



COMMODITY PROFILE- NATURAL GAS

Natural gas has emerged as the most preferred fuel due to its inherent environmentally benign nature, greater efficiency and cost effectiveness. It is a colourless, odourless, environment-friendly energy source, which is cleanest of all the fuels. Natural gas is a highly flammable hydrocarbon gas, mainly consisting of methane (CH₄). It also includes other gases such as oxygen, hydrogen, nitrogen, ethane, ethylene and helium.

Natural gas remains a key energy source for industrial sector uses and electricity generation. The industrial sector currently consumes more natural gas than any other end-use sector. The natural gas sector has gained importance, particularly over the last decade, and is being termed as the Fuel of the 21st Century.

Importance and Uses

Natural gas is mainly used in the industrial, residential, commercial, transportation and electric power sectors. The power and fertilizer sectors account for maximum share in natural gas consumption. Natural gas has a multitude of **industrial uses**, including providing the base ingredients for such varied products as plastic, fertilizer, anti-freeze, and fabrics. **Residential** applications are the most commonly known **use of natural gas**. It can be used for cooking, washing and drying, water warming, heating and air conditioning. It has **commercial uses** also that include cooling (space conditioning and refrigeration), cooking or heating. **Electric utilities** and independent **power** producers are increasingly using natural gas to provide energy for their power plants. Natural gas can be used as a **motor vehicle fuel** in two ways- as compressed natural gas (CNG), which is the most common form, and as liquefied natural gas (LNG).

Global Scenario

Russia has the largest reserves of natural gas in the world followed by Iran. However, Russia, the United States and Canada are the three largest natural gas producing countries in the world. Iran occupies the fourth position in the world's natural gas production.

World Natural Gas Production

World natural gas production was 3065.6 billion cubic metres in 2008, 4% higher than its production in the previous year. Strong growth was driven by the US, which for the second consecutive year accounted for the largest increment to global production.

Table 1: Natural Gas Production (in billion cubic metres)

Name of Country	2004	2005	2006	2007	2008
Russian Federation	573.3	580.1	593.8	592.0	601.7
U.S.	526.4	511.1	524.0	540.5	582.2
Canada	183.7	187.4	188.4	184.1	175.2
World Total	2694.1	2777.8	2876.1	2945.3	3065.6

Source: www.bp.com

World Natural Gas Consumption

World natural gas consumption was 3018.7 billion cubic metres in 2008, 2.7% higher than its consumption in the previous year. The United States, Russia and Iran are the three largest Natural Gas consuming countries in the world.

Table 2: Natural Gas Consumption (in billion cubic metres)

Name of Country	2004	2005	2006	2007	2008
U.S.	634.0	623.3	614.1	652.6	657.2
Russian Federation	389.9	393.0	419.2	425.7	420.2
Iran	86.5	105.0	108.7	113.0	117.6
World Total	2683.9	2769.8	2842.7	2938	3018.7

Source: www.bp.com

The OECD countries accounts for 37 percent of the world's total natural gas production and 50 percent of natural gas consumption.

Global Trade

In 2008, there was export of 587.26 billion cubic metres through pipeline shipments. However, Liquefied Natural Gas (LNG) trade was 226.51 billion cubic metres.

Global natural gas trade rebounded in 2008, growing by 3.8%, driven by growth in pipeline shipments; LNG trade for the year fell slightly.

Russia, Norway, Canada, Qatar and Algeria are the major exporters of natural gas. While the United States, Germany, Japan, Italy and Ukraine are the major importers of natural Gas in the world.

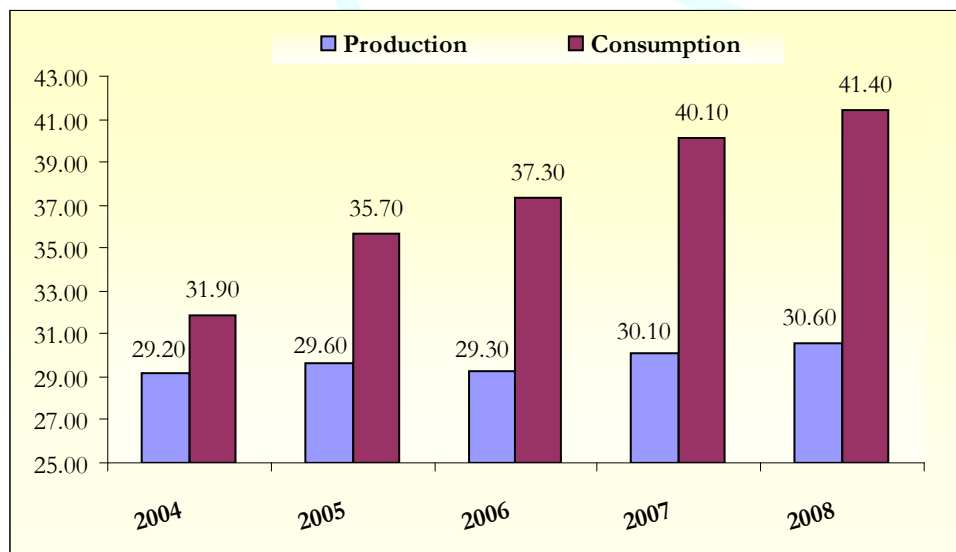


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Domestic Scenario

India accounts for 1% share in the world's natural gas output. Cumulative domestic natural gas production during April-February 2008-09 was 30,019 million cubic metres. **In 2008-09, natural gas output is expected to grow by a meagre 1.3 per cent to 32,849 mcm.** In 2009-10, India's natural gas production is expected to grow by a robust 60.0% to 52,239 million cubic metres (mcm). This is largely because of commencement of natural gas production from Reliance Industries' (RIL) Krishna Godavari basin.

Fig.: 1 Natural Gas Production and Consumption in India
(Qty in billion cubic metres)



Source: www.bp.com

Natural gas production in 2008 was 30.6 billion cubic metres (bcm) while consumption was 41.4 bcm.

Major Natural gas producing States & Companies

Most of the production of gas comes from the Western offshore area. Almost 70 per cent of India's natural gas reserves are found in the Bombay High basin and in Gujarat. Offshore gas reserves are also located in Andhra Pradesh coast (Krishna Godavari Basin) and Tamil

Nadu coast (Cauvery Basin). The on-shore fields in Assam, Tripura and Gujarat States are other major producers of gas. Smaller quantities of gas are also produced in Tripura, Tamil Nadu and Rajasthan States.

The **main producers of natural gas** are Oil & Natural Gas Corporation Ltd. (ONGC), Oil India Limited (OIL) and JVs of Tapti, Panna-Mukta and Ravva. Under the Production Sharing Contracts, private parties from some of the fields are also producing gas. Government have also offered blocks under New Exploration Licensing Policy (NELP) to private and public sector companies with the right to market gas at market determined prices.

Table 3: Company wise Natural Gas Production (Qty in Million Cubic Metres)

Year	2004-05	2005-06	2006-07	2007-08	2008-09*
Onshore					
OIL	2010	2270	2265	2340	2268
ONGC	5658	5751	5876	5877	5753
JVC/PRIVATE	1426	1557	1131	882	742
Total (Onshore)	9094	9578	9272	9099	8763
Offshore					
ONGC	17313	16823	16567	16457	16738
JVC/PRIVATE	5356	5801	5908	6861	7348
Total (Offshore)	22669	22624	22475	23318	24086
Grand Total	31763	32202	31747	32417	32849

Source: Ministry of Petroleum & Natural Gas

* Provisional

Import of Natural Gas in India

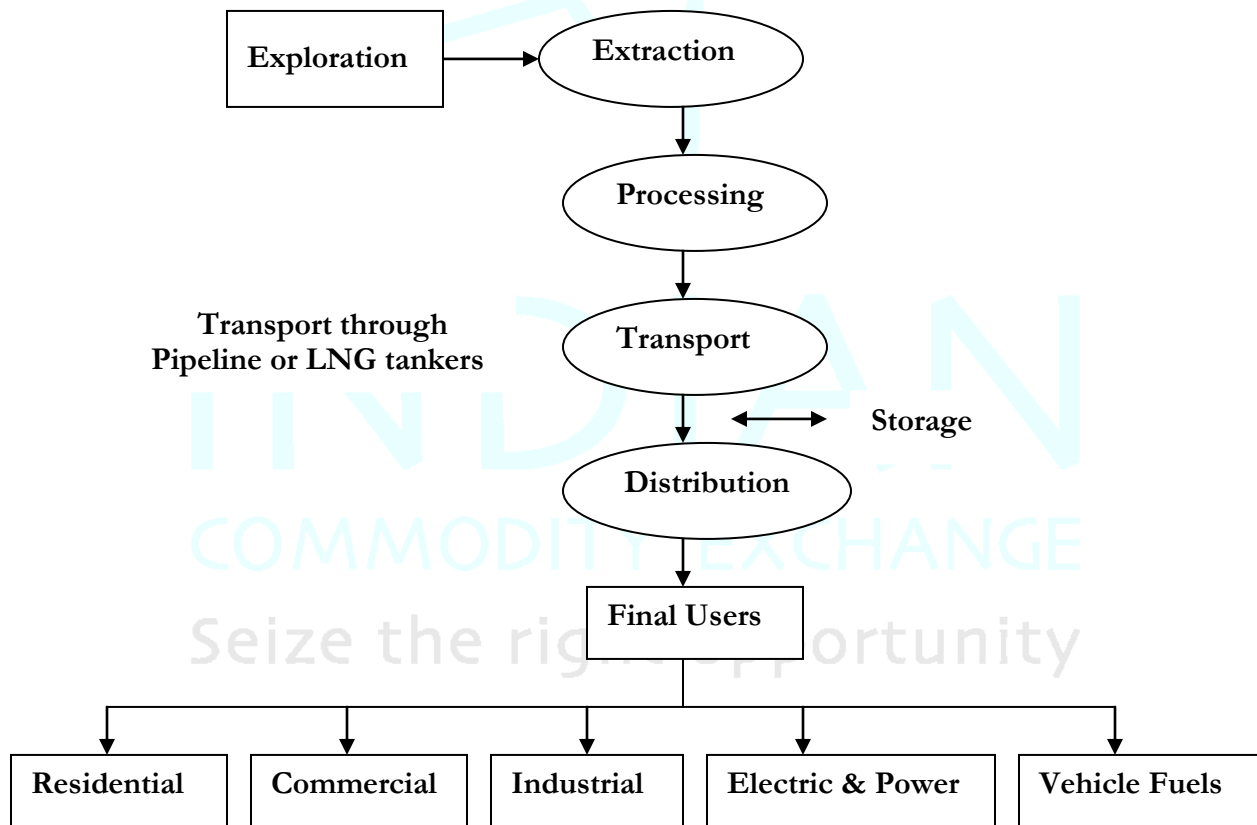
The demand for Natural Gas is increasing at a higher rate and widening the demand-supply gap. 25% of the country's domestic consumption is fulfilled by the imports.

India imports natural gas in form of liquefied natural gas (LNG). India began importing liquefied natural gas (LNG) in 2004. In 2006, India imported 254 Bcf of LNG, making it the seventh largest importer of LNG in the world. In 2008, India imported 380.89 billion cubic feet (10.79 billion cubic metres) of LNG. India imports LNG from Algeria, Egypt, Equatorial Guinea, Nigeria and Australia. The country imports LNG through both long-term contracts and spot shipments.

Dahej and Kochi are two LNG terminals in India for its import.

Natural Gas Supply Chain

Fig. 2: Supply Chain

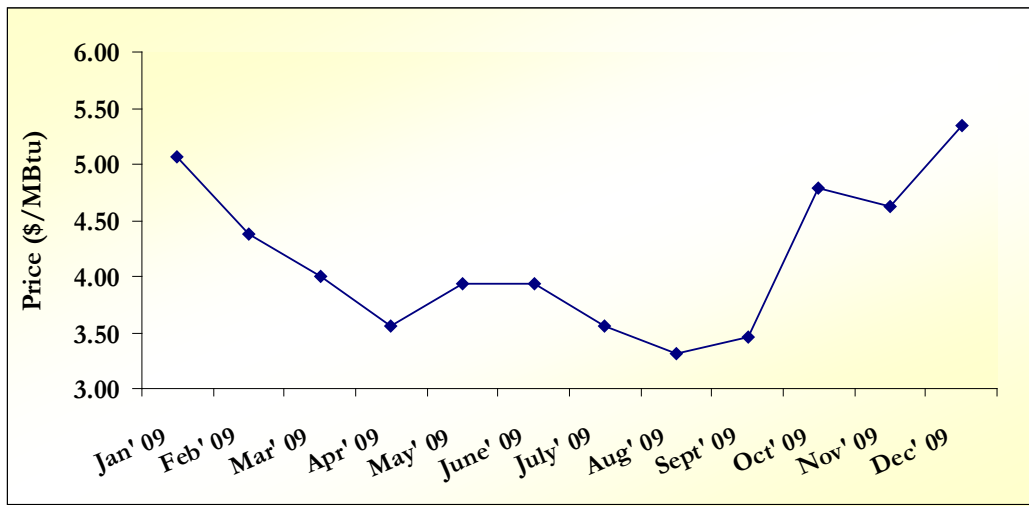


- Oil India Ltd. (OIL) is operating in Assam and Rajasthan States. The gas produced by OIL is marketed by OIL itself except in Rajasthan where GAIL is marketing its gas.
- ONGC is operating in the Western offshore fields and in other states. The gas produced by ONGC and a part of gas produced by the JV consortiums is marketed by the GAIL (India) Ltd.
- Gas produced by Cairn Energy from Lakshmi fields and Gujarat State Petroleum Corporation Ltd. (GSPCL) from Hazira fields is being sold directly by them at market determined prices.
- The gas produced in the western offshore fields is brought to Uran in Maharashtra and partly in Gujarat. The gas brought to Uran is utilised in and around Mumbai.
- The gas brought to Hazira is sour gas which has to be sweetened by removing the sulphur present in the gas. After sweetening, the gas is partly utilised at Hazira and the rest is fed into the Hazira-Bijaipur-Jagdishpur (HBJ) pipeline which passes through Gujarat, Madhya Pradesh, Rajasthan, U.P., Delhi and Haryana. The gas produced in Gujarat, Assam, etc; is utilised within the respective states.

Natural Gas Prices

Gas prices peaked in mid 2008 at levels around USD 13 per MBTUs (Million British Thermal Units), but have since dropped to around USD 3.50 per MBTUs in April 2009 due to continuing slump in demand amid poor economic conditions globally. May 2009 onwards, its prices showed sideways movement for a certain period. Prices have touched a low of USD 3.31 per MBTUs in August 2009. The modest economic growth and forecast of less production in 2010 is giving support to natural gas prices.

Fig. 3: Natural Gas Prices at NYMEX



Source: U.S. Energy Information Administration

Factors affecting Natural Gas Prices

- Demand and supply scenario of OPEC nations
- Fluctuation in the value of dollar
- Natural gas inventories
- Geo-political tensions
- Demand level from the importing countries
- Domestic demand from the various sectors of the country
- Government policies and regulations

Major Global Exchanges

- New York Mercantile Exchange (NYMEX)
- Natural Gas Exchange (NGX)

References

- U.S. Energy Information Administration
- www.bp.com
- Ministry of Petroleum & Natural Gas