



INDIA
HYDROCARBON VISION
-2025

INTRODUCTION

The hydrocarbons sector plays vital role in the economic growth of the country. It is necessary to have a long-term policy for the hydrocarbons sector, which would facilitate meeting the future needs of the country. The Hydrocarbons Vision - 2025 lays down the framework which would guide the policies relating to the hydrocarbons sector for the next 25 years. Issues such as energy security, use of alternative fuels, interchangeability of technology are vital to ensure that the mix of energy sources used in the economy is optimal and sustainable and that adequate quantities of economically priced clean and green fuels are made available to the Indian consumers. The estimated energy supply mix in India for a period up to 2025 is given at Annexure-I. Oil and gas continue to play a pre-eminent role in meeting the energy requirements of the country 45% of the total energy needs would be met by the oil and gas sector, though some amount of interchange between oil and gas is foreseen.

1.1 The current levels of per capita energy consumption in India are extremely low as compare to the rest of the world. In terms of comparison with the developed countries, the differentials are even more marked. The comparative figures of per capita energy consumption for India and rest of the world are in Annexure-II. Growth of the economy would lead automatically to growth in energy consumption, as there is a direct correlation between the GDP and energy consumption. The per capita consumption of primary energy and hydrocarbons (Annexure-III) reveals that India is amongst the lowest in

consumption of hydrocarbon in terms of kilograms of oil equivalent. Viewed from all angles, therefore, the hydrocarbon sector is most crucial for determining the energy, security for the country.

1.2 The presence of the Public Sector Undertakings (PSUs) in exploration, production and marketing of petroleum products has been pre-dominant in the last four decades. The oil sector PSUs stand out in performance both in terms of operational efficiencies and profitability amongst all the PSUs in India. This pre-eminence of the PSUs in the oil sector is a matter of pride.

1.3 The Vision. 2025 for the hydrocarbon sector has been prepared taking into account the above background. The action required to be taken in the medium term (3 to 5 years) and in the long term (beyond 5 years) to realise the Vision has also been brought out in this Report.

2. Hydrocarbons Vision - 2025

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

*To enhance *quality* of life by progressively improving product standards to ensure a cleaner and greener India. .

*. To develop hydrocarbon sector as a globally competitive industry which could be benchmarked against the best in the world through technology upgradation and capacity building in all facets of the industry.

* To have a free market and promote healthy competition among players and improve the customer service.

* To ensure oil security for the country keeping in view strategic and defence considerations.

3. Exploration and Production Sector

The gap between supply and availability of crude oil, petroleum products as well as gas from indigenous sources is likely to increase over the years (**Annexure-IV**). The growing demand and supply gap would require increasing emphasis to be given to the exploration and production sector. The objectives of the exploration policy would be as follows:-

3.1 Objectives

a) To undertake a total appraisal of Indian sedimentary basins for tapping the hydrocarbon potential and to optimise production of crude oil and natural gas in the most efficient manner so as to have Reserve Replacement Ratio of more than 1.

b) To keep pace with technological advancement and application and be at the technological forefront in the global exploration and production industry.

c) To achieve as near as zero impact, as possible, on environment.

3.2 To achieve the above objectives the following actions are required to be taken.

3.3 Medium term

i) Continue exploration in producing basins.

ii) Aggressively pursue extensive exploration in non-producing and frontier basins for knowledge building' and new discoveries, including in deep-sea offshore areas.

iii) Finalise a programme for appraisal of the Indian sedimentary basins to the extent of 25% by 2005, 50% by 2010, 75% by 2015 and 100% by 2025. Sufficient resources to be made available for appraising the unexplored/party explored acreages through Oil Industry Development Board (OIDB) cess and other innovative resource mobilisation approaches including disinvestment and privatisation.

iv) Provide internationally competitive fiscal terms, keeping in view the relative prospectivity perception of Indian basins, in order to attract major oil and gas companies and through expeditious evaluation of bids and award of contracts on a time bound basis.

v) Optimise recovery from discovered/ future fields.

vi) Improve archival practices for data management .

vii) Continue technology acquisition and absorption along with development of indigenous Research & Development (R&D).

viii) Ensure adequacy of finances for R&D required for building knowledge infrastructure.

ix) Make Exploration and Production. (E&P) operations compatible with the environment and reduce discharges and emissions.

x) Support R&D efforts to reduce adverse impact on environment.

xi) Acquire acreages abroad for exploration as well as production.

3.4 Long term

- i) 100% exploration coverage of the Indian sedimentary basins by 2025.
- ii) Leapfrog to technological superiority.
- iii) Put in place abandonment practices to restore the original base line.
- iv) Conserve resources and adopt clean technologies.

4. External policy & Oil Security

4.1 Objectives

Supplement domestic availability of oil with a view to provide adequate, stable, assured and cost effective hydrocarbon energy to the Indian economy.

4.2 To achieve the above objective the following actions are required to be taken.

4.3 Medium term

- i) Put in place a comprehensive policy to include total deregulation of overseas E&P business and empowering them to compete with international oil companies with provision of fiscal and tax benefits.
- ii) Evolve a mechanism to leverage India's "Buyer Power" to obtain quality E&P projects abroad.
- iii) Have focussed approach for E&P projects and build strong relations in focus countries with high attractiveness like Russia, Iraq, Iran and North African countries.

5. Natural Gas.

Natural gas is emerging as the preferred fuel of the future in view of it being an environmental friendly economically attractive fuel and also a desirable feedstock. Increased focus needs to be given to this potential sector.

5.1 Objectives

- a) To encourage use of natural gas, which is relatively a clean fuel.
- b) To ensure adequate availability by a mix of domestic gas imports through pipelines and import of LNG.
- c) To tap unconventional sources of natural gas like coal bed methane, natural gas hydrates, underground coal gassification etc.

5.2 To achieve the above objectives the following actions are required to be taken.

5.3 Medium term

- i) Timely and continuous review of gas demand and supply options to facilitate policy interventions.
- ii) Pursuing diplomatic and political initiatives for import of gas from neighbouring and other countries with emphasis on transnational gas pipelines.
- iii) Expediting setting up of a regulatory framework.
- iv) Import LNG to supplement the domestic gas availability and encourage domestic companies to participate in the LNG chain.
- v) Provide a level playing field for all the gas players and ensure reasonable transportation tariffs. .
- vi) Rationalise customs duty on LNG and LNG projects.
- vii) Put in place an effective organisational structure, which would facilitate progress in the National Gas Hydrates Programme.
- viii) Operationalise the Coal Bed Methane Policy with a time bound programme.
- ix) Formulate National Policy on Underground Coal Gassification in a time bound manner.

x) Increase R&D efforts on conversion of gas to liquids.

5.4 Long term

- i) Review of LNG option in the light of economic, political and energy security considerations.
- ii) Exploit the gas hydrates reserves.
- iii) Produce gas from Coal Bed Methane and through Underground Coal Gassification.
- iv) Commercialize the production and use of alternate fuels like Di-Methyl Ether and use of Fuel Cells through increased R&P efforts.

6. Refining & Marketing

This is another important sector and its development is crucial for having self-sufficiency in petroleum products and in moving towards a consumer oriented competitive market.

6.1 Objectives

- a) To maintain around 90% self-sufficiency of middle distillates in the sector with an appropriate mix of national oil companies, foreign players and private Indian players.
- b) To develop a globally competitive industry.
- c) To have a free market and healthy competition amongst players. .
- d) To develop appropriate infrastructure such as ports, pipelines etc. for an efficient hydrocarbons industry.
- e) To improve customer services through better retailing practices.
- f) To make available un-adulterated quality products at reasonable prices.
- g) To achieve free pricing for products while continuing subsidized prices for

some products in certain remote areas, Which are to be identified and reviewed from time to time.

6.2 To achieve the above objectives, the following action is required to be taken:-

6.3 Medium term

- i) Grant operational flexibility to refineries in crude sourcing and in respect of risk management through hedging.
- ii) Set out a timetable for achieving product quality norms to conform to cleaner environmental standards and to global standards by 2010.
- iii) Formulate a clear stable long-term fiscal policy to facilitate investment in refining, pipeline and marketing infrastructure.
- iv) Grant full operational freedom to existing PSUs to establish and maintain marketing networks and allowing entry of new players into the marketing sector through a transparent and clear entry criteria and provide a level playing field for new entrants.
- v) Make marketing rights for transportation fuels conditional to a company investing or proposing to invest Rs.2000 crores in E&P, refining, pipelines or terminals. Such investment should be towards additionality of assets and in the form of equity, equity like instruments or debt with recourse to the company.
- vi) Set up mechanisms to enable new entrants to establish own distribution networks for marketing without encroaching on the retail networks of existing marketing companies.
- vii) Set up a common regulatory mechanism for downstream sector and natural gas.

Viii) To take up with the States for a uniform State level taxation on petroleum products.

ix) Provide for level tax rates for domestic products vis-a-vis imported products.

x) Increase the ceiling of Foreign Direct Investment (FDI) in refining sector from the present level of 49% to 100%.

xi) Provide a level playing field among all market participants.

6.4 Long term

i) Develop an optimal transportation mix keeping in view the existing rail and port infrastructure.

ii) Develop a policy for encouragement of transportation of crude through Indian flag vessels.

iii) Develop a policy for transportation of LNG preferably through Indian flag vessels.

iv) Provide for massive capacity expansion of the refining and marketing infrastructure to be taken up. The total investment in refining sector upto 2025 is estimated at Rs.2, 50,000 crores while the same for the marketing infrastructure is estimated at Rs.1, 35,000 crores.

7. Tariff and Pricing

A rational tariff and pricing policy is vital to ensure healthy growth of the hydrocarbon sector and to protect the consumers as well.

7.1 Objectives

a) To provide incentives for cleaner, greener and quality fuels to promote environment friendly Hydrocarbon sector.

b) To balance the need to boost Government revenue with need to align

duties with Asia - Pacific countries and moving the prices to international levels.

c) To promote new investments, by ensuring adequate protection to domestic producers.

d) To remove subsidies and cross subsidies to promote efficient and optimal utilisation of scarce resources and also to eliminate adulteration.

7.2 To achieve the above objectives the following actions are required to be taken.

7.3 Medium term

i) Phase out existing subsidies as early as possible.

ii) Set up a Group of Experts to determine appropriate levels of tariffs and duties for introduction in a phased manner as early as possible.

iii) Transfer freight subsidy on supplies to far flung areas and subsidies on products to fiscal Budget. Necessity for concession is to maintain the supply line to hilly and remote areas, after decontrol of marketing.

iv) Increase linkage of consumer price of natural gas from current level of 75% fuel oil (FO) import parity to near 100%.

8. Restructuring and Disinvestment

8.1 Objective

The core objective of industrial restructuring is to maintain long-term profitability and strengthen competitive edge of the concerned companies in the context of changes in market forces and also to ensure that the consumers benefit by the restructuring.

8.2 To achieve the above objectives the following actions are required to be taken.

8.3 Medium term

The following sequence needs to be followed:-

- i) Announce policy in regard to specific public sector enterprises in alignment with the overall disinvestment policy of the Government.
- ii) Complete the internal restructuring of oil PSUs, making full use of information technology.
- iii) Implement proposals of mergers and alliances of oil PSUs with the objective of enhancing shareholder value.
- iv) Disinvest in a phased manner in oil PSUs down to appropriate level to realise best shareholder value.

9. Conclusion

The Hydrocarbon Vision articulated in this report has to be converted into prioritized action agenda for implementation in the medium and long term. In brief, the main thrust of the activities would be:-

- a) Focus on oil security through intensification of, exploration efforts and achievement of 100% coverage of unexplored basins in a time bound manner to enhance domestic availability of oil and gas.
- b) Secure acreages in identified countries having high attractiveness for ensuring sustainable long term supplies.
- c) Pursue projects to meet the deficit in demand and supply of natural gas, and facilitate availability of LNG.

- d) Maintain adequate levels of self-sufficiency in refining (90% of consumption of middle distillates).
- e) Establish adequate strategic storage of crude and petroleum products in different locations.
- f) Create additional infrastructure for distribution and marketing of oil and gas.
- g) Open up the hydrocarbon market so that there is free and fair competition, between public sector enterprises, private companies and other international players.
- h) Create a policy framework for cleaner and greener fuels.
- i) Have a rational tariff and pricing policy, which would ensure the consumer getting the petroleum products at the most reasonable prices and requisite quality, eliminating adulteration.
- j) Announce a long-term fiscal policy to attract required investments in the hydrocarbon sector.
- k) Restructure the oil sector PSUs with the objective of enhancing shareholder value and disinvest in a phased manner in all the oil sector PSUs.
- l) To develop regulatory and legislative framework for providing oil/gas security for the country.

Annexure-I

Share of future energy supply in India (%)

Year	Coal	Oil	Gas	Hydel	Nuclear
1997-98	55	35	7	2	1
2001-02	50	32	15	2	1
2006-07	50	32	15	2	1
2010-11	53	30	14	2	1
2024-25	50	25	20	2	3

Source: Upto 2011 from Technical Note on Energy, Planning Commission, Govt. of India (1998-99). Beyond this period the figures have been extrapolated.

Share of hydel energy remains constant considering the planned capacity addition upto 2012 and projected at the same level upto 2025.

Annexure-II

Per capita Energy consumption in million tonnes of oil equivalent (MTOE)

Country/Region	1987	1997
World	1.5	1.5
India	0.2	0.3
China	0.6	0.7
North America	5.8	6.3
Europe	3.1	3.1
Former Soviet Union	4.7	3.2
Rest of the World	0.6	0.7

Source: British Petroleum Statistics-1998

Annexure-III

Per capita consumption of Energy vis-à-vis Hydrocarbons

(in Kg of oil equivalent)

Country/Region	Primary Energy	Hvdro-Carbons
World	1454	927
India	285	113
China	688	169
Pakistan	264	231
Bangladesh	81	80
Japan	3962	2520
U.K.	3856	2719
Germany	4102	2539

Source: British Petroleum. Statistics - 1998

Annexure-IV

Supply/Demand-Petroleum Products (in MMT)

Year	Demand (without meeting gas deficit)	Demand (with meeting gas deficit)	Estimated refining capacity	Estimated crude requirement
1998-1999	91	103	69	69
2001-2002	111	138	129	122
2006-2007	148	179*	167	173
2011-2012	195	195**	184	190
2024-2025	368	368	358	364

* Assuming 15 MMTPA of LNG import by 2007.

** Assuming that by 2012, adequate gas is available through imports and domestic sources.

Source: Report of the Sub-Group on development of refining, marketing transportation and infrastructure requirements (1999).

As against this requirement the present domestic crude production is 33 MMT. The gap will have to be met through imports and increase in domestic production.

SUPPLY/DEMAND-NATURAL GAS (in million standard cubic meters per day)

	(MMSCMD)
	DEMAND
1999-2000	110
2001-2002	151
2006-2007	231
2011-2012	313
2024-2025	391

Source: Report of the Sub-Group on development and utilisation of natural gas (1999).

As against this requirement, the present domestic gas supply is 65 MMSCMD. The gap will have to be met from imports, increase in domestic production and by switching to liquid fuels.