon exploration and production data in a safe and reusable manner for providing access to all stakeholders.

5.1.15 Work by Advisory Council

The Advisory Council of DGH advises on technical matters/scientific projects to be implemented by DGH. The Council also examines major technical studies and progress of work carried out by DGH.

5.1.16 Coal Bed Methane (CBM):

The Government of India, in order to harness the CBM potential in the country, formulated a CBM Policy in 1997. DGH did a commendable job to operationalise the CBM Policy, which has provided a level playing platform for exploration and commercial exploitation of CBM by national and international entrepreneurs.

In May 2001, for the first time in the country, CBM blocks were offered through international competitive bidding for exploration and production of CBM in the country. So far, Government has awarded 30 CBM blocks under four rounds of CBM bidding to national, private & joint venture companies. In addition, 3 CBM blocks were awarded on nomination basis earlier. The total CBM resources in the 33 awarded blocks, covering an area of around 17,327 sq. km., are estimated to be 1810 BCM and expected peak production from these blocks is estimated at 38 MMSCMD.

During the last five years, more than 202 core holes, 53 test wells and 111 pilot wells and 119 development wells have been drilled in the awarded blocks. Exploration activities have already been completed in three blocks which entered the development phase. So far, CBM resources of about 8.92 TCF have been established in five CBM blocks.

The commercial production of CBM in the country has already commenced w.e.f. 14.7.2007. Current commercial CBM production from Raniganj (South) CBM block of GEECL is around 0.25 MMSCMD. In addition to this, incidentally produced CBM is also being sold in small quantities from Raniganj (East) and Jharia blocks to avoid wastage of gas through flaring.

5.2 ENGINEERS INDIA LIMITED

5.2.1 Introduction

Engineers India Limited (EIL) was established in 1965 with its head office in New Delhi to provide engineering and related technical services for petroleum refineries and related projects. Over the years, it has augmented its span of services and excelled in various fields to emerge as a leading Project, Design, Engineering and Turnkey (LSTK) contracting company in the fields of:

- Petroleum Refining
- Petrochemicals, Chemicals & Fertilizers
- Crude, Petroleum Products & Gas Pipelines
- Offshore/ Onshore Oil & Gas
- Terminals & Storage
- Sub-surface Strategic Storage
- Mining & Metallurgy
- Infrastructure

In 2000-01, EIL forayed into the infrastructure sector and since then has secured several noteworthy and significant assignments related to modernization/ development of international airports, intelligent buildings, water management and express highways projects. In 2010-11, EIL has taken diversification initiatives into fertilizers, city gas and power.

An ISO 9001 certified company, EIL has a network of regional offices in Chennai, Vadodara and Kolkata; a branch office in Mumbai, overseas engineering /marketing offices in Abu Dhabi, which is a hub of the company's activities in the Middle East. EIL has inspection/procurement offices at various locations all over India and also in London, Milan and Shanghai with construction offices at different project sites, both in India and abroad. Besides, EIL has a wholly owned subsidiary in Malaysia (EIL Asia Pacific Sdn Bhd) for executing projects and one subsidiary in India (Certification Engineers International Ltd.) for providing certification and inspection services. To strengthen its domestic and overseas business, EIL has formed two joint ventures - TEIL Projects Ltd. with Tata Projects Ltd. in New Delhi and Jabal EILIOT Company Ltd. with IOT Infrastructure & Energy Ltd. and Jabal Dharan Company Ltd. in Saudi Arabia.

EIL provides a comprehensive range of project related technology and engineering services spanning from project conceptualizing to project commissioning which includes revamp, capacity expansion and modernization of plants. The portal of services offered by the Company includes:

Pre-Project Services

- Feasibility Studies
- Environment Impact Assessment
- Technology & Process Licensor Selection
- Cost Estimation

Project Implementation Services

- Project Management
- Process Design and Front End Engineering
- Basic and Detailed Engineering
- Procurement
- Inspection and Third Party Certification
- Construction Management
- Commissioning and Plant Start-up Assistance

Specialist Services

- Heat and Mass Transfer Equipment Design
- Environment Engineering
- Information Technology
- Specialist Materials and Maintenance
- Plant Operations & Safety including HAZOPS & Risk Analysis
- Corrosion Protection, Plant Integrity and Residual Life Assessment
- Refinery Optimization Studies
- Yield & Energy Optimization Studies

Turnkey Contracting

- EPC (Engineering, Procurement, Construction & Commissioning)
- OBE (Open Book Estimate)

EIL has one of the largest multi-disciplinary engineering workforce with over 4 million man-hours available in its design offices along with 12,000 man-months of construction management services annually. The regular employee strength of the Company as on 30.11.2011 was 2262 at headquarters and 1198 in field offices including those in foreign offices.

The Right to Information Act 2005 has been implemented in the Company with a Public Information Officer and an Appellate Authority nominated to address issues under the Act. Information as per provisions of the Act is posted on the Company's website www.engineersindia.com. Besides, a web-based complaint management system has been implemented for handling complaints/grievances from the public, contractors, vendors, suppliers etc. Further, the Women's Forum of the Company has a designated committee for dealing with complaints relating to sexual harassment.

5.2.2 Performance

a) Physical performance - Business Secured 2011-12 (up to November 2011)

During the current financial year (up to November, 2011), EIL secured new business worth ₹ 490 crore comprising consultancy business of ₹ 360 crore and LSTK business of ₹ 130 crore. Details of major jobs secured in the two business segments of the Company are given below:

Consultancy Business

- Consultancy services for Refinery upgradation project of Kenya Petroleum Refineries Limited, Kenya
- PMC Services for five Pipeline Projects of GASCO, Abu Dhabi
- EPCM Services for Western Onshore Redevelopment Project for Mehsana, Ankleshwar and Ahmedabad Assets of ONGC
- PMC Services for Dahej Petrochemical Complex at Dahej, Gujarat for OPaL
- LSTK Business
- OBE-LSTK job for Polypropylene Unit of MRPL at Mangalore

Business Secured during 2010-11

During the preceding financial year, EIL secured business worth ₹ 4055 crore, of which ₹ 873 crore was consultancy business and ₹ 3182 crore was LSTK. Details of major jobs secured are given below:

Consultancy Business

- EPCM Services for Petrochemical Complex-II at Vijaipur & Pata for GAIL.
- Process Design & Basic Engineering Package for

Solvent De-Oiling Unit (SDU) for Wax Project for NRL, Numaligarh.

- EPCM Services for Brown Field Fertilizer Plant at Panki for Jai Prakash Associates Ltd., Noida.

LSTK Business

- LSTK job from GSPC for Onshore Gas Terminal facilities for Deen Dayal Field Development Project.
- LSTK job from IOC for South Jetty Facilities at Paradip Refinery.
- LSTK job from MRPL for SPM facilities off Mangalore Coast.

(b) Financial Performance

The details of the financial performance of the company for 2011-12 (up to September 2011) are as under:

₹ in crore

Description	2010-11	2011-12 (upto September 2011)
TURNOVER	2823.00	1681.00
OTHER INCOME	160.00	96.00
PROFIT BEFORE TAX	785.00	432.00
PROFIT AFTER TAX	523.00	295.00

5.2.3 Projects

As a design engineering consultancy organization executing projects on behalf of clients in the hydrocarbon sector and process industry, EIL does not have projects of its own.

5.2.4 Policy Initiatives Undertaken

The significant policy initiatives taken during the current financial year (up to November 2011) include the following:

MOUs signed with:

- NPCC, Abu Dhabi for execution of EPC Projects in Middle East countries.
- National Fertiliser Ltd. for business cooperation for setting up ammonia urea units at Ramagundam Fertiliser Project
- EDAC Engineering for pre-commissioning, commissioning along with operations and maintenance services for projects in the hydrocarbon and power sectors
- Cairn India for project, engineering and consultancy services.

5.2.5 HR Development

- Implementation of reward and recognition scheme to recognize employees' creativity, improve employee engagement and create a better working environment.
- The leadership development programme "Aarohan" carried forward to develop business and functional leaders
- Leveraging IT in HR processes by implementing online HR modules for various HR processes and an online employee database.

5.2.6 Overseas Operations

- Joint venture company formed along with IOTL and Jabal Dahran Company in Saudi Arabia.
- Secured break-through assignment from Kenya Petroleum Refineries Limited
- Prepared business profiles including bidding strategies for Uzbekistan, Nigeria and Kazakhstan
- Participated in Indo Oman Joint Working Group

5.2.7 Technology & Sustainable Development

- EIL, jointly with BPCL (R&D), is working on a project for the development of CTL technology.
- In association with IIT Kharagpur, EIL is working on the development of a process for removal of CO2 from sour gas to less than 3% by volume using activated MDEA. Other developmental projects include dynamic simulation capability for oil gas separation systems and development of design methodology for clean-up of synthesis gas produced from coal gasifier for FT reactor. EIL has also undertaken development of basic design for pilot coal gasifier.
- The indigenously developed diesel hydrotreating technology by EIL and IOC (R&D) was used for the first time for the grass roots diesel hydrotreating unit of IOC Bongaigaon Refinery.
- To augment the corporate carbon footprint in the energy sector, actions have been initiated for diversification into nuclear power, gas-based power generation & fertilizer production, deep water offshore oil/gas production and city gas distribution.
- An enterprisewide e-document management system was rolled out to enable online business processes, systematic storage and retrieval of information/data and expedite project implementation.
- Six e-learning modules were developed for training new entrants as part of the comprehensive learning management system in the Company.
- Need-based leadership development programme "Aarohan" carried forward to develop functional leaders and business leaders.
- MoU on corporate performance for 2010-11 signed with MoP&NG with challenging targets of turnover, gross margin and new business secured of ₹ 2400 crore, ₹ 630 crore and ₹ 2345 crore respectively.

5.3 BIECCO LAWRIE LIMITED

Biecco Lawrie Limited (BLL), a Government of India Enterprise, under the administrative control of the Ministry of Petroleum & Natural Gas (MOP&NG), was established in 1919 and became a Government Company in 1972. This is a medium sized engineering

unit with diversified activities having two factories located at Kolkata. As on 31.3.2012, the total turnover of the Company is expected to be ₹ 94.57 crore as against ₹ 81.48 crore in 2010-11 and it is expected to register a net profit of ₹ 1.51 crore. The President of India and the Oil Industry Development Board (OIDB) hold 32.67% and 67.33% respectively of the equity share capital.

The Company also acts as a third-party inspection agency for inspection and certification of projects under REC and prepares a detailed project report for upcoming electricity distribution projects under various schemes of Government of India.

In recent years, the Company has been undertaking additional areas of business in consonance with the national investment plans in power sector infrastructure as well as small hydropower projects, viz. turnkey small hydropower projects in the state of Arunachal Pradesh under Prime Minister's package of Ministry of New & Renewable Energy.

International collaboration of the Company includes Turbo Institute of Slovenia for hydel turbines up to 6 MW and plans to manufacture turbines, tie-up with a California based technology company and a Swedish equipment company.

Diverse activities of the Company include supply of medium-voltage switchgears, execution of turnkey electrical & micro/small hydropower projects, wireless video surveillance systems using Wimax based 4g technology, lubricating oil filling operations at its lubricating oil blending & filling plant.

Under CSR, the Company has spent ₹ 1.11 lakh in 2010-11 for distribution of spectacles to underprivileged persons. Nursing training has been sponsored and old furniture was donated.

5.4 BALMER LAWRIE & COMPANY LIMITED

Balmer Lawrie & Co. Ltd. (BL) was established in 1867 as a Partnership Firm and was incorporated as a Private Limited Company in 1924. It was subsequently converted into a Public Limited Company in the year 1936 with its registered office at Kolkata. The authorized capital, paid-up capital and reserves & surplus of the Company as on 31.12.2011 were ₹ 30 crore, ₹ 16.29 crore and ₹ 617.88 crore respectively.

BL is a multi-technology, multi-locational Company with operations spread throughout India and overseas. The main activities of the Company are classified into a number of Strategic Business Units (SBUs) viz. Manufacturing related (Industrial Packaging, Greases & Lubes, Performance Chemicals and Tea), Service related (Logistics Infrastructure, Travel & Tours and Logistics Services), Research & Development related (Technology & Product Development, Applications Research Laboratory and Product Development Centre). The Company manufactured around 26.75 lakh barrels/ drums, 28,260 MT of greases & lubricants and 4115 of leather chemicals during the period from April to December 2011.

The Company achieved a turnover of ₹ 1591.79 crore during 2011-12 (up to December 2011. The profit after tax of the Company during the stated period was ₹ 91.23 crore. The Company has spent an amount of ₹ 72 lakh under the Tribal Sub Plan (TSP), Special Component Plan (SCP) and Gender Budgeting during the period from April to December 2011.

BL also provides various products and services through Joint Ventures as detailed below:-

Name of Joint Venture Company/Subsidiary	Main Products/Services
I. Joint Ventures	
(a) Balmer Lawrie (UAE) LLC	- Manufacturing of barrels, conipails and cans of various sizes (both metal and plastics), lithography printing line and reconditioning of barrels
(b) Transafe Services Ltd.	- Operational leasing of freight containers and speciality containers in the domestic market; Logistics operations (cold chain, trailer operations, consolidation, break bulking, warehousing, depot/yard operations), designing and manufacture of creative containers.
(c) Balmer Lawrie-Van Leer Ltd.	Manufacturing of barrel closures and plastic barrels/drums.
(d) Avi-Oil India (P) Ltd.	Manufacturing of synthetic & semi-synthetic aviation lubricants.
II. SUBSIDIARY	
Balmer Lawrie (UK) Ltd.	Manufacturing/trading of greases and lubricants in Indonesia and neighboring region through its JVC PT Balmer Lawrie Indonesia.

CSR activities undertaken by BL:

BL has initiated various CSR activities in the following areas :

- Education.
- Health care and family welfare.
- Community development.
- Promotion of sports and culture.
- Calamity relief.
- Development of infrastructural facilities.
- Development of the socially and economically weaker sections of society.

5.5 BALMER LAWRIE INVESTMENTS LIMITED

Government of India, in view of its planned deregulation of oil and globalisation of the economy, decided to disinvest 33.58% of its total equity holding of 59.58% in IBP Company Limited (IBP) to a strategic partner with management control. Consequently, the shareholding of IBP, in its erstwhile subsidiary Balmer Lawrie & Company Limited (BL), was de-merged in favour of Balmer Lawrie Investments Limited (BLIL), which was incorporated on 20th September 2001 under the Companies Act, 1956. The President of India holds 59.67% of its total paid-up equity capital. BLIL is under the administrative control of Ministry of Petroleum & Natural Gas having its registered office at Kolkata.

BLIL is a non-banking financial Company as defined under section 45-I (f) of the Reserve Bank of India Act, 1934. BLIL does not carry on any business except to hold 1,00,64,700 equity shares of ₹ 10 each of BL. The present strength of the Board is three, out of which two are non-executive Government nominees and the third is Director (Finance) of Balmer Lawrie Limited, who is the ex-officio member on the Board of BLIL. BLIL does not have any employees except the Company Secretary who is deputed from BL. The equity shares of BLIL are under compulsory demat mode and are listed in two Indian Stock Exchanges viz. Kolkata and Mumbai. The authorized share capital of BLIL is ₹ 25 crore. The issued and subscribed capital of the Company is ₹ 22.2 crore.

The total turnover and profit after tax of the Company during 2011-12 (up to December 2011) was ₹ 2889.64 lakh and ₹ 2768.90 lakh respectively.

5.6 OIL INDUSTRY DEVELOPMENT BOARD (OIDB)

5.6.1 Objectives of the Oil Industry Development Board (OIDB)

The Oil Industry (Development) Act, 1974 was enacted for the development of the oil industry, following successive and steep increase in the international prices of crude oil and petroleum products since early 1973, when the need of progressive self-reliance in petroleum and petroleum based industrial raw materials assumed greater importance.

5.6.2 Functions of the Board

The Oil Industry Development Board was established on 13th January, 1975 under the Oil Industry (Development) Act, 1974 to provide financial assistance for development of the oil industry. Its organizational set-up consists of a) Chairman b) Members and c) Secretariat.

The functions of the Board, as defined in Section 6 of the Act, involve rendering financial assistance to the promotion of all such activities as are, in its opinion, conducive to the development of the oil industry. The financial assistance is extended by way of loans and grants for activities such as prospecting, refining, processing, transportation, storage, handling and marketing of mineral oil, production and marketing of oil products and production of fertilizers and chemicals.

5.6.3 Resources of the Board

The funds required for various activities, envisaged under the Act, are made available by the Central Government after due appropriation by Parliament from the proceeds of cess levied and collected on indigenous crude oil. The proceeds of this duty are credited to the Consolidated Fund of India and sums of money, as the Central Government think fit, are made available to the OIDB after appropriation by Parliament. The current rate of cess on crude oil produced in the country is ₹ 2500 per tonne (w.e.f. 1st March, 2006) excepting on blocks in joint ventures under New Exploration Licensing Policy (NELP). Since inception and up to 31st December, 2011, the Central Government has collected more than ₹ 99,248 crore (provisional) as cess. Out of this, OIDB has received an amount of ₹ 902 crore (approx.).

This amount of cess so received by OIDB i.e. ₹ 902 crore, together with internal receipts generated as interest income on loans given to various oil sector companies and short term investment of surplus funds, has contributed to the Oil Industry (Development) Fund to accumulate to ₹ 10,175 crore (approx.) as on 31st March, 2011.

5.6.4 Assistance to the Oil Industry

OIDB has been entrusted with the responsibility to render, in such manner, to such an extent and on such terms and conditions, as it may deem fit, financial and other assistance for the promotion of all such measures as are, in its opinion, conducive to the development of the oil industry. The Board renders financial assistance by way of payment of loans for projects, disbursement of grants for R&D programmes and funding expenditure of Scientific Advisory Committees, study groups, task forces etc. The OIDB determines the terms and conditions, including interest rates, for project loans from time to time, subject to periodical review at least every three months depending on the interest rates prevailing in the market. According to the formulation as recommended by the Standing Committee and approved by the OIDB, the month-end interest rates for Government Securities having different residual maturities as the latest available in RBI's monthly bulletin, are the benchmark rates for computing interest rates on OIDB loans for different tenures on a monthly basis. 50% of corresponding month-end margins of AAA rated Bonds on Government Securities available in page INCORP are then added to the benchmark rate for arriving at the interest rate. On the basis of the above formulation, OIDB term loans carried the

following interest rates for the month from April, 2011 to December, 2011:

Interest rates charged on OIDB loans

(Financial Year 2011-12 upto December, 2011) (%) Per annum

Month	Period of Loan			
	1 year	3 years	5 years	10 years
April 2011	8.52	8.78	8.60	8.58
May 2011	8.49	8.52	8.57	8.56
June 2011	8.46	8.37	8.48	8.49
July 2011	7.08	8.16	8.68	8.61
August 2011	8.98	9.03	9.04	9.00
September 2011	8.80	8.89	8.89	8.90
October 2011	8.92	8.86	8.85	8.90
November 2011	8.73	8.76	8.77	8.78
December 2011	8.73	8.78	8.83	8.86

As per the recommendations of the Committee, further discounts on interest rates on OIDB loans are given to the following projects: -

- Projects of strategic national importance that have a direct bearing on the energy security of the country are eligible for a discount of 100 basis points on the effective interest rates.
- Environmental improvement projects and projects for special areas, such as north-east region, J&K state etc. are eligible for a discount of 50 basis points on the effective interest rates.

5.6.5 Deployment of Funds

OIDB has accorded the highest priority to programs connected with exploration, production, refining, marketing, R&D etc. and the activities related to the energy security of India. So far, OIDB has up to 31st December, 2011 extended the following financial assistance to the oil industry :

Financial assistance since 1975

(₹ in crore approx.)

Month	Cumulative up to December,2011
Loans	31,279.00
Grants	1631.00
Total	**32,910.00**

In addition, till 31st December, 2011, the Board has invested its funds in the equity share of Biecco Lawrie Ltd (BLL) ₹ 17.58 crore and Indian Strategic Petroleum Reserves Limited (ISPRL) to the extent of ₹ 1351 crore (approx.) respectively. A major portion of loan has been given to oil companies for meeting the capital outlay of plan projects.

Details of financial assistance given during last five years

(₹ in crore)

Year	Loan	Grants	Total
2006-07	1827.90	211.45	2039.35
2007-08	1982.10	105.80	2087.90
2008-09	3043.00	135.94	3178.94
2009-10	2779.00	151.59	2930.59
2010-11	1388.41	128.78	1517.19
2011-12	1105.00	70.48	1175.48
(Upto December,2011)			

Disbursement of Loan during the year 2011-12 (Up to 31.12.2011)

(₹ in crore)

S.No.	Name of the Oil PSU	Loan disbursed (2011-12)
1.	Hindustan Petroleum Corporation Ltd.	355.00
2.	GAIL (India) Ltd.	435.00
3.	MRPL	265.00
4.	Brahmaputra Cracker & Polymers Ltd.	20.00
5.	GAIL Gas Ltd.	30.00
	Total	**1105.00**

5.6.6 Details of the projects funded by OIDB during 2011-12 (Up to 31.12.2011)

5.6.6.1 Hindustan Petroleum Corporation Limited :

HPCL is a downstream company engaged in refining and marketing of petroleum products.

Diesel Hydrotreater at Mumbai and Visakh Refineries

With objectives of realizing green and clean fuel in accordance with the Auto policy. The company has taken up projects at Mumbai and Visakh refineries at a cost of ₹ 3,284 crore and ₹ 3,597 crore respectively. During the year 2011-12, ₹ 250 crore for each of the projects has been sanctioned as loan by OIDB for implementation of the project. Out of the sanctioned loan, the company has availed a loan of ₹ 355 crore up to December 2011.

5.6.6.2 GAIL (India) Ltd.

Expansion of Dahej-Vijaypur Pipeline Project

The project envisages augmentation of the DVPL-GREP Pipeline System in a phased manner and utilizing it for transporting RLNG/Gas up to Chainsa and Dadri for onward sale and distribution to consumers, enroute Chainsa-Jhajjar-Hissar pipeline and Dadri-Bawana-Nangal pipeline respectively. This would primarily cater to the mid-term and the long-term demand for gas in the power, fertilizer, industrial,

automobile, commercial, engineering, city gas projects and domestic sectors of the states of Rajasthan, Haryana and Punjab. The Company has availed a sanctioned loan of ₹ 1150 crore.

Expansion of Pata Petrochemical Plan

Under PATA expansion, GAIL would be setting up a new Gas Processing Unit to extract C2/C3 and also setting up C2/C3 extraction plants at Vijapur and injection of the C2/C3 into the Hajira-Vijaypur-Jagdishpur pipeline at Vijapur and further recovery of C2/C3 from Natural Gas at PATA. Out of a sanctioned loan of ₹ 200 crore, OIDB has disbursed ₹ 135 crore up to December, 2011.

Dhabol-Bangalore Pipeline

GAIL proposes to lay a pipeline with designed capacity of 16 MMSCMD for transportation of gas from Dhabol (Maharashtra) up to Bidadi (near Bangalore in Karnataka) and then from Bidadi to Bangalore on common carrier basis. The Company has availed a sanctioned loan of ₹ 100 crore.

5.6.6.3 Mangalore Refinery and Petrochemicals Ltd. (MRPL)

Single Point Mooring Project:

To facilitate decongestion of existing jetties and overall jetty infrastructure revamp of New Mangalore Port. Out of a sanctioned amount of ₹ 150 crore, OIDB has disbursed ₹ 65 crore to MRPL up to December 2011.

Phase-III Refinery Project

This project envisages setting up facilities for meeting Euro III/IV standards for diesel, upgradation of black oils into distillates and production of high value products like LPG/Propylene along with a new 3 MMPTA CDU/VDU unit for processing of High Acid Crude Oil at Mangalore. The Company has availed a sanctioned loan of ₹ 200 crore.

5.6.6.4 Brahmaputra Cracker and Polymer Ltd. (Assam Gas Cracker Project)

This project envisages a socio-economic objective to carry out all inclusive growth of the north-eastern region. Out of a sanctioned amount of ₹ 327 crore, OIDB has disbursed ₹ 303 crore to BCPL up to 31.12.2011.

5.6.6.5 GAIL Gas Ltd.

Out of a sanctioned loan of ₹ 118 crore for city gas distribution projects in 4 cities viz. Dewas, Kota, Meerut and Sonipat, the company has availed a loan of ₹ 104.41 crore up to December 2011.

5.6.7 Grants for R&D Activities

Section 6 of the Oil Industry (Development) Act, 1974, inter alia provides that the Board may render assistance for scientific, technological and economic research that could be directly or indirectly useful to the oil industry. Hydrocarbon Vision 2025 also envisages that sufficient resources may be made available for appraising the unexplored/partly explored acreages through OIDB.

a) Regular Grantee Institutions

OIDB has been providing grants to five organizations viz. Directorate General of Hydrocarbons (DGH), Petroleum Conservation Research Association (PCRA), Centre for High Technology (CHT), Oil Industry Safety Directorate (OISD) and Petroleum Planning and Analysis Cell (PPAC) as per the resolutions/directions of the Central Government for carrying out their activities.

b) Upstream Sector

In respect of OIDB grants related to the upstream sector, a Peer Group comprising Joint Secretary (Exploration), MOP&NG, Secretary, OIDB and representatives from DGH, ONGC and OIL has been constituted by OIDB to examine these proposals in the first instance and give its recommendations. These recommendations are submitted to the OIDB for approval. The projects that are approved by OIDB with an outlay of more than ₹ 25 lakh are sent to the Central Government for conveying its approval before release of the grant in terms of Rule 24 of OID Rules. Since 1998, the OIDB/Central Government has approved more than 50 projects at an estimated cost of about ₹ 160 crore. Most of these projects have been completed. A number of projects have yielded considerable benefits to the oil industry in terms of oil production, upgradation of technology, identifying new areas for exploration etc. The total grants released by OIDB for upstream sector projects since 1998 amounted to ₹ 93 crore approximately.

c) Review Committees

The above Peer Group also reviews the progress of the OIDB funded projects in the upstream sector. The recommendations of the Peer Group are presented before OIDB for consideration and appropriate direction.

d) Downstream Sector

The projects related to the downstream sector are considered and recommended by the Scientific Advisory Committee (SAC) on Hydrocarbons set up by the Ministry. These projects are primarily funded through CHT. The members representing SAC are eminent persons in various fields of the oil industry. The tenure of this Committee is two years, after which Ministry of Petroleum & Natural Gas reconstitutes it. The SAC on Hydrocarbons also reviews the progress of R&D projects in the downstream sector.

5.6.8 National Gas Hydrate Programmes (NGHP)

The National Gas Hydrate Programme is for mapping gas hydrates for utilization as a future alternate energy resource by abstracting methane from solids below the seabeds in deep oceans and the permafrost regions of the world. The programme was initiated in 1997 with a Steering Committee and a Technical Committee of NGHP. Based on the review of seismic data by the Technical Committee, two areas in Indian waters, one along the east coast and the other on the west coast,

EIL's mobile medicare unit is a boon for the elderly.

have been identified as "Model Laboratory Areas" for further R&D work. DGH is the coordinator of the programme. Review of various projects under this programme is done by a Steering Committee set up by the Ministry of Petroleum & Natural Gas. An amount of ₹ 203 crore approx. has been given for various activities under NGHP which included ₹ 72 crore approx. contributed by Oil PSUs up to December 2011.

5.6.9 Hydrogen Corpus Fund

The Ministry of Petroleum & Natural Gas has set up a Hydrogen Corpus Fund on the use of Hydrogen as an auto fuel. The Indian oil industry has to work synergistically and in close coordination with reputed technological institutions to make headway in this frontier area. With this objective in mind, the Ministry has set up a Hydrogen Corpus Fund of ₹ 100 crore with contribution from Oil PSUs/OIDB as follows:

1. OIDB ₹ 40 crore
2. ONGC, IOC, GAIL ₹ 16 crore each
3. HPCL, BPCL ₹ 6 crore each

OIDB is to maintain the account of the fund. OIDB has so far contributed an amount of ₹ 20 crore to the corpus. IOC, ONGC & BPCL have already taken up R&D activities for usage of Hydrogen as a future source of energy. The Scientific Advisory Committee (SAC) has approved 9 projects estimated to cost ₹ 40.62 crore for implementation by various PSUs and other institutions. An amount of ₹ 33.7 crore has been approved for these projects from HCF.

5.6.10 Expenses on Grants/Schemes sponsored by OIDB/Govt. of India

The OIDB incurred the following expenditure on grants/schemes sponsored by Govt. of India/OIDB during the year 2011-12 (up to 31.12.2011):

S. No.		Name of the Institutes	Amount in ₹ crore
	A	**Regular Grantee Institutes**	
1		Directorate General of Hydrocarbons	30.00
2		Petroleum Conservation Research Association	13.00
3		Centre for High Technology	6.65
4		Oil Industry Safety Directorate	7.22
5		Petroleum Planning & Analysis Cell	9.15
		Total (A)	**66.02**
	B	**BR &D Grants**	
6		Coal Bed Methane, Govt. of Rajasthan, Jaipur	0.50
7		Bharathidasan University	0.32
		Total (B)	**0.82**
	C	**Schemes/Projects sponsored by Govt. of India/OIDB**	
8		Rajiv Gandhi Institute of Petroleum Technology (RGIPT), Rai Bareily	2.95
9		NGHP (DGH)	0.23
10		Strategic Storage Project/Study (EIL)	0.12
11		Strategic Petroleum Reserves (SPR) in India(TERI)	0.34
		Total (C)	**3.64**
		Grand total (A+B+C)	**70.48**

5.6.10.1 Assistance to Technical Institutes/CSIR Laboratories/Other Govt. sponsored projects

OIDB has been providing assistance to educational institutes such as IIT Delhi, CIPET, Chennai, North East Institute of Science & Technology (NEIST) (Formerly Regional Research Laboratory), NGRI, Hyderabad, IIP, Dehradun etc. for various R&D projects undertaken by them.

5.6.11 Major Activities

5.6.11.1 Construction of Strategic Storage for Crude Oil through Indian Strategic Petroleum Reserves Limited (ISPRL)

Government of India decided to build a Strategic Crude Oil Reserve of 5 MMT through a Special Purpose Vehicle (SPV). The SPV, named Indian Strategic Petroleum Reserves Limited (ISPRL), was initially a subsidiary of IOC. It has now become a wholly owned subsidiary of OIDB w.e.f. 9.5.2006.

Three locations were selected for creating the strategic reserves viz. Visakhapatnam (1 MMT), Mangalore (1.5 MMT) and Padur (2.5 MMT). The capital cost for constructing the strategic storage facilities is estimated to be ₹ 2,397 crore and the operation and maintenance cost is expected to be ₹ 90 crore per annum at September 2005 prices. The cost excludes the price of crude oil, which shall be procured at the prevailing market rates after the respective caverns are ready to be filled. As on 31.3.2010, the

authorized capital, paid-up capital and subscribed capital of the company were ₹ 1,000 crore, ₹ 500 crore and ₹ 190.91 crore respectively.

Project wise status is as under:-

1. Visakhapatnam (Storage Capacity : 1.33 MMT)

Engineers India Limited (EIL) has been appointed as Project Management Consultant (PMC). Land has been taken on lease from Visakhapatnam Port Trust/Eastern Naval Command. Requisite environmental clearance from Ministry of Environment & Forests and Consent for Establishment from Andhra Pradesh Pollution Control Board have been obtained. After supplementary site investigations, to avail the benefits of lower marginal costs for additional capacity, the cavern capacity has been increased to 1.33 MMT.

The underground civil works have been awarded to Hindustan Construction Company Limited (HCC) in January 2008 through a reverse auction process. The completion period is 36 months. All 6.6 kms of tunnelling work has been completed. Total excavation of 18.91 lakh cu.m. was completed on 31.12.11. National Insurance Company Limited has been awarded the Contractors' All Risk Insurance cover of the underground civil works.

The above ground works have also been awarded through global NIT to IOT Infrastructure & Energy Services Limited on 30.11.2009 with a completion period of 23 months. The mechanical completion is likely to be achieved by January, 2013. The delay is on account of a rock fall incident in April, 2011.

2. Mangalore (Storage Capacity : 1.5 MMT)

EIL has been appointed as the Project Management Consultant. The land identified for Mangalore Cavern falls in the Mangalore Special Economic Zone (MSEZ) area and MSEZ Limited has allotted 100 acres of land. In-principle approval for Establishment of Strategic Storage under SEZ Rules 2006 has been received. Environmental clearance has been received from MOE&F. Consent for Establishment has also been obtained from the State Pollution Control Board. An application has been filed with the Board of Approvals, Ministry of Commerce for becoming a co-developer of a proposed Free Trade Warehousing Zone (FTWZ).

The underground civil works have been awarded to M/s. SKEC-KCT JV on 16.4.2009 with a completion period of 36 months. Water curtain 3368 m completed out of 3456 m. Access Tunnel 852 m completed out of 972 m as on 31.12.2011. Cavern Top heading 3170 m completed out of 3572 m. Total excavation 6062 lakh cu.m against 2206 lakh cu.m. National Insurance Company has been awarded the Contractors' All Risk Insurance Cover of the underground civil works. Above ground works were awarded to Punj Lloyd in July, 2011. Mechanical completion by 2013. Orders for submersible pump placed. Boundary wall under construction. The target date for mechanical completion is November 2012.

3. Padur (Storage Capacity : 2.5 MMT)

EIL has been appointed as the Project Management Consultant. Land for the project is being acquired through Karnataka Industrial Area Development Board (KIADB). Preliminary notification for acquisition of 170 acres of land has been issued by KIADB and final notification is being issued shortly for acquisition of 140.65 acres of land. Cadastral Survey for plot and Central Line Survey for pipeline route has been completed. Supplementary investigations and Cadastral Survey for pipeline route has been completed.

The job at Padur is divided among two contractors.

Part A: 5155 m of tunneling top heading completed against a scope of 6780 m. Total excavation 5.07 lakh cu.m against 18 lakh cu.m scope. All water curtain bore holes have been completed.

Part B: 6043 m tunneling top heading completed against 67552 m. Total excavation 6.26 lakh cu.m against 21.3 lakh cu.m. Above ground job awarded to Linde Engineering on 11.11.11. The target date for mechanical completion is January, 2014.

OIDB has released funds to the tune of ₹ 1350.99 crore (approx.) till 31st December, 2011 for all the 3 projects at Visakhapatman, Mangalore & Padur and for pre-project activities including secretariat expenditure.

5.6.11.2 Pre-feasibility Studies For Phase II of Strategic Storage Program

While approving the 5.33 MMT crude oil storage at 3 locations at Mangalore, Vishakhapatnam and Padur, the Government had noted the country's need of 15 MMT petroleum product reserves. For the purpose, OIDB, in its 77th meeting held on 3rd August 2009, accorded 'in principle' approval and Central Government conveyed its approval vide letter dated 12th February 2010 for undertaking Pre-feasibility Studies for Phase II of the Strategic Storage Program.

EIL has been assigned to undertake the pre-feasibility studies so as to identify technically suitable sites and prepare a Preliminary Feasibility Report (PFR) with a fee of ₹ 235 lakh plus taxes and The Energy Research Institute (TERI) has been assigned to undertake an Economic Analysis for the Strategic Storage Reserves in India with a fee of ₹ 46.51 lakh plus taxes.

The scope of the PFR covers selection of sites for creation of storage facilities for both crude oil and petroleum products, with type of storage and maximum possible capacity of storage for each selected site. The Preliminary Feasibility Report by EIL and the draft report of TERI has been received and are under examination in OIDB at present.

5.6.11.3 Setting up of Rajiv Gandhi Institute of Petroleum Technology (RGIPT), Rai Bareily

The Government of India felt the need to establish a single training and educational institution that can render expert technical and management training to the existing petroleum industry and provide world

Shri L.N. Gupta, Joint Secretary MOP&NG visits the crude oil storage cavern at Vizag

class multi-disciplinary techno-management, academic programmes in the petroleum field for creating human resources for the future on a global basis, to meet the emerging demand scenario in India and abroad. The establishment of RGIPT is a step in the above direction. The Institute will be of international repute.

The Institute is being set up at Jais, Rai Bareily at an estimated cost of ₹ 685 crore including the cost of land. Out of this, an amount of ₹ 150 crore comprising cost of land (₹ 45 crore) and capital expenditure (₹ 105 crore) will be borne by OIDB. Constituent Oil PSUs viz. ONGC, OIL, GAIL, IOC, BPCL and HPCL would contribute to the endowment fund of ₹ 250 crore in the ratio of their profit after tax during the financial year 2005-06. The remaining ₹ 285 crore would be met from budgetary support from the Government of India through MOP&NG.

RGIPT has procured and acquired 47.5 acres of land at Jais by entering into an agreement with Indian Oil Tanking Limited, a Joint Venture of IOC. OIDB released an amount of ₹ 4.25 crore during the year 2007-08. An amount of ₹ 14.37 crore has been released for the project which includes ₹ 2.95 crore during the year (up to December 2011) to meet the capital related expenditure.

5.6.11.4 Setting up of Rajiv Gandhi Institute of Petroleum Technology (RGIPT), Assam Centre

Another Centre of RGIPT is being set up in Assam. The total expenditure on setting up of this centre has been estimated at ₹ 330 crore. The entire endowment fund of ₹182 crore will be shared by select oil PSUs (ONGC, GAIL, OIL, IOC, EIL & NRL). The capital expenditure of ₹ 143 crore shall be shared by OIDB and select oil PSUs in the ratio of 65% : 35%. The start-up expenses of ₹ 5 crore is being borne by OIDB. OIDB has released a total of ₹ 3.95 crore for implementation of the project up to December, 2011.

5.6.11.5 OIDB Office building at NOIDA to house its office and its regular grantee institutions

OIDB has constructed its own office building at Sector-73, NOIDA on a plot measuring 16,000 sq.m to house its office and the offices of ISPRL, DGH, CHT and OISD.

5.7 OIL INDUSTRY SAFETY DIRECTORATE (OISD)

The Oil Industry Safety Directorate (OISD) assists the Safety Council under the Ministry of Petroleum and Natural Gas, which is headed by Secretary, P&NG as Chairman and includes Additional Secretary, Joint Secretaries, Chief Executives of all Public Sector Undertakings under the Ministry, Chief Controller of Explosives, Advisor (Fire) of the Government of India, Director General Mines Safety, Director General of Factory Advice Service & Labour Institutes and two Chief Executives from private/JV companies, on rotation basis as members.

5.7.1 Standardization

OISD develops technical safety standards for the oil and gas sector, drawing knowledge from international standards and adapting them to Indian conditions. These standards cover inbuilt design safety, asset integrity and best operating practices in the field of production, processing, storage and transport of petroleum. OISD standards are reviewed periodically

to incorporate the latest technological developments. During the current year, five existing standards have been taken up for revision and three new standards are under development. As on date, OISD has developed 112 technical safety standards for the oil industry.

5.7.2 External Safety Audits (ESA)

OISD is carrying out safety audits of oil & gas installations to check compliance with safety standards. Installations of PSU as well as private sector companies in onland as well as in offshore areas are audited periodically. During the year, ESA of 4 refineries has been carried out and ESA of another refinery and 2 gas processing plants will be carried out by March, 2012. ESA of 6 marketing locations (POL terminal/Depot, LPG plants) has been carried out and another 10 installations will be audited by March, 2012. ESA of 59 onland E&P installations and 7 offshore E&P installations has been carried out and another 2 offshore installations will be audited by March, 2012. ESA of 961 kms of cross-country pipelines has been carried out till date and another 1539 kms will be audited by March, 2012.

Pre-commissioning Safety Audits of 3 refineries, 12 marketing installations and 8 segments of 691.2 kms of cross-country pipelines have been carried out during the year. Surprise Safety Audits of 5 E&P installations and 11 marketing installations were carried out and of another 9 refineries and gas processing plants will be carried out by March, 2012. For the first time, ESA of private sector refineries - Essar Oil Ltd. and RIL were conducted during this year. In addition, construction safety audits of 2 'crude cavern storage' facilities were carried out during the year.

5.7.3 Safety Performance Evaluation of Industry

Safety performance evaluation is done by a specially developed methodology, which is based on hazards associated, incidents occurred during the year and safety management system of the installation. The process of safety performance evaluation of E&P, refineries & gas processing, cross-country pipelines and marketing sectors for the year 2010-11 has been completed and put up to MoP&NG for approval. Safety awards are being presented in the following groups:

- Exploration & Production (Oil & Gas Assets (Onshore); Offshore Production Platforms)
- Refineries & Gas Processing Plants (Refineries; Other Processing Plants)
- Cross-Country Pipelines (Crude Pipeline; Gas/LPG Pipeline; Product Pipeline)
- Oil Marketing Organizations (LPG Marketing Organizations)
- Award for Individual's Contribution Towards Safety

5.7.4 Safety in Offshore Operations:

OISD is the safety regulator for upstream offshore operations in India. OISD has a MOU with Bureau of Safety and Environment Enforcement (BSEE) of the Department of the Interior, USA for knowledge sharing and capacity building in the area of offshore safety. Under this MOU, a three day Regulators Interaction on Offshore Structures with BSEE experts has been planned at OISD.

5.7.5 Training Program / Conferences

Technical conferences/Workshops covering the entire oil industry are conducted by OISD to discuss the latest technological developments, sharing of experiences etc.

A Workshop on 'Safety Critical Issues in Onland E&P Operations' was organized for Private/ JV E&P operators in the month of September 2011. A Workshop on 'Enhanced Capability in Prevention of Accidents & Firefighting: Best Practices in Hydrocarbon Sector' is planned.

5.7.6 Incident Investigation & Analysis

OISD investigates as well as participates in investigation of major incidents (depending upon the severity / damage) to analyse the cause of the incident. A databank of incidents of the oil industry is maintained and analysed to reflect statistical trends, areas of concern, major recommendations etc. which are then disseminated to the industry through safety alerts, advisory notes, workshops, training programmes etc. During the year, six incident investigations were carried out by OISD.

5.7.7 Dissemination of Safety Information

OISD, through its website www.oisd.gov.in, provides a list of OISD standards, upcoming events, information about OISD standards under revision, etc. OISD is designated as the Competent Authority for supervision of safety in offshore E&P operations through the 'Petroleum & Natural Gas (Safety in Offshore Operations) Rules, 2008'. To facilitate implementation of these rules by the companies, issue of guidance notes by OISD on technical matters is an ongoing activity. 'Petrosafe' & 'OISD Newsletter' are technical journals published by OISD which provide information on various safety related activities.

5.7.8 Other Major Activities

Under instructions from MoP&NG, OISD is working towards obtaining statutory status to look after the downstream petroleum sector and transfer of existing work related to Petroleum Act 1934 (and its rules) from The Petroleum and Explosives Safety Organization (PESO) to OISD. A Concept paper has also been prepared in this regard by OISD.

5.8 CENTRE FOR HIGH TECHNOLOGY (CHT)

Centre for High Technology (CHT) was established by Ministry of Petroleum & Natural Gas (MOP&NG) in 1987 as a specialized agency of the oil industry to assess futuristic technology requirements for acquisition, development and adoption in the field of refinery processes,

R&D efforts lead to a competitive edge in the market.

petroleum products, additives, storage and handling of crude oil, products and gas.

CHT acts as the Technical Wing of MOP&NG for implementation of scientific and technological programmes of Govt. of India. Major functions of CHT include assessment of technology requirement as also operational performance evaluation and improvement of the refineries. CHT acts as a focal point of the oil industry for centralised technical assistance, knowledge dissemination, a performance data base, exchange of information and experience. CHT also coordinates funding of research work in refining and marketing areas and pursues the programmes of "Scientific Advisory Committee on Hydrocarbons" of MOP&NG.

5.8.1 Major activities undertaken during April-November 2011 are as under:

5.8.1.1 Integrated Refinery Business Improvement Programme" by M/s Shell Global Solutions International (Shell GSI):

Integrated Refinery Business Improvement Programme (IRBIP) Phase-I, covering data collection and reconciliation, site assessment and implementation of approved projects was successfully concluded at BPCL Kochi Refinery, IOC Mathura Refinery, CPCL and HPCL Visakh refinery. A cumulative net benefit of around US$ 50 million has been realised by the refineries. Inter-refinery teams of experts led by CHT successfully conducted third party audits of projects implemented at all the four refineries and the salient features and other details have been documented in the form of a report. The IRBIP Phase-I was formally closed with the Executive Committee (EXCOM) meeting in September, 2011.

Under the IRBIP Phase-II programme, 3 more PSU Refineries viz. BPCL Mumbai, HPCL Mumbai and MRPL have been taken up. Site assessment by Shell GSI has been successfully completed at BPCL Mumbai Refinery in August 2011 and at HPCL Mumbai Refinery in October 2011. Site assessment at MRPL is in progress. The total duration of the programme is 36 months which includes an assessment phase and implementation phase (implementation, commissioning & sustainability). The minimum expected benefit is US 25 cents/barrel.

5.8.1.2 Energy Efficiency Improvement Studies (EEIS)

CHT, in association with EIL, has regularly been carrying out an in-depth Energy Efficiency Improvement Studies exercise at identified refineries. One such study is currently being carried out at Numaligarh Refinery Ltd. (NRL) with the objective of reducing fuel consumption and processing losses. Data collection and reconciliation has been completed and the whole exercise is expected to be concluded by end 2011-12. The potential areas for energy savings that have been identified include steam/power optimisation, crude pre-heat improvement, steam and DM water reduction, hydrogen management, flare gas recovery etc.

5.8.1.3 Joint Energy Audits (JEAs)

CHT has been regularly undertaking energy performance audits at PSU refineries, to identify gaps for improvements through Joint Energy Audits. JEA is carried out through teams constituted by CHT with experts from the industry. The JEA provides for lateral exchange of rich operational experience gained over the years at different refineries. The entire activity is centrally coordinated by CHT. CHT has been carrying out this mammoth exercise since 1991-92 at PSU refineries at regular intervals. The JEA-2011, third in the series, was carried out at all PSU refineries. Implementation of recommendations will result in significant energy savings.

5.8.1.4 16th Refinery Technology Meet (RTM)

The 16th edition of the Refinery Technology Meet (RTM) was successfully organized by CHT in association with IOC from 17th to 19th February, 2011 at Kolkata. The theme of the Meet was "World Energy Order - New Frontiers in Refining". The aim of the RTM was to bring together participants from public and private sector refineries, policy makers, consultants and technology providers from India and abroad and provide a platform for sharing, interacting and exchange of technical ideas among refinery operators, technology providers, researchers, etc. More than 450 delegates from India and abroad participated in the meet. A total of 69 technical papers, including 22 papers from global leaders like Shell, ExxonMobil, Chevron, UOP, Axens, BASF, DuPont, Albemarle, KBR, Jacobs, Stone & Webster, GTC, Solomon were presented during the technical sessions. Poster sessions were organised on all the three days of the meet, which covered 64 technical papers.

The Jawaharlal Nehru Centenary Awards for Energy Performance of Refineries for 2009-10 and Oil & Gas Conservation Fortnight (OGCF) Awards for 2010 were also given to winning refineries during the inaugural session of the RTM.

5.8.1.5 Workshop on "Transportation of Oil & Gas through Cross-country Pipelines"

A Pipeline Workshop was organized by CHT in association with IOC on 7th and 8th July, 2011 at Kovalam, Trivandrum. The theme of the Workshop was "Advancements and Challenges for Cross-country Pipelines - the Hydrocarbon Transportation Highways". The workshop was a huge success and in all, 131 delegates from the oil and gas industry from India, viz. IOC, HPCL, BPCL, ONGC, OIL, GAIL and RIL including senior executives participated in the workshop. The participants also included delegates from private companies like Jindal, NDT Germany & Dubai, Chemtrols and Global Instruments. The technical sessions covered 18 presentations on i) Laying of pipelines ii) Operations and optimisation iii) Integrity & reliability and iv) Pipeline case studies.

5.8.1.6 Activity Committee Meetings

CHT regularly organises Activity Committee Meetings on major areas of refinery operations and pipelines with the aim of sharing the best operational practices and improvements and dissemination of information on the latest developments. Six Activity Committee Meetings on major areas viz. fluidised catalytic cracking, power generation/ distribution/boiler operations/maintenance, refinery fuel & loss and energy optimisation, hydroprocessing & hydrocracking, catalytic reforming and pipelines were held by CHT.

5.8.1.7 Scientific Advisory Committee (SAC)

CHT coordinates the activities of SAC on hydrocarbons of MOP&NG in identifying and funding of research projects for the hydrocarbon sector. The last (69th) SAC meeting was held in June, 2011 at Bangalore. Presentations on completed projects and on-going projects were made to SAC.

5.8.1.8 Jawaharlal Nehru Centenary Awards for Energy Performance of Refineries for 2010-11

CHT has compiled and evaluated the energy performance of PSU and private refineries viz. Essar and Reliance, in terms of specific energy consumption (MBTU / BBL / NRGF) for distribution of the Jawaharlal Nehru Centenary Awards for 2010-11, instituted by MOP&NG. The Awards were approved in October 2011 by the Award Selection Committee constituted by MOP&NG.

5.8.1.9 Oil & Gas Conservation Fortnight (OGCF) Awards for 2011

In connection with the 21st Oil & Gas Conservation Fortnight (OGCF-2011), CHT organised 'Steam Leak' surveys at all the refineries, including RIL and Essar, in January 2011 to select awardees on the basis of their performance. CHT has compiled and evaluated the survey data for consideration by the Award Selection Committee of MOP&NG, and it has been approved in October 2011.

5.8.1.10 Other Activities

- CHT reviewed and examined applications for issuance of essentiality certificates for import of various project items and submitted its analysis/recommendations to MOP&NG.
- CHT coordinated and prepared Consolidated Oil Industry Observations / Comments on the Draft National Summary Report of MOE&F on Air Quality Monitoring, Emission Inventory and Source Apportionment Study for Indian cities.
- CHT prepared and submitted to MOP&NG a consolidated document on research & development for processes, products and technology covering upstream, downstream and natural gas for the 12th Five Year Plan. CHT also prepared the plan document on refining capacity, configuration, environmental issues etc.
- CHT prepared the consolidated report on the analysis of refineries' performance and submitted it to MOP&NG for QPR meetings

5.8.2 R&D Projects

The following R&D projects were completed:

- Development of technologies for Synthetic Aviation Lubricants from renewable feedstocks jointly by IOC (R&D), IICT, NAL, GTRE and CEMILAC
- Synthesis of Room Temperature Ionic Liquids and study of their applications for extraction of sulphur, nitrogen and aromatic compounds from petroleum feedstock by IIP

5.8.3 Projects under Hydrogen Corpus Fund

The project on "Setting up of a Hydrogen Dispensing station at Dwarka, New Delhi" by IOC (R&D) was completed.

MOUs for the following four projects, approved by the Steering Committee of HCF, were signed and all the projects are in progress :

- Design and construction of metal-organic framework materials with tuneable physical properties for storage of Hydrogen - HPCL/Gitam University
- An integrated approach for Bio-hydrogen production through combined dark and photo fermentative process - HPCL/TERI
- Hybrid-sorption enhanced steam reforming for the production of Hydrogen from Natural Gas - BPCL
- Development of large scale photo-catalytic process using modular reactors for Hydrogen production by dissociation of water / H2S utilising solar energy - IOC (R&D) /IT-BHU

A new project on "Development of novel nano-composite Hydrogen storage materials" by GAIL/IIT-Madras was approved by the Steering Committee of HCF in its meeting held in December, 2011.

5.9 PETROLEUM PLANNING & ANALYSIS CELL (PPAC)

The Petroleum Planning & Analysis Cell (PPAC) was created w.e.f. 1st April 2002 after dismantling of the Administered Pricing Mechanism (APM) in the petroleum sector and abolition of the erstwhile Oil Coordination Committee (OCC). The Governing Body under the chairmanship of Secretary (P&NG) and senior officials of Ministry of Petroleum & Natural Gas (MOP&NG) and Chief Executives of major oil and gas PSUs as members provides necessary supervision and guidance in the functioning of PPAC. It is attached to MOP&NG to assist the Government, inter alia, in the discharge of the following functions:

1. Administration of subsidy on PDS Kerosene and domestic LPG and freight subsidy for far-flung areas;
2. Maintenance of an information data bank and communication system to deal with emergencies and unforeseen situations;
3. Analyzing the trends in the international oil market and domestic prices;
4. Forecasting and evaluation of petroleum import and export trends;
5. Operationalising the sector specific surcharge schemes, if any.

During the year 2010-11, the following important activities and initiatives were taken by PPAC:

a) Settlement of Subsidy Claims of OMCs

During the year 2010-11, ₹ 2904.26 crore and ₹ 22.33 crore were paid as subsidy on PDS Kerosene and Domestic LPG and Freight Subsidy for far-flung areas respectively by the MOP&NG on the subsidy claims processed by PPAC.

b) Settlement of Under-recovery Claims of OMCs

During the year 2010-11, total under-recovery claims of ₹ 78,190 crore on MS, HSD, Domestic LPG and PDS Kerosene were scrutinised and a compensation mechanism thereof was prepared. Under the burden sharing mechanism, ₹ 30,297 crore was contributed by the PSU upstream companies in the form of discounts and ₹ 41,000 crore was provided as cash assistance by the Government.

c) Study on Data Management System

PPAC has entered into an MOU with Indian Statistical Institute (ISI) Kolkata on 22.9.2009 for study on a data management system for the oil and gas sector and formulation of data quality guidelines and manuals by ISI. The all-inclusive cost of this project is ₹ 50 lakhs. The scope of the project includes, inter alia, assessment of the current data system and identification of areas of improvement and preparation of guidelines and manuals for the officials of PPAC for effective collection and dissemination of data.

d) Asian Energy Outlook

Institute of Energy Economics, Japan (IEEJ) has initiated a joint project to develop the Asian Energy Outlook by Asian petroleum producing & consuming countries. It has involved energy experts from Asian countries in developing the Asian Energy Outlook including major countries like China, India, Saudi Arabia, Korea etc. IEEJ has organized workshops on the subject in different countries. The 4th workshop hosted by PPAC was held in New Delhi on 23rd September 2010.

ONGC workers exhibit sustained toil on the derrick floor

e) National Gas Grid Study Project with technical assistance from USTDA

PPAC executed the contract with ICF International, USA on 16th July, 2009 for carrying out a study on the National Gas Grid Project under United States Trade and Development Agency (USTDA) grant. The total cost of carrying out the study is US$ 920,000 excluding taxes of which USTDA share is 75% and PPAC's share is 25%.

f) PPAC Website

A new website ppac.org.in having modern user-friendly features including enhanced security was made online in December 2010 at a cost of ₹ 1.75 lakh.

5.10 RAJIV GANDHI INSTITUTE OF PETROLEUM TECHNOLOGY

5.10.1 Rajiv Gandhi Institute of Petroleum Technology (RGIPT) has been set up by the Government of India as an Institute of National Importance under an Act of Parliament passed in December 2007. The objective of the Institute is to offer technical and managerial educational programmes in the domain of the petroleum sector, with a vision to create aspirations in the youth of the country regarding the petroleum sector and to serve as the fountainhead for nurturing world class human capital capable of being the future leaders of technology and innovation in the entire hydrocarbon value chain, serving both domestic and global needs in the sector. The institute is co-promoted by six oil PSUs and the Oil India Development Board (OIDB) under the patronage of Ministry of Petroleum.

5.10.2 While the construction of the RGIPT campus at Jais (UP) is under progress, the Institute has commenced its academic operations from the temporary campus at

Rae Bareli in 2008. The following educational programmes are being conducted:

(a) B. Tech. in Petroleum Production & Reservoir

(b) B. Tech. in Chemical Engineering

(c) MBA (Petroleum & Energy Management)

(d) M. Tech in Petroleum Engineering

5.10.3 RGIPT has completed 3 years of its academic operation and two batches of MBAs have passed out successfully. By the turn of the current academic year (2011-12), the first batch of B.Tech programmes will be ready for job placements. Currently, the Institute has about 400 students. The Institute is headed by a Director and at present, is supported by 28 faculty members for both technical and management programmes and an equal number of non-academic staff.

5.10.4 Construction of Jais Campus

While the application for acquisition of the balance land is under process by UPSIDC, the Phase-I construction of the campus at Jais has commenced in 2010 after obtaining all statutory approvals. EIL is providing Project Management Consultancy. The campus facilities planned include construction of 13.5 lakh sq.ft. area. Major civil and structural work is in progress and the overall progress status as on 30th November, 2011 is 28.5%. Preparation of tender documents for electrical, civil finishing and other work relating to firefighting, plumbing, air-conditioning, etc. have been completed.

5.10.5 Assam Centre of RGIPT

With a view to supplement its on-campus academic offerings, the Rajiv Gandhi Institute of Petroleum Technology is in the mission of establishing a constituent off-campus academic center in the State of Assam mainly catering to the spawning of skilled manpower for the petroleum sector. The site for the proposed Assam Centre was identified in Sivasagar, Upper Assam which is closer to the oil fields of ONGC and OIL. The primary objective of the Assam Center of RGIPT is envisaged as the offering of programmes of education and training of skilled technical manpower at the certificate, diploma and advance diploma levels; skilled higher-end technical manpower at the Integrated Dual Degree (B.Sc.-M.Sc.) Programme and Continuing Education Programmes in various areas in the domain of the petroleum sector as per requirements of the oil, gas and petrochemical industry.

One short programme on 'Geology for Non-geologists' was conducted in February - March, 2011. One short course on 'Well Test Analysis' has been planned for March, 2012 which will be followed by two more short courses.

A plot of 100 acres of Govt. land identified in Sivasagar was purchased by RGIPT in 2010 for construction of the campus. Site survey and geotechnical investigation work has been completed during the year and the master plan and concept of the campus has been approved. Project cost estimates with a capping of ₹ 200 crore has been approved by the RGIPT Board subject to MOPNG's final approval for additional funding. The tendering exercise for site grading and civil & structural work has been completed.

Chapter 6

Conservation of Petroleum Products

Conservation of Petroleum Products

6.1 EMERGENCE OF PCRA

The oil crisis of 1970s brought into sharp focus the need for conservation of petroleum products due to the enormous hike in the country's import bill. The Government in response set up the Petroleum Conservation Action Group (PCAG) in 1976, which reported that a conservation potential of about 20% existed in major sectors of the economy. PCAG was subsequently reconstituted in 1978 as Petroleum Conservation Research Association (PCRA) with a vision to become a center of excellence for conservation of hydrocarbons and environment protection for sustainable development.

The demand of petroleum products in the country is growing steadily and the Government Policy as spelt out in India Hydrocarbon Vision 2025 considers issues such as energy security, use of alternate fuels and interchangeability of technology as vital to ensure that the mix of energy sources used in the economy is optimal and sustainable. The Energy Conservation Act 2001 provides the legal and institutional framework for energy conservation activities.

In its mission for efficient energy utilization and environment protection leading to improvement in quality of life, PCRA works in close cooperation with Public Sector Oil & Gas Companies, Government & Non-Government Organizations, Research Institutes and Laboratories, Educational Institutions, Consumer Associations and other organizations.

6.2 VISION

To become a Center of Excellence for Conservation of Hydro-carbons and Environment Protection for sustainable development on its inherent strength

6.3 MISSION

Efficient energy utilization and environment protection leading to improvement in quality of life.

6.4 OBJECTIVES OF PCRA

PCRA is a registered society working under the aegis of the Ministry of Petroleum and Natural Gas, Government of India. Its main objectives are:

- To formulate strategies and promote measures for accelerating conservation of petroleum products leading to environment protection, energy security and sustainable development.
- To create awareness among the masses about the importance, benefits and methods of conserving petroleum products & a clean environment by enhancing information and capacity building.
- To promote research, development and deployment efforts aimed at petroleum conservation & environment protection, support & facilitate efforts for adoption and dissemination of fuel efficient technologies and substitution of petroleum products with alternate fuels and renewable energy.
- To establish synergistic institutional linkages at the national & international levels in the areas of petroleum conservation & environment protection.
- To provide training and technical advisory services, designed to achieve economy & efficiency in use of petroleum products for a cleaner environment.
- To function as a think tank to the Govt. of India for proposing policies and strategies on petroleum conservation and environment protection aimed at reducing excessive dependence on oil.

MoP&NG has formulated a strategy for conservation of petroleum fuels in close coordination with PCRA in the country during 2011-12. The strategies include technical and fiscal interventions that can help in increasing the efficiency in usage of petroleum products.

6.5 PCRA ACTIVITIES - AN OVERVIEW

6.5.1 Oil and Gas Conservation Fortnight 2012

Oil & Gas Conservation Fortnight (OGCF) is a significant annual event of the Ministry of Petroleum & Natural Gas, which is organized jointly by PCRA and Public Sector Oil & Gas Companies every year from 15th to 31st January.

Started as Oil Conservation Week (OCW) in 1991, this nation-wide campaign has eventually become a very effective tool in creating and spreading mass awareness among the masses about the importance of conservation of petroleum products in the country. Encouraged by the tremendous success of its campaign, the duration of OCW was extended to a fortnight from the year 1997, making it Oil Conservation Fortnight (OCF). With increasing use of cleaner and eco-friendly gaseous fuels in the country, the conservation of these fuels has also become equally important. Therefore, w.e.f. the year 2004, this event is being observed as "Oil & Gas Conservation Fortnight (OGCF)" in line with the decision taken in the 63rd Executive Committee meeting of PCRA.

OGCF 2012 took off with impressive inaugural functions in the National Capital and all the State Capitals on 15th January 2012. The theme for this year was -

" SAVE FUEL YAANI SAVE MONEY"

The event in New Delhi was inaugurated by Shri S. Jaipal Reddy, Hon'ble Minister for Petroleum & Natural Gas on 18th January 2012 at the Air Force Auditorium. The function was graced by Shri G. C. Chaturvedi, Secretary MOP&NG and Shri Sudhir Bhargava, Additional Secretary, MOP&NG. They addressed a large gathering of dignitaries from the Government, senior executives from the oil & gas industry, school

Lighting of lamp by Shri S.Jaipal Reddy, Union Minister for Petroleum Natural Gas, during Inaugural Function of OGCF 2012

children and others present on the occasion. In their addresses, they urged upon the need of conservation of petroleum products. The Oil & Gas Conservation Pledge was administered by Shri. S. Jaipal Reddy. During the inaugural function, the "Best Performance Awards" were distributed to State Level Coordinators (SLCs), Regional Level Coordinator (RLC), State Governments and the Upstream Sector for their best performance during the last OGCF 2011. The awards were also distributed to the winners of the National Level Essay Competition organised for students of class X & up to post graduate in Hindi and English and to the winners of the All India Painting Competition organised for students of class III to Class V (Group A) and students of class VI to Class VIII (Group B). On this occasion, four publicity vans were also flagged off by dignitaries which covered various states viz. Chandigarh UT, Haryana, Punjab, Rajasthan, Uttar Pradesh and Uttarakhand to create and spread awareness about the conservation of petroleum products among the masses.

In addition to the National Level Essay Competition in Hindi and English, PCRA also organised the State Level Essay Competition in 12 regional languages viz. Assamese, Bangla, Gujarati, Kannada, Kashmiri, Maithili, Malayalam, Marathi, Odia, Punjabi, Tamil and Telugu and the awards were distributed to the winners during the inaugural/valedictory function of respective states by SLC. Impressive inaugural functions were also organized at the State Capitals, which were graced by dignitaries like Governors, Chief Ministers, Ministers and other eminent persons.

During OGCF'12, a large number of activities like mass rallies, cycle rallies, marathons, human chain, technical seminars, symposiums, essays, quiz and painting competitions, LPG/PNG saving workshops.

workshops for industrial workers / drivers etc. were arranged all over the country by PCRA and Public Sector Oil & Gas Companies, for propagation of oil & gas conservation messages amongst the major consuming sectors namely, Transport, Industry, Agricultural, Household and Commercial.

6.6 FIELD ACTIVITIES

Field Activities are one of the core areas of PCRA operations. Through sectoral field activities, PCRA engineers and external experts are able to reach the target groups with innovative energy conservation programmes. These activities are designed to cover a large spectrum of socio-economic profile of our country in different sectors viz Industry, Transport, Domestic, Agriculture and Commercial.

During 2011-12, a total of 2673 field activities were carried out up to November 2011.

6.6.1 Chartered Activities

Field Activity performance in Transport, Industry, Agricultural and Domestic sectors during 2010-11(up to November 2011) is given in the table below:

Sr. No	Activity	Upto Nov. 2011
1	Energy Audit	167
2	Fuel Oil Diagnostic Study	79
3	Service to Small Scale Industry	59
4	Follow-up	195
5	Institutional Training Programme	198
6	Seminar/Technical Meet/Consumer Meet	50
7	Model Depot Project	75
8	Driver Training Programme	341
9	Kisan Mela	27
10	Youth Programme	678
11	Exhibition	45
12	Workshop-Industrial	183
13	Workshop-Transport	211
14	Workshop-Domestic	301
15	Workshop-Agriculture	222
16	Van Publicity Cycle	2
	Total	**2673**

6.6.2 Energy Audits:

During 2011-12 (up to November 2011), PCRA conducted 2673 energy efficiency studies in the Industrial sector, which include Energy Audits (167), Fuel Oil Diagnostic Studies (79) and walk through audits (59) in small-scale industries.

6.6.3 Seminars:

Technical seminars are an effective tool for the dissemination of recent advances in technologies and also for improvement in operational practices for improving energy efficiency. In this direction, PCRA has during 2011-12 (upto November 2011) organized 50 Seminars / Technical Meets in different parts of the country for the benefit of specific industrial sectors. During these seminars, PCRA's experience of conducting energy efficiency studies in that sector were shared through case study presentations where in details of investment required and the benefits accrued through implementation of the energy conservation measures were shared.

6.6.4 Exhibitions:

Through participation in national and international exhibitions, PCRA exhibits its in-house capabilities and expertise through display of information about successful case studies about its services provided to various sectors. PCRA participated in/ organized 45 exhibitions during 2011-12 (upto November 2011).

6.6.5 Institutional Training Programmes:

PCRA's Institutional Training Programme (ITP) is an activity primarily meant to share the experience gained by PCRA during industry audits. These training programmes are targeted at raising the awareness level of the members of industry about the conservation opportunities that can be realized through the energy audit of their plant. In 2011-12 (upto November 2011), PCRA conducted 198 Industrial Training Programmes in various industries. PCRA is currently executing a comprehensive training programme on energy conservation techniques for 7500 non-executives of ONGC. These one-day training programmes featuring PCRA engineers as faculty and totaling about 234 in numbers would be held at ONGC locations all over the country.

People's participation in Oil Conservation Fortnight.

6.6.6 Empanelment of Energy Auditors:

Over the years PCRA has been playing an important role of developing quality energy auditors whose services become available to industries and commercial establishments in the country. Our empanelment committee comprises members from BEE, NPC, TERI and PCRA. Today a strong force of more than 94 PCRA empanelled energy auditors is providing service to the Indian industry.

6.7 NETWORKING WITH OTHER AGENCIES:

Energy Conservation Center Japan (ECCJ):

As part of Government of India's initiative for cooperation with Japan in the field of oil & gas conservation, PCRA executed an MOU with "The Energy Conservation Center Japan (ECCJ)" on 28th June 2006 in New Delhi. This MoU has been extended on an annual basis and activities leading to reduction in Energy Intensity including training, presentation of technical papers, development of an Energy Audit Manual for the textile industry etc. are being jointly executed by PCRA and ECCJ.

6.8 PCRA'S DRIVER TRAINING PROGRAMMES (DTPS)

The Transport sector that accounts for around 50% of the country's consumption of petroleum products remained another major area of focus for PCRA. During 2011-12 (upto November 2011), PCRA conducted 341 DTPs, thereby training 6820 drivers resulting in improvement of the average KMPL. Since 1985-86, a total of 163308 drivers have been trained. 75 integrated Model Depot Project studies and 211 transport workshops were also conducted in 2011-12 (upto November 2011).

6.9 CONSERVATION TECHNOLOGY CENTRE

A Conservation Technology Centre (CTC) was inaugurated in February 2008 at Petroleum Conservation Research Association, Sanrakshan Bhawan, New Delhi. The Conservation Technology Centre has been set up to fill the gap of effective information dissemination on energy efficient products and technologies for the general public. Apart from products, the Conservation Technology Centre is also intended to be a nodal point for exposition of energy efficient technologies, both in nascent and in different stages of development. A large number of visitors, school students and Engineering College students regularly visit the Conservation Technology Centre. PCRA's special drive to invite school students to visit the Conservation Technology Centre at its premises helps in generating awareness on energy conservation amongst them as they are explained the utility and feature of different energy efficient products displayed there. Films on conservation are also shown to these

students during their visit. The initiative is highly appreciated by school students and teachers as it not only helps in providing an in-depth understanding of energy conservation, but also raises awareness about important issues such as global warming and the environment.

6.10 RESEARCH AND DEVELOPMENT

During April'11 - Dec'11, PCRA's energy conservation efforts were enhanced by development of processes and technologies through Research & Development activities. During this period, the Screening Committee has technically approved 2 new R&D projects and accepted the draft completion report of 7 R&D projects as per the details given below.

6.10.1 New R&D project approved by Screening Committee :

- Replication of retro-fitting technologies for improving energy-efficiency and reducing GHG emissions of existing re-heating furnaces in Small and Medium Sector Re-rolling Mills, RDCIS Ranchi.
- Promotion of Energy Efficient Improved Biomass Cook Stoves in rural areas of Sikkim, CAEPHT Gangtok.

6.10.2 Draft completion reports of R&D projects approved in Screening Committee:

I. Development & Installation of Energy Efficient Improved Cook Stoves in rural areas of Andhra Pradesh, ANGRAU Bapatla.

II. Energy Conservation through Solar Tunnel Drying System for Large Scale Drying, MPUAT Udaipur.

III. To Study Performance Improvement of the Small Gur Making Plant by Improving the Fuel Feeding Platform, IIP Dehradun.

IV. Utilization of Glycerol to 1, 3/1, 2 Propane Diol, IIP Dehradun.

V. Development of Low Capacity LAP Burner for Ceramic / Pottery Industry of Khurja, IIP Dehradun.

VI. Feasibility Study of Utilization of 10% Pre-treated non-edible vegetable oils in stationary diesel engines, IIP Dehradun.

VII. Popularizing SONA ESVs in dhabas in and around Dehradun, IIP Dehradun.

6.11 EDUCATION CAMPAIGN

6.11.1 Mass Awareness Campaign "SAVE FUEL YAANI SAVE MONEY"

Reducing energy intensity is one of the major objectives today to ensure better energy security for the country. Hence, it is essential that our country becomes most fuel-efficient and checks its wasteful utilization in all petroleum fuel-intensive sectors of Indian economy. With the above backdrop, PCRA used various mediums to spread the Mass Awareness Campaign in 2011 that depicts the scope of savings of money as a result of fuel conservation. The campaign was simultaneously launched on Television, Print and Outdoor to create a strong impact on the consumers. Even if our country targets at saving of 2% of its petroleum products, this can lead to a saving of about ₹10,000 crores per year.

6.11.2 Outdoor Publicity, Exhibition and Ground Activity

Out door media is an effective means to carry the message on conservation of oil & gas to the masses in general. PCRA has been using various modes of outdoor advertisements like hoardings, LED displays, displays on bus panels & bus shelters, displays on unipoles, kiosks, ads inside train coaches, pillar wraps, etc. to generate awareness among the masses for judicious use of petroleum products. During 2011-12, the PCRA campaign has covered 362 cities / towns of India.

6.11.3 Exhibition:

Exhibitions are an excellent platform to showcase the latest fuel saving campaigns/tips propagated by PCRA and an opportunity to establish direct contact with the masses for increasing awareness for efficient use of petroleum products. The India International Trade Fair (IITF) is one of the prestigious platforms wherein national and international renowned companies/ corporates/organizations/bodies showcase their products, services and innovations, driven with the desire. to make better the lives of the people. During 2011-12, PCRA participated in the India International Trade Fair 2011 held at Pragati Maidan, New Delhi from 14th to 29th November 2011 by opening a stall to spread awareness on petroleum conservation amongst the general masses.

6.11.4 Printed Literature

PCRA, over the years, has designed and developed a rich bank of conservation literatures for the users of petroleum products carrying useful information and tips for saving of petroleum products. This literatures is regularly distributed free of cost to consumers in various sectors of the economy. During 2011-12, PCRA printed literatures to the tune of 7.81 lakhs copies in Hindi, English, Tamil, Telugu, Kannada, Malayalam, Punjabi, Gujarati, Marathi, Bengali, Odia and Assamese for distribution amongst the masses extensively during Oil & Gas Conservation Fortnight 2012 and to various target groups. Besides the above, PCRA printed 2.59 lakhs of various educational literature for display in the Science Express Train during its journey to various cities in India.

6.11.5 Television:

In order to reach its target audience PCRA telecast educational messages regularly through the Doordarshan news channel.

6.11.6 Newsprint:

During 2011-12, PCRA adopted the strategy of increasing its visibility through low-cost advertisement in magazines, which has got a high shelf life and readership amongst the masses. Totally 210 Ads ware released in DAVP empanelled publications in Hindi, English and other regional languages.

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Chapter 7

International Co-operation

International Co-operation

7.1 The Ministry of Petroleum and Natural Gas has a significant international interface. Today, the country imports crude oil from as many as 40 countries spread across four continents. With the country's domestic consumption of petroleum products growing at a robust rate of 4.5% per annum and with the refining capacity of the country set to grow from 196 MMTPA to 238 MMTPA in 2013, India is faced with the task of augmenting its supply of crude oil from overseas sources. To strengthen the country's energy security, the Ministry of Petroleum & Natural Gas is engaged in oil diplomacy. India's oil PSUs are being encouraged to adopt a global vision in their pursuit of raw materials and raw material-producing assets abroad, and to vigorously pursue acquisition of oil and gas assets overseas. In this mission, the International Cooperation (IC) Division provides a comprehensive international template/framework along with diplomatic support to the PSUs.

7.2 THE MAJOR COMPONENTS OF MOP&NG'S OIL DIPLOMACY ARE:

(i) Engaging with Governments of hydrocarbon-rich countries for seeking exploration & production blocks on nomination basis or Government-to-Government basis;

(ii) Participating in the Global Energy Dialogue through multilateral fora, such as the International Energy Forum and the International Energy Agency;

(iii) Leveraging India's pre-eminent position in the International Energy Forum to effectively ventilate issues of direct concern to India, such as transparency in oil markets and pricing issues;

(iv) Entering into collaborative arrangements with international organizations in the energy sector, such as the International Energy Agency through Memorandums of Understanding, Agreements/ Declarations for cooperation in the areas of specific relevance to an emerging economy like India;

(v) Pursuing the acquisition of oil & gas assets abroad, with the objective of increasing the oil & oil equivalent gas available for the country.

(vi) Entering into collaborative arrangements with international organizations to facilitate technical assistance in R&D data sharing, statistical model building and analytical tools for energy sector forecasts, etc.

7.3 THE MECHANISMS FOR ACHIEVING OUR OIL DIPLOMACY OBJECTIVES ARE:

(i) Meetings at the level of Head of State/ Government/Oil Minister of hydrocarbon-rich countries;

(ii) Inter-Governmental agreements with oil and gas-rich countries;

(iii) The instrumentality of Joint Working Groups with oil & gas-rich countries;

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas at the World Petroleum Congress at Doha

(iv) Through Memorandums of Understanding/Declarations of Cooperation with the Governments of oil-rich countries and the relevant international organizations;

(v) Bilateral meetings at the level of the Minister and Secretary;

(vi) Attending important Ministerial meetings of international organizations, such as the International Energy Forum, etc.;

(vii) Utilizing the services of Indian High Commissions/Embassies abroad for issues relating to the country's energy security;

(viii) Holding high-level conferences, such as the India-Africa Hydrocarbons Conference, Petrotech, etc., to seek engagement with oil & gas producing countries/international oil companies.

7.4 In order to achieve the objective of oil security, the Ministry of Petroleum and Natural Gas engaged several countries in bilateral/multi-lateral talks. These included attending international meets like the Extraordinary Ministerial Meeting of the International Energy Forum at Riyadh on 22nd February, 2011, 5th ASEAN Energy Ministers Summit at Brunei on 20th - 21th September, 2011, WPC at Doha on 4th-8th December, 2011,India-Africa Hydrocarbon Conference in Delhi on 9th-10th December, 2011 and 4th Asian Energy Ministerial Roundtable at Kuwait on 18th April 2011. Indian delegations also had bilateral talks with various countries including Saudi Arabia, Canada, Iran, Qatar, UAE, Nigeria, Oman, Kazakhstan, Bahrain, Turkmenistan, Indonesia, USA, Iran, Pakistan, Australia, UK etc. to enhance cooperation in the hydrocarbon sector.

7.5 The Minister of Petroleum and Natural Gas undertook a number of visits abroad during the year 2011-2012, some of which are shown below:

Overseas visits by Shri S. Jaipal Reddy, Minister (P&NG) and Shri R.P.N. Singh, Minister of State (P&NG)

S.No.	Countries visited and period	Objectives of the Visit	Attended by
1.	Saudi Arabia - 22-2-2011	To participate in the Extraordinary IEF Ministerial Meeting	Shri S. Jaipal Reddy, Minister (P&NG)
2.	Qatar 4-8 December, 2011	To participate in the World Petroleum Congress	Shri S. Jaipal Reddy, Minister (P&NG)
3.	Indonesia and Thailand - 2-7 April, 2011	Study Indonesia's successful switchover to LPG from Kerosene	Shri R.P.N. Singh, Minister of State (P&NG)
4.	USA - 11-15 April, 2011	International Ministerial Forum on Offshore Oil and Gas Spill Containment	Shri R.P.N. Singh, Minister of State (P&NG)
5.	Kuwait - 16-20 April, 2011	4th Asian Energy Ministerial Roundtable	Shri R.P.N. Singh, Minister of State (P&NG)
6.	Nigeria (Lagos) and Senegal (Dakar) - 3-8 May, 2011	As Prime Minister's Special Envoy	Shri R.P.N. Singh, Minister of State (P&NG)
7.	Brunei - 20-21 May, 2011	5th East Asia Summit Energy Ministerial Meeting	Shri R.P.N. Singh, Minister of State (P&NG)
8.	Turkmenistan -25-26 May, 2011	To attend the second Turkmenistan Gas Congress	Shri R.P.N. Singh, Minister of State (P&NG)
9.	Kazakhstan 5-6 October, 2011	9th meeting of India-Kazakhstan Inter-Governmental Commission on Trade and Economic, Scientific, Technological, Industrial and Cultural Cooperation	Shri R.P.N. Singh, Minister of State (P&NG)

7.6 VISIT OF FOREIGN DELEGATIONS TO INDIA:

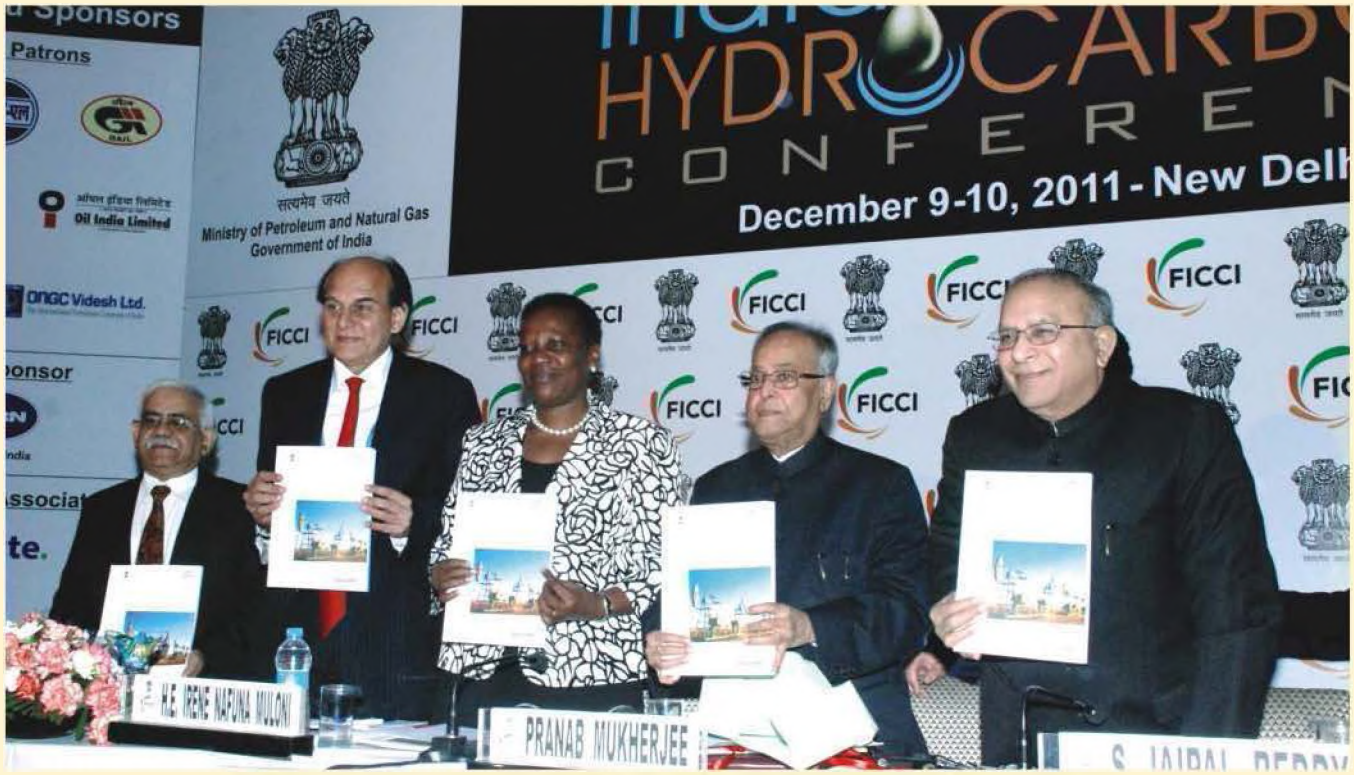
During the period, Ministerial delegations from Nigeria, Ghana, Turkey, Iraq, Turkmenistan, Myanmar, Qatar, Australia, Trinidad & Tobago(T&T), Mozambique, Cote D'Ivory, Kenya, Ethopia, Afghanistan and Pakistan met Minister(P&NG) and had discussion on the bilateral co-operation in the hydrocarbon sector.

7.7 PIPELINE PROJECTS:

The Government is pursuing transnational gas pipelines such as the Turkmenistan-Afghanistan-Pakistan-India (TAPI) Gas Pipeline and the Iran-Pakistan-India (IPI) Gas Pipeline.

(a) On 11th December, 2010 the four countries involved in the TAPI Gas Pipeline Project, signed an Inter-Governmental Agreement along with a Gas Pipeline Framework Agreement in Ashgabat, Turkmenistan. To accelerate the project, parties have formed the Minister level Steering Committee and Technical Working Group (TWG).

To settle various issues related to the Gas Sale Purchase Agreement (GSPA), bilateral and



Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas and Shri Pranab Mukherjee, Union Minister for Finance at the India Africa Hydrocarbons Conference

multilateral meetings have been held among the four countries and their gas companies participating in the (TAPI) Gas Pipeline Project. Regarding security & safety of the pipeline, suitable provisions have been made in the Inter-Governmental Agreement (IGA) and Gas Pipeline Framework Agreement (GPFA) signed by the Governments of Turkmenistan, Afghanistan, Pakistan and India in December 2010. The discussions relating to the TAPI Project, particularly the Gas Sale Purchase Agreement (GSPA) have reached an advanced stage.

(b) Iran-Pakistan-India (IPI) Gas Pipeline Project has been under discussion with the Governments of Iran and Pakistan. 60 mmscmd of gas is proposed to be supplied in Phase-I, to be shared equally between India and Pakistan and 90 mmscmd of gas is envisaged to be supplied in Phase-II. Several rounds of discussions have taken place, involving the India-Pakistan-Iran Joint Working Group, India-Pakistan JWG and the India-Iran Special JWG. The matter has also been discussed at the Ministerial level; the last such meeting between India and Pakistan was held in Islamabad on 25.4.2008. Several critical issues, viz., the delivery point of Iranian gas, the project structure, guarantees related to safety of the pipeline and security of supply, besides pricing of gas are yet to be resolved.

7.8 TRAINING PROGRAM UNDER INDIA AFRICA FORUM SUMMIT (IAFS)

Under the training programmes being offered to African Nationals for Human Resource Development and Institutional Capacity Building in African Countries, premier oil PSUs namely, ONGC, GAIL and IOC will be imparting training in the upstream and downstream sectors to a total of 150 participants per year for three years (2011-14). The participants would be provided with local accommodation, living allowance, air-fare in economy class through the shortest route and study material. The expenditure incurred on training programmes would be incurred by the host organization.

7.9 PAYMENT CHANNELS TO IRAN

After the Asian Clearing Union was withdrawn by the RBI in December 2010, the Government has operationalised a new payment mechanism in August, 2011 under which all the outstanding payments due to National Iranian Oil Company (NIOC) have been settled successfully, and payment for crude oil import from Iran is made through this mechanism as and when due. There was no interuption of crude oil imports from Iran.

7.10 IMPORTANT EVENTS

(i) International Energy Agency

A Memorandum of Understanding between MoP&NG and IEA on Cooperation on Oil & Gas Security was

signed in the IEA Ministerial at Paris on 18th-19th October, 2011. A bilateral hotline on oil emergency preparedness has been established between MoP&NG and IEA's headquarters at Paris. To expand cooperation and collaboration with IEA, MoP&NG will be participating in the Emergency Response Review of France and the Standing Group on Emergency Questions in May 2012.

ii) Extraordinary IEF Ministerial Meeting Held at Riyadh

India has played a vital role in the preparation and adoption of the charter of IEF, which gave IEF an institutional framework and organisational strength. A high level delegation led by Shri S. Jaipal Reddy, Minister of Petroleum & Natural Gas participated in the Extraordinary IEF Ministerial Meeting held at Riyadh on 22nd February, 2011. Shri S. Jaipal Reddy emphasized the need for improving understanding of inter-linkages between the physical and financial markets to address the issues of price volatility and price discovery.

The Minister also called for strengthening the current regulatory framework for commodity futures and derivatives markets. He appreciated the initiatives being taken in the US, UK and other countries to bring in regulatory oversight of the physical and financial markets. He extended Indian support for further initiatives by IEF and other international organizations, for putting in place suitable regulatory mechanisms, to prevent a recurrence of 2008.

(iii) 4th Asian Energy Ministerial Round table held at Kuwait

Shri R.P.N. Singh, Minister of State (PNG) led a delegation to represent India in the 4th Asian Energy Ministerial Round table held at Kuwait on 18th April, 2011. Stressing the need to avoid wasteful use of fossil fuels, Shri R.P.N. Singh stated that inefficient fossil fuel subsidies,that encourage wasteful consumption, need to be phased out over the medium term, while ensuring targeted delivery of the subsidy to the really needy, so as to provide them access to energy at affordable prices. He also underscored the need for regulation of price discovery of such a vital and finite resource as oil, stating that it cannot be left entirely unregulated.

Shri Singh also had bilateral meetings with Oil Minister of Kuwait, Mr. Sheikh Ahmad Al-Abdullah Al - Ahmad Al-Sabah, Oil Minister of Brunei, Mr. Pehin Dato Mohammad Yasmin Umar and Oil Minister of Indonesia, Mr. Darwin Zahedy Saleh on the sidelines of the Ministerial Roundtable for enhancing bilateral cooperation in the hydrocarbon sector.

Shri R.P.N Singh also had discussions with the IEA's Executive Director, Nobua Tanaka on different aspects of expanding cooperation between India and IEA, particularly India's strategic reserves programme.

(iv) 5th East Asia Summit Energy Ministerial Meeting at Brunei

A high power delegation led by Shri R.P.N. Singh, Minister of State for Petroleum and Natural Gas visited Brunei 21st September, 2011. Besides participating in the Energy Ministers Meeting, MoS also utilized the presence of Energy Ministers from the hydrocarbon-rich counties of East Asia to hold discussions with them on matters of mutual interest. Over a two day period, MoS held bilateral discussions with the Energy/Petroleum Ministers of Australia, Singapore, Indonesia, Myanmar, Malaysia, USA, Brunei and Vietnam besides International organizations such as the International Energy Agency and Energy Charter Forum. The thrust of MoS's bilateral talks was the diversification of India's sources of supply of LNG. Seeking to start long term supply of LNG from Brunei, Indonesia, Australia and Malaysia, Shri R.P.N. Singh pointed out that India was one of the largest and fastest growing gas markets in the world, and it would be a win win for LNG producing countries of East Asia and India to forge long term relationships in the region.

MoS also made a strong pitch for India as an attractive investment destination. He pointed out India was seriously pursuing the development of non-conventional hydrocarbons such as Shale Gas and Coal Bed Methane, and invited companies having experience and expertise in this sector to tie up with Indian companies.

The biggest achievement of the visit and MoS's bilateral discussions was that Brunei and Indonesia agreed to supply India LNG on long term contract basis subject to the right price being struck.

(v) 2nd Turkmenistan Gas Congress in Turkmenbashi, Turkmenistan

A high level delegation participated in the 2nd Turkmenistan Gas Congress in Turkmenbashi, Turkmenistan, on 25th-26th May, 2011 and held discussions on various aspects of the TAPI gas pipeline.

Shri R.P.N. Singh, Minister of State for Petroleum & Natural Gas at the India Africa Hydrocarbons Conference

(vi) India-Kazakhstan Inter-Governmental Commission (IGC)

Shri R. P. N. Singh lead an inter-ministerial delegation to Kazakhstan for the 9th meeting of the India-Kazakhstan Inter-Governmental Commission on Trade, Economic, Scientific, Technological, Industrial and Cultural Cooperation held in Astana, Kazakhstan on 11th-12th October, 2011. A protocol for the 9th IGC was signed on 12th October, 2011 between the two governments.

ONGC Videsh Limited signed a tripartite agreement with the Ministry of Oil and Gas of Kazakhstan and Kaz Munai Gas, the national oil company of Kazakhstan amending a E&P Contract, to give effect to OVL's 25% participating interest in the Satpayev Block in the oil rich north Caspian Sea of Kazakhstan. The Agreement was signed in the presence of Shri R.P.N. Singh, Minister of State for Petroleum & Natural Gas by Mr Sauat Mynbayev, Minister of Oil and Gas of Kazakhstan, Mr. Bolat Akchulakov, President of Kaz Munai Gas and Mr. Joeman Thomas, Director (Exploration), OVL at the Ministry of Oil and Gas in Astana(Kazakhstan).

(vii) MOU between India and Indonesia

A Memorandum of Understanding was signed between the Ministry of Petroleum & Natural Gas Government of India and the Ministry of Energy and Mineral Resources, Republic of Indonesia on 25th January, 2011 in New Delhi during the visit of the Indonesian delegation led by the President of Indonesia. The MoU provides a framework for enhancing cooperation in the oil and gas sector.

A Pre-JWG meeting on the hydrocarbon sector between the Ministry of Petroleum & Natural Gas of the Republic of India and the Directorate General of Oil & Gas, Ministry of Energy & Mineral Resources of the Republic of Indonesia was held on 14th October, 2011 at New Delhi.

(viii) MOU between India and USA

A Memorandum of Understanding was sighed between the Natural Gas and the Department of State, U.S.A. on Shale Gas Resources, on 6th November, 2010 and it has progressed well during the year under review. The objective of the MoU is to pursue cooperation in the area of Shale Gas characterization, assessment and in developing a regulatory framework in India. The areas of cooperation cover Shale Gas resource assessment, technical studies, regulatory framework consultations and investment promotion through exchange of experiences and best practices and through study tours.

(ix) India - Afghanistan MoU

An MoU between the Ministry of Mines of the Government of Islamic Republic of Afghanistan and the Ministry of Petroleum & Natural Gas Government of India has been signed with the objective of

Bilateral Meeting between India and Turkmenistan

establishing a cooperative institutional framework to facilitate and enhance bilateral cooperation in the hydrocarbon sector.

(x) India - Australia JWG

The 7th Meeting of the India-Australia Joint Working Group on Energy & Minerals was held in Australia on 17th-18th May, 2011 at Sydney, Australia, where in a wide range of issues including expansion of trade in crude oil, LNG and refined petroleum products; Indian investments in oil & gas producing assets in Australia and Australian investment in India's upstream and downstream sectors etc. were discussed. After thorough discussions. on areas of bilateral cooperation a Work Program for 2011-14 was drawn up and agreed to by both sides. The Protocol signed at the end of the meeting endorsed the activities under the Action Plans on Mining and Minerals, Power, Petroleum and Natural Gas and Coal sectors.

(xi) India Pakistan Cooperation

Pursuant to the 5th round of talks on commercial and economic cooperation between the Commerce Secretaries of India and Pakistan, a Group of Experts to expand Trade in Petroleum Products between India and Pakistan has been constituted in June 2011. The Group would inter alia also discuss trade arrangements, building of cross border pipelines, use of road/ rail routes etc.

(xii) Meeting with Kenyan Parliamentary Committee delegation on Energy, Communication & Information.

A meeting with the Kenyan Parliamentary Committee delegation on Energy, Communication & Information with the Ministry of Petroleum and Natural Gas was held on 24.8.2011 to discuss the mutual interest of both the countries, especially in the hydrocarbon sector.

(xiii) India - Myanmar Cooperation

Myanmar Minister of Energy met Minister of Petroleum & Natural Gas, Govt. of India on 14.10.2011 and had a fruitful discussion on expanding bilateral cooperation between the two countries.

(xiv) India - Russia Cooperation

The 16th meeting of the Russia- India Working Group on Energy and Energy Efficiency under the Russia India Inter Governmental Commission on Trade, Economic, Scientific & Technical and Cultural Cooperation was held in Moscow on 17.11.2011. A protocol was signed re-affirming the importance of intensifying bilateral cooperation in the energy sector, for strengthening Russia-India relations as a whole.

(xv) India - Qatar Cooperation

A delegation led by H.E. Dr. Mohammad bin Saleh Al-Sada, Minister of Energy & Industry meet Shri S. Jaipal Reddy, Minister, Petroleum & Natural Gas, India on 28.10.2011. The two ministers stressed the need for expediting the process of evaluating the present opportunities for mutual cooperation in the hydrocarbon sector.

(xvi) India-Oman Cooperation

The first meeting of the India - Oman Joint Working Group on Oil & Gas was held in Muscat on 4.10.2011 and extensive discussions on the hydrocarbon sector were held in a very cordial atmosphere.

(xvii) World Petroleum Congress at Doha, Qatar

Shri S. Jaipal Reddy, Minister of Petroleum and Natural Gas led the Indian delegation to the 20th World Petroleum Congress(WPC) at Doha from 4th-8th December, 2011, and undertook a series of meetings with his counterparts from various countries on the sidelines of the WPC, with a view to explore new opportunities for Indian oil companies and seek investments.

(xviii) 3rd India Africa Hydrocarbon Conference

The 3rd India Africa Hydrocarbons Conference, organized by the Ministry of Petroleum & Natural Gas was held on 9th-10th December, 2011. The conference comprised interactive sessions analysing opportunities for furthering cooperation between India and Africa, leveraging the capabilities of each side for a mutually beneficial partnership. The conference received participation of 16 African countries, with five of them being led at the Ministerial level. About 400 delegates from the hydrocarbon sector of India and Africa representing national oil companies as well as the private sector participated in the event.

7.11 AN OVERVIEW OF INTERNATIONAL OPERATIONS OF OIL PSUS

To strengthen the country's energy security, the Government is encouraging national oil companies to aggressively pursue equity oil and gas opportunities overseas. Today, India's oil companies are present in 22 countries namely Vietnam, Russia, Sudan, Myanmar, Iraq, Iran, Egypt, Syria, Cuba, Libya, Mozambique, Brazil, Kazakhstan, Gabon, Colombia, Trinidad and Tobago, Nigeria, Venezuela, Oman, Yemen, Australia and Timor-Leste. The total investment by oil PSUs (OVL, OIL, IOC, HPC, GAIL and BPRL) overseas is ₹ 64,832 crore which includes two pipeline projects in Sudan and Myanmar. ONGC Videsh Limited produced 9.4 MMT of oil and oil equivalent gas in 2010-11 (equal to 22% of domestic oil production) from its assets in Sudan, Vietnam, Venezuela, Russia, Syria and Colombia.

MoP&NG is encouraging the oil and gas PSUs to emerge as global energy players, to pursue hydrocarbons wherever they exist, to acquire equity in raw material-producing assets, with the overarching objective of enhancing the country's energy security. The International Cooperation Division provides support in many of these initiatives through diplomatic support.

A list of ongoing projects is given below:

Important Overseas Projects

S.No.	Country	Name of the Block	Participating Interest with details of other partners
1	Vietnam	Block 06.1	OVL-45% BP-35% PV-20% (Operator - TNK)
		Block 128	OVL- 100%
2	Russia	Sakhalin-1	OVL - 20% Exxon-30% Sodeco - 30% SMNG - 11.5% RN Astra - 8.5% (Operator - Exxon Mobil)
		Imperial Energy	OVL-100%
3	Sudan and South Sudan	GNOP Block 1, 2 & 4	OVL - 25% CNPC - 40% Petronas - 30% Sudapet - 5% (Joint Operatorship)
		Block 5A	OVL- 24.125% Petronas-67.875% Sudapet - 8% (Operator - Petronas and Sudapet Joint Operator)
		Khartoum-Port Sudan Pipeline Project, Sudan	OVL-90% OIL-10% (Operator -OVL)
4	Myanmar	Block A-1	OVL -17% Daewoo-51% KOGAS - 8.5% MOGE -15% GAIL - 8.5% (Operator - Daewoo)
		Block A-3	OVL -17% Daewoo-51% KOGAS - 8.5% MOGE -15% GAIL - 8.5% (Operator - Daewoo)
		Shwe Offshore Mid-Stream Project	OVL -17% Daewoo-51% KOGAS - 8.5% MOGE -15% GAIL - 8.5% (Operator - Daewoo)
		Onshore Gas Transportation Pipeline	OVL -8.347% CNPC-SEAP - 50.9% Daewoo-25.041% KOGAS - 4.1735% MOGE -7.365% GAIL - 4.1735% (Operator - Daewoo)
5	Iraq	Block 8	OVL- 100%

6	Iran	Farsi Offshore Block	OVL - 40% IOC - 40% OIL - 20% (Operator - OVL)
7	Libya	Block 43	OVL- 100%
8	Egypt	Exploration Blocks South Quesai & South Senai.	GSPC - 50% OIL - 25% HPCL -25%
9	Syria	Block 24	OVL - 60% IPR International - 25% Tri Ocean Mediterranean- 15% (Operator - IPR International)
		Al Furat (4 PSA)	Himalaya Energy (Syria) B.V. - 33.33% to 37.5% Shell - 66.67% to 62.5% (Operator - Al Furat Petroleum Company (AFPC), jointly owned by Syrian Petroleum Company, Shell and HESBV)
10	Cuba	Blocks N-25, 26, 27, 28, 29 & 36	OVL - 30% Repsol YPF-40% Stat Oil -30% (Operator - Repsol YPF)
		Block N-34 & N-35	OVL- 100%
11	Brazil	Block BC-10	OVL- 15% Shell - 50% Petrobras - 35% (Operator - Shell)
		Block ES-42	OVL- 100%
		Block BM S-73	OVL- 43.5% Petrobras -43.5% Ecopetrol -13% (Operator - OVL)
		Block BM-SEAL-4	OVL-25% Petrobras -75% (Operator - Petrobras)
		Block BM-BAR-1	OVL-25% Petrobras -75% (Operator - Petrobras)
		Block BM S-74	OVL- 43.5% Petrobras -43.5% Ecopetrol -13% (Operator - Petrobras)
12	Colombia	Mansarover Energy Colombia Limited (MECL)	OVL - 50%, Sinopec-50% (Joint Operatorship)
		Block RC-8	OVL - 40% Ecopetrol - 40% Petrobras - 20% (Operator - OVL)
		Block RC-9	OVL - 50% Ecopetrol - 50% (Operator - Ecopetrol)

		Block RC-10	OVL - 50% Ecopetrol - 50% (Operator - OVL)
		Block CPO-5	OVL -70% Petrodorado - 30% (Operator - OVL)
		Block SSJN -7	OVL-50% Pacific Stratus Energy Colombia- 50% (Operator - Pacific Stratus Energy)
13	Nigeria	OPL 279	OMEL -45.5% EMO - 40% Total-14.5% (Operator -OMEL)
		OPL 285	OMEL -64.33% EMO - 10% Total-25.67% (Operator -OMEL)
14	Venezuela	San Cristobal Project	OVL-40% CVP-60% (Operated Jointly)
		Carabobo Project -1	CVP -60% OVL-11% Repsol YPF -11% Petronas-11% IOC-3.5% OIL-3.5% (Joint operatorship)
15	Oman	Block 56	Oilex- 25% GAIL - 25% Videocon - 25% HPCL-12.5 % BPRL -12.5%
16	Yemen	Block 82 & 83	Medco-45% Kuwait Energy -25% IOC -15% OIL-15% Operator- Medco Energi
17	Australia	Block WA-388-P	Oilex -8.4% Apache-40% GSPC-8.4% Videocon -8.4% HPCL - 8.4% BPRL -8.4% Sansol - 18%
18	Timor-Leste	Block- K	RIL -75% IOC-12.5% OIL -12.5% (Operator RIL)
19	Kazakhstan	Satpayev Project	OVL - 25% KMG - 75% (Operator - KMG)

Chapter 8

Welfare of Scheduled Castes/Scheduled Tribes, Other Backward Classes and Physically Handicapped

Welfare of Scheduled Castes/Scheduled Tribes, Other Backward Classes and Physically Handicapped

8.1 The guidelines in respect of the Reservation for the Scheduled Castes/Scheduled Tribes, Other Backward Classes and Physically Handicapped persons issued from time to time by the Department of Personnel & Training, the Department of Public Enterprises, the Ministry of Social Justice and Empowerment and Ministry of Tribal Affairs are being implemented in the Ministry of Petroleum & Natural Gas and the Public Sector Undertakings under its administrative control. The SCT Cell of this Ministry monitors the implementation of reservation policies in PSUs as well as in the Ministry. The PSUs have also constituted Implementation Cells under the supervision of their Liaison Officers to safeguard the interests of SCs/STs, OBCs and People With Disability (PWD) employees and redress their grievances. The Liaison Officers of the PSUs are responsible for ensuring implementation of the Presidential Directives as well as the various orders of the Government. Remedial action on the grievances of the SCs/STs, OBCs and PWD employees of PSUs received through Members of Parliament, National Commission for SCs and STs, National Commission for Scheduled Area are taken, wherever necessary.

The status of appointment of SCs/STs/ OBCs/PWD persons is monitored by the Ministry through a half yearly report furnished by PSUs separately. As per instructions from the Department of Public Enterprises, all the PSUs have been advised to complete a Special Recruitment Drive to fill up back-log vacancies reserved for SC, ST and PWD by 31.3.2012.

In pursuance of the observations of the Parliamentary Committee on the Welfare of SCs/STs/PWD persons and the Presidential Directives on Reservations for SCs/STs in service, a team led by the Liaison Officer of this Ministry inspects the Reservation Roster maintained by the Units of PSUs, annually. In 2011, the team has inspected Rosters of 29 out of 51 units of PSUs where Rosters are maintained.

8.2 SPECIAL COMPONENT PLAN FOR SC/ST/PH FOR 2010-11

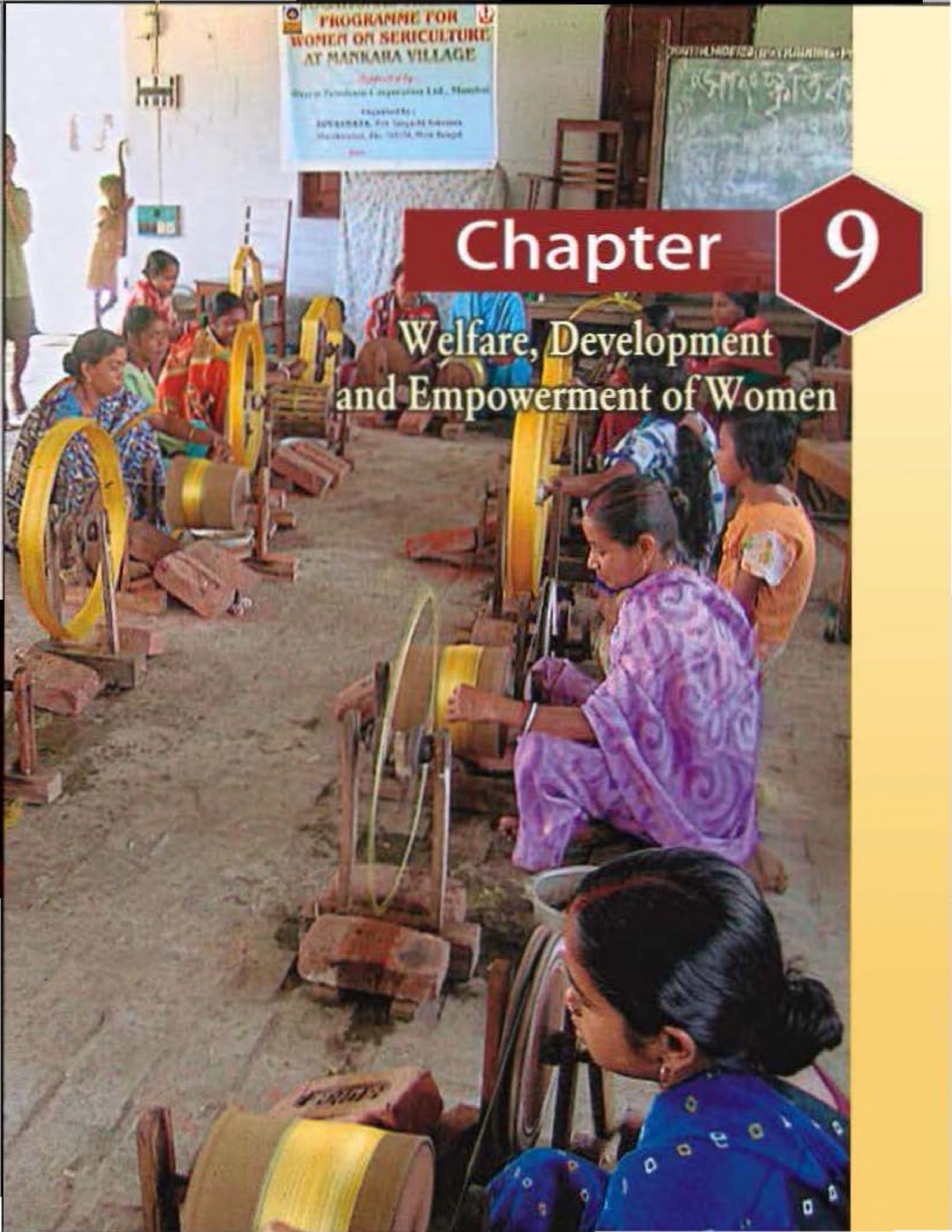
Under this plan, most of the PSUs of this Ministry are undertaking the following developmental activities for the Welfare of the SC/ST population during 2010-11 :

- Scholarship/Financial Assistance for purchase of books/uniforms etc to SC/ST students in neighbouring schools
- Various activities under the Annual Component Plan for the welfare of SC/ ST communities in and around ONGCareas of operation. At present ₹ 20 crore have been allocated under this head.
- Education for primary level schools, hiring of teachers, provision of uniforms, note-books, stationery etc. to school going children
- During the financial year 2010-11 the PSUs of this Ministry have made a provision in the plan outlay for award of scholarships to SC/ST students
- A special drive relating to SC/ST/ OBC/PH welfare activities is being launched during the year 2011-12 i.e. recruitment, minimizing the shortfall etc.
- Most of the PSUs of this Ministry are implementing the provisions under Disability Act, 1995 in respect to identification of course, implementing various provision of 3% reservation of course in Orthopedically Handicapped (OH), Visually Handicapped (VH) and Hearing Handicapped (HH) categories.

8.3 BACKLOG OF SC/ ST/ OBC/ PH IN OIL COMPANIES UNDER THE ADMINISTRATIVE CONTROL OF THE MINISTRY AS ON 31.12.2011

Direct Recruitment

PSU	Number of Backlog Reserved Vacancies Remaining (Direct Requirement)							
	Group-A		Group-B		Group-C		Group-D	
	SC/ ST	OBC/ PH	SC/ ST	OBC/ PH	SC/ ST	OBC/ PH	SC/ ST	OBC/ PH
Balmer Lawrie	0/1	4/1	0/1	Nil	9/7	12/3	35/25	18/5
OIL	Nil	0/4	Nil	Nil	9/7	3/16	0/1	0/26
EIL	4/24	47/33	Nil	Nil	Nil	1/2	Nil	Nil
BPCL	16/15	39/0	Nil	273/0	0/3	183/0	0/1	300/0
NRL	Nil	Nil	Nil	Nil	Nil	0/2	Nil	Nil
IOC	12/7	69/0	Nil	Nil	2/4	8/32	3/2	3/6
GAIL	3/3	31/1	4/6	25/2	3/5	0/1	0/2	0/3
HPCL	17/45	45/0	Nil	Nil	Nil	6/13	Nil	54/5
ONGC	Nil	Nil	Nil	Nil	7/15	25/70	2/15	24/0
CPCL	Nil	0/1	Nil	Niil	Nil	Nil	Nil	Nil
BIECCO LAWRIE	0/1	5/0	0/2	6/1	1/0	Nil	0/9	4/4
MRPL	2/2	5/0	Nil	Nil	17/10	1/0	Nil	Nil



Chapter 9

Welfare, Development and Empowerment of Women

Welfare, Development and Empowerment of Women

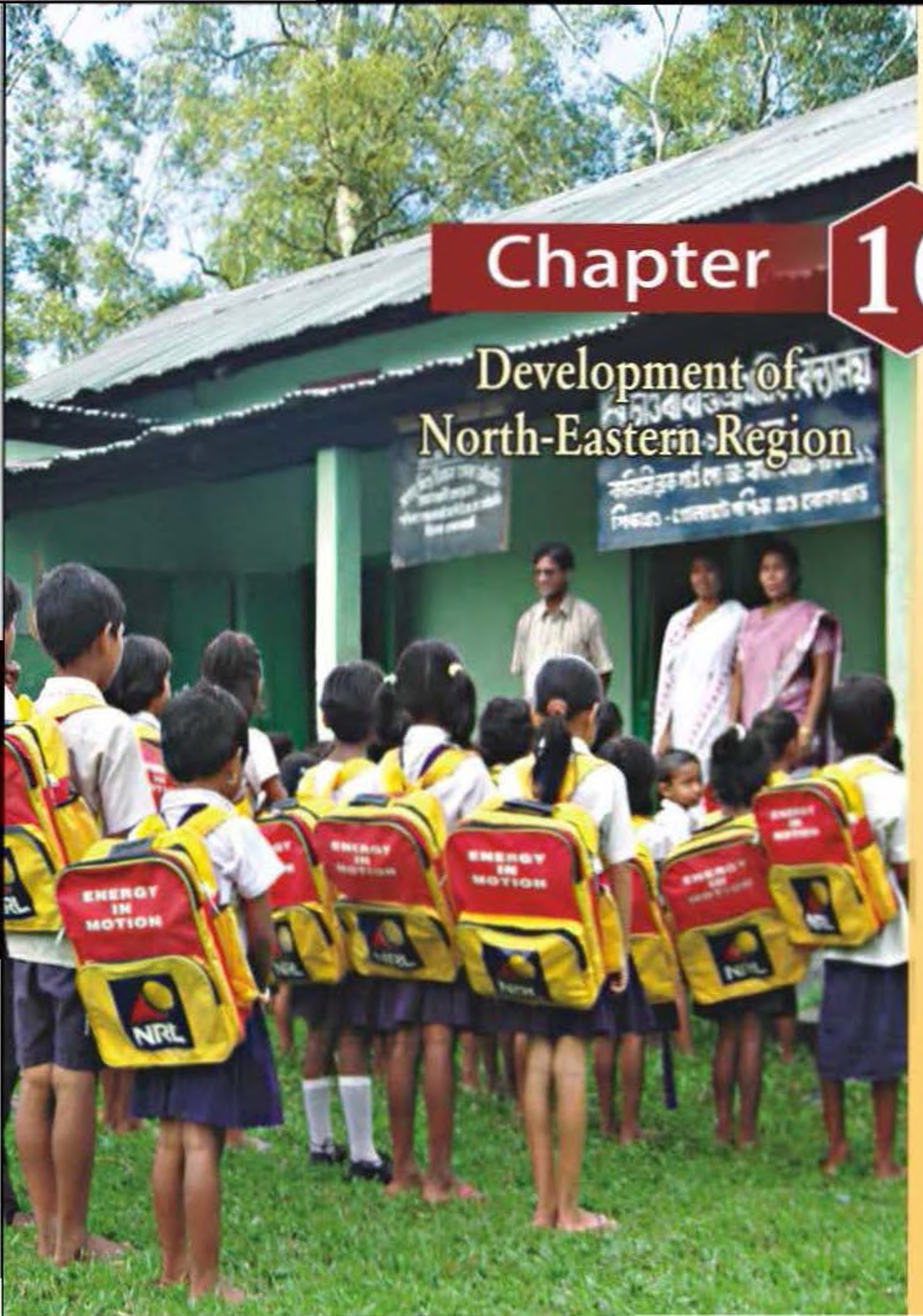
9.1 The Ministry of Petroleum & Natural Gas and Public Sector Undertakings/Organizations under its administrative control have been taking numerous initiatives towards welfare and development of the women employees. With a view to deal with gender sensitization and to promote the cause of women empowerment, special programmes are organized, focusing on their professional development and welfare activities. These include external and in-house training, programmes on women health, sponsoring them to attend the National Meet of the Forum of Women in Public Sector, etc.

9.2 Women Forums have been formed in the PSUs to look after the interests of the women employees. A List of Do's and Don'ts prepared by the National Commission for Women has been circulated for the attention of all employees. Committees have been set up to attend to redressal of complaints on 'Sexual harassment at the work place.'

9.3 The number of women employees vis-à-vis the total number of employees as on 31.12.2011 in the oil PSUs is tabulated as below:-

Sl. No.	Name of PSU	Total No. of Employees	Total No. of Women Employees
1.	ONGC	32809	2050
2.	IOC	34495	2681
3.	HPCL	11394	845
4.	BPCL	13460	1170
5.	GAIL	3900	220
6.	EIL	3460	388
7.	OIL	8089	338
8.	CPCL	1766	88
9.	NRL	842	40
10.	MRPL	1384	78
11.	BIECCO LAWRIE	384	7
12.	BALMER LAWRIE	1425	92

Vocational training sets women on the path of self-reliance



Chapter 10

Development of North-Eastern Region

Development of North-Eastern Region

10.1.1 ONGC

ONGC has large operational activities in the states of Assam and Tripura in the north-east. ONGC operations in these states inter alia include geophysical surveys, drilling, operation of production installations, maintenance workshops, operation & maintenance of crude oil & gas pipelines. Out of a total ONGC expenditure on CSR of an amount of ₹ 2186 lakhs till 31.1.2012, an amount of ₹ 759 lakhs has been spent on CSR activities/programmes in the north-eastern states.

10.1.2 Restoration of Ahom Kings' monuments in Assam

ONGC has undertaken conservation of 4 Ahom kings' monuments in Sivasagar Distt. of Assam viz,. Rang Ghar, Talatal Ghar, Karen Ghar & Maidams at Charaideo. A Memorandum of Cooperation has been signed with Archaeological Survey of India on 29th June 2010. ASI has since, developed the conservation plan and work based on this plan is scheduled to commence from March 2012.

10.1.3 Super Specialty Hospitals at Sivasagar

A 300 bed super specialty hospital is being established at Sivasagar in Assam, at a cost of ₹ 300 crore under the PPP model. Based on the finalized Feasibility report, Expression of Interest had been invited and shortisting done. Selection of the Project Management Consultant is in progress. The land identified for the hospital is under the approval of Revenue Dept., Govt. of Assam.

10.1.4 ONGC-NSTFDC Hathkarga Prashikshan for Tribal handloom (Women) artisans, Assam

National Scheduled Tribes Finance and Development Corporation (NSTFDC) has conducted the training through the Indian Institute of Entrepreneurship (IIE), Guwahati under Ministry of Micro, Small and Medium Enterprises, Govt. of India. Training to tribal handloom women artisans has been organized in 4 batches/ places in Assam comprising of 25 trainees each at Sibsagar, Majuli, Jorhat and Golaghat.

Each programme was of 300 hours duration (60 working days) to be completed within a period of 3 months. (at flexi hours).

10.1.5 The expenditure (in ₹ lakh.) made by ONGC under CSR in North-eastern states is as under :

	2007-08	2008-09	2009-10	2010-11	2011-12 (Upto Jan' 12)
Assam	103.59	1548	1054	900	759
Tripura	65.99	741	737	360	323

10.2 OIL INDIA LIMITED

Oil India Limited has been involved with community development since its inception. The twin objectives of business and social commitment have given a lot of thrust to health care, education, environment conservation and even the progress of scientific research. These initiatives have resulted in a well charted social welfare programme for OIL's operational areas which drives the company to visualize business strategy within the perspective of community well being. OIL has an established rural development network in its areas of operations whose main objective is self-sufficiency. The Social Welfare Programme covers 1,400 villages in OIL's operational areas in Assam and Arunachal Pradesh. To give a positive and systematic thrust, OIL carried out a survey with the help of Dibrugarh University, Assam and a well-charted social welfare programme was evolved. An amount of ₹ 2,900.00 lakh was spent for the purpose in Fields during 2010-11. An outlay of ₹ 5,190 lakh is earmarked for the year 2011-12. Similarly for the year 2012-13, OIL is projecting an outlay of ₹ 5,800 lakh for CSR expenditure against various ongoing schemes of OIL.

10.2.1. Various Ongoing CSR Initiatives

Educational Development

Upliftment of education is one of OIL's most overwhelming concerns for which the Company has introduced various schemes and undertaken a number of well planned programmes to facilitate the all round improvement of education and educational infrastructure in and around its operational areas. Over the year, OIL has provided benefits to a large number of educational institutions and helped educational activities in general by building schools, aiding in procurement of laboratory equipment, books, teaching aides, furniture and by launching scholarships for meritorious students An amount of ₹ 339.10 lakh has been extended to 829 beneficiaries during the year 2010-11. A programme of entrepreneurial skills has been introduced to teach young people in the oilfield areas on how to start and maintain business ventures. This programme is designed to further the Company's policy of encouraging local young business people to supply to and produce materials and services for the Company's operational needs.

1) **Spreading of Elementary Education**

OIL is providing fund to run 2 Higher Secondary Schools and maintains 5 Primary Schools in the OIL Township. Also, OIL provided funds for the construction of a third higher secondary school in recent years at Duliajan by DPS, Delhi. In addition, OIL provides cash grants and other benefits to educational institutions every year in and around operational areas.

2) **KD Malaviya Chair in Dibrugarh University**

OIL instituted a chair in the memory of the late Shri.

Hon'ble Chief Minister of Assam, Shri Tarun Gogoi releases a commemorative music album at the function to celebrate IOC's Guwahati Refinery's Golden Jubilee.

KD Malaviya ex- Petroleum Minister, GOI in late sixties in Dibrugarh University, Assam. This is one of OIL's social gestures of promoting research works in geo-scientific fields relevant o exploration & exploration of hydrocarbon for India's self-sufficiency OIL contributes an amount of ₹ 10 lakhs during 2010-11 under its Social Welfare Programme towards the chair.

3) Promotion of Sports:

OIL gives due importance to sports. The Company sponsors a national ranking tournament every year. A number of employees have participated in various sports/games and tournaments organized by Petroleum Sports Promotion Board (PSPB) as well as some state level competitions and tournaments and earned laurels.

10.2.2 Oil India Rural Development Society (OIRDS)

Agriculture Development Programme

The primary objective of the Agriculture Project is to introduce a modern method of cultivation to generate large scale production and thus provide an opportunity to the unemployed youths of the society to adopt agriculture as a means of livelihod and attain economic empowerment. While doing so, maximum emphasis is given in extending in-field training by experts from the Agriculture Department, Government of Assam & Assam Agriculture University for proper and adequate use of technology. To boost the encouragement of farmers, OIRDS introduced high yielding paddy seeds specially collected from Regional Agriculture Research Centre, Titarbor and organic manure to revitalize the paddy fields. The patterns of crops are mostly Sali & Rabi. Till date OIRDS has adopted more than 6l areas consisting of more than 77 villages under Parthar Parichalona Samity, Krishi Got and Co-operative Society covering nearly 5087 farm families under its agricultural project. In the year 2012-13 OIRDS has proposed to adopt seven new areas namely, Merbil Bhumuck Singibil Bhakatgaon (Sassoni), Puwali Bagmora(Nilmoni) Dihing Bahdhari (South Bank Naharkatia), Ratanpur & Kohargaoan(Rajigarh) in Dibrugarh District, Ashomiya Kathgaon (Tingrai), Borpother (Barekuri, Makurn) in Tinsukia District and Khoradhara (Gaurisagar) in Sibsagar District. It is noteworthy to mention here that, Doordarshan, Dibrugarh shot a small duration programme on Rabi Cultivation last year for "Krishi Darshan" a popular agriculture based TV Show telecast nation wide.

Handicraft Training & Production Centre (HTPC)

OIL's Handicraft Training and Production Centre located at Duliajan, Assam has been imparting nine-month stipendiary training in Weaving, Cutting & Tailoring, Embroidery & Knitting to young girls from OIL operational areas. The students were selected through a written test and viva-voce. During 2010-11 32 rural women were imparted such training with a total expenditure of approx. ₹ 9.63 lakhs. In the current year 32 women are undergoing similar training in the above training centre.

Area Development Scheme

The Area Development Scheme was formulated with the objective of supporting the various socio-cultural activities in the operational areas. The Scheme covers

the construction of roads, setting up of educational institutions and primary health centers in the North-East Region and other operational areas of the company. An outlay of ₹ 750 lakh was provided for the scheme during the year 2010-11, out of which an amount of ₹ 512.82 lakhs has been spent during the year for various development activities in the Company's operational areas in the North-East. The execution of these works is being taken up by the District Rural Development Agency (DRDA) & other Govt. agencies headed by the respective Deputy Commissioner under the Govt. sponsored base employment generating scheme- An outlay of ₹ 750 lakh is earmarked for the year 2011-12.

10.2.3 OIL-SIRD Agro-Based Projects

Project Rupantar

In order to address the problem of growing unemployment and poverty, OIL has undertaken a long-term project named Rupantar (transformation) of investing in projects, which can help the unemployed youths to find alternate sources of employment. OIL signed a MoU with the State Institute of Rural Development (SIRD), Assam at the Company's field headquarters in Duliajan on 8th September, 2003. The MoU has been extended for another period of 5 years i.e. up to August 2013. The guiding provisions of the MoU are a long term vision to generate sustainable self employment avenues for the educated unemployed youths in and around the Company's operational areas in upper Assam. The project aim is to create self-employment avenues and promote entrepreneurship in the region and generate sustainable sources of livelihood. In order to help the large number of unemployed youth and strengthen the rural economy, the focus is on development of agro-based industries, diversification in handloom products with special focus on Eri and Muga (world famous golden silk of Assam) poulty farming pig breeding, duck rearing, fishery, sericulture, organic farming etc. As on 31.3.11 around 4115 Self Help Groups (SHGs) have been formed and 2249 of these SHGS have received financial assistance/loans from banks. The total value of the projects including investment made by OIL ₹ 3.42 crore), contributions from SHGS, Bank Loans and Government Subsidies is around ₹ 35.00 crore.

Project Rupantar Milestones

1. So far, 4,115 SHGs have been formed out of,12 economic activities namely Farm Mechanization; Dairy Farming; Pig Breeding; Duck Rearing; Goat Rearing; Mushroom Cultivation; Diversification of Handloom Products; Food; Processing Computer Training Centres; Farmer's Service Centres; Agro Processing and Marketing; Broom Making.
2. A marketing outlet named AASTHA has been opened at the HTPC campus at Duliajan. Plans are on to open a bigger outlet in the old bus stand opposite the OIL market at Duliajan. Efforts are also on to open up small marketing outlets in Dibrugarh and Tinsukia Town.

10.2.4 Gender Budgeting

OIL undertakes all gender-related activities through Public Relations Department under the aegis of 'Social Welfare Programme' and 'Area Development Scheme'. On the basis of the Ministry's guidelines, an independent cell has been formed to deal with all the Gender Budgeting activities of the company. The cell monitors the following schemes which aim for benefit of the female members of society.

a) Handicraft Trainings for Women

OIL's Handicraft Training and Production Centre, located at Duliajan, Assam imparts training since 1984 to women members of society on Handicraft, Weaving Embroidery and Tailoring on monthly stipendiary for 9 months duration basis. During 2010-11. 32 rural women were imparted such training with a total expenditure of approx. ₹ 9.63 lakh. In the current year 32 women are undergoing similar training in the above training centre.

b). General Nursing Mid-Wifery (GNM) Training

The nursing school in OIL Hospital Duliajan conducts a 3 years General Nursing Midwifery (GNM) training courses which is recognized by the Directorate of Medical Education, Government of Assam. The annual intake is 20 candidates, out of which one vacancy each is reserved for a SC and ST candidate. Stipend is paid to the students in addition to limited hostel accommodation, uniform and protective clothing. The expenditure on this account was approx. ₹ 98.89 lakh during 2010-11.

c). Family Welfare

The Family Welfare Society of OIL hospital educates families of OIL employees specially the women on the importance of good health and helps in follow up treatment in all family welfare cases. Stress is also laid on child care and hygiene. The actual expenditure on this during 2010-11 was approx. ₹ 40.29 lakh.

d). Donation to Women Colleges/ Schools/ Organizations

The Company lays emphasis on women education, sports, etc. Towards this, OIL has made a significant contribution to various women colleges, schools, Associations, etc. Besides, OIL pays significant contribution to numerous co-educational institutions benefiting the women of the society. OIL also donates periodically to women organization of the locality through its SWP and ADS for their socio-cultural and other developmental works. An amount of ₹ 89.52 lakhs was incurred for the above organizations under OIL's area of operation in Assam and Arunachal Pradesh during 2010-11.

e). Nomination of women representative

WIPS (Women in Public Sector), Duliajan branch has the majority working women members from OIL. Besides extending financial assistance, OIL sponsors

women members for attending. for attending National and International seminars/training etc.

f). Infrastructure for growth of Self Employment activities

The following Infrastructure (one each) have been created for providing services for growth of self Employment activities.

- Extension Training Centre
- Poultry Hatchery
- Handloom Growth Centre *
- Mushroom Spawn Lab
- Eco Hatchery
- Computer Training
- Pig Breeding Centre
- Marketing Centre

* A Growth Centre with Modern Handlooms has been installed for Training and Production of Diversified Handloom Production in Eri and Muga.

30 batches of weavers (1045 participants till date) total of from various interior areas have successfully completed training programme. Most of the trained weavers have formed SHGs and have availed loans for starting their receptive specialized eri and muga training cum production weaving centres. OIL and SIRD signed another MoU to extend the project for another five year period till August 2013 available. The actual expenditure on this account was ₹ 42.44 lakhs during 2010-11.

g). Working Women Hostel Facility

OIL provides single occupancy type ladies Hostel facility at Duliajan to working women employees of OIL. There are at present 24 such residential facilities at Duliajan besides Hostel facility for working women nurses.

h). Women beneficiaries under SIRD (State Institute of Rural Development, Assam:

In order to help the large number of unemployed youth irrespective of gender perspective and to strengthen the rural economy. OIL and the State Institute of Rural Development (SIRD), Assam have jointly started an ambitious project since September, 2003, with a central focus to assist Self Help Groups for development of Agro based industries like bamboo cultivation, floriculture, fishery, sericulture, organic farming etc. As on 31.3.2011 the total investment by OIL in this project is ₹ 3.42 crores.

10.2.5 OIL's Health Care Schemes

Mobile Health Services

Way back in the 1980's, Oil India Hospital began extending primary heath care in villages around Duliajan by arranging Mobile Dispensary camps. These mobile hospital services have since become one of the most appreciated and effective CSR initiatives of OIL, extending primary health care services. 619 camps were arranged during 2010-11, in the two districts of Dibrugarh and Tinsukia, where 138,921patients were examined.The actual expenditure incurred in this account was ₹ 146.79 lakh.

Family Welfare Services/ Adoption of Small Family Norms

OIL encourages its employees and general population to adopt small family norms through its Family Welfare Services, thereby fulfilling the national objective of population control. OIL hospital is the pioneer in providing thousands of free laparoscopic Sterilization services in the North-Eastern region since 1980. Emphasis is given on temporary methods of Birth control, especially for young couples in the form of IUCD's (Intra Uterine Contraceptive Device's), Injectable Contraceptives and Oral Pills. All these are provided free of cost. Trained motivators provide door-to-door services and motivate people to adopt small family norms. OIL hospital educates the families of OIL employees specially the women on the importance of maintaining good health and extends follow-up treatment in all family welfare cases. The actual expenditure on this during the year 2010-11 was ₹ 40.29 lakh.

Health Care and Public Health Schemes

The following main activities have been carried out during 2011-12 so far:

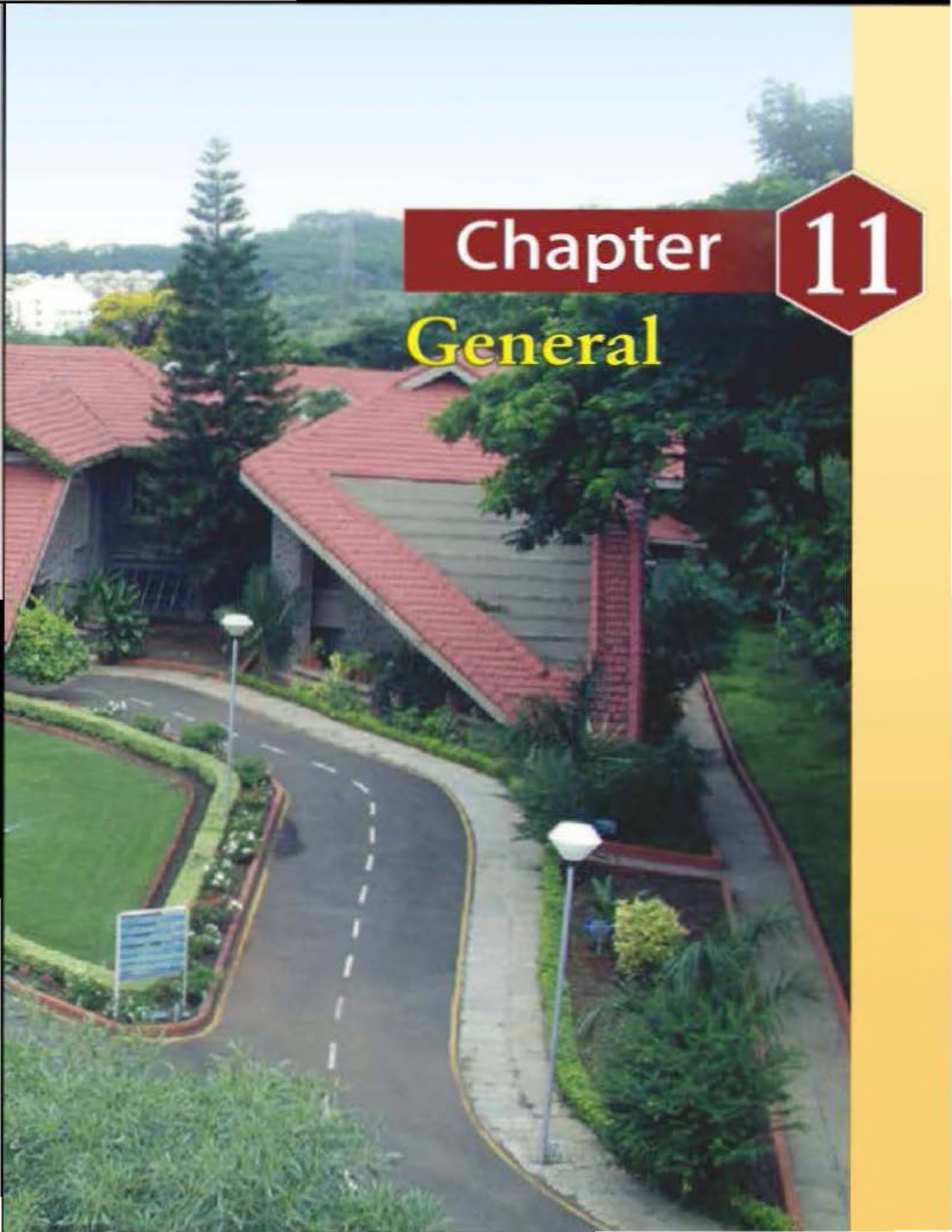
- 3,772 children have been immunized.
- 143 sterilization operations have been done.
- 316 mobile dispensary camps in Dibrugarh & Tinsukia District were done to cover 67,531 patients.
- Periodic health check up of 869 (768) (Executive & 83 Employee) personnel have been done.
- Direct observation treatment scheme & DOTS microscopy centre under Revised National Tuberculosis Control Programme covered 160 patients.
- 141 physically handicapped children of Mrinaljyoti were provided treatment that covers immunization and periodic health check up.
- 150 patients were examined & 12 nos. of patients were operated in Ear Microsurgery camps.

10.2.6 Expenditure of CSR Activity of OIL

Expenditure incurred by OIL on CSR activities are as under:

(₹ in Lacs)

2007-08	2008-09	2009-10	2010-11	2011-12 Plan
1,642.70	1,936.24	1,829.08	2,900.00	5,190.00



Chapter 11

General

General

11.1 PROGRESSIVE USE OF HINDI

11.1.1 The Ministry of Petroleum & Natural Gas is implementing provisions of the Official Language Act, 1963 and Rules framed thereunder. It is also responsible for the implementation of Official Language Policy in various Offices of Public Sector Undertakings under its administrative control.

11.1.2 This Ministry has been notified under Rule 10 (4) of the Official Language (Use for Official Purpose of the Union) Rules, 1976. Three sections of the Ministry viz. Administration Section, Library and SC/ST Cell have been identified under Rule 8 (4) for doing their entire work in Hindi. The Establishment Section is also required to do entire work in Hindi in respect of Group 'C' and 'D' employees. Eleven types of works have been identified under the aforesaid Rule for doing in Hindi only. Further, instructions have been issued, under the said Rules to all officers/employees of the Ministry who are proficient in Hindi, to prepare and submit drafts etc. of following categories of communications in Hindi language only:

(a) All communications to State Government & Union Territory Administration in Region 'A' and Region 'B' and all offices, Undertakings, etc. of Central Government situated in these Regions or to any person in these Regions.

(b) Replies to all incoming communication written in Hindi.

(c) Reply to application, appeal or representation written or signed by an employee in Hindi.

11.1.3 The Ministry has prepared a time-bound programme to impart in-service training to all its employees who do not possess working knowledge of Hindi and Hindi Stenography/ Hindi typing training to Stenographers and Lower Division Clerks (LDCs) of the Ministry, under which 1 UDC and 3 Assistants were nominated for training during 2011-12.

11.1.4 The first working day of every month is observed as Hindi Divas in the Ministry. All the officers/employees are expected to undertake official work only in Hindi on that day. Similarly, the PSUs under the Ministry have also been advised to observe Hindi Divas every month in their offices.

11.1.5 Two display boards are maintained. In which 'Aaj ka vichar' and 'Aaj ka shabd' are displayed daily.

11.1.6 The 'Hindi Fortnight' was celebrated in the Ministry during 14th-28th September, 2011 and a number of competitions viz., Ullekhniya Karya, Hindi essay writing competition,Hindi noting/drafting competition for Hindi speaking as well as non-Hindi speaking employees, Swarachit Kavita Paath etc. were organized. 33 participants were given cash prizes.

11.1.7 On the occasion of Hindi Divas/Week/Fortnight/Month, the messages from Hon'ble Minister for P&NG and Hon'ble Cabinet Secretary were circulated among all the officers of the Ministry and all the PSUs.

11.1.8 Two Hindi Workshops were organised during the year in which 18 Dealing Assistants participated. These workshops enabled them to increase their work in Hindi by 15%.

11.1.9 The Parliamentary Committee on Official Language inspected 26 offices of PSUs under the administrative control of the Ministry scattered throughout the country. 16 PSU offices were entrusted with the co-ordination work also. The location in-charge and officers of official language actively participated in the inspections. All the PSUs were made aware of the findings of the Committee and orders were issued for removing short comings.

11.1.10 The Meeting of the Hindi Advisory Committee was held on 11.8.2011. Minutes have been circulated and ATNs are sought from PSUs.

11.1.11 All computers purchased during the year were provided with Hindi software during the year.

11.1.12 In order to undertake the Official Language implementation work effectively, an Official Language Implementation Committee (OLIC) is functioning in the Ministry under the Chairmanship of Joint Secretary (Admn.). All the Public Sector Undertakings under the Ministry are members of the Committee. This Committee reviews the overall progress of implementation of the Official Language Policy in the Ministry and the Public Sector Undertakings, as also the progress of implementation of the Annual Programme circulated by Department of Official Language.

11.1.13 Quarterly progress reports on progressive use of Hindi are sent to Department of Official Language, and Quarterly progress reports received from Public Sector Undertakings are reviewed in the Ministry.

11.1.14 So far, 376 offices of the Public Sector Undertakings, in which 80% staff acquired working knowledge of Hindi, have been notified in pursuance of Rule 10 (4) of the Official Language (Use for Official Purpose of the Union) Rules, 1976. The Public Sector Undertakings have been advised to conduct a survey of their offices with a view to ascertain the number and percentage of employees who have acquired working knowledge of Hindi.

11.1.15 The Annual Programme for the financial year 2011-12 received from the Department of Official Language was circulated to all officers of the Ministry and Chief Executives of PSUs/Offices. Various Sections in the Ministry and all PSUs were instructed to ensure its proper implementation.

11.1.16 Books, magazines and newspapers published in Hindi are available in Ministry's library. Hindi books worth ₹ 46,314 have been purchased during the year. Help books, such as Administrative and Technical Terminology in Hindi, English-Hindi Dictionaries etc. have been provided to various Sections and Desks.

11.1.17 With a view to assess the position of compliance of Official Language Rules and use of Hindi in the various offices of PSUs in different parts of the country, an inspection team has been constituted under the Chairmanship of a Joint Secretary who is also the Chairman of OLIC of the Ministry. 15 offices in Regions "A", "B" and "C" have been inspected in 2011-12.

11.2 Public Grievance Cell (PG Cell)

In accordance with the guidelines of the Cabinet Secretariat, Government of India, the Public Grievance Cell has been functioning in the Ministry of Petroleum & Natural Gas. The Cell has been attending to the grievances of members of the public against the Public Sector Oil Companies and other organizations under the administrative control of this Ministry. All possible efforts are being taken to ensure the regular monitoring of the public grievances received through Department of Public Grievances, Department of Administrative Reforms and Public Grievances (DARPG), Directorate of Public Grievances (DPG) and other Departments of the Government as well as the members of the public. A systematic mechanism has been evolved so as to ensure speedy and expeditious redressal of the public grievances. The Public Grievance Cell is functioning under the charge of Director of Public Grievances. Ministry of Petroleum & Natural Gas. In addition, a new online system called " Centralized Public Grievance Redress and Monitoring System" (CPGRAMS) has been introduced in the month of June, 2008. With the aid of this online system, public grievances from the public and others are received speedily and is convenient for the common man.

During the year 2011-12 (upto 31st December, 2011), the Public Grievance Cell of this Ministry received a total of 602 grievances and the pendency of the grievances as on 31st December, 2011, was 92 grievances only thus, during the aforesaid period a total numbers of 510 grievances have been redressed.

As far grievances received through CPGRAMS, it is mentioned that around 81% of such grievances stands disposed as on 31st December, 2011. However, the grievances keep pouring in constantly through CPGRAMS in the Ministry either from citizens directly or posted/ transferred by Government agencies like DARPG, DPG, President Secretariat, which are dealt/processed by referring the same either to subordinate/attached organizations/Oil Public Sector Undertakings under the Administrative control of the Ministry or to different sections/desks/divisions of the Ministry internally, as the case may be. However, it should be borne in mind that ideally speaking, the Government's emphasis is to make such endeavours that the public grievances should not arise ab *initio*.

11.3 Information Facilitation Counter

The Information Facilitation Counter of the Ministry of Petroleum & Natural Gas was set up on 30th June, 1997. Its main responsibilities are to ensure transparency in the working of this Ministry and provide relevant information on all aspects of the Oil Industry to the members of the public. The Citizens' /Client's Charter of this Ministry is the guiding force which aims at educating the common man about the consumers' entitlements to public services, including the standards of performance, quality of products, mode of access to information, etc.

The type of information provided to the public has been ranging from the supply of Basic Petroleum Statistics to the provision of information on various locations in the country rostered under various Marketing Plans for Retail Outlets, LPG Distributorships, and Kerosene Agencies. Dealer Selection Guidelines (both in Hindi and English) are provided to the members of the public to enlighten them about the eligibility criteria.

During the year 2011-12 (till Dec, 2011), about 2400 members of the public have benefited from the Information Facilitation Counter.

11.4 E-Governance Initiatives

The terms 'governance' and 'good governance' are increasingly being used in development literature. Governance describes the process of decision-making and the process by which decisions are implemented (or not implemented). Good governance accomplishes this in a manner essentially free of abuse and corruption, and with due regard for the rule of law. These days with ICT initiatives, the concept of good governance has assumed a whole new dimension.

Taking advantage of the latest ICT enabled tools, Ministry of Petroleum & Natural Gas with the support of National Informatics Centre (NIC) has taken sincere initiatives towards adoption of best practices and integrated delivery of useful information.

- A high speed Local Area Network (LAN) with around 130 nodes with OFC backbone supported by L2 & L3 manageable switches is operational in the Ministry. The LAN along with internet facility has also been extended to officials of E&S division situated in Paryavaran Bhawan. Cyber security measures have been implemented for the existing LAN.
- The Website (http://petroleum.nic.in) of the Ministry is operational and time to time updated with new contents provided by the concerned divisions of the Ministry. This website provides the latest organizational changes, new policies, annual reports, Minister's speeches, upcoming events, monthly statistics and links to other oil sector related websites.
- An IntraNet Portal "IntraPetro" has a primary goal of timely circulation of notifications, office orders, circulars, announcements and online availability of various IT enabled integrated services. This portal works as a gateway for many useful applications like Notice Board, Pay-slip, Income Tax Calculation Sheet and Complaint Monitoring. Various online enterable, downloadable and printable forms pertaining to various divisions of the Ministry are being provided through this Portal.

- A webbased MIS Application "Overseas Projects Information System (OPIS)" is operational to facilitate the higher officials of the Ministry and PSUs in monitoring physical and financial progress of the project taken up by Oil Sector PSUs.
- e-Governance applications like "Telephone Bills Payment & Monitoring System", "O&M Pendency Monitoring System", "File/Receipt Movement & Tracking System (OPA)", "Composite Payroll System (CompDDO)", "Personnel Information System", "Notice/Bulletin Board Services", "RTI Request & Appeal Management Information System" are functional in the Ministry to facilitate various sections of the Ministry.
- File Tracking System (FTS) is a webbased application to monitor the pendency of receipts and files and assist in their easy tracking. It is an integrated package which has features right from diarizing of receipts/files, updating its status, opening of new files, tracking the movement of files, despatch of letters/files and finally, record management. The application been developed by National Informatics Centre (NIC) based on the Central Secretariat Manual Office Procedures (CSMoP) of the Department of Administrative Reforms & Public Grievances (DAR&PG) and is operational in the Ministry of Petroleum and Natural Gas from August, 2011.

11.5 Outstanding Audit Objections

A total number of 48 Inspection Reports/ Paras were outstanding against this Ministry as on 30.9.2011. Attempts are being made to settle the outstanding Audit observations expeditiously.

11.6 C & AG's Report

A summary of important Audit observations made available by the office of C&AG for the year 2011-12 are in Appendix VIII.

11.7 Position of ATNs in Respect of Audit Observations

Position of ATNs in respect of audit observations included in the Annual Report as well as those included in the earlier Annual reports are in Appendix IX

11.8 Recent Changes in Pricing and Taxation of Petroleum Products

International prices of crude oil and petroleum products have remained highly volatile in the recent past. The price of the Indian basket of crude oil, which averaged US$ 79.25 per barrel during 2007-08, had gone up to an unprecedented level of US$142.04 per barrel on 3rd July 2008 before declining sharply. The crude prices have been steadily increasing since December 2008 when it reached its lowest rate at $35.83 per barrel on 24th December 2008, largely due to the global economic recovery and increase in demand from the emerging economies. The average price of the Indian basket of crude oil during 2010-11 was $85.09 per barrel and is US$ 110.01 per barrel in 2011-12 (up to 28th December 2011).

The international prices of crude oil and major petroleum products since 2009-10 is given below:

Period	Crude Oil (Indian Basket) $/bbl.	Petrol US$/bbl.	Diesel US$/bbl.	Kerosene US$/bbl.	LPG US$/MT
2009-10	69.76	76.2	76.67	76.35	582.69
2010-11	85.09	92.4	95.66	96.79	745.29
2011-12 (Up to 28.12.11)	110.01	119.46	123.82	124.82	851.80

Note: 1. Composition of the Indian Basket of Crude represents average of Oman & Dubai for sour grades and Brent (Dated) for sweet grade

2. Price of petrol is at Singapore and other products are at Arab gulf.

11.8.1. Under-recoveries of PSU Oil Marketing Companies

i. Around three-fourths of domestic requirement for petroleum products in the country are met by import of crude oil. Therefore, the prices of crude oil and petroleum products in the international oil markets have a decisive influence on the domestic prices of petroleum products.

ii. Post de-control of the price of petrol effective 26th June 2010, the OMCs are free to fix the retail selling price of petrol taking into account changes in prices in the international market and their own commercial considerations, including competitive market conditions. As the prices of petrol in the international market have been rising consistently in recent months, OMCs have revised the price of petrol periodically.

iii. However, as the retail selling price of Diesel, PDS Kerosene and Domestic LPG have not been maintained in line with the international oil prices, the Public Sector Oil Marketing Companies are incurring under-recoveries on sale of these products.

iv. In view of the alarming situation arising out of projected massive under-recoveries of the OMCs during 2011-12, the Government took the following decisions effective 25th June, 2011:-

i Elimination of 5% Customs Duty on Crude Oil and on petroleum products by 5%.

ii Reduced Excise Duty on Diesel by ₹ 2.60 per litre.

iii Minimal price increase of ₹ 3 per litre on Diesel, ₹ 2 per litre on PDS Kerosene and ₹ 50 per 14.2 kg Domestic LPG cylinder excluding State levies.

v. Even after these measures OMCs are expected to incur under-recoveries of ₹ 1,32,016 crore during 2011-12 assuming crude prices to remain at level of US$ 110/bbl and exchange rate of ₹49/US$.

vi. During the current financial year (up to September 2011), the OMCs have incurred a total under-recovery of ₹ 64900 crore as against a total under-recovery of ₹ 78190 during 2010-11. This under-

recovery has been partly compensated by the Government and upstream oil companies under the burden sharing arrangement during 2010-11 and April-September 2011 as given below:

Under-recovery and Burden Sharing (₹ Crore)

	2010-11	April - September 2011
Total Under recovery	78190	64900
Burden Sharing through:		
Cash assistance by Government	41000	30000
Discount by the upstream companies	30297	21633
Balance under-recovery borne by OMCs	6893	13267

11.8.2. Reduction/Changes in Central Taxes

LPG as "Declared Goods"

LPG (Domestic) was made a "Declared Goods" under the CST Act and the maximum sales tax/VAT rate is 4% effective 19/4/06 across all States/Union Territories. This has reduced the sales tax levied by States to maximum 4% (now increased to 5% in union budget 2011) as against VAT rate of 12.5% levied by most of the States.

The Government has taken a number of measures to rationalize taxes and duties on petrol and diesel to keep the consumer prices of these sensitive petroleum products within reasonable limits. The details of rationalization in duties on sensitive petroleum products during the recent past are given below:

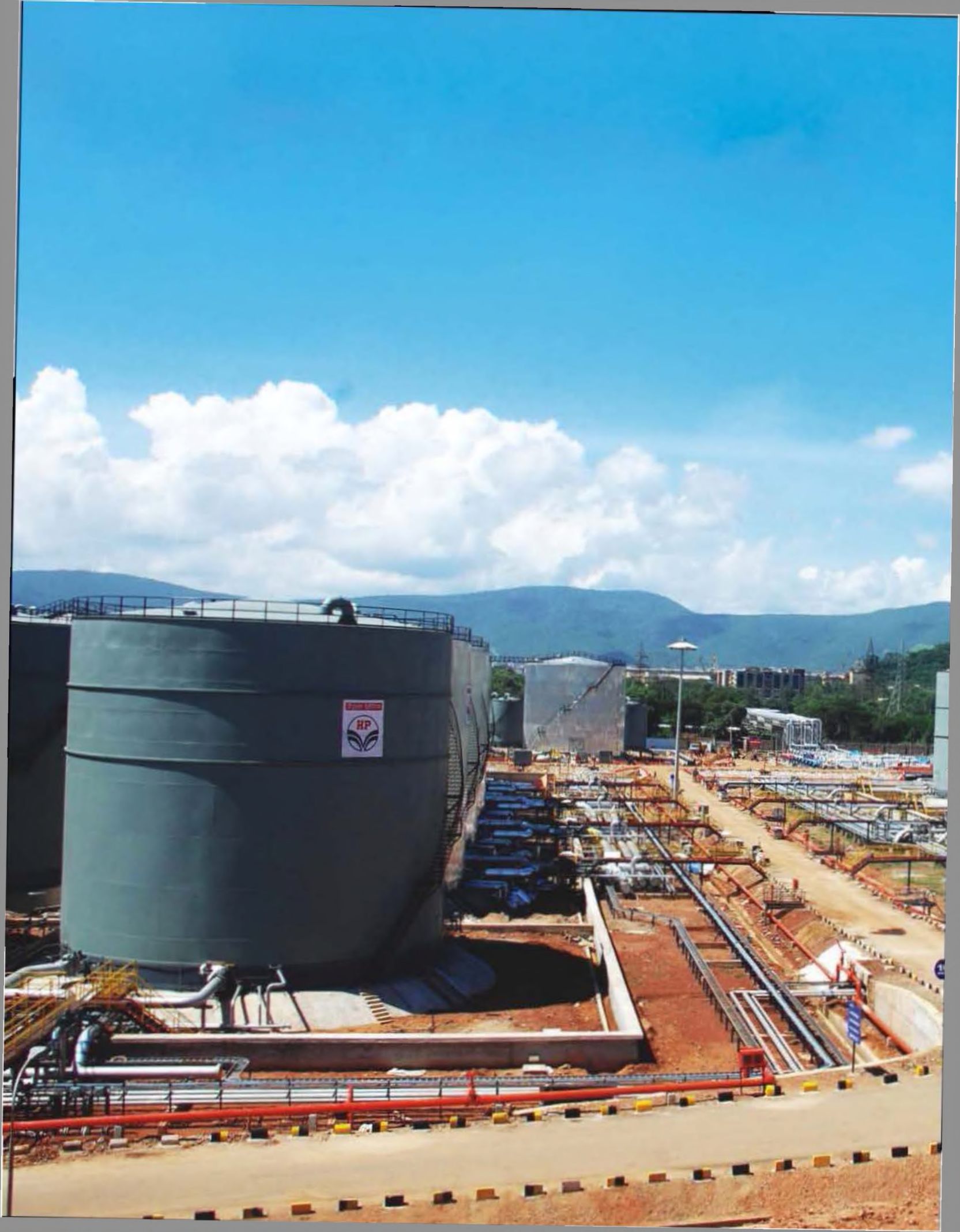
Changes in Customs Duty rates since 1st April' 2002 (in %)

Date	Crude	Petrol	Diesel	PDS Kerosene	LPG
01/04/2002	10	20	20	10	10
19/08/2004	10	15	15	5	5
01/03/2005	5	10	10	Nil	Nil
14/06/2006	5	7.5	7.5	Nil	Nil
05/06/2008	Nil	2.5	2.5	Nil	Nil
27/02/2010	5	7.5	7.5	Nil	Nil
25/06/2011	Nil	2.5	2.5	Nil	Nil

Changes in Excise Duty Rates since 1st April' 2002

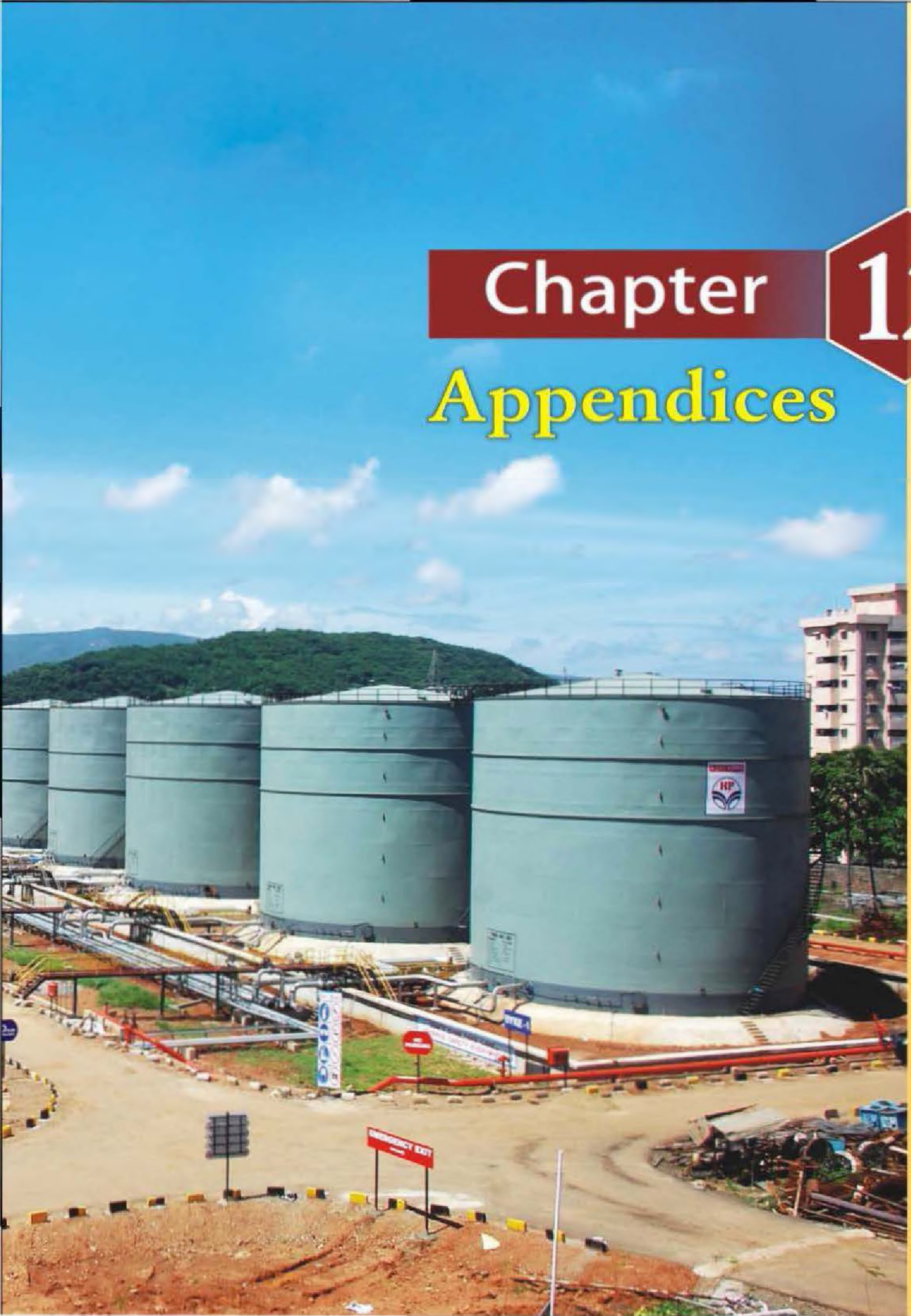
Date (w.e.f.)	Crude	Petrol			Diesel			PDS Kero sene%	Dom. LPG %
	Cess (₹/MT)	Ad-Valorem %	Specific (₹/ ltr.)	Total (₹/Ltr) at Delhi	Ad-Valorem %	Specific (₹/Ltr)	Total (₹/Ltr) at Delhi		
01/04/2002	1800	32.00	7.00	**10.53**	16.00	1.00	**2.85**	16.00	16.00
04/06/2002	1800	30.00	7.00	**10.82**	14.00	1.00	**2.80**	16.00	16.00
01/03/2003	1800	30.00	7.00	**11.81**	14.00	1.50	**3.59**	16.00	16.00
16/06/2004	1800	26.00	7.50	**11.97**	11.00	1.50	**3.32**	16.00	8.00
19/08/2004	1800	23.00	7.50	**11.90**	8.00	1.50	**3.01**	12.00	8.00
01/03/2005	1800	8.00	13.00	**14.59**	8.00	3.25	**4.80**	Nil	Nil
01/03/2006	2500	8.00	13.00	**14.59**	8.00	3.25	**4.80**	Nil	Nil
01/03/2007	2500	6.00	13.00	**14.66**	6.00	3.25	**4.69**	Nil	Nil
01/03/2008	2500	Nil	14.35	**14.78**	Nil	4.60	**4.74**	Nil	Nil
05/06/2008	2500	Nil	13.35	**13.75**	Nil	3.60	**3.71**	Nil	Nil
27/02/2008	2500	Nil	14.35	**14.78**	Nil	4.60	**4.74**	Nil	Nil
25/06/2011	2500	Nil	14.35	**14.78**	Nil	2.00	**2.06**	Nil	Nil

NOTE: -With effect from 1/3/2003 NCCD at the rate of ₹ 50/per MT imposed on crude oil.



Chapter 12

Appendices



Appendix - I

Work Allocated to Ministry of Petroleum and Natural Gas

1. Exploration for and exploitation of petroleum resources, including Natural Gas and Coal Bed Methane.
2. Production, supply, distribution, marketing and pricing of petroleum, including Natural Gas, Coal Bed Methane and petroleum products.
3. Oil refineries including Lube Plants.
4. Additives for petroleum and petroleum products.
5. Lube blending and greases.
6. Planning, development and control, of land assistance to all industries dealt with by the Ministry.
7. All attached or subordinate offices or other organizations concerned with any of the subjects specified in the list.
8. Planning, development & regulation of oilfield services.
9. Public sector projects falling under the subject included in this list. Engineers India Limited and IBP Company, together with its subsidiaries, except such projects as are specifically allotted to any other Ministry/ Department.
10. The Oil Fields Regulations and Development Act, 1948 (53 of 1948).
11. The Oil and Natural Gas Commission Act, 1959 (43 of 1959).
12. The Petroleum & Minerals Pipelines (Acquisition of Right Usser Inland) Act, 1962 (50 of 1962).
13. The Esso (Acquisition of Undertakings in India) Act, 1974 (4 to 1974).
14. The Oil Industry (Development) Act, 1974 (47 to 1974).
15. The Burmah-Shell (Acquisition of Undertakings in India) Act, 1976 (2 of 1976).
16. The Caltex (Acquisition of Shares of Caltex Oil Refining (India) Limited and of the Undertakings in India of Caltex (India) Limited Act, 1977.
17. Administration of the Petroleum Act, 1934 (30 of 1934) and the rules made thereunder.
18. Administration of Balmer Lawrie Investments Limited and Balmer Lawrie and Company Limited.
19. Petroleum & Natural Gas Regulatory Board Act, 2006.
20. To promote long term engagement of India Oil Companies in the hydrocarbon on sector abroad.
21. Strengthening energy security by acquiring oil and gas equity abroad and participation in transnational oil and gas pipeline projects.
22. Creation and administration of strategic petroleum reserve through Indian Strategic Petroleum Reserves Limited (ISPRL).

Appendix - II

List of Public Sector Undertakings and other Organisations under the Administrative Control of The Ministry of Petroleum & Natural Gas

I. Oil Companies in which Government of India has a shareholding as on (31.12.2011)

1.	Oil & Natural Gas Corporation Limited	74.14%
2.	Indian Oil Corporation Limited	78.92%
3.	Hindustan Petroleum Corporation Limited	51.11%
4.	Bharat Petroleum Corporation Limited	54.93%
5.	GAIL (India) Limited	57.35%
6.	Engineers India Limited	80.40%
7.	Oil India Limited	78.43%
8.	Biecco Lawrie & Co. Ltd.	99.57%

II. Subsidiaries and Other Companies.

1.	ONGC Videsh Limited	- wholly owned by ONGC
2.	Mangalore Refinery & Petrochemicals Limited	- subsidiary of ONGC
3.	Bharat Petro Resources Limited	- subsidiary of BPCL
4.	Chennai Petroleum Corporation Limited	- subsidiary of IOC
5.	Numaligarh Refineries Limited	- subsidiary of BPCL
6.	Certification Engineers International Limited	- wholly owned by EIL
7.	EIL Asia Pacific Sdn BHD	- wholly owned by EIL
8.	GAIL Gas Limited	- wholly owned by GAIL

III. Other Organisations

1. Oil Industry Development Board
2. Petroleum Conservation Research Association
3. Oil Industry Safety Directorate
4. Centre for High Technology
5. Petroleum Planning & Analysis Cell
6. Directorate General of Hydrocarbons
7. Rajiv Gandhi Institute of Petroleum & Technology

Appendix - III

Production of Crude Oil and Natural Gas

Item	'2004-05	'2005-06	'2006-07	2007-08	2008-09	2009-10	2010-11*	2011-12* (Apr-Dec)
1	2	3	4	5	6	7	8	9
1. Crude Oil Production ++ ('000' Tonnes)								
(a) Onshore:								
Gujarat	6187	6251	6212	6177	5946	5960	5905	4391
Assam/Nagaland	4703	4474	4400	4357	4674	4740	4719	3772
Arunachal Pradesh	83	104	109	102	102	131	116	89
Tamil Nadu	391	385	353	298	265	239	234	189
Andhra Pradesh@	226	216	252	279	289	304	305	228
Rajasthan	-	-	-	-	-	447	5149	4804
'Total (a)	**11590**	**11430**	**11326**	**11213**	**11276**	**11821**	**16428**	**13473**
of which								
OIL	3196	3234	3107	3100	3468	3572	3582	2889
ONGC	8320	8095	8058	7921	7565	7515	7446	5601
JVC/Private	74	101	161	192	243	734	5400	4982
(b) Offshore:								
ONGC	18165	16309	17993	18020	17801	17340	17002	12332
JVC/Private	4226	4451	4669	4885	4431	4529	4282	2895
Total (b)	**22391**	**20760**	**22662**	**22905**	**22233**	**21869**	**21284**	**15227**
Grand Total (a+b)	**33981**	**32190**	**33988**	**34118**	**33508**	**33690**	**37712**	**28700**
2. Natural Gas Production (Million Cubic Metres)								
(a) Onshore:								
Gujarat	3710	3831	3294	2931	2605	2444	2263	1614
Assam/Nagaland	2249	2408	2526	2598	2573	2703	2682	2188
Arunachal Pradesh	40	48	35	30	30	40	44	31
Tripura	497	480	520	534	553	564	610	480
Tamil Nadu	678	906	1130	1169	1242	1178	1119	964
Andhra Pradesh	1707	1663	1525	1567	1524	1479	1384	1015
Rajasthan	213	242	242	255	216	239	432	449
West Bengal (CBM) $	-	-	-	15	20	38	41	62
Total (a)	**9094**	**9578**	**9272**	**9099**	**8763**	**8685**	**8577**	**6803**
of which								
OIL	2010	2270	2265	2340	2268	2416	2350	1994
ONGC	5658	5751	5876	5877	5753	5634	5507	4279
JVC/Private	1426	1557	1131	882	742	635	720	530
(b) Offshore:								
ONGC (Mumbai High)	17313	16823	16567	16457	16733	17462	17591	13007
JVC/Private	5356	5801	5908	6861	7348	21350	26054	16384
Total (b)	**22669**	**22624**	**22475**	**23318**	**24082**	**38811**	**43645**	**29391**
Grand Total (a+b)	**31763**	**32202**	**31747**	**32417**	**32845**	**47496**	**52222**	**36194**

Notes: '*: Provisional

Source: ONGC, OIL and DGH.

'++: Includes condensates

$: Coal Bed Methane Production

Appendix - IV

Refinery Crude Throughput

('000' Tonne)

Refinery Crude Throughput								
Refinery / Location	'2004-05	'2005-06	'2006-07	2007-08	2008-09	2009-10	2010-11*	2011-12* (Apr-Dec)
1	2	3	4	5	6	7	8	9
(a) PUBLIC SECTOR	**93107**	**96946**	**108172**	**112541**	**112223**	**112117**	**115461**	**90222**
IOC, Guwahati, Assam	1002	864	839	920	1076	1078	1118	780
IOC, Barauni, Bihar	5082	5553	5469	5634	5940	6184	6207	4297
IOC, Koyali, Gujarat	11698	11543	12953	13714	13852	13206	13561	10673
IOC, Haldia, West Bengal	5418	5502	5836	5715	6042	5686	6878	6077
IOC, Mathura, Uttar Pradesh	6387	7938	8883	8033	8601	8107	8880	5985
IOC, Digboi, Assam	651	615	586	564	623	600	651	454
IOC, Panipat, Haryana	6390	6507	9435	12821	13070	13615	13660	11625
IOC, Bongaigaon, Assam	2311	2356	2067	2020	2163	2220	2008	1626
Total IOC	**38939**	**40878**	**46068**	**49421**	**51367**	**50696**	**52964**	**41517**
BPCL, Mumbai, Maharashtra	9138	10298	12030	12746	12262	12516	13020	9929
BPCL, Kochi, Kerala	7924	6939	7742	8134	7739	7875	8732	6888
Total BPCL	**17062**	**17237**	**19772**	**20880**	**20001**	**20391**	**21752**	**16817**
HPCL, Mumbai, Maharashtra	6118	6249	7419	7409	6652	6965	6752	5615
HPCL, Visakh, Andhra Pradesh	8121	7980	9377	9409	9155	8796	8200	6775
Total HPCL	**14239**	**14229**	**16796**	**16818**	**15807**	**15761**	**14952**	**12390**
CPCL, Manali, Tamil Nadu	8181	9680	9784	9802	9718	9580	10104	7363
CPCL, Narimanam, Tamil Nadu	742	682	618	464	418	517	703	466
Total CPCL	**8923**	**10362**	**10402**	**10266**	**10136**	**10097**	**10807**	**7829**
NRL, Numaligarh, Assam	2042	2133	2504	2568	2251	2619	2255	2165
ONGC, Tatipaka, Andhra Pradesh	93	93	94	63	84	55	69	52
MRPL, Mangalore, Karnataka	11809	12014	12536	12525	12577	12498	12662	9450
(b) PRIVATE SECTOR	**34309**	**33163**	**38379**	**43562**	**48549**	**80651**	**90693**	**68043**
RPL, Jamnagar, Gujarat	34309	33163	36616	36931	35636	34415	34517	26427
RPL(SEZ), Jamnagar, Gujarat	-	-	-	-	-	32735	41303	32067
ESSAR Oil Ltd. Vadinar	-	-	1763	6631	12913	13501	14873	9549
Total (a+b)	**127416**	**130109**	**146551**	**156103**	**160772**	**192768**	**206154**	**158265**

Note: "*: Provisional

1 RIL(SEZ), Jamnagar Refinery upto the August'11 actual and estimated for the Month Sept'11-December'11

2 Include other inputs of RIL(SEZ) in 2009-10,2010-11 and 2011-12(April-December).

Source: Public Sector Undertakings / Private Company.

Appendix - V

Production of Petroleum Products

('000' Tonne)

PRODUCTS	'2004-05	'2005-06	'2006-07	2007-08	2008-09	2009-10	2010-11*	2011-12* (Apr-Dec)
1	2	3	4	5	6	7	8	9
(a) From Crude Oil								
1. Light Distillates	**32865**	**32427**	**38104**	**40111**	**40222**	**51197**	**55197**	**43432**
of which								
LPG	5570	5525	6315	6732	6996	8091	7538	5333
Mogas	11057	10502	12539	14167	16020	22537	26135	18975
Naphtha	14100	14509	16660	16440	14826	17105	17531	14724
OthersLD	2138	1891	2590	2772	2380	3464	3994	4400
2. Middle Distillates	**62509**	**64432**	**71225**	**76649**	**80309**	**93790**	**99776**	**77381**
of which								
Kerosene	9298	9078	8491	7794	8223	8545	7702	5564
ATF/RTF/Jet A-1	5201	6196	7805	9107	8071	9296	9570	7774
HSD	45903	47572	53465	58361	62889	73281	78053	61131
LDO	1546	923	803	671	606	472	578	356
OthersMD	561	663	661	716	520	2196	3874	2557
3. Heavy Ends	**23205**	**22891**	**25931**	**28170**	**29985**	**34782**	**35391**	**26391**
of which								
Furnace Oil	10560	10320	12325	12638	14749	15828	18659	13660
LSHS/HHS/RFO	4410	3985	3372	3166	2935	2518	1860	1257
Lube Oils	646	677	825	881	874	950	737	482
Bitumen	3349	3576	3891	4507	4713	4889	4478	3145
Petroleum Coke	3162	3182	3779	4129	4241	3709	2632	3287
Paraffin Wax	64	63	63	64	69	64	179	299
Others Waxes	4	3	5	7	5	3	6	4
OthersHE	1010	1085	1671	2778	2399	6821	6840	4255
Total (1+2+3)	**118579**	**119750**	**135260**	**144930**	**150516**	**179769**	**190364**	**147204**
(b) From Natural Gas								
LPG	2240	2185	2093	2060	2162	2243	2168	1658

**Provisional*

Note

1. RIL(SEZ),Jamnagar Refinery upto Oct'11 actual and estimated for the month Nov'11 & Dec'11.
2. Include other inputs of RIL Jamnagar and RIL(SEZ) production in 2009-10, 2010-11 & 2011-12(Apr-Dec)

Light Distillate : Includes Propylene, C-3, Propane, Hexane, Special Boiling Point Spirit, Benzene, Toluene, Petroleum Hydro Carbon Solvent, Natural Heptane, Methyl Tertiary Butyl Ether, Poly Isobutine, Poly Butadine Feed Stock and Methyl Ethyl Keetone Feed Stock.

Middle Distillate: Includes Mineral Turpentine Oil, JP-5, Linear Alkyl Benzene Feed Stock, Aromex, Jute Batching Oil,Solvent 1425, Low Sulphur, Heavy Fuel HSD, Desulphurisation Hydrocracker Bottom and Special Kerosene.

Heavy Ends : Includes Carbon Black Feed Stock, Sulphur, Solar Oil, Light Aluminium Rolling Oil and Extracts.

Appendix - VI

SALES / CONSUMPTION OF PETROLEUM PRODUCTS

(000' Tonne)

	PRODUCTS	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11*	2011-12* (Apr-Dec)
	1	2	3	4	5	6	7	8	9
1.	**Light Distillates**	**35204**	**33662**	**37076**	**38556**	**39878**	**39086**	**41433**	NA
	of which								
	LPG	10245	10456	10849	12165	12344	13121	14328	11338
	Motor Spirit	8251	8647	9285	10332	11258	12818	14192	11190
	Naphtha+NGL	13993	12194	13886	13294	13911	10239	10691	8537
	Others	2715	2365	3055	2766	2365	2908	2222	NA
2.	**Middle Distillates**	**53906**	**54423**	**57595**	**62823**	**66378**	**71198**	**74950**	NA
	of which								
	SKO	9395	9541	9505	9365	9303	9304	8929	6204
	ATF	2811	3296	3983	4543	4423	4627	5079	4120
	HSDO	39651	40191	42896	47669	51710	56320	59990	47894
	LDO	1476	883	720	667	552	457	455	325
	Others	573	512	491	579	390	490	497	#
3.	**Heavy Ends**	**22524**	**25129**	**26078**	**27567**	**27343**	**27912**	**25402**	**NA**
	of which								
	Furnace Oil	9136	8921	9257	9469	9419	9105	8896	6862
	LSHS	4404	3907	3361	3248	3169	2484	1982	$
	Lubes/Greases	1347	2081	1900	2290	2000	2657	2508	1784
	Bitumen	3337	3508	3833	4506	4747	4919	4566	3106
	Petroleum Coke	3129	4928	5441	5950	6166	6750	5487	4508
	Paraffin Wax	60	268	303	241	203	211	190	NA
	Other Waxes	20	105	64	65	65	78	73	NA
	Others	1090	1411	1919	1799	1574	1708	1700	3663
	TOTAL	**111634**	**113213**	**120749**	**128946**	**133599**	**138196**	**141785**	**109531**
	Refinery Boiler Fuel	8537	9141	10920	11751	11912	11607	12622	12524
	Grand Total	**120171**	**122354**	**131669**	**140697**	**145511**	**149803**	**154407**	**122055**

* :Provisional
Note: 2000-01 onwards consumption data includes pvt. sales & pvt. imports also.
included in others under sub-head Heavy Ends.
$: included in Furnace Oil.
NA: not available
Source: Petroleum Planning & Analysis Cell.

Appendix - VII

Imports / Exports of Crude Oil and Petroleum Products

(Qty :'000' Tonne, Value : ₹ Crore)

ITEM	2006-07		2007-08		2008-09		2009-10		2010-11*		2011-12* (Apr-Dec)	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Gross Imports												
A. Crude Oil	**111502**	**219029**	**121672**	**272699**	**132775**	**348149**	**159259**	**375378**	**163594**	**455909**	**125592**	**469994**
B .LNG	**6810**	**5650**	**8320**	**7197**	**8060**	**9548**	**8828**	**10297**	**8949**	**12719**	**7357**	**14911**
C. Petroleum Products												
I.Light Distillates	**8005**	**21369**	**9485**	**29221**	**8000**	**27617**	**4813**	**15339**	**8500**	**30065**	**5690**	**23446**
1. LPG	2278	5766	2832	8700	2359	7916	2718	8329	4484	15888	3609	15002
2. MS	421	1326	328	1137	397	1530	385	1264	1702	6426	618	3091
3. Naphtha	5306	14277	5983	18470	5023	17410	1402	4942	2063	6853	1407	5167
4. Propane	0	0	342	914	221	761	308	804	251	898	56	186
II.Middle Distillates	**2392**	6938	5443	17556	4201	16286	3547	9326	3364	11886	1375	6452
1.ATF	2	17	3	20	4	34	3	27	2	22	48	245
2.SKO	1423	4250	2489	8324	1423	6480	985	2909	1366	4895	564	2702
3.HSD	967	2671	2951	9212	2774	9772	2559	6390	1996	6969	763	3505
3.Others												
III.Heavy Ends	**7263**	**12853**	**7533**	**14223**	**6323**	**16942**	**6302**	**9089**	**5500**	**13861**	**4196**	**5234**
1.FO / LSHS	2983	5174	1187	2211	1359	3059	762	1626	735	1745	477	1283
2.Lubes / Others	4280	7679	6346	12012	4964	13883	5540	7463	4765	12116	3719	3950
Total(C)	**17660**	41160	22461	61000	18524	60845	14662	33754	17364	55812	11261	35131
Grand Total(A+B+C)	**135972**	**265839**	**152453**	**340896**	**159360**	**418542**	**182750**	**419429**	**189907**	**524440**	**144211**	**520036**
Exports												
Petroleum Products												
I.Light Distillates	**12344**	**32581**	**13937**	**42220**	**13147**	**43101**	**19804**	**61509**	**24408**	**87356**	**18507**	**86238**
1.LPG	112	342	99	401	109	455	131	491	158	714	128	664
2.MS	3615	10191	4258	13614	5433	17779	9762	31170	13581	49446	10726	52251
3.Naphtha	8411	21431	9297	27365	7601	24849	9911	29848	10667	37184	7651	33311
4.Reformate	206	617	283	841	4	18	0	0	2	12	2	12
II.Middle Distillates	**15171**	**39993**	**18931**	**54919**	**18471**	**63423**	**23054**	**64318**	**24865**	**84992**	**19473**	**86836**
1.ATF	3652	10254	4486	13556	3701	13498	4588	13331	4478	16141	3705	17275
2.SKO	150	541	137	492	77	362	46	154	34	142	23	125
3.HSD/LDO	11369	29198	14308	40871	14693	49563	18420	50833	20354	68710	15746	69436
III.Heavy Ends	**6109**	**8520**	**7911**	**13650**	**7284**	**15540**	**8116**	**18210**	**9859**	**23764**	**8240**	**26859**
1.FO/LSHS	3759	4988	4718	6811	6201	12240	5173	10501	6735	15097	5924	18297
2.VGO/Lubes	859	1826	1498	3236	122	1021	87	213	638	1845	175	705
3.Coke/Bitumen/White Oil/Paraffin	66	77	409	614	132	306	285	544	532	854	4	25
4. Others	1425	1629	1286	2989	829	1973	2571	6952	1954	5969	2136	7834
Total	**33624**	**81094**	**40779**	**110789**	**38902**	**122064**	**50974**	**144037**	**59133**	**196112**	**46220**	**199932**
Net Imports												
A. Crude Oil	**111502**	**219029**	**121672**	**272699**	**132775**	**348149**	**159259**	**375378**	**163594**	**455909**	**125592**	**469994**
B. LNG	**6810**	**5650**	**8320**	**7197**	**8060**	**9548**	**8828**	**7861**	**8949**	**12719**	**7357**	**14911**
C. Pol.Products	**-15964**	**-39934**	**-18318**	**-49790**	**-20378**	**-61219**	**-36312**	**-110283**	**-41769**	**-140300**	**-34959**	**-164801**
Grand Total	**102348**	**184745**	**111674**	**230106**	**120458**	**296478**	**131776**	**272956**	**130774**	**328328**	**97990**	**320104**

*: Provisional.

'Source: Petroleum Planning & Analysis Cell, New Delhi.

Appendix - VIII

Audit Report No. PA 28 of 2010-11

Joint venture operations of OVL

ONGC Videsh Limited (OVL) is a wholly owned overseas arm of Oil and Natural Gas Corporation Limited formed with the objective of ensuring energy security for the country. Up to March 2010, OVL had acquired a total of 45 Exploration and production (E&P) assets with an investment of ₹ 52,492 crore in 16 countries worldwide.

Out of 36 assets that OVL acquired at the exploration stage at an investment of ₹ 6,207 crore, only five have been successful. Eight of these assets with an investment of ₹ 1,066 crore had to be abandoned (in three of these abandoned assets, OVL was the sole owner and operator) and the remaining 23 projects were still in the process of exploration. OVL is yet to succeed as an operator.

OVL's major investment of ₹ 46,285 crore (88 per cent) was in nine assets that were acquired at producing/ discovered stage. OVL, however, did not have a policy which would have provided a framework for decision making and brought about greater consistency, assurance and transparency in the system.

In audit, inadequacies were noticed in nine out of 20 test cases, in the evaluation process of investment opportunities and formation of joint ventures. Significant shortcomings were:

- OVL acquired exploration Block-5 B in Sudan despite its consultant' reservations on limited availability of reserve data as also security problems. The consortium could not implement the scheduled seismic and drilling plan and, in view of no hydrocarbon discovery, the block had to be relinquished resulting in unfruitful expenditure of ₹ 424 crore.
- OVL relied on the oil reserves estimated by Qatar Petroleum without revalidation of maps and data from an independent technical consultant. The drilling disclosed commercially unviable discovery of oil and the block had to be relinquished resulting in unfruitful expenditure of ₹ 369 crore.
- In case of a producing asset acquired by OVL in Russian Federation (Imperial Energy Corporation PLc.) at a cost of ₹ 10,320 crore, it could achieve production of only 15,803 barrels of oil per day (bopd) as against the envisaged production level of 35,000 bopd and has, therefore, incurred a loss of ₹ 1182 crore during 15 months from January 2009 to March 2010.
- In case of joint venture in Nigeria OVL could not secure its interest against the violation of local law by the JV partner which had a financial implication of ₹ 77.63 crore.

Internal Control

- The Joint Venture agreements contained provisions for partners audit in all the cases. However, out of 29 E&P assets which were under JV arrangement, OVL exercised partner's audit rights available to it in only 11 JVs after an average delay of one to three years. This resulted in irregularities not being noticed in time and consequently impacted timely corrective action.
- The internal audit system of OVL needs to be strengthened in view of its presence in 16 countries in varied political environments and diverse array of portfolio, to provide assurance to the stakeholders.

Recommendations:

- Formulate a policy and prepare standard guidelines in line with practices of Petroleum Resources Management System for evaluation of investment opportunities for acquisition of producing, discovered and exploration assets so as to mitigate the risks.
- Frame a policy and prepare guidelines formation of Joint Ventures so as to mitigate the risk, leverage the combined financial strength and share experience of the Joint Venture partner.
- Strengthen internal control system including internal audit and ensure a strong monitoring mechanism with multi level controls for financial and operational activities. Also, put in place timely audit arrangements for audit of the JV partners.

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BPCL, HPCL and IOCL

Revenue foregone

Inability to utilize pipeline as planned resulted in loss of opportunity to earn revenue of ₹ 5.17 crore besides avoidable expenditure of ₹ 15.99 crore.

Para 12.1

GAIL (India) Limited

Undue benefit extended to power producers

The Ministry of Petroleum & Natural Gas restricted use of APM gas only for fertilizer and for power generating companies supplying electricity to the grid for distribution to the consumers through public utilities/licensed distribution companies. Accordingly, the Ministry revised the rate for APM gas supplied to consumers other than power and fertilizer sector consumer from ₹ 3200 to ₹ 3840 per Metric Standard Cubic Meter. GAIL (India) Limited continued to supply the gas at pre revised rates of ₹ 3200 to consumers generating electricity and supplying to their consumers at commercial agreed rates through wheeling arrangement with the state electricity board. Thus, GAIL extended benefit to private parties taking shelter under the argument that the matter stood referred to the Ministry for clarification and leaving the matter unresolved for an indefinite period. This resulted in loss revenue of ₹ 227.37 crore during April 2006 to March 2010.

Para 12.2

Indian Oil Corporation Limited

Duty Drawback claims

The Oil Marketing Companies (OMC) import crude to meet the domestic demand, export surplus products, supply Aviation Turbine Fuel (ATF) to foreign bound aircrafts on regular basis and are eligible to claim drawback for the customs duty on the imported crude element included in the ATF/petroleum products exported.

Until the year ended 31 March, 2002, the marketing and pricing of petroleum products were governed by Administered Pricing Mechanism (APM), under which, Government of India (GOI) controlled the prices of the products marketed by OMCs with assured marketing margins. During the APM Regime, the Indian Oil Corporation Limited (Company) acted as the canalizing agent to import crude/export petroleum products on behalf of all OMCs up to March 2001. A thematic audit was conducted to examine whether there existed proper system for claiming duty drawback for all eligible ATF exports and the Company had a system to prefer the drawback claims for other locations by virtue of the experience gained. Audit observed that between January 2004 and March 2008, the Company exported ATF to the extent of ₹ 10435.11 crore in the country and claimed drawback only for a partial value of ₹ 2066.14 crore against ₹ 3701.54 crore of ATF exported in SR. Out of ₹ 6733.57 crore exported in other regions, only ₹ 4.05 crore was claimed in ER and NR. The Company did not claim the drawback for the exports made between May 1995 and March 2002 as there was no system of incentive during APM Regime; efforts taken by the Company to claim drawback when the other OMCs were not claiming the same were appreciable but the attempt made by the Company to claim drawback was partial in terms of exporting locations/sources of products.

Para 12.3

Early payment of Running Account bills before due date - Loss of interest

Indian Oil Corporation Limited, by releasing 'on Account' payments earlier than due date to the contractors of lumpsum turnkey contracts, incurred loss of ₹ 5.37 crore.

Para 12.4

Numaligarh Refinery Limited

IT Audit-Enterprise Resource Planning - SAP

Numaligarh Refinery Limited implemented SAP R/3 in 2005. Delays in up-gradation to SAP ECC version 6 resulted in non utilization of hardware purchased at a cost of ₹ 1.49 crore for the purpose. Review of the system revealed lack of referential integrity regarding excise duty, lack of input controls resulting in excess provision for entry tax, incomplete master data, non charging of depreciation as per policy of the Company etc. Further, Goods receipt based invoice verification feature was not used compulsorily for payment of goods received. Thus, the SAP ERP needs further customization to enable generation of reliable data.

Para12.5

Oil and Natural Gas Corporation Limited

Unproductive investment besides expenditure on interim facilities due to improper planning

Improper planning in setting up of plant for extraction of ethane, propane and butane from liquefied natural gas resulted in unproductive investment of ₹ 573 crore since December 2008 besides expenditure of ₹ 100.47 crore on interim facilities.

Para 12.6

Injudicious payment of golden jubilee incentive

The Company made an outright payment of ₹ 50,000 to each of its employees amounting to ₹ 173.70 crore as part of its golden jubilee celebrations. This payment was however, not consistent with the Department of Public Enterprises' guidelines on ex-gratia, honorarium, reward etc. and performance related payments.

Para 12.7

Unfruitful expenditure in exploration block beyond re-grant period

Failure of the Company in establishing any lead in the nomination block KK-DW-12 and 17 despite retaining the block for 11 years and acquisition of fresh seismic data in the block without ensuring extension of the petroleum exploration licence beyond five years of re-grant period followed by surrender of the block resulted in unfruitful expenditure of ₹ 12.13 crore.

Para 12.8

Petronet India Limited

Unfruitful expenditure due to delay in taking decision

The change in policy of the Government and failure to take prompt action resulted in unfruitful expenditure of ₹ 16.05 crore.

Para 12.9

Summary of important audit observations printed in the report of the CAG of India Union Government (Civil) No.19 of 2011-12 Performance Audit of Hydrocarbon Production sharing contracts.

1. **KG-DWN-98/3 (Operator: RIL)**

The KG-DWN-98/3 block, which is operated by RIL,was awarded in the first NELP round in the year 2000. It has India's largest gas discoveries (Dhirubai-1 and Dhirubai-3 gas fields) and also has a large oilfield discovery (MA oilfield). Our main findings and recommendations relating to the KG-DWN-98/3 block are as follows:

2. **Non-relinquishment of area and declaration of entire contract area as discovery area**

We found that the contractor was allowed to enter the second and third exploration phases without relinquishing 25 per cent each of the total contract area at the end of Phase-I and Phase-II as against Articles 4.1 & 4.2 of PSC. Subsequently, in February 2009, GoI also conveyed approval to treat the entire contract area of 7645 sq.km. as 'Discovery Area' thus enabling the operator to completely avoid relinquishment of area.

'Discovery Area' is defined in Article 1.39 of the PSC as "that part of the contract area about which, based on discovery and results obtained from a well or wells drilled in such part, the contractor is of the opinion that petroleum exists and is likely to be produced in commercial quantities". The delineation of 'discovery area' is inextricably linked to results obtained from wells drilled and finding of petroleum deposits recoverable at the surface (which can be discovered only through drilling of successful wells). At the end of the Exploration Phase-I, the operator had drilled all wells - in the north-west part of the block only. The sequence of events between April 2004 and February 2009 clearly demonstrates that

- Originally DGH did not agree (May 2004) to RIL's proposal (while preparing to proceed from Exploratory Phase-I to Phase-II) for not relinquishing any part of the contract area (at the end of Exploration Phase-I) and reiterated the PSC contractual provisions for relinquishment of 25 per cent at the end of Phase-I (even identifying "least priority" areas for consideration for relinquishment). DGH, further, stated that none of the existing discoveries extended beyond 'priority area-I' and no well had been drilled in 'priority area-II, and hence it was not possible to consider the total block area as the discovery area.
- However, by April/May 2005, DGH capitulated. While noting that there were "no two different interpretations possible as far as the definition of discovery provided in the PSC", DGH felt it would be "prudent to acquire and interpret the 3D seismic data in the remaining part of the block on a fast track basis". Subsequently, "the relinquishment area could also be worked out in a proper manner". In the meanwhile, RIL had already moved from Phase-I to Phase-II without any area relinquishment, and was notifying its intent to move from Phase-II to Phase-III, again without any relinquishment. In August 2006, DGH informed MoPNG that the Management Committee (MC) (chaired by DGH representative) had, in July 2006, permitted the contractor to enter the next phase without relinquishing any area, since data showed "continuity of discovery" in the block area (on the basis of RIL's representation based on the results of seismic data acquired).
- Thereafter, there was extensive correspondence between MoPNG and DGH from August 2006. MoPNG raised pertinent questions as to whether the coverage of wells was over the entire block for DGH to reach the conclusion of discovery extension, but failed to pursue this aspect further.
- By April 2007, MoPNG felt that the proposal might be considered on getting a certification from DGH that the whole area had been covered by a reasonable number of wells/3D seismic to substantiate continuity of channels and the extent of discovery area. DGH gave a certificate in May 2007 to MoPNG.
- Even in May 2007, internal notes of MoPNG indicated their awareness that the whole of the block had been provided as a discovery area on the basis of 3D seismic and not on drilling of wells, which were mainly confined to the NW part of the block. However, MoPNG now proposed that on the basis of the proposed discovery area, the operator should be asked to appraise the area as per appraisal-related PSC provisions. After concerns expressed by the then Minister, PNG as to whether the decision sought to be ratified was consistent with the PSC provisions, the case was referred to a committee under the chairmanship of Additional Secretary, MOPNG. The Committee accepted the contractor's claim (February 2008) and decided (April 2008) that the timeline for appraisal of discoveries would commence from 11 July 2006 (viz. MC's acceptance of the contractor's claim). This was finally approved by the Minister in July 2008, but communicated to DGH only in February 2009.

RIL's views at the different points of time (that the contractor was "of the opinion that petroleum was likely to exist", "the contract area was having hydrocarbon potential", "ultimately additional exploratory wells needed to be drilled to establish the additional hydrocarbon potential in the deeper water area of the block for which they were making efforts to hire ultra-deepwater rigs" clearly attempted to confuse potential/ prospectivity with actual discovery of hydrocarbons. Their difficulties in hiring ultra-deepwater rigs for the deep water area of the block (essentially the SW part, where no discoveries had been made) had no linkage with the contractual provisions for discovery area and relinquishment.

Thus, RIL's proposal of April 2004 to not relinquish any area and retain the whole contract area as 'discovery area' was submerged in a sea of correspondence between RIL and DGH, without relinquishment action being taken in terms of the PSC provisions, while RIL was allowed to proceed from phase to phase. By April / May 2005, DGH had "waived" its earlier objections, and now advised/ directed the operator to complete 3D seismic data. By July 2006, DGH completed its about-turn and agreed (through the MC) to the contractor's proposal. MoPNG was aware of the flaws in the MC's decision for retention of the entire area, but, instead of reversing the same (in line with PSC provisions) it chose to accept DGH's certification for such retention.

MoPNG gave a detailed reply (July 2011) regarding acceptance of operator's opinion by DGH and MoPNG. We, however, do not agree with the reply as allowing the contractor to retain entire block area as discovery area was not in compliance with PSC provisions.

We recommend that MoPNG should review the determination of the entire contract area as 'discovery area' strictly in terms of the PSC provisions. Further, it should delineate the stipulated 25 per cent relinquishment area at the time of the conclusion of the 1st and 2nd exploratory phases, and then correctly delineate the 'discovery area' strictly based on the PSC definition, linked to well or wells drilled in that part, without considering any subsequent discoveries (which would be invalid on account of non-compliance with PSC provisions).

3. **Discovery related issue**

In violation of PSC provisions, in the case of 13 out of 19 discoveries between October 2002 and July 2008, the operator had, without first furnishing the initial particulars of the discoveries in writing to the MC and Government, directly given written notifications regarding potential commerciality of the discoveries.

MoPNG replied (July 2011) that in the beginning, systems and processes were not fully established, however, over a period of time, the procedures had now been strengthened, and were being strictly followed for subsequent discoveries as per PSC requirement.

4. **D1-D3 gas discovery**

The operator submitted an "Initial" Development Plan (IDP) in May 2004 (with estimated capital expenditure (capex) of US$ 2.4 billion). The IDP was followed up with an Addendum to the IDP (AIDP) in October 2006 (estimated capex of US$ 5.2 billion for Phase-I and US$ 3.6 billion for Phase-II). We found that:

- Most procurement activities were undertaken late in line with the schedules of the IDP of May 2004. By contrast, activities in respect of items in the AIDP were initiated even before the submission/approval of the AIDP. Clearly, the development activities of the operator were guided by AIDP, rather than IDP.
- As indicated by the operator, advance action was taken to tie up vendors for timely development of D1/D3 fields in anticipation of the MC approval of the AIDP. While a view could, perhaps, be taken that such pre-approval action is at the risk and cost of the contractor, in reality, this increases the probability of such approvals becoming a fait accompli.

Most of the expenditure incurred/ payments made in respect of individual items under AIDP has been or will be incurred from 2008-09 onwards. Since approval of estimates does not constitute acceptance of the cost projections of the operator, validating the cost incurred by him can be done only after audit of the actual cost through proper norms. Such expenditure will, therefore, be covered in future audits.

5. **Procurement-related activities**

We found that payments during 2006-07 and 2007-08 revealed instances of huge procurement contracts where we could not derived assurance as to the reasonableness of costs incurred, primarily due to lack of adequate competition - award on single financial bids; major revisions in scope/ quantities/ specifications; post-price bid opening; substantial variation orders - with consequential adverse implications for cost recovery and GoI's financial take.

In particular, regarding the MA oilfield, we found that well before submission, let alone approval, of the Field Development Plan (FDP) and Mining Lease (ML) application, the operator had placed orders for various critical items required for development activities/ production facilities from 2006 itself. We also found serious deficiencies in the award, on a single financial bid, of a 10 years hiring contract for US$ 1.1 billion for a Floating Production, Storage and Offloading (FPSO) vessel from Aker Floating Production (AFP).

During our scrutiny of the operator's records, we have come across instances, where multiple vendors were pre-qualified. However, when technical bids were received, all vendors (except one) were rejected, and the contract was finally awarded on a single financial bid.

In our opinion, such disqualification of vendors on technical grounds, after a pre-qualification process and bidders' meetings for technical clarifications, limits the competitiveness which is not accordance with the spirit of the procurement procedure given in the PSC. In many cases, it resulted in no competing financial bids, and the contract was awarded on the basis of a single financial bid. In such a situation, the letter and spirit of the MC's role at the pre-qualification stage is vitiated.

Consequently, in our opinion, in cases of procurement (under procedure "C" - high value contracts), where pre-qualified bidders are subsequently disqualified/ declared non-responsive on various technical and other grounds and there is only one financial bid being considered, the Operator should either go back to the pre-qualification process, and ensure that more vendors/ parties are pre-qualified. Alternatively, if the operator wishes consideration of only a single financial bid, the matter has to be necessarily referred back to the MC (including GoI representatives)/ GoI for ex ante relaxation from PSC stipulated procurement procedures. Post facto approval of the MC may be provided for in emergent cases, with adequate justification.

Likewise, extension of contracts (beyond the extension periods already stipulated in the contract) is not inconsonance with PSC provisions. If the operator wishes to extend such contracts, the matter has to be necessarily referred back to the MC for necessary relaxation.

We, therefore, recommend that in the case of the KG-DWN-98/3, MoPNG carefully review in depth the award of 10 specific contracts (of which 8 were awarded to Aker Group companies) on the basis of a single financial bid. In this recommendation were not even remotely suggesting that the operator should follow government procurement procedures, yet any commercially prudent private acquisition would also attempt to generate competition and thereby obtain the most competitive price. Such concern for a cost effective acquisition is not perceptible in the aforementioned process.

6. **RJ-ON-90/1 block (Operator : Cairn Energy)**

This onland block (mainly in Rajasthan) was awarded in 1995 under the pre-NELP exploratory rounds, and is currently operated by Cairn Energy. It now has India's largest onland oil discoveries, and also has significant gas discoveries. The high "pour point" of the crude oil has necessitated a 660 km oil pipeline with insulation and heating facilities to the Gujarat coast. Our main findings and recommendations with regards to the RJ-ON-90/1 block are as follows:

- 13 fresh discoveries were made during/ between the appraisal phase and in the development phase in areas already delineated as development areas. Consequently, in our opinion, the declaration of fresh discoveries during the appraisal/ development phases within delineated discovery/ development areas amounted to irregular extension of exploration activities, which is not in consonance with the terms of the PSC. This also indicates that the discovery/ development areas were not strictly delineated, and included excess area.
- There were instances of non-compliance with regard to the PSC provisions for notification of potential commercial interest, appraisal programme, submission of Field Development Plans etc.

7. Panna-Mukta and Mid & South Tapti Fields

The Panna-Mukta and Mid & South Tapti fields are offshore shallow water fields in the offshore Bombay basin, which were initially discovered and operated by ONGC. Subsequently, these were awarded in 1994 to a consortium of private operators under a JV arrangement with ONGC.

As already pointed out, our scrutiny of records of the PMT JV and findings arising thereon are incomplete, due to non-production of records. Based on the limited records made available to us, our main findings are as follows:

- GoI incurred a substantial loss (on account of royalty) by failing to finalise the norms for post-well head costs of gas, and consequentially, gas wellhead prices. Even the norms for post well-head costs notified in August 2007 had significant deficiencies.
- MoPNG has accepted all our detailed findings relating to calculation of wellhead value of natural gas, and has agreed to take necessary action thereon.
- MoPNG and its nominee for gas purchase (GAIL) failed to comply with the terms of the PSC during 2005-08 with regard to the pre-determined gas pricing formula. Not honouring the PSC formula severely affects the sanctity of the contract (which is to be maintained by all parties), which is highly undesirable from the long-term perspective of all contracting parties.
- The PMT JV had not completed key work commitments in respect of the Mukta Field, which remained undeveloped (with very low volumes of oil and gas production). The committed work programme in respect of the Mid & South Tapti fields was also incomplete.

8. Compliance and Control Issues

We also found numerous deficiencies in compliance and control vis-avis PSC provisions by MoPNG/DGH, notably with regard to:

- Irregular declaration of entire contract area of KG-OSN-2001/2 as discovery area;
- Non-compliance to PSC provisions regarding notification of discovery and submission of test reposts;
- Delay in submission/ review of appraisal programme;
- Numerous deficiencies in functioning of the Management Committees for individual blocks; and
- Deficiencies in timely submission of stipulated periodical reports.

9. Conclusions and General Recommendations

Our audit indicated that there is considerable scope for improvement in the management of hydrocarbon E&P with private sector participation.

Structure of PSC

The PSC, as it currently stands, is based on a scaled formula for profit sharing between the GoI and the private contractors. This is based on a critical parameter - Investment Multiple (IM) - which is essentially an index of the capital-intensive nature of the E&P project i.e. the amount of "capex" on exploration and development activities relative to income. The slabs for profit sharing are so designed that more the capital intensive the project (ie. Lower IM) the lower the GoI share of "profit petroleum" (which could be as low as 5 to 10 per cent). Contrarily, the higher the IM (i.e. less capital intensive vis-à-vis income), the higher the GoI share of "profit petroleum" (which could be as high as 85 per cent).

In practice, however, the private contractors have inadequate incentives to reduce capital expenditure and substantial incentive to increase capital expenditure or "front-end" capital expenditure, so as to retain the IM in the lower slabs or to delay movement to the higher slabs.

The structure of the IM-based profit sharing formula (especially when there is a huge jump in GoI's profit share from 28 per cent to 85 per cent on an IM slab of 2.5 or more) is such that in certain scenarios, an increase in capital expenditure, upto a point, could conceivably result in an increase in the contractor's share of profit petroleum, despite a reduction in the total profit petroleum as well as GoI's share of profit petroleum. Further, "front-ending" of capital expenditure (i.e. skewed towards the initial phases) decreases the IM, and postpones the movement to higher IM slabs; this results in a reduction in GoI share on a discounted cash flow basis, since the slabs involving higher GoI share come later, rather than earlier.

Operational control of E&P operations is largely with the private operators, and the GoI's oversight role is restricted essentially to its representation (through MoPNG and/ or DGH) in the Management Committee for the block, especially in approval of Annual Work Programmes and Budgets and Field Development Plans, as well as a few approval functions delineated in the PSC.

Ashok Chawla Committee Report

We are given to understand that the report of the Ashok Chawla Committee on allocation of natural resources also draws similar conclusions regarding the IM-based profit-sharing formula. However, the report is not currently available in the public domain.

According to media reports, the Committee has stated that the system "gives incentive (to an operator) to increase his investment, or front-end his work plan in order to see that

the threshold where Government's profit take rises rapidly is not reached".

Citing the example of KG-DWN-98/3, the Committee has stated that "the relationship between the pre-tax IM and the share of contractor profit petroleum changes dramatically once the pre-tax IM crosses 2.5, with the government's share increasing from 28 per cent to 85 per cent. It is useful to remember that this schedule is bid by the operator, and not determined by the Government".

Further, according to the Committee, "a high share of some pre-tax IM will help to win the bid, depending on the financial mode of evaluation used, but it does raise concerns that such a radical change would provide very strong incentives for any operator to adopt all investment and strategies possible to ensure that the pre-tax IM stays within the 2.5 limit".

The report clearly points out the risks associated with the IM-based formula for sharing of profit petroleum, especially with a steep jump in profit sharing from one slab to another. In our view, even the linearity introduced in the sliding scale for IM slabs from NELP-VII onwards does not fully address these risks.

The oversight/ control of GoI representatives on high value procurement decisions is also very limited in scope (largely restricted to prior intimation of the list of pre-qualified bidders). In fact, a comparison of the procurement procedure under PSCs in Bangladesh and India reveals that the clauses are similar, except that the Bangladesh PSCs require approval by the Management Committee for high value procurements (typically greater than US$500,000). This clause is however, strangely missing from the Indian PSCs in almost all its versions.

Our audit review also revealed that, by and large, the MoPNG as also DGH, both through the Management Committee and otherwise, did not pay adequate attention to protecting - at every stage of E&P, be it exploration, development or production - GoI's financial interests. Adequate attention was not paid to specifically how every proposal/ decision would potentially affect GoI's share of profit petroleum. In addition to their failings, the constraints of adequately skilled resources with MoPNG/DGH for monitoring several hundred PSCs simultaneously cannot also be ignored. By contrast, it is inconceivable that the private contractor would fail to protect his financial interests, and assess every investment/ operational proposal to see whether it would result in incremental revenues for him both in terms of cost recovery and contractor's share of profit petroleum.

Given the similar conclusions that two independent agencies have reached as regards the adverse impact of the profit sharing mechanism in protecting GoI's share (linked to the IM), designed in the late 1990s, there does seem to be enough ground to revisit the formula. The PSC as drawn up then, was with the limited expertise available with the GoI at that point of time. In view of the fact that, albeit by hindsight, we have gained the knowledge now, there is need to conclusively address this issue in respect of future PSCs.

Recommendations for Future PSCs

The stated strength of the profit sharing mechanism is the sharing of risks between the contractor and the Government - if the profits are low or non-existent, both parties suffer.

For future PSCs, we recommend that the IM-linkage with the profit sharing formula (even with the linear sliding scale introduced from NELP-VII onwards) be removed by the GoI. Instead, the biddable profit-sharing percentage should be a single percentage. This will reduce the incentive for skewed volume and timing of capital expenditure resulting in very low GoI share of PP. Further, in order to ensure a modicum of control, very high value procurement decisions above a specified limit should be subject to approval by the MC, more specifically the approval of the GoI representatives. Such a mechanism already exists in PSCs operating in Bangladesh.

Bid Evaluation Criteria

The Bid Evaluation Criteria (BEC) currently give weightage to technical/ financial ability and two biddable parameters - committed exploratory work and fiscal package (royalty + GoI share of profit petroleum). As regards fiscal package, the current evaluation model generally involves multiple scenarios of oil reserves and oil prices (typically high, medium and low) as well as a projected profile.

The assumptions based on which calculations of fiscal packages of different bidders are made are completely hypothetical. In the absence of high quality seismic data, let alone drilling and discovery findings, estimates of oil/ gas reserves and production profiles, as also projected capital and operating expenses and even crude oil and natural gas prices, are completely speculative. Admittedly, the evaluation model is applied consistently across all bidders. However, when the current system allows multiple bidding points (viz. different GoI shares of PP for different IM slabs), these hypothetical assumptions can not only make a significant difference as to who comes out as the winning bidder, but can also convey extremity unrealistic assumptions about what GoI's share of PP will be (e.g. when will GoI's share of PP reach the highest IM slab?).

Consequently, we recommend that the bidders should be allowed to make only a single point bid, which can be compared straightaway without resorting to hypothetical assumptions.

As regards the biddable exploratory work programme, we are generally in agreement with the bid evaluation process, except for the system of awarding points for well depth. As pointed out in Chapter 4 (relating to KG-DWN-98/3), it is unrealistic and impractical, without having accurate and reliable seismic data, to bid upfront how deep the well should be drilled, and then expect that, notwithstanding geological objectives, the well will be drilled to the committed depth even if it means a waste of money.

Consequently, in future, while considering the bid evaluation criteria, we recommend that either no weightage be allocated for well depth, or alternatively, well commitments be categorized into two groups - wells above

and below a specified depth, e.g., 1500 or 2000 meters, and points be awarded accordingly.

MoPNG stated (July 2011) that they are prepared to look at alternative formulas and would consider the suggestion of the CAG and the Ashok Chawla Committee with an open mind and take a final view on merits.

Management of existing PSCs

The vast majority of blocks with high prospects for hydrocarbon discovery have already been awarded through various pre-NELP / NELP rounds, and GoI has no option but to work within the constraints of the existing PSC structure and clauses to the fullest extent possible.

Development Plans and Annual Work Programmes and Budgets

It is inconceivable that a private operator/ contractor will make investments in absolute as well as incremental terms, in petroleum operations under the PSC without assessing whether such investments would result in increased revenues for him in terms of cost recovery and contractor's share of profit petroleum. It is necessary for MoPNG and DGH to function in a similar manner, with regard to GoI's financial interests. Consequently we recommend the following:

- Review and approval of development plans should be considered not just from a "technical perspective" viz. how best can oil and gas be extracted from the reservoirs, but also from a financial perspective - not only overall (i.e. what is the project NPV, Rate of Return etc.), but specifically from GoI's point of view (what are the projections of royalty and GoI share of profit petroleum? What are the risks to these revenues? How will increases/ decreases in capital expenditure, reserves, reservoir productivity, prices etc. affect GoI's financial take?).
- While reviewing and approving development plans, GoI representatives on the MC as well as DGH and MoPNG should ensure that detailed and appropriately validated estimates of GoI take and contractor take are included as an integral part of these plans at the approval stage. A suitable range for GoI take, say ± 15, 20 or 25 per cent, as considered appropriate by MoPNG could be stipulated.
- Approval by MoPNG of such development plans should be on the clear stipulation that any changes in capital and operating expenditure, expenditure commitments, production quantities and other factors, which have the impact of reducing the Investment Multiple and GoI share of profit petroleum beyond the stipulated range must be submitted for prior approval by GoI representatives on the MC, with detailed justification.
- Annual Work Programmes and Budgets should be strictly in line with approved development plans. Any

Aircraft Refuelling

deviations or changes vis-à-vis the development plan which have the impact of reducing the IM and GoI share of profit petroleum beyond the stipulated range must be submitted for prior approval of the MC. Similarly, any significant variations from the approved Work Programme and Budgets with similar impact beyond the stipulated range must also be subject to prior approval.

- Incurring of any costs which vary from the Development Plans and Annual Work Programmes & Budgets on an overall basis, as well as in terms of significant line items with significant adverse impact on IM and GoI share of profit petroleum - beyond the stipulated range - without prior approval of GoI representatives on MC should automatically be ineligible for cost recovery.

While some of these recommendations could be misconstrued as hampering operational flexibility in petroleum operations by the contractor, the importance of the overall objective of protecting GoI's revenue interests cannot be ignored.

Procurement Activities

The provisions relating to procurement procedures in the PSCs do not provide for adequate oversight/ control by GoI representatives on procurement processes. However, given the existing provisions, we recommend the following measures for protecting GoI's financial interest.

- The objective of effective procurement is to ensure optimum, not necessarily lowest, prices through effective competition. As long as adequate number of 'responsive' financial bids, typically three or more, from reputed vendors, who are pre-qualified after following due process, are received and duly considered (i.e. not withdrawn, disqualified on technical or other grounds, deviations/ non-responsiveness or otherwise not considered), generate adequate competitive tension, the probability of effective procurement at optimum costs remains high.
- However, when high value contracts are awarded on the basis of single 'responsive' financial bids, in our opinion, these are awarded without competition, effectively on nomination basis. In all such cases, prior approval of the MC should be necessary for such awards. Post facto approval, with appropriate justification, for emergent procurement decisions may also be considered. Similar provisions would also apply to all procurement decisions involving post-priced bid opening changes to scope, quantities, work, prices, conditions etc.
- Also, the practice of repeated extensions, subsequent substantial variations in scope etc. of existing contracts is also not in line with the existing PSC procurement provisions, which incidentally makes no mention of extensions. Extensions or scope variations for high value contracts, beyond the contractually stipulated extensions, should also be subject top prior MC approval, with provisions for post facto approval in emergent cases.

Relinquishment of area, and delineation of discovery and development areas

As pointed out in earlier chapters, the entire PSC process is designed to ensure that the private contractors fully explore the contract area within designated timelines, relinquish areas where hydrocarbon prospects appear poor in a phased manner, and retain only those areas where hydrocarbon discoveries are made, relinquishing the remaining area for re-allocation - through a competitive bidding process - to other potential bidders, whose hopes/ views in terms of hydrocarbon prospectivity differ (either on account of technical and other capabilities or in terms of their risk appetite) from the contract holders who have relinquished such area. We, therefore, recommend the following:

The stipulated timelines and processes in the PSC for relinquishment of contract area should, under no circumstances, be relaxed, and compliance with these provisions should be invariably ensured.

Further, the discovery and development areas should be rigorously delineated, keeping strictly to the discoveries made through exploratory and appraisal well drilling and proper delineation of reservoir boundaries. Attempts by contractors for delineation of excessively wide discovery/ development areas through elastic (and incorrect interpretation) of hydrocarbon discovery should be strongly rebutted.

Compliance with other PSC provisions

The PSC is a contractual document, and compliance with every contractual clause is of utmost importance. It would be inappropriate to distinguish between "major" and "minor" clauses, and neglect monitoring of compliance with so called "minor" PSC clauses.

We recommend that DGH and where necessary, MoPNG should put into place adequate and effective measures to ensure that compliance with all provisions of the PSC are fully monitored on a timely basis and appropriately documented, and action taken against operators on a timely and consistent basis, for non-compliance with PSC provisions. For such purposes, strengthening of the resource basis of DGH in terms of adequate quantity of skilled resources may be necessary.

DGH should also consider developing a comprehensive PSC monitoring system, which will not only provide details of compliance with PSC provisions for any block/ contract at a glance, but will also enable operators to "file" returns/ documents/ information electronically through the web and / or e-mail. The cost of developing (and maintaining) such an IT system will be miniscule, compared to the total GoI Profit Petroleum revenues as well as the potential (although not exactly quantifiable) gains from more effective and timely monitoring of compliance.

Role of DGH

In our view, the roles and functions of DGH encompass two sets of functions with potential conflict of interest - an upstream regulatory function, and a function or rendering technical advice to GoI. While in 1993 (when DGH was set

up), there was lack of adequate clarity on the role and position of regulators in various economic sectors, the need for clear autonomy of sectoral regulators (from the Executive) is now well recognized.

Consequently, we recommend that the functions currently discharged by the DGH be clearly demarcated. The technical advisory and related functions should be discharged by a body completely subordinate in all respects to MoPNG (either a cell/ attached office/ subordinate office within the MoPNG or a separate entity under MoPNG). Functions of a regulatory nature (review of hydrocarbon reserves and reservoir management, laying down of norms for declaration of discoveries, laying down safety and related norms and conducting safety inspections/ audits etc.) should be discharged by an autonomous body, with an arm's length relationship with GoI.

MoPNG has assured that conclusions and recommendations drawn by CAG would be considered for appropriate action.

Appendix - IX

Position of ATNs in respect of Audit Observations included in the Annual Report as well as those included in earlier Annual Reports

(As on 31.01.2012)

Sl. No.	Year	No. of Paras/PA reports on which ATNs have been submitted to PAC/COPU after vetting by Audit	Details of the Paras/PA reports on which ATNs are pending		
			No. of ATNs not sent by the Ministry even for the first time	No. of ATNs sent but returned with observations and Audit to awaiting their resubmission by the Ministry	No. of ATNs which have been finally vetted by Audit but have not been submitted by the Ministry to PAC/COPU.
1.	2003	03	-	-	-
2.	2004	21	-	-	-
3.	2005	49	-	2	-
4.	2006	31	-	-	-
5.	2007	27	-	1	-
6.	2008	21	-	4	-
7.	2009-10	12	-	6	-
8.	2010-11	02	-	-	-

Shri S. Jaipal Reddy, Union Minister for Petroleum & Natural Gas at the dedication ceremony of the Expanded Capacity & Modernised Facilities of Bharat Petroleum's Kochi Refinery

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