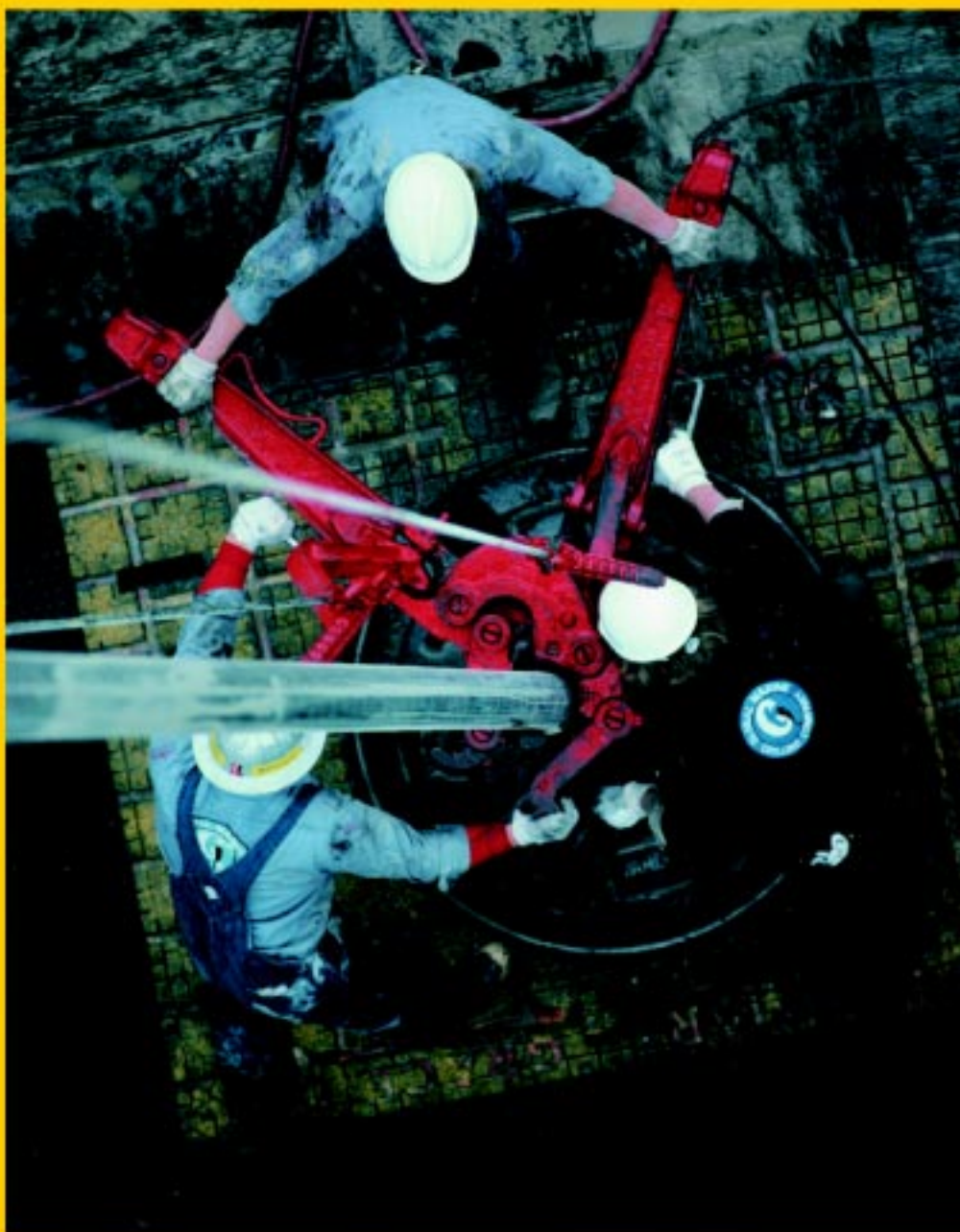


Fuelling India's Growth

Past Trends and Scenarios 2011-2012



Petroleum Federation of India



Knowledge partner

PRICEWATERHOUSECOOPERS 

Oil & Gas Industry Practice

PricewaterhouseCoopers Pvt. Ltd.

11-A, Sucheta Bhawan, Gate No. 2, 3rd Floor, Vishnu Digamber Marg, New Delhi-110 002

Tel: +91 11 2321 6023, 2321 0891 Fax: +91 11 2321 0594, 2321 0596

E-mail: oil.gas@in.pwc.com Website: www.pwc.com

Fuelling India's Growth

Past Trends and Scenarios 2011-2012

Executive Summary



Petroleum Federation of India

Foreword

We are happy to present the study “Fuelling India’s Growth – Past Trends & Scenarios 2011-2012”. This is a part of the continuing initiative of the Petroleum Federation of India to enhance awareness about the petroleum sector and current issues concerning it and associated industry in India.

As the world nears the half-decade in the new millennium, there is no dearth of good news on the global economic front. According to IMF, global GDP growth in 2004 is expected to be higher than the performance recorded over the past 3 decades. China and India are among the star performers. However, the momentum of global growth, including India’s, is now being threatened *inter alia* by fluctuating oil prices.

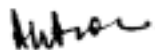
In 2003-04, India registered an overall GDP growth rate of 8.1%. This is a record performance in the new millennium and a substantial improvement over 2002-03. This growth was accompanied by stable inflationary conditions and was backed by favourable balance of payments situation. The fuels for this growth were the buoyancy in the services sector, a resurgence in agricultural growth and a stable manufacturing sector. Even in coming years, India is expected to remain among the faster growing economies in the world.

The petroleum sector not only needs to gear up for the desired growth but also fuel the economy more efficaciously. PetroFed, therefore, considered it necessary to focus on the drivers of fuel demand as well as draw out scenarios reflecting differential growth paths. PetroFed has undertaken this study in an endeavour to provide information as a basic input for strategic planning, policy-making and reviewing the future course of action.

This study analyses the commercial energy mix and trends in changes in production, consumption, imports and exports of crude oil, gas and refined petroleum fuels over the period 1998-99 to 2003-04. The infrastructure available and planned for transportation of fuels is also covered. Projections of demand of fuels for the growing economy till 2011-12 by way of econometric modelling are the crux of this study. The information is expected to be of immense benefit to the industry and stakeholders, investors and policymakers.

A further study to project the demand scenarios of fuels in 2017, 2020 & 2030 is in progress.

Our warm thanks to PricewaterhouseCoopers Pvt. Ltd. who undertook this study, and Integrated Research and Action for Development (IRADe) who assisted PwC in undertaking the econometric modelling and projections. We also sincerely thank all our member companies for their valuable inputs provided during the course of this study.



A K Arora
Director General
January, 2005

Past trends – Crude Oil, Gas & Refined fuels

Introduction

Energy plays a critical role in the socio-economic development of a country. The Indian economy has been on a the long-term growth trend since the decade of 80s when it breached the average GDP growth rate of 3.5% a year (“Hindu rate of growth”) to move to an average of 6% in the 90s. Over the last 5 years, the GDP has grown at an average of 5.6 per cent.

Global experience proves that the energy market needs to keep pace with growth of economy. In fact, the sustained handholding by energy availability is one of the important requirements for growth. India, over the last 5 years, has prominently shown this trend. The requirement of energy in the form of power, natural gas and refined fuel products has increased steadily. Towards the end of 20th century, a wide gap existed between the demand for crude, natural gas as well as refined products and their domestic supply. Both crude and refined products were heavily imported to bridge this gap. The trend changed substantially after a sudden increase in domestic refining capacity just before the 21st century dawned. In almost all refined products, the dependence on imports is now reduced and as we move towards 2004, India has surplus refining capacity..

Regarding crude oil, the gap between domestic supply and demand has been increasing. The import burden has increased because of the increase in refining capacity and no growth in domestic production. There has been a wide gap in the potential demand and supply gap of natural gas . The limited availability of natural gas was due to a lack of domestic discoveries and non-availability of import facilities . The recent construction of 2 LNG import terminals is aimed at improving the availability of natural gas in India. A major gas discovery in 2002 in KG basin on Eastern coast, when commercialized, would bring relief to the gas starved situation but would not be sufficient to bridge the demand supply gap.

Approach to this study

1. In order to undertake projections of demand of fuels and estimate the domestic supply of these fuels, it was necessary to understand the past trends of changes in production, consumption, imports and exports of fuels.
2. This study began with the detailed collation of data from various reliable sources. These sources, which provided statistics on crude oil, natural gas and refined products, included Ministry of Petroleum & Natural Gas (MoPNG), Directorate General of Hydrocarbons (DGH), Centre for Monitoring Indian Economy (CMIE) and CRIS Infac. Valuable information was also obtained from company sources through direct interactions with oil companies. Some of the information obtained from secondary sources was later ratified by oil industry.
3. A detailed analysis of data and trends was conducted and through direct interaction with the member companies of PetroFed the analysis was enriched and validated.

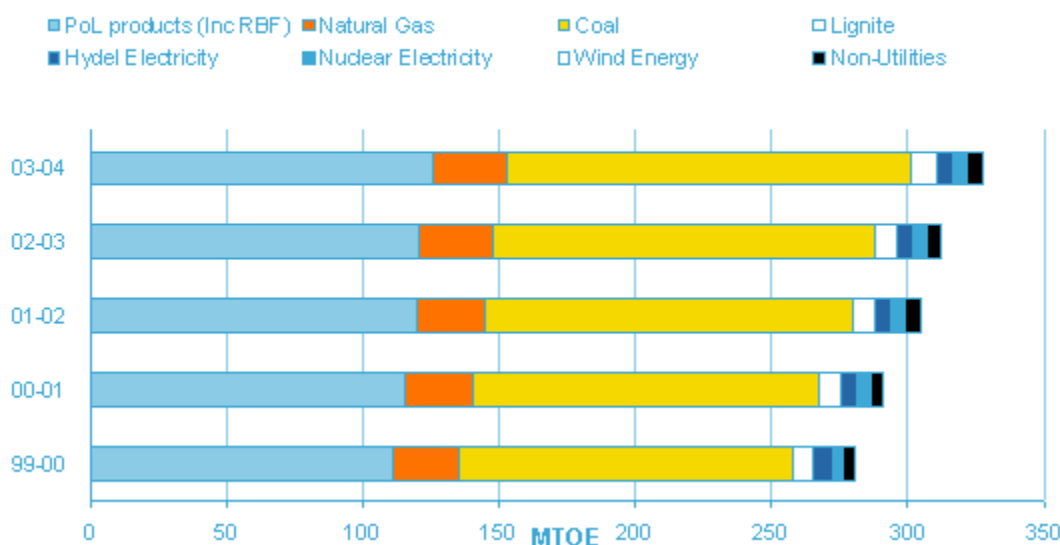
Executive summary

- Information regarding production, consumption, imports and exports of fuels like coal and lignite, biomass and other non-conventional energy sources was obtained from the respective ministries.
- The study starts with the demand side issues in the Indian economy. Further, it analyses the broad commercial energy mix and each of the refined petroleum fuels and the crude and natural gas for its trends observed in 1998-99 to 2003-04, the period under study. The report also reviews the broad progress during this period on the use of renewable non-conventional energy sources and alternate fuels.
- By adopting the above approach, data regarding consumption, production, imports and exports have been studied, analysed and presented in the study. The infrastructure for transportation of fuels available and expected to be built has been presented in the study. In following paragraphs, the trends as regards each of these fuels are briefly discussed. The detailed analysis is available in the PetroFed publication.

Commercial Energy Mix

Commercial energy consumption has grown at a CAGR of 4 per cent from 280 MTOE in 1999-00 to 327 MTOE in 2003-04. India is highly dependent on coal, lignite and oil and gas, which account for 95 per cent of commercial energy mix. Coal and Lignite form 48 per cent whereas Oil & Gas account for 47 per cent of the total commercial energy mix.

Commercial Energy Mix (1999-2004) in MTOE

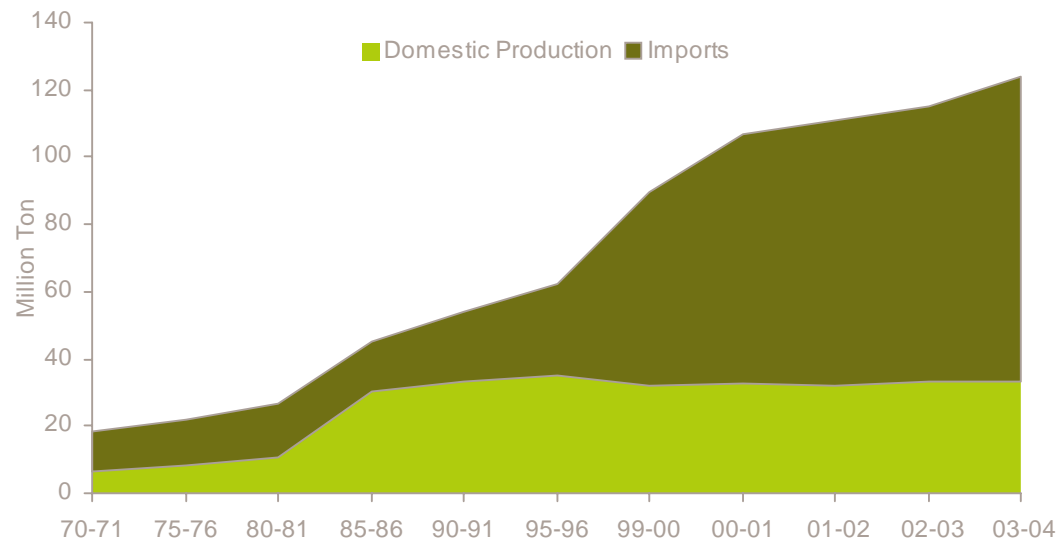


Executive summary

Primary fuels

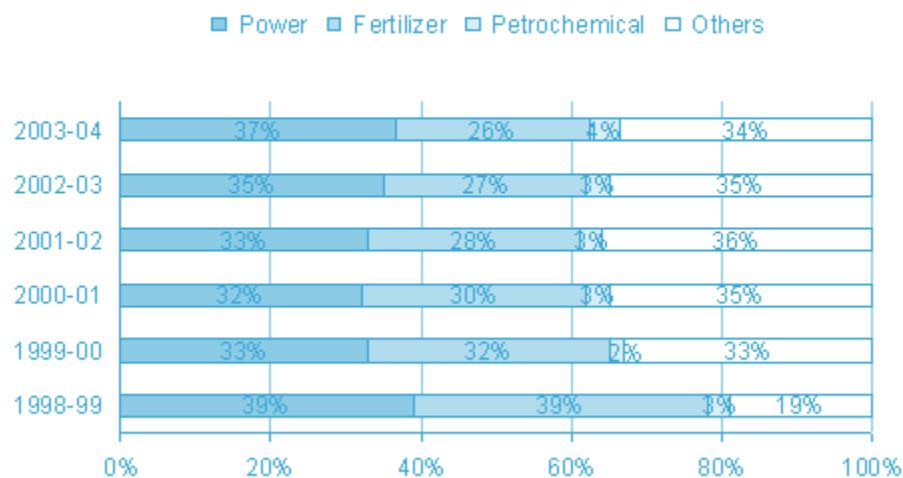
Crude Oil production has increased at a CAGR 7 per cent from 1970-71 to 1995-96 and is declining at a CAGR 0.6 per cent from 1995-96. Domestic crude oil production has been stagnant around 32 MMT during 1999-2000 to 2003-04. India imports around 73 per cent of its total crude oil requirements.

Crude Oil – Production and Imports



Net Production of NG has increased at a CAGR of 3.74 per cent from 25,716 MCM in 1998-99 to 30,900 MCM in 2003-04. In India, gas produced by ONGC is allocated to various sectors by Gas Linkage Committee whereas gas produced under NELP blocks and LNG imports can be freely marketed by gas producers and importing companies.

Natural Gas- Sector Wise Application



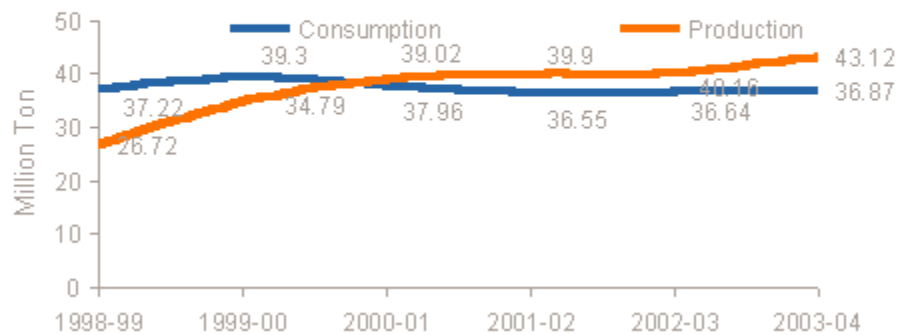
Executive summary

Coal is India's principal source for meeting its commercial energy requirements. In India, coal is the most abundant available fossil fuel and provides a substantial part of country's energy needs. It is used for power generation, to supply energy to industry as well as for domestic purposes. Over 90 per cent of the coal supply is produced indigenously. The largest consumers are the electric power sector, iron and steel industry, coal producers themselves and the cement industry. Other industrial consumers include the textile, fertilizer and brick industries. About 85 per cent of the total coal and lignite production comprises of non-coking coal with lignite at 7 per cent and balance coking coal. About 86 per cent of the total coal production in the country comes from the collieries of Coal India Limited (CIL).

Refined and Other fuels

Diesel (HSD), largely a transport fuel, forms the biggest chunk (35 per cent) of total petroleum product consumption in India. Diesel is mainly used in the road transport, rail transport, and agriculture and power generation sectors. Road transport and agriculture account for 73-75 per cent of total diesel consumption. The balance is accounted for by the railways 4-5 per cent, the manufacturing industry (captive power generation) and power utilities 13-14 per cent and other end-users. The transport fuel demand was met with by considerable imports just six years back. However, the scenario has changed and India has recently emerged as net exporter of diesel. Diesel consumption did not rise noticeably from 1998 to 2004 (HSD growth was negative in the first half of 2003-04).

HSD - Trend Analysis



Motor Spirit (MS), Motor Gasoline, Petrol and Gasoline are terms interchangeably used in India for this light distillate product of refineries. Motor spirit (MS) is used as a fuel in vehicles such as passenger cars, two-wheelers and three-wheelers. MS accounted for 7.43 per cent of the total demand for petroleum products in 2003-04. MS production increased at a CAGR of 14.5 per cent in the period 1998-99 to 2003-04. The consumption has, however, grown with comparatively lower CAGR of 7.53 per cent in the same period.

Naphtha is a highly volatile product, manufactured from crude oil by direct atmospheric distillation and by catalytic cracking of heavy residues. The demand for Naphtha is inextricably linked to that of the petrochemical and fertilizer industries where it is used as a feedstock (raw material). While production of Naphtha has increased from 1998-99 to 2003-04 at a CAGR of 13.24 per cent, overall consumption of Naphtha has increased at a CAGR of 4.95 per cent during the same period. The surplus production of Naphtha in India has resulted in increasing exports that have risen at a CAGR of 24.80 per cent during the same period.

Executive summary

Kerosene, also called Superior Kerosene Oil (SKO), is a middle-level distillate and is primarily used in India for cooking. Kerosene has been classified as a common man's fuel and keeping this in view, the price of SKO through the Public Distribution System is subsidized. The production of Kerosene was lagging behind demand during 1998 to 2002 and the gap was filled by imports. Since 2003, the production of Kerosene has gone up, reducing India's dependence on imports. During 03-04, 0.80 MMT of Kerosene was imported.

Liquefied Petroleum Gas (LPG) is largely used as a domestic fuel in India for cooking and to a lesser extent, as an industrial and commercial energy source. LPG is a cleaner alternative fuel for automobiles compared to petrol, diesel, etc. Production of LPG has increased at a CAGR of 16.08 per cent from 3.64 MMT in 1998-99 to 7.67 MMT in 2003-04. In the same period, the consumption increased at a CAGR of 11.72 per cent, from 5.35 million tonnes to an around 9.31 MMT. LPG Imports came down from 1.62 million tonnes in 1998-99 to 0.66 million tonnes in 2001-02 before increasing again to 2.18 million tonnes in 2003-04.

Aviation Turbine Fuel (ATF), as the name suggests, is used as a fuel for aircraft. ATF is a middle level distillate along with Kerosene and High-Speed Diesel in the fractional distillation of crude oil. Production of ATF in India has been growing at CAGR of 13.4 per cent from 98-99 to 03-04. The consumption of ATF has been growing at a CAGR of 3.4 per cent from 98-99 to 03-04.

India is one of the few countries that produce LDO. LDO is a distillate fuel with a small proportion of residual fuel. This fuel is used for agricultural pump sets by small industries and as start up fuel for power generators. LDO consumption is on an average about 4 per cent to 4.5 per cent of the total diesel consumption in India.

Low Sulphur Heavy Stock (LSHS) and Heavy Fuel Oil (HFO) are jointly described as Fuel Oils. Fuel Oils are consumed mainly by the fertilizer industry, mechanical and electrical equipment manufacturers and the chemical and textiles industries. Apart from the manufacturing sector, the other big consumer is power. In thermal power plants, Fuel Oil is used as a feedstock for power generation and as a fuel for boilers in the plants. Consumption of LSHS/HFO has declined at CAGR of 0.1 per cent from 1998-99 to 2003-04. However, production of LSHS and HFO has increased at CAGR of 3.9 per cent in the same period.

Bitumen is also known as asphalt. The uses of bitumen are numerous. The chief one is road construction including surfacing airfield runways and taxi tracks. It is also used for hydraulic applications such as canal lining, river bank protection, dam construction and sea defenses. There are also numerous industrial applications like roofing felt manufacture, printing inks, electrical cable / junction boxes, mastic for roofing of terraces, duplex paper manufacture, etc. The consumption of Bitumen has grown at a CAGR of 5.3 per cent from 98-99 to 03-04.

Compressed Natural Gas (CNG) is a relatively clean automobile fuel with lower emission levels of SO_x, NO_x and SPM. It is, therefore, being promoted by the Government of India as a fuel for the transport sector by granting fiscal incentives. Average CNG consumption has grown at a CAGR of 76.86 per cent from 201.67 tonnes per day (TPD) as at April 1, 2001 to 1115.66 TPD as at April 1, 2004.

Government has permitted use of LPG, being a clean and environmentally friendly fuel, as an automobile fuel. For this purpose, MoPNG along with the other ministries/ Departments concerned has formulated necessary legislative and Regulatory framework necessary for the safe use of LPG as an automotive fuel. Currently, there are 694.65 lakh vehicles running on LPG in India, which does not include vehicles using LPG unauthorisedly.

Executive summary

Renewable & Non-Conventional fuels

Hydrogen is a potential 'fuel for the future'. It is a colourless, odourless gas, 14 times lighter than air, that when burnt produces only water. If applied successfully and cost-effectively, hydrogen fuel cells could transform transportation and significantly reduce emissions. MNES would be supporting various preparatory activities concerning the preparation of a National Hydrogen Energy Road Map leading to a National Programme and certain specific projects to accelerate the pace of work.

Coal gasification is a process that converts solid coal into a synthetic gas composed mainly of carbon monoxide and hydrogen. The environmental benefits stem from the capability to cleanse as much as 99 percent of the pollutant-forming impurities from coal-derived gases. Presently, ONGC and GAIL are working on underground coal gasification projects.

Bio-diesel is emerging as an alternative as it is similar to diesel in terms of engine performance, wear, fuel mileage and drivability. In addition, it reduces the smoke from engine exhausts. The Planning Commission and MNES have been actively sponsoring several programmes in this area. The government of India has been assisting farmers in cultivating *Jatropha Curcas*.

Ethanol is a renewable fuel and its refueling is akin to that of gasoline or diesel. It can be used for both light and heavy-duty vehicles. Ethanol-blended petrol had been introduced in select states from January 2003.

Biomass energy is generally produced from firewood, agricultural residues such as bagasse, crop stalks, animal dung and husk, etc. Biomass is used for power generation and as a producer gas. Biomass energy is being utilized mainly for domestic, commercial and industrial applications. The availability of biomass in India is estimated at about 540 million tonnes per year.

Biogas is a clean, non-polluting and low - cost fuel. It contains about 55 to 75 per cent methane, which is inflammable. There is a wide range of capacities available from 20 KW to 500 KW for electrical applications. Largest biomass thermal gasifier used in India for an industrial application has a capacity of 1.0 MW.

Fuel Transportation Infrastructure in India

Refined petroleum products from refineries to consumption centers are transported by rail, road, pipelines and sea. Among the developed countries, the share of pipelines in the overall movement of petroleum products is as high as 60 per cent, whereas it is just 30 per cent in India. With the demand for petroleum products picking up in the country and increased competition among the oil marketing companies, this scenario is bound to change with oil companies opting for the least-cost option of transporting petroleum products.

Transportation infrastructure for Crude Oil, Natural Gas & Refined products

Crude from onshore oil fields is mainly transported through pipelines while for offshore oil fields, crude oil carriers are also used. Imported crude comes via the sea and is directly supplied to refineries situated on the coast. Road and rail do not play any role in transporting crude oil excepting in few cases.

Executive summary

Natural gas is transported from producing regions to various consumption centers by a network of pipelines. India has a limited network of cross-country and regional gas pipelines.

Transportation of petroleum products from refineries to distribution centers is carried out by road, rail, sea and pipelines or a combination of these modes. The bulk movement of petroleum products is done by sea, rail and pipelines. LPG is imported only by sea. Movements within the country are by road (bulk or packed), rail and pipelines.

Transportation of petroleum products by Rail, Road, Ship and Pipelines

For 2003-04, Coal and POL accounted for around 44 per cent and 6 per cent respectively of the total revenue earning tonnage carried by Indian Railways. The share of railways in the transport of petroleum products has declined steadily over the last few years.

Products are carried from the depots or terminals to retail outlets nearby through tank-lorries. Roads offer the most viable option to transport petroleum products over short distances or to destinations where rail, coastal tankers or pipelines cannot penetrate.

Major ports handled almost 75 per cent of coastal cargo. Crude, POL and coal accounted for 90 per cent of traffic handled. Minor ports handled 27 per cent of coastal cargo - POL, cement, building material and iron ore accounted for 90 per cent of the traffic handled at minor ports.

The state-owned Shipping Corporation of India (SCI) dominates the Indian shipping industry, owning more than 40 per cent of the gross registered tonnage.

Pipelines are used for transporting crude oil from oilfields or import terminals to the refineries for processing into refined petroleum products. Pipelines are the most preferred mode to transport petroleum products. Pipelines are also required to transport natural gas from the well-head or the LNG terminals to consumption centres. LPG is also transported through a network of pipelines.

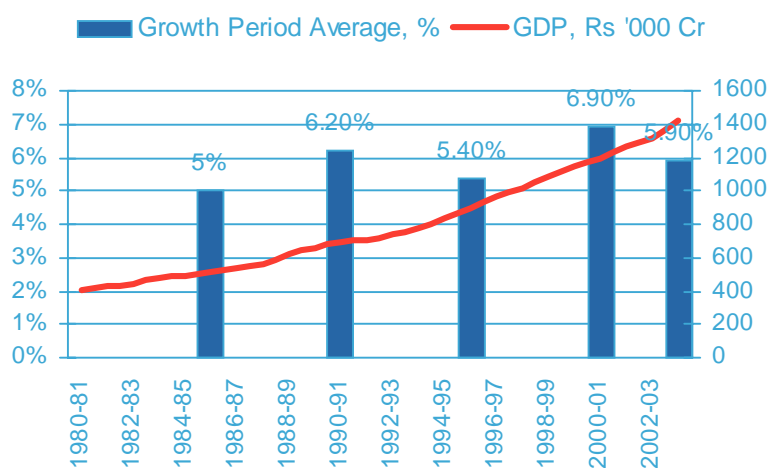
Executive summary

Fuel Demand Projections

Factors impacting Energy demand

Growth in energy consumption is intrinsically linked to growth in the economy. The planners and policymakers of the Indian economy have envisaged a faster rate of growth of the economy. Most economists and planners expect India to record a real GDP growth rate anywhere between 5 per cent and 8 per cent. In fact, the GoI in its Vision 2020 has targeted an annual GDP growth rate of 8.5 to 9 per cent over the next 20 years. This would result in quadrupled per capita income in real terms and almost eliminate poverty. This confidence in the Indian economy is shared by many international agencies. The recent trends as indicated in the figure below have borne out this optimism.

GDP Growth rate



The high rate of economic growth is likely to be accompanied by increasing per capita income and changes in lifestyles. Besides, in view of the rising awareness about environmental protection and conservation, future growth in the energy sector has to be environmentally benign. At the same time, the overall energy intensity of the economy is expected to continue to decline on account of progressive substitution of primary non-commercial energy sources by more efficient commercial energy sources and adoption of more efficient technologies. As discussed in the report, the GDP intensity of use for individual petroleum products do not always follow the same pattern.

In addition to the above, other factors that affect energy demand are:

- the price of oil products
- environmental considerations
- increase in efficiency of use
- higher contribution of the service sector in the GDP
- impact of information technology, telecommunication and e-commerce

These factors also increase the room for substitution by other products such as natural gas, non-conventional and other renewable sources of energy. Oil security is a matter of key concern to policymakers because India is heavily import-dependent. Global oil prices are especially volatile as they are sensitive to various global factors. The impact of such volatility on India is aggravated by its current inability to respond by increasing crude production.

Executive summary

Projections: Necessity and Limitations

To address these issues, policymakers and key stakeholders require some scenario building that enables them to assess the contours of energy demand and supply so that scarce investible resources can be optimally apportioned between competing activities. The study endeavours to develop broad demand and supply scenarios for fuels and fuel products in India in 2011-12.

Past experiences have amply illustrated that projections are subject to a great deal of uncertainty. The further ahead into the future you look, the more uncertain things become. At the same time, developing strategies for growth may take several years and require significant forward planning for which some expectations about the future have to be modelled and presented in quantified terms. Thus, projections, based on accurate data and clear assumptions, should be viewed as tools meant to provide a framework to analyse, “if and then” scenarios.

Approach for Demand Projections of Natural gas and Refined Products

The econometric model used for projections of demands of fuels demanded time series data for modeling. Similarly, in order to estimate the domestic supply of these fuels in 2011-12, information has been used as regards the availability of capacities of production, expected infrastructure developments and transport facilities. This information, including time series data, has been sourced from Ministry of Petroleum & Natural Gas (MoPNG), Directorate General of Hydrocarbons (DGH), Centre for Monitoring Indian Economy (CMIE) and CRIS Infac.

The demand requirements have been projected using econometric models. Econometric models are based on observed relationships of the demand for commodities with other variables. In this study, these relationships are derived from a regression analysis of time series data of various variables considered for the analysis.

Natural gas and refined products are consumed by infrastructure industries like transport, power and the non-service sectors like industry. The exceptions to this are LPG and SKO which are primarily used as domestic fuels. However, the product end-use mix is dynamic due to variations in consumption patterns of end-use sectors and the potential of displacement of fuels by natural gas and sources like automobile CNG.

In formulating econometric models, macro-economic indicators like GDP, population and urban population along with product prices have been taken to be the primary explanatory variables. These variables are technically referred to as “Robust Variables”. They indicate the pace and composition of economic progress. Thus, these indicators also capture the underlying structural changes in the various sectors of the economy.

These Robust Variables drive other sectoral indicators in the economy. For example, an increase in income will lead to an increase in demand and hence production of vehicles. Similarly, an increasing rate of urbanisation will lead to increasing demand for LPG as a cooking fuel.

Executive summary

Indicators like price of fuels/petroleum products are known as “Policy Variables” as fuel/petroleum products prices were determined under an Administered Pricing Mechanism.

The structural changes in the economy and demographic profile will also impact the mix of petroleum products being consumed and produced in India. Thus, in this study, individual scenarios for prominently consumed refined petroleum products have been considered.

Following fuels and refined products have been analysed to arrive at demand projections based on econometric models:

- a. Naphtha
- b. LPG
- c. Petrol
- d. Diesel oils
- e. SKO
- f. ATF
- g. Fuel Oils
- h. Bitumen
- i. Natural Gas

Approach for Demand Projections of Other Energy Sources

Documents, publications and research material from sources like Planning Commission and Central Electricity Authority were referred to extensively for analysis specially for demand projections for energy sources like Coal and Lignite, Hydro power, Nuclear power and Wind power.

Econometric Models and Key Variables

GDP and its composition, total population and its structure, Gross Domestic Capital Formation, Private Final Consumption Expenditure and product prices, were some of the key indicators that emerged significant in explaining and predicting future oil and gas demand in India.

Of these, the variations in urban–rural population structure reflect the degree of urbanisation. The degree of significance of different indicators of demographic profile, i.e., rural and urban population, also serves to illustrate the current and expected integration of the products with both urban and rural India.

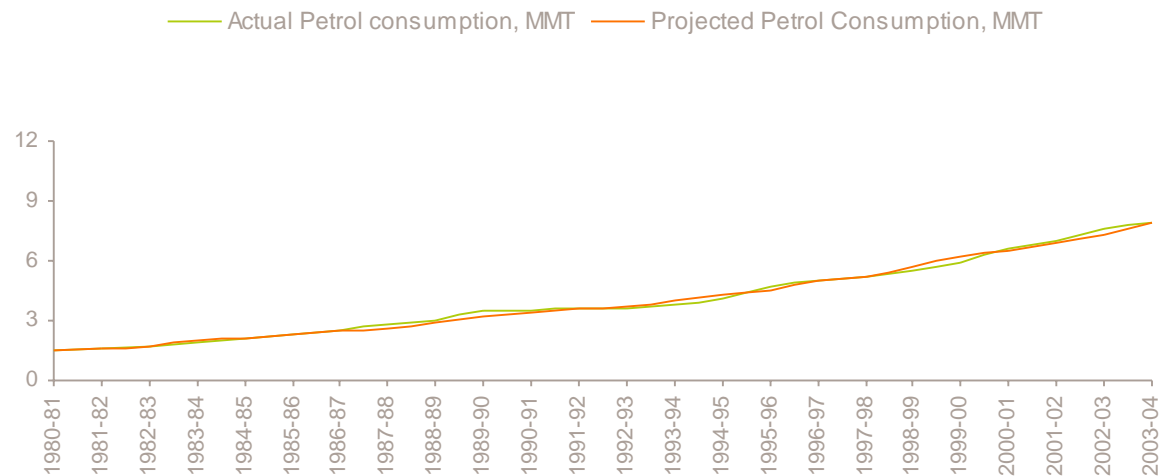
Private Final Consumption Expenditure represents the total consumption outlay in an economy. Similarly, Gross Domestic Capital Formation is the investment expenditure incurred in year in an economy. The shares of these two streams of expenditure in an economy reflect the share of resources being allocated to investment and consumption.

The demand projections for the refined products have been developed for different scenarios based on differential assumptions regarding the future growth path of the Indian economy.

Executive summary

In order to validate these demand projections and the underlying econometric models, actual consumption and the model estimate over the observed time period were plotted. A sample plot has been shown in the figure “Petrol Consumption – Actual Vs Model Estimate.”

Petrol Consumption - Actual vs Model Estimate



Production Estimates

Estimates for future production scenarios have also been presented. These estimates are based on the analysis of information collated through various secondary sources like proposed capital additions, investments and production forecasts. These secondary sources include documents by the respective ministries of GoI, the Planning Commission, industry analysis bodies and company disclosures.

The demand-supply balance for crude oil has also been analysed based on refinery production estimates and estimated crude oil production scenarios.

Study Inferences

The broad scenarios arrived in the study attempt to indicate and suggest India's position on product surplus or deficit in the terminal year of the 11th 5-year Plan. Other inferences on trends in production and demand have also been discussed.

In keeping with the aim of the study to offer realistic scenarios, the demand–supply estimates have been compared with the GOI prognosis, as put forward in the Plan forecasts and Vision documents.

The study outlines the possible demand scenarios in India in 2011-12 for emerging alternative fuels, i.e., CNG, Hydrogen, Ethanol, Bio-Diesel and Coal gasification.

The study also discusses the commercial energy mix for India in 2011-12. For this, estimates for energy sources like coal, renewables have been based on the projections by the Planning Commission and the Central Electricity Authority.

Abbreviations

APM	Administered Price Mechanism
CAGR	Compound Annual Growth Rate
E&P	Exploration and Production
GDP	Gross Domestic Product
IRADe	Integrated Research Action Development
LNG	Liquefied Natural Gas
MNES	Ministry of Non conventional Energy Sources
MoPNG	Ministry of Petroleum and Natural Gas
NELP	New Exploration Licensing Policy
NOC	National Oil Companies
OMC	Oil Marketing Companies
PetroFed	Petroleum Federation of India
PMS	Parallel Marketing Scheme
POL	Petroleum Oil and lubricants
PwC	PricewaterhouseCoopers (P) Ltd
R-LNG	Regasified Liquefied Natural Gas

Units

BCF	Billion Cubic Feet
BCM	Billion Cubic meters
BOPD	Barrels of Oil Per Day
MCM	Million Cubic Meters
MMbtu	Million Metric British Thermal Unit
MMSCMD	Million Metric standard cubic meters per day
MMT	Million Metric Ton
MT	Metric Ton
MTOE	Million Ton of Oil Equivalent
tcf	Trillion Cubic Feet

Order your copy

Copies of the publication titled “**Fuelling India’s Growth - Past Trends and Scenarios 2011-2012**”, which covers the complete study and projections of fuels’ demand, are available with PetroFed. Interested companies or individuals may obtain the hard copy on payment of Rs. 500 towards printing and distribution cost.

Please mail, write or call PetroFed at the below mentioned contact details to obtain a copy against payment by cheque or demand draft in favour of “Petroleum Federation of India.”

Yogendra Sahai
Director (Marketing and Communications)
Petroleum Federation of India (PetroFed)
8th Floor, Indian oil Bhawan
1, Sri Aurobindo Marg
Yusuf Sarai, New Delhi - 110 016
E-mail : petrofed@petrofed.org
Phone : +91-11-2653 5697, 2653 7069
Fax : +91-11-2696 4840

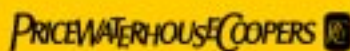


The Petroleum Federation of India is a Registered Society of Indian and International Companies / Associations in the hydrocarbon sector to promote the interests of members in line with Public / National Policies through a self regulatory environment with consumer interest in sight.

It acts as an oil industry interface with Government, regulatory authorities, public and representative bodies of traders. It helps in resolution of issues and facilitates evolution of hydrocarbons related policies and regulations and their implementation. It represents the industry on Government bodies, committees & task forces.

PetroFed promotes energy conservation, health, safety & environment and helps to optimise resource utilisation of members. It organises seminars, conferences, workshops, training programmes, lectures and brings out technical publications. It produces a quarterly journal.

It functions through committees from member organisations and other experts, covering all aspects of oil and gas industry which submit recommendations on ongoing basis.



PricewaterhouseCoopers Pvt. Ltd. is one of the largest and most reputed professional services network in the country. PricewaterhouseCoopers specialists from the tax and advisory teams connect their thinking, experience and solutions to build public trust and enhance value for clients and their stakeholders.

The Oil & Gas Industry Group within PricewaterhouseCoopers works with national and international companies in public and private sector to provide industry focussed solutions. PricewaterhouseCoopers is privileged to work with an unrivalled Oil and Gas industry client base, who value the rigorous, practical approach, characterised by a detailed understanding of individual client issues and by deep industry knowledge and experience. Strategies to develop services and delivery methods that fully meet client's needs have enabled networks of highly skilled professionals to be built around the clients. The success in meeting client's business challenges is mirrored in the growth seen by the Oil and Gas companies.

PricewaterhouseCoopers has offices in Bangalore, Kolkata, Chennai, Hyderabad, Mumbai, New Delhi, Bhubaneshwar and Pune.



A comprehensive approach to development requires perspectives from several disciplines. It also needs participation of the government, the academic community, NGOs, industry, corporations and financial institutions. It is essential that these stakeholders be involved as partners at all stages of the research and implementation processes. With these ideas, the institute - Integrated Research and Action for Development (IRADe) is set up as a fully autonomous advanced research institute. IRADe aims to do innovative research and policy analysis, to build capacity and to be a hub network among various stakeholders, leading ultimately to action.

In a short span, IRADe has started working with government organisations such as the Ministry of Environment and Forests and the Ministry of Non-conventional Energy Source, with academic institutions such as Stanford University and the Indira Gandhi Institute of Development Research, also with multilateral organisations such as UNCTAD, UNDP and the World Bank.



Petroleum Federation of India

IndianOil Bhavan, 8th Floor, 1 Sri Aurobindo Marg, Yusuf Sarai, New Delhi - 110 016 Tel. : +91-11-26535697 Fax: +91-11-26964840
E-mail : petrofed@petrofed.org Website : www.petrofed.org