DRAFT REPORT
SUBSIDIES DISCIPLINES ON NATURAL RESOURCES

Submitted to

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Jointly Submitted by

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Chapter – 1
Introduction and Methodology

1. Context

1.1 Interface of Natural Resources and Economic Growth

1.1.1 Economic growth requires capital, including natural capital. Economic theory and empirical evidence deal with two dichotomies of the natural resource economics i.e. abundance and scarcity. On one hand, abundant natural resources may crowd out or impair other types of capital (such as financial capital, human capital etc) and thus impede economic growth over long periods[1], hence warrant corrective intervention by governments. On the other hand, scarce resources require the governments to strike a balance between efficiency and effectiveness of allocation to various sectors. Particularly, in a liberal international trade regime, with the liberal movement of economic actors (factors of production, producers etc), the achievement of a balance between welfare and efficient allocation poses even more complex questions before policy makers.

1.2 Methods of Administration of Scarce Natural Resources

1.2.1 The allocation and price of natural resources such as rock phosphate, crude oil, coal, iron ore, bauxite, etc. hugely determine the competitiveness of an economy. Governments employ several methods and tools to achieve equitable distribution and industrial competitiveness. These methods of administration of natural resource allocation include:

- Direct price control
- Price discrimination or dual pricing of a natural resource which may occur between
  - Domestic Users
  - Domestic and foreign users of a natural resource
- Export restrictions
- Direct or indirect subsidization of the production, raw material and intermediate
  - On-budget
  - Off-budget
- Preferential tax treatment

1.2.2 One or more of above methods may result in provision of a natural resource for "*less than adequate remuneration*" to domestic industry. Such a discriminatory provision of a natural resource may attract legal obligations on a WTO member originating from various WTO Agreements including WTO Agreement on Subsidies and Countervailing Measures (ASCM). But 'what constitutes a subsidy?' is still under debate and WTO-ASCM does not contain clear provision on various aspects of natural resource administration in WTO members. There is no single, commonly agreed definition of a subsidy. This is partly because economists' looking at different sectors of the economy (energy rather than agriculture, for instance) have developed their own methods for classifying subsidies. Intergovernmental organizations dealing in international trade, such as the World Trade Organization, have developed their own definitions, reflecting an acceptable consensus amongst their membership. Hence this leads to a debate on how to discipline various subsidies under the WTO –ASCM?

[1] Known as Resource Curse.

1.3 Price Distortions and Trade Issues

1.3.1 The lack of clarity about what constitutes a subsidy to natural resources production and pricing of it, has been viewed as a major obstacle in the creation of a fair international trade regime by some countries like the US and the EC. The economic definition of subsidy omits one element that international and national trade laws have used to distinguish a subsidy from other government interventions: that the intervention benefits a single industry or small group of linked industries rather than a wide range of industries. Thus the provision of water or hydroelectric power at below-market prices because of government pricing policies would not be a subsidy under WTO rules if it benefits a number of industries. This requirement for specificity helps to define the field of action to which trade law should be addressed. Exclusion of measures which are broad-based thus does not qualify on specificity parameter, there by Member-countries have sought to strengthen the disciplines on subsidies under WTO-ASCM. Defining subsidies in strictly economic terms ensures that government intervention in this direction is not excluded from the discussion of trade policy. In order to make the disciplines on subsidies under the ASCM, the member countries have made proposals to Negotiating Group on Rule seeking the recognition of such subsidies which can be provided by means of a wide range of trade-distorting policy instruments, most of which operate indirectly by altering price signals rather than through fiscal measures alone.

1.3.2 As discussed above, natural resources are subsidized directly by government budgetary and tax measures, indirectly by trade and other policy instruments that alter price signals. Often a government permits private businesses to remove a natural resource from the public domain at a price below its full market value, thereby helping private companies to earn high 'economic rent'. It may be difficult to define precisely what the economic rent is for a unit of a given natural resource, because of uncertainties about future markets and other factors. If the state does not capture the full economic rent on the sale of natural resource rights to private companies, it is transferring financial resources to the company just as much as if it provided a tax concession or an outright grant. Natural resource subsidy by selling either the resource or the right to exploit it at a price below its full market value is a central problem in the management of (several) natural resources in many countries.

1.3.3 In many countries, natural resource pricing is done considering the domestic as well as export market. It is observed that domestically competitive prices are maintained but internationally pricing is done in such way as if it is facing a monopoly market. Hence, internationally, prices of natural resources are kept at a higher level. This price discrimination is assumed to be distorting the international trade. However, many studies argue that international prices can't be kept at monopoly level for long (unless exporters form a cartel). International prices will tend towards competitive level as monopoly power is limited[2]. Domestic prices are also not competitive in real sense as it is administered in most of the situation. Hence, the welfare implication of dual pricing in real term is not straightforward at all. Also allocation of natural resources between export and domestic use becomes complex as demand uncertainty get mixed along with the optimal depletion rate of resources and new discovery[3].

[2] Watkins G. C. and L. Waverman (1985), **Canadian Natural Gas Export Pricing Behaviour** *Canadian Public Policy / Analyse de Politiques*, Vol. 11, Supplement: Western Canadian Economic Development: Energy Policy and Alternative Strategies (Jul., 1985), pp. 415-426.

[3] Rowse John (1986), **Allocation of Canadian Natural Gas to Domestic and Export Markets,** *The Canadian Journal of Economics*, Vol. 19, No. 3. (Aug., 1986), pp. 417-442.

2. The Study

2.1 In view of ongoing debate, UNCTAD India Programme commissioned Indian Institute of Foreign Trade (IIFT) and Economic Laws Practice (ELP) with this study. The Study is aimed at:

- *Understanding the administration of natural resource to determine if the domestic sector has a preferential access to natural resource.*

2.2 Research questions and methodology

2.2.1 In order to address the above objective, the study reviewed current policy framework and pricing mechanism employed by the natural-resource-rich-countries with regard to natural resources such as raw - copper, iron ore, petroleum etc. and natural resource based products like fertilizer, refined petroleum products .etc. Following research questions were framed to achieve the study objective:

- Are there policies and pricing mechanism/s for the sampled natural resources in India and other select countries which can be construed as a dual pricing system resulting in government provision of natural resources to down stream industry at a less than fair value? (the phrase "less than fair value" is not used in the Agreement on Subsidies and Countervailing Measures and therefore the study shall carris out the analysis of whether the natural resources are provided for "less than adequate remuneration"(the phrase used in Article 14 (d)) to downstream industries)
- Are there policies and pricing mechanism/s as applicable to natural resource-based refined products in India and other select foreign countries which keep domestic prices higher than international prices with regard to these refined/ manufactured products?
- Do dual/ differential pricing policies apply only to select product/s or across the board?

2.2.2 Based on some factors such as production and share in the world market of a commodity, export and import interests of India and other countries selected certain commodities and countries were sampled. Table below presents the commodities and countries which were selected for the Study:

Table 1: Commodities and Countries under the Review

Commodity	Countries under Review
Rock Phosphate	Morocco, USA and India
DAP	Jordan, USA and India
Iron Ore	Brazil, China and India
Steel	China, Japan and India
Coal	China, United States and India
Crude Petroleum	Saudi Arab, Russia and India
Gasoline/ petrol	Saudi Arab, Russia and India
Natural gas	Russia, United States and India
Bauxite	China, Russia and India
Copper	Chile, United States and India

2.2.3 Each chapter in the Report deals with the pricing mechanism for natural gas in the selected countries. The analysis is two pronged: (a) reviewing the legal and policy framework regulating a sector covered under the Study and (b) embedding it in the economic rationale

behind the current pricing policies and practices. The broad areas, covered under each commodity-centric chapter, are as follows:

A. Background:

(i) Reserves
(ii) Supply: Reserves, production and imports
(iii) Demand: Consumption and exports
(iv) Trade

B. Industry Structure:

(i) Covering the number of players in the industry
(ii) Type of competition in the industry

C. Regulatory Framework:

(i) Broad policy covering the natural resources
(ii) Commodity specific policy & regulations

D. Pricing Policy:

(i) Pricing Mechanism
(ii) Direct price fixation by the government
(iii) Indirect measures affecting prices
(iv) Comparison of commodity prices with export prices/world market prices

E. Conclusion:

(i) Whether there is dual pricing
(ii) Whether there is provision of the commodity for less than adequate remuneration to downstream sector
(iii) Whether the pricing policy affects only one commodity or a broad range of products

2.3 Limitations of the Study

2.3.1 The Study has been constrained by serious data deficiencies both in India as well as foreign countries. The crucial details pertaining to pricing mechanisms and legal/ policy framework are not in public. Instances of such deficiencies include:

- Components/ factors taken into consideration while arriving at a pricing formula.
- Texts of policy/ Acts controlling one or more aspects of the administration of a natural resource in question.
- Details of private production sharing contracts controlling the production and selling of a natural resource.
- Time-series data on export and domestic prices

2.4 Organization of the Report

2.4.1 The Report is divided into ten chapters wherein from chapter number two to nine research findings on each of the commodity are presented. Of the ten commodities sampled under the study, five commodities: crude oil, refined petrol, natural gas, bauxite and aluminum, copper were studied and written by Economic Laws Practice (ELP) and are presented in chapters two through five. Remaining five commodities, which are: iron ore, steel, rock phosphate, DAP and coal, were researched and written by Indian Institute of Foreign Trade (IIFT) and are presented in the chapters six through nine. Last chapter summarizes the over all findings.

Chapter – 2
Subsidies Disciplines in Natural Resources Pricing: Natural Gas

SECTION I: BACKGROUND

A. Introduction:

1.1 Natural gas is a highly flammable hydrocarbon gas consisting chiefly of methane (CH4). Although methane is always the chief component, it may also include other gases such as oxygen, hydrogen, nitrogen, ethane, ethylene, propane, and even some helium. The gas is found entrapped in the earth's crust at varying depths beneath impervious strata, such as limestone, and may or may not be in association with oil. If oil is present, it is called wet gas, else dry gas.

1.2 It is a colorless, odorless fuel that burns cleaner than many other traditional fossil fuels. Natural Gas, converts into liquid state when cooled to -161 degree Celsius and is commonly know as Liquefied Natural Gas (LNG). When compressed at a pressure of 250 bars, it is termed at Compressed Natural Gas (CNG). Natural gas is used for heating, cooling and production of electricity besides for various other industrial purposes.[1]

1.3 Much of the world's natural gas use is for industrial sector processes. The industrial sector accounted for 44 percent of world natural gas consumption in 2004 and is projected to account for 43 percent in 2030. Industrial use of natural gas is projected to increase at an average annual rate of 1.9 percent from 2004 to 2030, as compared with an average increase of 1.1 percent per year for liquids consumption in the industrial sector. Consumption of natural gas worldwide would increase from 100 trillion cubic feet in 2004 to 163 trillion cubic feet in 2030.[2] Considering the increasing reliance of the industrial sector on natural gas as a source of fuel/ raw material, Governments tend to regulate the prices of natural gas.

B: Natural Gas Pricing:

1.4 The world market for natural gas is fragmented in different regional markets and thus it is not possible to arrive at a world price for natural gas. There is a market liberalization trend all over the world; however in some countries the natural gas market still remains highly regulated. For example North American countries like USA and Canada have completely liberalized their natural gas markets, whereas Russia one of the largest producer of natural gas in the world, retains a strict control over its natural gas market. As a result of different degrees of regulation in natural gas markets, prices differ considerably among different markets[3].

1.5 Natural gas prices may be measured at different stages of the supply chain. At the first stage there is the wellhead price, and then there are prices at different stages of delivery and supply of natural gas. Prices are also measured for different end-user groups as

[1] Information on Natural Gas, Multi-commodity Exchange of India brochure, available online: www.mcxindia.com

[2] International Energy Outlook 2007, Energy Information Administration, available online: http://www.eia.doe.gov/oiaf/ieo/pdf/nat_gas.pdf

[3] Natural Gas: Benchmark and Price Discovery Mechanism, available online: http://www.unctad.org/infocomm/anglais/gas/prices.htm

residential, commercial, industrial consumer or electric utilities. In general, the main components of natural gas price are[4]:

- wellhead price (the cost of natural gas itself or commodity cost)
- long-distance transportation cost
- local distribution cost

1.6 Wellhead prices tend to fluctuate depending on weather conditions and different markets factors such as transport, storage etc. The prices at which a consumer obtains natural gas could also be influenced by government regulations and policies such as taxation policy. Also in many instances governments may infact fix the retail prices of the natural gas. There can be government intervention in price determination at the different points or stages of natural gas sale/distribution.

1.7 Government intervention could take the form of simple policy instrument, e.g. Government order directly specifying the prices at which the natural gas is to be sold to different consumers or indirect policy measures/regulations regulating the sector for example taxation policy (e.g. a tax concession can act as subsidy and may distort prices) or policies controlling distribution of natural gas etc. In order to comprehensively understand the government intervention in natural gas pricing and analyze whether there exist any dual pricing policy or not; it is important to understand, first the industry structure, the broad regulatory framework and then the specific regulations dealing with natural gas.

1.8 This chapter shall deal with the pricing mechanism for natural gas in the selected countries-India, Russia and USA in three separate sections.

[4] Ibid

SECTION II: OVERVIEW OF NATURAL GAS SECTOR: WORLD

2.1 ***Reserves:*** Historically, world natural gas reserves have, for the most part, trended upward. As of January 1, 2007, proved world natural gas reserves, as reported by *Oil & Gas Journal (**OGJ**)*, 9 were estimated at 6,183 trillion cubic feet—71 trillion cubic feet (about 1 percent) higher than the estimate for 2006.[5]

2.2 The largest revisions to natural gas reserve estimates were reported for Kazakhstan, Turkmenistan, and China. Kazakhstan added an estimated 35 trillion cubic feet, Turkmenistan 29 trillion cubic feet, and China 27 trillion cubic feet. The United States also reported an increase of 12 trillion cubic feet over its 2006 reserves—a 6-percent increase and the largest increment in U.S. annual reserves since 1970. Declines in natural gas reserves were reported for the Netherlands (a decrease of 12 trillion cubic feet), Trinidad and Tobago (7 trillion cubic feet), Argentina (3 trillion cubic feet), Nigeria (3 trillion cubic feet), and Italy, Norway, the United Kingdom, and Saudi Arabia (about 2 trillion cubic feet each).[6]

2.3 Almost three-quarters of the world's natural gas reserves are located in the Middle East and Eurasia. Russia, Iran, and Qatar combined accounted for about 58 percent of the world's natural gas reserves as of January 1, 2007. Reserves in the rest of the world are fairly evenly distributed on a regional basis[7].

2.4 ***Production:*** Production increases in the non-OECD countries are projected to account for more than 90 percent of the world's total growth in production from 2004 to 2030(***EIA Projection Period***). In the non-OECD countries, production is projected to grow by an average 2.6 percent per year, from 59 trillion cubic feet in 2004 to 119 trillion cubic feet in 2030. In particular, Russia and the Middle East each account for around 20 percent of the increase in annual production over the projection period. Both regions are expected to provide connections to natural gas markets in the Atlantic and Pacific basins, with Russia exporting mainly by pipeline and most Middle East exports being shipped as LNG.[8]

[5]International Energy Outlook 2007, Energy Information Administration, Department of Energy, USA, available online: http://www.eia.doe.gov/oiaf/ieo/pdf/nat_gas.pdf
[6] Ibid
[7] Ibid
[8] Ibid

SECTION III: NATURAL GAS PRICING IN INDIA

A. Background:

3.1 ***Reserves:*** According to Oil and Gas Journal (*OGJ*), India had 38 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2007. The bulk of India's natural gas production comes from the western offshore regions, especially the Mumbai High complex. The onshore fields in Assam, Andhra Pradesh, and Gujarat states are also major producers of natural gas. According to EIA data, India produced 996 billion cubic feet (Bcf) of natural gas in 2004.[9]

3.2 India imports small amounts of natural gas. In 2004, India consumed 1,089 billion cubic feet (Bcf) of natural gas, the first year in which the country showed net natural gas imports. During 2004, India imported 93 Bcf of liquefied natural gas (LNG) from Qatar.[10]

3.3 ***Exploration and Production:*** There have been several large natural gas finds in India over the last five years, predominantly in the offshore Bay of Bengal. In December 2006, ONGC announced that it had found an estimated 21 to 22 Tcf of natural gas in place at the KG-DOWN-98/2 block off the coast of Andhra Pradesh in the Krishna Godavari basin. On the same day, ONGC announced another find in the Mahanadi basin off the coast of Orissa state, with an estimated 3 to 4 Tcf in place. Neither of these finds has been certified, but could potentially raise India's natural gas reserve levels significantly.

3.4 The discoveries also fit into the recent trend of large upstream developments in the Bay of Bengal, especially in the Krishna Godavari basin. State-owned Gujarat State Petroleum Corporation (GSPC) holds an estimated 20 Tcf of natural gas reserves in place at the KG-OSN-2001/3 block in the Krishna Godavari area. Reliance Industries recently secured government approval for the commercial development of the D-6 block in the Krishna Godavari basin, which holds 9 Tcf of recoverable natural gas reserves (14.5 Tcf total reserves in place). Under the development plan for the D-6 block, Reliance and its equity partner Niko Resources will spend $5.2 billion to bring the first natural gas to the market in 2009. At its peak, the D-6 block is expected to supply 2.8 Bcf/d of natural gas, which would more than double the country's current production level.[11]

3.5 ***Consumption:*** The consumption of natural gas in India has been consistently rising. It has risen from 22.75 billion cubic meters (bcm) in 2004 to 30.83 bcm in 2007. The table below gives the annual consumption of natural gas in India since 2004[12].

Year	Consumption in bcm	Rank
2004	22.75	24
2005	22.75	25
2006	27.10	21
2007	30.83	21

3.6 Natural gas in India is primarily used by the household sector for cooking purposes, as fuel by the power generation companies; the industrial sector uses it for all the utilities like

[9] India: Country Analysis Briefs, Energy Information Administration, Department of Energy, USA available online: http://www.eia.doe.gov/emeu/cabs/India/NaturalGas.html
[10] Ibid
[11] Ibid
[12] Source: IndexMundi, available online: http://www.indexmundi.com/india/natural_gas_consumption.html

boilers, furnaces, baking ovens, air conditioning etc. the fertilizer and chemical industries use it as feedstock. The table below gives the consumption pattern of natural gas in India[13]:

Consumption Pattern of Natural Gas in India[14]:

User	Total Consumption in %	Specific Uses
Power	41%	As fuel
Household/Internal Use	5%	Cooking, heating
Fertilizer	37%	Feedstock
Sponge Iron	4%	Heating
Others	13%	As feedstock in chemical industries, for utilities in other industries etc.

3.7 It is clear from the above discussion that power and fertilizer sectors are the biggest consumers of natural gas. These two sectors are critical to the economic development of the country and the output prices of these sectors is either controlled or regulated by the Central and State Governments, who have to bear subsidy to a large extent for any increase in the output price. In addition, India is emerging as a key player in the world natural gas market and as the thrust on the use of cleaner fuel increases (e.g. use of Compressed Natural Gas (CNG) by public transport system in Delhi and Mumbai). Considering the relative importance of natural gas as a fuel or feedstock for downstream industries in the Indian economy the chances of government regulation in the sector increases. This also increases the chances of government intervention in the fixation of prices of natural gas for the domestic market. Natural gas pricing policy and mechanism shall be discussed in detail in the section of Pricing Policy.

B. Natural Gas Sector: Industry Structure

3.8 ***Exploration and Production:*** The natural gas industry in India has evolved over a period of time from complete monopoly by the State-run companies across the entire gas value chain, to a market which encourages participation by private companies, both domestic and foreign. However even today the industry is dominated by Government- owned or controlled companies such as ONGC and OIL (primarily in the field of production) and GAIL and GSPCL/GSPL (Gujarat State Petronet Ltd.) [Primarily in the field of transportation and distribution]. There are some major private players as well in the industry such as British Gas (BG), Cairn Energy and Reliance Industries Ltd (RIL).[15]

3.9 ***Transmission***: GAIL today is the primary gas transmission, distribution and marketing company in India, accounting for more than 90 per cent of the market share. GAIL owns and operates the major gas sector infrastructure in India including the 2,800 km HBJ pipeline (Hazira-Bijaipur-Jagdishpur), while a number of other companies have limited infrastructure which supply to the local regional /markets. The other two important players

[13] Source: Handbook on natural gas, available online: http://www.mcxindia.com/Productleaflets/NaturalGas.pdf, also, Hydrocarbon Vision 2025

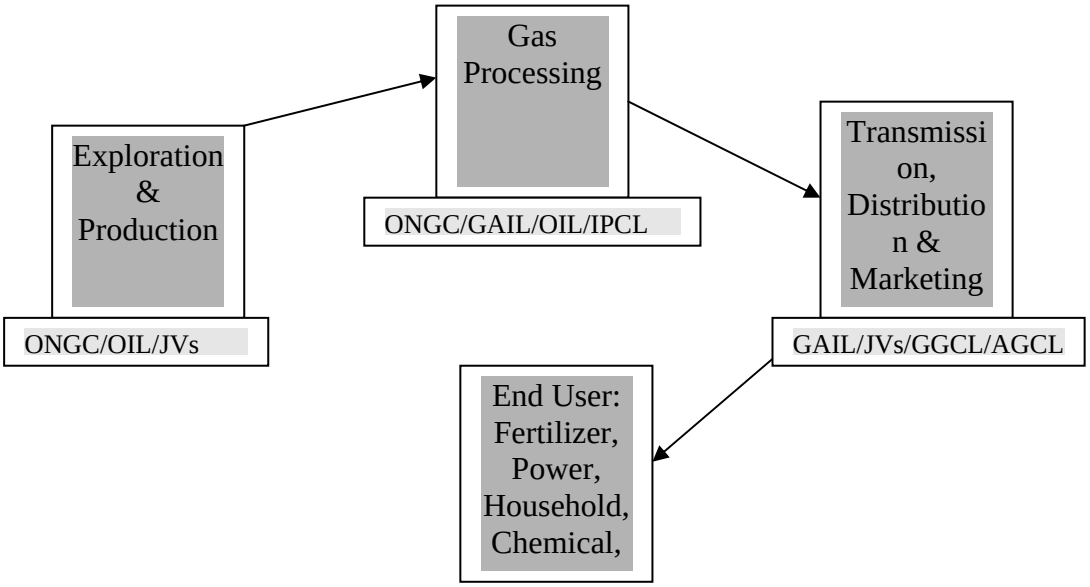
[14] Ibid

[15] Natural Gas: Special Commodity Report, Multi-commodity Exchange of India, available online: www.mcxindia.com

in the industry are Gujarat Gas Company Limited (GGCL) and GSPL, a subsidiary of the Gujarat State Petroleum Corporation (GSPC).[16]

3.10 ***Local Gas Distribution:*** In the recent years the use of gas by transportation sector has gained importance. At present extensive gas distribution networks to supply fuel to automobile sector exists in the cities of Mumbai and Delhi. Mahanagar Gas Limited (MGL) in Mumbai and Indraprastha Gas Limited (IGL) in Delhi are engaged in developing CNG infrastructure and providing fuel to automobiles in these metros. MGL is a joint venture between GAIL, BG Group, UK, and the Government of Maharashtra. IGL is a joint venture between GAIL, BPCL and the Government of Delhi. Assam Gas Company Limited (AGCL) and Gujarat Gas Company Limited (GGCL), a BG Group subsidiary, are also engaged in distribution of piped natural gas in different cities in Assam and Gujarat, respectively. There are plans to extend CNG facilities in some other highly polluted cities like Kanpur, Lucknow, Agra, Bareily, Faridabad and Pune.[17]

3.11 The diagram below shows the structure of natural gas industry in India:



3.12 As discussed above the natural gas sector in India consists of both Government held entities (ONGC & GAIL) as well as private and joint venture companies (RIL, Cairns Energy, British Gas etc). However the government owned companies still have a significant presence in the sector and remain the dominant players. In the upstream segment ONGC and OIL are the dominant players and in the downstream segment GAIL holds an effective monopoly. Given this structure of industry, there is all the possibility of differential regulatory framework for the industry players, particularly when it comes to pricing of natural gas.

C. Natural Gas Sector: Regulatory Framework:

[16] Ibid
[17] Ibid

3.13 The natural gas industry in India is regulated by the Government through the Ministry of Petroleum and Natural Gas (MoPNG). State ownership of industry participants, regulated consumer and producer prices and allocation of resources to distributors and end users are some of the steps undertaken by the Government to regulate India's gas industry. The regulatory framework for the domestic natural gas sector is comprised of the following statutes:

- ***The Petroleum Act, 1934*** regulates import, transport, storage, production, refining and blending of petroleum (which includes liquid hydrocarbon or mixture of hydrocarbons).
- ***The Petroleum Rules, 2002*** regulate storage, ports of receipt, transportation by water, land, pipelines and right of way.
- ***The Oilfields (Regulation and Development) Act, 1948*** regulates the grant of exploration and mining leases.
- ***The Petroleum and Natural Gas Rules, 1959*** regulate the grant of exploration licences and mining leases in respect of petroleum and natural gas and conservation and development thereof. They also specify area and term of grant of licence.
- ***The Petroleum and Minerals Pipelines (Acquisition of Right of User in Land) Act, 1962*** provides for the acquisition of right of use in land for laying pipelines for the transport of petroleum and minerals. It also provides for acquisition by Central Government for companies.
- ***The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976*** regulates the exploration and exploitation of resources of the continental shelf and exclusive economic zone.
- ***The Essential Commodities Act, 1955*** makes provisions controlling the production, supply and distribution of certain essential commodities 'which include petroleum and petroleum products.
- ***Petroleum and Natural Gas Regulatory Act 2006***, provides for the establishment of a regulatory board to regulate activities of companies related to refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas.

3.14 The table below summarizes all the laws and regulations related to the natural gas sector in India.

ACTS/REGULATIONS/LEGAL INSTRUMENTS	ADMINISTERING AUTHORITY	COVERAGE
Oilfields Regulation and Development Act, 1948	Officer or Authority appointed by Central Government (Sec. 8)	➢ Regulation of Oilfields, ➢ Grant of mining lease –conditions applicable
Petroleum and Natural Gas Rules, 1959	Agency for Supervision (Rule 32)	➢ Grant of mining lease and licence ➢ Rights of licencee/lessee, Area/Term of Licence ➢ Royalty on Petroleum
Petroleum Act, 1934	Officer Appointed by Central Government(Sec. 26)	➢ Import, Transport, Storage of petroleum ➢ Classification ➢ Testing of Petroleum
Essential Commodities Act	Officer Appointed by Central Government(Sec. 5), or State Government or such Officer or authority subordinate to a State Government	➢ Powers to control production, supply, distribution, etc. of essential commodities ➢ Control the price of commodities ➢ Regulate the licencees
Petroleum and Mineral, Pipelines(Acquisition of Right of User in Land) Act, 1962	"competent authority" under Sec 2(a)-Appointed by the Central Government	➢ Acquisition of right of user in land for laying pipelines for the transport of petroleum and minerals
Oil Industry(Development) Act	Oil Industry Development Board	➢ To levy excise duty on crude oil and natural gases
Petroleum and Natural Gas Regulatory Act 2006	Petroleum and Natural Gas Regulatory Board	➢ Regulation of refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas.
The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976		➢ Regulates the exploration & exploitation in the continental shelf & exclusive economic zone

D. Natural Gas Pricing Policy in India:

3.15 The Ministry of Petroleum & Natural Gas (MOP&NG) has been regulating the allocation and pricing of gas produced by ONGC and OIL by issuing administrative orders from time to time. The gas produced by the JVs and by NELP operators is governed by the respective production sharing contracts (PSC) between the Government and the producers.

3.16 India's gas pricing policy has been part of the overall gas allocation and control system. Although the volume of gas that is subject to this system is decreasing, the system is still in operation today. According to this system, a natural gas volume quota is allocated by GAIL to each of the key consumers (fertilizer, power, city gas distribution etc.). Also, under this system the Government of India (GoI) sets consumer prices (exclusive of royalties, duties & taxes) and transportation tariffs. The producer price of gas payable to ONGC is on "***net back***"[18] basis after making deductions from the Consumer Price on account of contribution to the Gas Pool Account and Joint Venture (JV) purchase price differential. Over a long period, the gas price for fertilizer, power and city gas is kept low so that their end products become affordable.[19] .The natural gas pricing policy for gas produced by the government owned companies can be studied under four phases:

- Gas Prices Mutually Negotiated between the Producers(GAIL & ONGC) and the buyers-1959-1986
- Gas Prices Fixed by the Government-Ad-hoc Prices-1987-1992
- Gas Prices Fixed by the Government-(Kelkar Committee)- 1992-1997
- Gas Prices Fixed by the Government-(Shankar Committee)- 1997-2002
- Gas Prices Fixed by the Gocvernment-2002 Onwards

3.17 ***Gas Prices Mutually Negotiated between the Producers (GAIL & ONGC) and the buyers-1959-1986[20]:*** Gas was a new source of fuel in 1965 and it took considerable efforts to promote its usage. It was a buyer's market and supplies were based on market determined principles. Gas allocation, pricing and supply contracts were negotiated between ONGC and the consumers. Initially gas prices were mutually negotiated between ONGC and buyers.

3.18 During the 1970s, the price charged by ONGC was based on V K R V Rao award and was Rs 50/MCM (million cubic metres) exclusive of sales tax, royalty, etc. The price was valid up to March 31, 1971. The price of gas for the period April 1 , 1971, to March 31, 1976, was fixed at Rs 66/MCM by the award given by the Governor of Gujarat and Minister, MoPNG. This price was exclusive of royalty, sales tax and transportation charges. The above prices were applicable for the supply of gas from Cambay and Ankleshwar in Gujarat.

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[18] A contractual arrangement in which the price of gas at the wellhead is based upon what it sells for at the burnertip less applicable transportation and distribution charges. , See, Natural Gas Glossary, available online: http://www.aga.org/Kc/aboutnaturalgas/glossary/default.htm?id=%7B3524C7FD-EDF4-47D4-B1D3-5EE4DBAADB4C%7D

[19] "The Green Imperative: Future of Natural Gas in India", Petroleum Federation of India

[20] "The Green Imperative: Future of Natural Gas in India", Petroleum Federation of India

3.19 OIL charged a gas price of around Rs 9/ MCM in the Upper Assam region, exclusive of royalties, duties etc. OIL renegotiated the price of gas with their customers and in the late 19605, OIL supplied gas at the rate of Rs 52.501 MCM exclusive of taxes, duties and transportation charges. In 1969, ONGC started supplying gas in Assam and adopted the same price.

3.20 In 1976, ONGC decided to revise the gas price based on alternative fuel parity. ONGC started supplying gas to new consumers and old consumers entering in new contracts on the basis of thermal equivalence based on coal. During the period 1976-79, gas price was based on coal parity. This practice resulted in increase in gas price to Rs 210/MCM. In 1977-78, the price rose to Rs 350/MCM inclusive of royalty but exclusive of transportation charges.

3.21 In 1978, supplies from Western offshore came on stream and ONGC started supplying gas to consumers from Uran, Maharashtra. ONGC adopted charging gas prices to consumers on the basis of thermal equivalence of alternative fuels used by the consumers viz. coal, naphtha and furnace oil. The prices therefore, varied from consumer to consumer and use to use.

3.22 In 1979, GoI sought a study on gas pricing by Chief Cost Adviser. He submitted his report in 1979, recommending gas prices of Rs 185/MCM, Rs 250/MCM, Rs 320/MCM for Assam State Electricity State Board, Hindustan Fertilizer Corporation Ltd & other consumers and tea industry, respectively. These prices were exclusive of royalties, taxes, etc. and the transportation cost. OIL adopted these prices for the supplies made in Assam. However, ONGC continued with the principle of thermal equivalence in determining prices of gas in the Assam region.

3.23 With inherent advantages of gas vis-a-vis other fuels, additional availability of gas and marketing efforts of ONGC, natural gas became a preferred fuel of choice for customers and by mid-1980s, the gas market became a sellers market.

3.24 On January 1, 1982, ONGC decided to adopt the principle of thermal equivalence in determining prices of gas for Gujarat. As a result, prices in Gujarat were varying from unit to unit and use to use. The prices were in the range of Rs 2,1 00/MCM to Rs 2,500/ MCM for fertilizer and other industries and about Rs 850/MCM for power plants.

3.25 The prices realized by the ONGC/OIL in the Eastern Region, which had lower industrial infrastructure facilities, were much lower than in the Western region. Consequently flaring was much higher in the Eastern Region than Western region where the industrial infrastructure for utilization of gas was comparatively better developed and prices realized by ONGC were much higher. This resulted in multiple pricing of gas varying from Rs 92.50/MCM to Assam State Electricity Board in the Eastern region to as high as Rs 2,940/MCM for offshore gas supplied by ONGC in the Western region.

3.26 The potential of gas early on as an alternative fuel /feedstock was not fully assessed and generally gas was offered at very low prices. As the volume of gas production increased

scope of utilization was more fully comprehended, the use of gas also multiplied. Consequently, disputes on gas prices also assumed increasing proportions in those years.

3.27 ***Gas Prices Fixed by the Government-Ad-hoc Prices-1987-1992:*** During 1984-86, GoI decided to evolve a set of prices to encourage optimum/efficient utilization of gas, minimise flaring, generate adequate investible resources required for large investment programme of this sector and ensure energy conservation and inter-fuel substitution commensurate with the resource endowment of the country. The prices to be fixed, therefore, were to cover the cost of exploration, development of the fields, installation of production facilities, and the actual cost of transportation and provide a reasonable return to the producer. The pricing was to be fair to the consumer and encourage optimum utilization of gas.

3.28 After several deliberations the GoI established a fixed uniform gas price based on long-term average cost of production, regardless of the end use and the location of consumer along HBJ pipeline from January 30, 1987 as follows:

- Offshore gas at landfall point and onshore gas - 1400/MCM
- Transportation charges for Gas sold along HBJ pipeline - Rs. 850/MCM
- Gas sold in North-Eastern States (with further concession/discount in the price upto Rs 500MCM on a case to case basis).

3.29 The above prices were applicable for gas with calorific value ranging between Rs. 85000 to Rs.10,000 KCal/cubic meter for gas supplies with calorific values beyond this range, there was a discount premium based on the mid-point of the range i.e., Rs 9,250.

3.30 The above structure of prices was evolved by the Government to optimize the use of gas, minimise flaring and provide reasonable return to the exploration, production and transportation companies. The new price structure was, thus, expected to promote the overall growth of the gas industry and of the national economy.

3.31 ***Gas Prices Fixed by the Government-(Kelkar Committee)- 1992-1997:*** In 1988, GoI realized that the system of ad-hoc price was not appropriate and a decision was taken to set up a committee under the Chairmanship of Dr Vijay L Kelkar, Chairman - Bureau of Industrial Costs & Prices (BICP), to study gas pricing. The Committee was to review the existing pricing policy, including structure and levels of prices and recommend changes, if any, required either in the principles for determining these prices and in the actual levels of the prices or both.

3.32 The GoI following the recommendations of the Kelkar Committee fixed the prices of natural gas as follows w.e.f from January 1, 1992:

- Offshore gas at landfall point and onshore gas - Rs.1,550/MCM w.e.f January 1, 1992 to be increased each year by Rs.100/MCM till it reached Rs. 1850/MCM
- Transportation charges for Gas sold along HBJ pipeline - Rs. 850/MCM

- Gas sold in North-Eastern States (with further concession/discount in the price upto Rs 400/MCM on case to case basis).

3.33 The prices were exclusive of royalty, taxes, duties, etc. The producer price payable to ONGC was kept fixed at Rs 1 ,500/MCM and the difference between the producer price and the consumer price was credited to the Gas Pool Account - an account set up to compensate gas producers and the transmission company for the increased costs of producing gas from the North-East. The subsidized price in North-East India was decided because the law and order situation was not conducive to industrial activity and a significant amount of gas was being flared.

3.34 By 1990, the demand of gas far exceeded availability, requiring GoI's intervention for gas allocation through the inter-ministerial Gas Linkage Committee.

3.35 ***Gas Prices Fixed by the Government-(Shankar Committee)- 1997-2002:*** In January 1995, the Government appointed a Committee under the Chairmanship of Mr. T L Shankar to examine the changes required in the levels and structure of prices and review natural gas pricing. The Shankar Committee inter-alia recommended that prices of natural gas shall be fixed in parity with the prices of other fuels. The Government of India decided to adopt a pricing policy relating it to the prices of fuel oil. Under this policy the consumer price of gas at land points would be linked to the price of a basket of (need to define) Fuel Oils. The salient feature of the gas pricing order NO: L-12015/3/94-GP dated September 18, 1997 were as follows:

- The price would be determined and notified by GAIL with the approval of the Ministry for every quarter depending upon the average price of the basket of fuel oils based on the figures obtained from Platt's Oil gram for the previous quarter. The general price would vary between the floor price of RS.2, 150/MCM and the ceiling price of Rs.2, 850/MCM. The concessional price for the North-Eastern States would have a floor price of Rs.1, 200/MCM and a ceiling price of Rs. 700/MCM. A discount of Rs. 300/MCM would also be available for existing consumers in the North-East on a case-to-case basis for new units in these set up during 19972002 for a period of five years. Clarifications/guidelines regarding the manner of fixation of the gas price would be issued separately by the Ministry.
- The consumer price of gas would be linked to a calorific value of 10,000 kCaVm3. The existing linkage between price and calorific value would be retained till gas prices can be denominated in terms of calories would be expedited by the Ministry of Petroleum and Natural Gas in consultation with ONGC, OIL and GAIL.
- The consumer price of gas will be reviewed at the end of the first three years (1997-2000) with a view to achieving 100 percent Fuel Oil parity prices over the 4th and 5th years.
- ONGC/OIL/GAIL is permitted to sell gas from marginal isolated fields to be developed in future, at market driven prices.
- Over the period October 1, 1997 to March 31, 2000, the transportation charge payable to GAIL along the HBJ pipeline would be Rs. 1, 1501 MCM. The transportation charge will increase by 1 percent for every 10 percent increase in the consumer price index. This increase will be paid to GAIL out of the Gas Pool

Account. The transportation charge will be linked to the calorific value of 8,500 k cal/cu mtr. till such time as it could be denominated in terms of calories. The transportation charge will be reviewed after years.

- In addition to the price as fixed above, the transportation charges and royalty, taxes, duties and other statutory levies on the production, transportation and sale of natural gas will be payable by the consumers.
- Out of the consumer prices collected by GAIL, GAIL will retain the amount required to pay for the higher cost of gas purchased from the JVCs.
- An amount of Rs. 250 crore per year will also be deducted by GAIL from the consumer prices collected and credited to the Gas Pool Account to continue to compensate OIL for concessional gas price in the NorthEast. This will enable it to continue providing a marketing margin to GAIL; compensate GAIL/OIL for increases in the operating cost on account of inflation and for utilisation on R&D for exploration and exploitation of small fields. Any balance amount left in the Gas Pool Account after taking care of the above requirements would be transferred to the Central Exchequer. To compensate OIL for concessional gas prices in the North-East, the producer price of OIL will be Rs.19001 MCM which will be increased by 1 percent for every 10 percent change in the consumer price index.
- GAIL shall pass on to ONGC and OIL in proportion to the gas supplied by them, on a net back basis the entire proceeds of sales of gas of ONGC and OIL, after making certain specified deductions.
- The producer price of gas payable to ONGC/OIL w.e.f. 1.1.1996 till 30.9.1997 will be Rs.1, 650/MCM. The increment will be paid out of the Gas Pool Account.
- Contractual issues relating to the gas supply contract of GAIL including minimum guaranteed off-take, penalty for non-supply, etc., will be reviewed by the Ministry of Petroleum and Natural Gas in consultation with the Gas Linkage Committee.

3.36 ***Gas Prices Fixed by the Government-2002 Onwards***: The international prices of natural gas rose considerably in 1999 and continued to rise through 2000, thus it became difficult for the government to achieve full import parity and the gas prices remained unchanged till May 2005. Thereafter the prices of the Administered Pricing Mechanism (APM) gas of ONGC and OIL was revised effective July 1, 2005 through a Government order. The salient features of the revised pricing order effective July 1, 2005 were as follows:

- The determination of producer price was referred to the Tariff Commission. The consumer price of APM gas was increased from Rs. 2,850 per thousand standard cubic meters (SCM) to a fixed price of Rs. 3,200 per thousand SCM on an adhoc basis.
- All available APM gas was to be supplied to only the power and fertilizer sector consumers against their existing allocations along with the specific end-users committed under Court orders. Small scale consumers having allocations up to 0.05 Million Standard cubic Meter per Day (MMSCMD) were to be sold gas at the revised price of Rs. 3,200 per thousand SCM. This price is linked to a calorific value of 10,000 kCaVm3. However, the gas price for transport (CNG), Agra-Ferozabad small industries and other small scale consumers having allocations up to 0.05 MMSCMD

was to be progressively increased over the next 3 to 5 years to reflect the market price.

- The gas supplies through GAIL network to non-APM consumers was to be at the price at which GAIL buys from JV producers at landfall point, subject to a ceiling of ex-Dahej Regasified Liquid Natural Gas (RLNG) price of $3.86 per MMBTU for the year 2005-06. For the North- East region, Rs. 3,200 per thousand SCM was considered as the market price during 2005-06.
- The price of gas for the North-Eastern region was pegged at 60 percent of the revised price for general consumers. Thus, the consumer price for the North-East region increased from the existing price of Rs. 1,700 to Rs. 1,920 per thousand SCM.
- Subject to the determination of producer price, based on the recommendations of the Tariff Commission, any additional gas as well as future production of gas from new fields to be developed in future by ONGC/OIL will be sold at market-related price in the context of NELP provisions.

3.37 Subsequently, effective June 2006, consumers have been further reclassified. Priority sectors include power and fertilizer. The second within priority sector includes transportation and consumers requiring less than 0.05 MMSCMD of gas. The third category is of non-priority customers or non-APM consumers including fertiliser, petrochemicals etc. While landfall prices of power and fertilizer sectors have been left untouched, the price for the second category has been increased marginally to Rs.3,480 per thousand SCM (around $2.26 per MMBtu). For non-APM consumer gas price has been increased to $4.74 per MMBtu. In case of trunk lines, namely HBJ pipeline and Dahej-Vijaipur pipeline (DVPL) a combined single tariff of Rs. 831 per million standard cubic metre (MMSCM) with escalation formula, is being followed with effect from June 1, 2006. In order to benefit the customers of Gujarat, the Government decided, with effect from June 1, 2006, that the combined single tariff of Rs.831 per MMSCM for use of DVPL need not be paid by GSPL's customers and the connectivity charges of GSPL to DVPL were kept at Rs. 280 per MMSCM only.

3.38 ***Gas Pricing Policy for Private/Joint Venture Companies***: The over-regulation of the natural gas sector in India led to a slower growth of the sector and it could not attract much private participation. The government began a process of pricing reform to attract private investment in upstream and distribution to address these issues. The prices of gas produced by the private companies or the joint venture companies (with the Government companies) are not directly fixed by the Government.

3.39 Prices of JV gas are based on the pricing clauses of respective PSCs. To encourage investment in the exploration of oil and gas, the Government has allowed the contractors freedom to market oil and gas in India under New Exploration and Licensing Policy (NELP). Accordingly, oil and gas produced under NELP blocks are not covered under the Administered Gas Pricing Mechanism and the producers are free to market the gas at market-determined prices. GoI does not fix transportation charges or gas prices of distribution networks. The transportation tariff would now be an area to be regulated by the regulator expected to be appointed under the Petroleum & Natural Gas Regulatory Act 2006.

3.40 ***Pricing Mechanisms under the Production Sharing Contracts (PSC):*** Under the Production Sharing (PSC) the contractors have been allowed to sell gas at market price

in India. The relevant provisions on gas pricing under New Exploration Licensing Policy PSC are reproduced below[21]:

3.41 Subject to Article 21.2, the Indian domestic market shall have the first call on the utilization of Natural Gas discovered and produced from the Contract Area. Accordingly, any proposal by the Contractor relating to discovery and production of Natural Gas from the Contract Area shall be made in the context of the Government's policy for the utilization of Natural Gas and shall take into account the objectives of the Government to development its resources is the most efficient manner and to promote conservation measures.

3.42 For the purpose of sales in the domestic market pursuant to this Article 21.3 the contractor shall have freedom to market the Gas and sell its entitlement.

3.43 The Contractor shall endeavor to sell all Natural Gas produced and saved from the Contract Areas prices to the benefit of parties to the Contract.

3.43 Not with standing the provision of Article 21.6.1, Natural Gas produced from the Contract Area shall be valued for the purposes of this Contract as following:

a. Gas which is used as per Article 21.2 or flared with the approval of the Government of re-injected or sale to the Government pursuant to Article 21.4.5 shall be ascribed a zero values.

b. Gas which is sold to the Government or any other Government nominee shall be would on the forms and conditions actually obtained including pricing formals and delivery and

   (Explanation: However, it is clarified that this provision, would apply only when the sale is made to the Government or Government for nominee under the provisions of the contract)

c. Gas which is sold or disposed of otherwise than in at contract with paragraph (a) or (b) shall be valued on the basis of competitive arms length sales in the region for similar sales under similar conditions.

3.44 The formula or basis on which the prices shall be determined pursuant Article 21.6 shall be approved by the Government prior to the sale of Natural Gas to the consumers/buyers, within sixty (60) Business days from the receipt of proposal or from the date of receipt or clarifications additional information, where asked for the by Government. For granting this approval, Government shall take into account the prevailing policy, if any, pricing of Natural Gas including any linkage with traded liquid fuels, and it may delegate or assign this function to a regulatory authority as and when such an authority is in existence and in place.

[21] Model Production Sharing Contract (PSC) between Government of India and Contractors

3.45 The model PSC of the Ministry of Petroleum and Natural Gas for the NELP stipulates that the formula or basis on which the prices shall be determined shall be approved by the Government prior to the sale of Natural Gas to the consumers/ buyers. Under the terms of the PSC the price of gas should be determined on the basis of competitive arms length sale[22] (e.g. competitive bidding). Given below are two such existing contracts under which the prices are determined on the basis of competitive bidding, both on eastern offshore and western offshore.

Eastern Offshore

Contract	**Free Gas from Raava Satellite field**
Contract Year	2001
Period of contract	Duration of PSC, i.e. till September 2019
Floor Price	USD 2.30/MMBTU
Ceiling Price	USD 3.30/MMBTU since 2001
Price Review	In 2006
Pricing formula	Base Price x A/B Where, Base Price= 95% of average price of HSFO in 1999-2000, i.e., USD 2.74/MMBTU A= Average Price of HSFO basket 12 months prior to quarter B= 24 months average price of HSFO in 1998-2000, i.e., USD 86.44/ton
Methodology of Price discovery	Limited tender invited and GAIL (as GOI Nominee) matched the highest price
Daily Contracted Quantity	0.90 MMSCMD

Western Offshore:

Contract	**Panna-Mukta & Tapti fields**
Contract Year	2006
Period of contract	Upto March 2008
Floor Price	Fixed price till 2008
Ceiling Price	
Price Review/Pricing Formula	
Methodology of Price discovery	Price discovered through limited tender. GAIL matched the highest bid price of USD 4.75/MMBTU
Daily Contracted Quantity	Around 5 MMSCMD

[22] A brief note on applicability of "Arms length principle for the determination of Arm's length price of natural gas" is provided in Appendix I.

3.46 The above discussion on the pricing policy of natural gas in India clearly establishes that India follows two kinds of pricing policies for natural gas pricing; one for the gas produced by the Government owned companies (ONGC and OIL) and earmarked for allocation to different sector and the other for the gas produced by the private companies or the JV companies. The prices of natural gas produced by ONGC and OIL and falling under Government mandated allocation quota are fixed by the government itself. The prices of gas produced by the private companies or the JV companies are determined as per the respective price clauses in the PSCs. However the formula for price determination under the PSCs has to be approved by the Government, thus there is a possibility of governmental intervention in the pricing of natural gas produced by the private or joint venture producers as well.

E. Prices of Natural Gas in India (Supplied by ONGC and OIL)[23]

Customers	Pre-revised landfall [24] price(Rs./tcm)	Landfall price post July-2005(Rs./tcm)	Landfall price post June 2006(Rs./tcm)	Current landed cost(2006) (US$/MMBTU)
Power, Fertilizers & specific end-users as per court orders	2850	3200	3200	3.07
CNG, small consumers with off take<50000 m3/day)	2850	3200	3840	3.52
Other consumers	2850	6893	8482	6.22
Core sector consumers in North East	1700	1920	1920	1.50
Other Consumers in North East	1700	3515	6044	3.38

* All prices based on an LCV of 10,000 Kcal/m3

With effect from April 1, 2006

F. Dual Pricing Policy in Natural Gas Pricing in India:

[23] Indian Natural Gas Sector: Developments and Outlook, ICRA Report, August 2006
[24] The price of gas once it reaches the land.

3.47 As discussed above there exist two kinds of prices for natural gas in India; one for the APM gas produced by the Government companies and the other for the gas produced by the private producers under the Production Sharing Contracts. The former is directly fixed by the Government, wherein the gas producers are mandated under Government orders to sell a certain quota of their produce to specific consumers at a fixed price. The later is arrived at under the formula negotiated between the producers and the buyers under the PSCs, however the respective formulae require prior Government approval.

3.48 Such a pricing mechanism wherein either the government fixes the prices for a select group of consumers or approves the formulae for the determination of prices raises the presumption that prices are not strictly determined by the market forces of demand and supply and could be said to result in provision of natural gas to downstream consumers for less than adequate remuneration.

3.49 As far as the applicability of this pricing policy to other sector is concerned, it is clear from the perusal of the policy that it is limited in its scope and application and is limited only to the natural gas.

SECTION IV: NATURAL GAS PRICING IN UNITED STATES OF AMERICA

A. Background:

4.1 ***Reserves:*** As of December 31, 2004, the Energy Information Administration (**EIA**)[25], estimated that the United States had proven natural gas reserves of 192.5 trillion cubic feet (Tcf), or about 3 percent of world reserves (6th in the world).[26]

4.2 ***Production:*** USA is one of the highest producers of natural gas in the world. In the year 2002 it produced 19.05 Tcf of natural gas, which was sufficient to meet around 84% of its total demand. The rest of the demand for natural gas in the US is met through imports. Around 95% of the imports of natural gas into USA come from Canada. USA also imports some amount of Liquefied Natural Gas (LNG) from other countries such as Qatar, Algeria, Trinidad. In the year 2002 it imported 0.17 Tcf of LNG from Qatar[27].

4.3 ***Consumption:*** The total consumption of natural gas in the year 2006 was 21,716,442 million cubes. Natural gas is consumed in the United States mainly in the industrial (30.12 percent), electric power (28.70 percent), residential (20.05 percent), and commercial (13.06 percent) sectors.[28]

4.4 The industries which use natural gas extensively in the USA are paper and pulp, metals, chemicals, petroleum refining, stone, clay and glass, plastics and food processing etc and they together account for 84% of the total industrial natural gas uses in the US. The household sector consumes natural gas primarily for cooking and heating purposes. The commercial uses of natural gas are for heating, lighting, cooling, cooking, drying and transportation purposes. The electricity generation companies are emerging as huge consumers of natural gas. In 2006 natural gas accounted for 28% of all electricity generated in the US.[29]. The table below summarizes the consumption pattern of natural gas in USA:

[25] Department of Energy, USA

[26] USA: Country Analysis Briefs, Energy Information Administration, available online: http://www.eia.doe.gov/emeu/cabs/Usa/NaturalGas.html

[27] Natural Gas: Industry and Market Structure, available online: http://www.naturalgas.org/business/industry.asp

[28] USA: Country Analysis Briefs, Energy Information Administration, available online: http://www.eia.doe.gov/emeu/cabs/Usa/NaturalGas.html

[29] Natural Gas: Industry and Market Structure, available online: http://www.naturalgas.org/business/industry.asp

Consumption Pattern of Natural Gas in USA[30]:

	2002	2003	2004	2005	2006	Consumption Pattern
Total Consumption (Million Cubic Feet)	23,007,017	22,276,502	22,388,975	22,241,202	21,716,442	
Residential	21.25	22.80	21.74	21.61	20.05	Heating and Cooking
Commercial	13.66	14.27	13.97	13.94	13.06	Heating, lighting, cooling, cooking, drying and transportation
Industrial	32.63	32.09	32.35	30.33	30.12	Natural gas finds its use in the paper and pulp, metals, chemicals, petroleum refining, stone, clay and glass, plastics and food processing industries.
Vehicle Fuel	0.065	0.08	0.91	0.10	0.11	Fuel
Electric Power	23.22	23.05	24.40	26.38	28.70	Fuel for electricity generation

4.5 As discussed above, United States is one of the largest producers of natural gas in the world and it is heavily dependent upon the use of natural gas as fuel or feedstock for various downstream industries. The consumption pattern of natural gas in USA is varied and natural gas sector therefore is a very important sector in the US economy.

B. Natural Gas Sector: Industry Structure

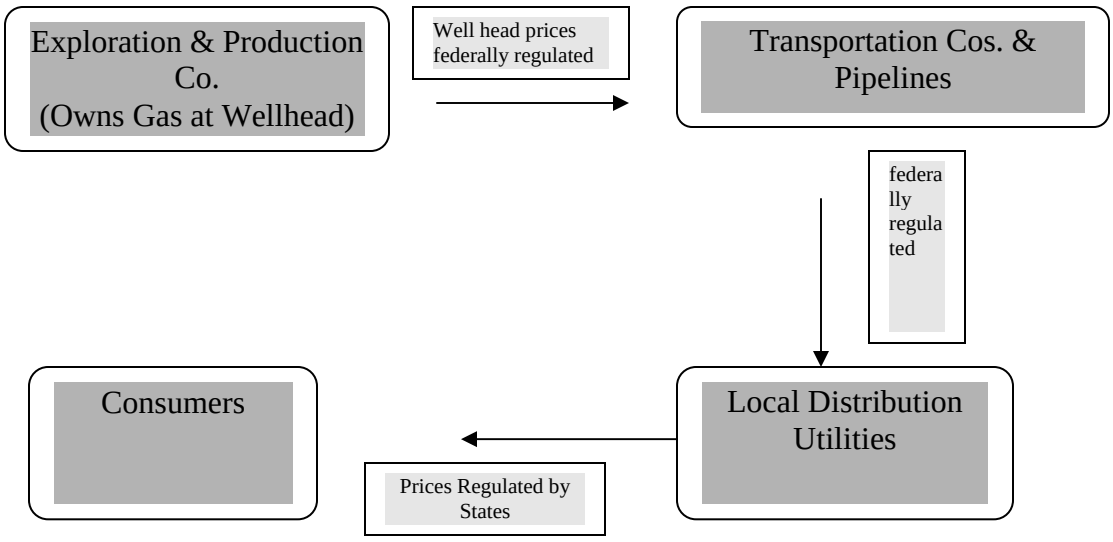
4.6 The natural gas industry in the USA is an extremely important segment of the US economy. The structure of the US natural gas industry has undergone significant changes over the last two decades. The structure of the US natural gas industry can be studied under two segments-pre de-regulation and unbundling[31] of the pipelines services and post de-regulation. Below is a brief description of the natural gas industry and market in the USA.

[30] Percent shares calculated ion the basis of consumption data provided by the Energy Information Administration, available online: http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_dcu_nus_a.htm

[31] Unbundling refers to separation of marketing and transmission services of gas from each other.

4.7 ***Pre-deregulation and Pipeline Unbundling:*** In the pre-deregulation period the structure of the US natural gas industry was relatively simple. The industry players consisted of exploration and production companies, transportation companies, local distribution utilities and independent consumers. Exploration and production companies explored and drilled natural gas, and in turn sold their produce at the wellhead to large transportation pipeline companies. These pipeline companies transported the natural gas, selling it to local distribution utilities, which in turn distributed and sold that gas to its customers. The selling price for all the three intermediaries i.e. producer, transporter and distributor were regulated by the Government.[32] The diagram below explains the structure of the natural gas sector in the US in the pre-deregulation period:

USA Natural Gas Industry Structure: Pre-deregulation and Pipeline Unbundling



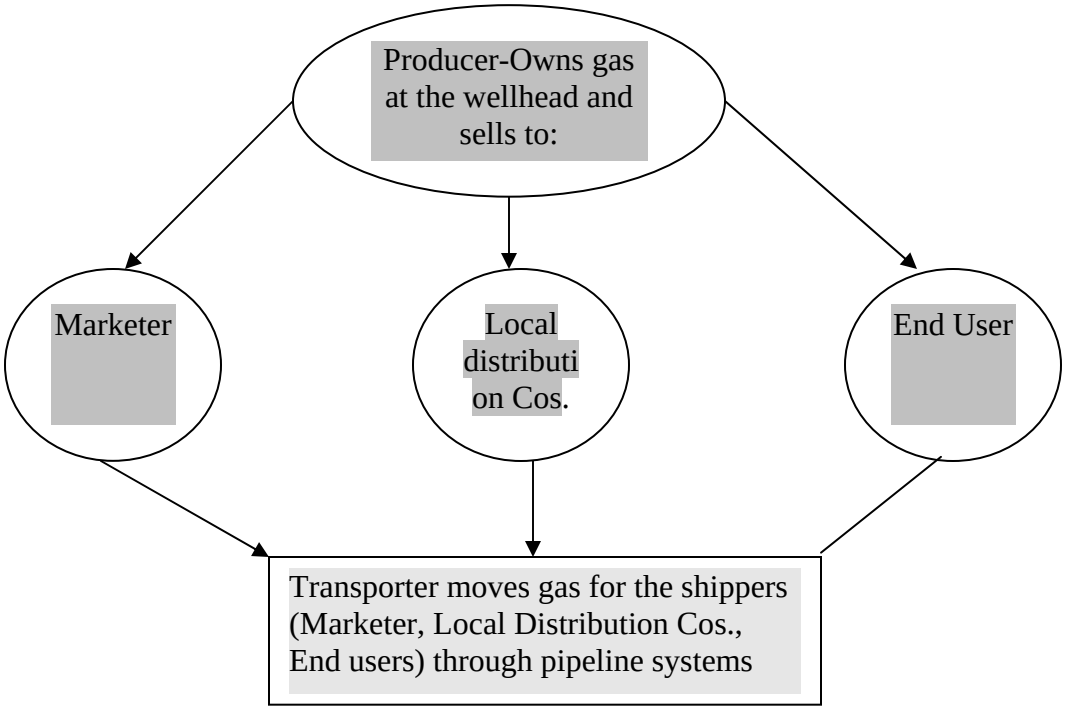
4.8 ***Post-deregulation:*** The regulation of the natural gas sector, coupled with lack of competition led to serious distortions in the sector. Thereafter the US government decided to deregulate the pricing of natural gas and unbundled the pipelines transmission system. In the deregulated scenario wellhead prices are no longer regulated-meaning the price of natural gas is dependent on supply and demand interactions. Pipeline transmission services is unbundled-meaning that interstate pipelines no longer take ownership of the natural gas commodity; instead they offer only the transportation component, which is still remains under federal regulation. Local distribution companies continue to offer bundled products(they market gas as well as provide transmission services) to their customers. In some states due to unbundling of retail services has led to use of distribution network for the

[32] Natural Gas: Industry and Market Structure, available online: http://www.naturalgas.org/business/industry.asp

transportation component alone. End users may purchase natural gas directly from producers or local distribution companies.[33]

4.9 One of the primary differences in the current structure of the market is the existence of natural gas marketers. Marketers serve to facilitate the movement of natural gas from the producer to the end user. Essentially, marketers can serve as a middle-man between any two parties, and can offer either bundled or unbundled service to its customers[34]. The diagram below explains the structure of USA's natural gas sector post the deregulation of the sector:

USA Natural Gas Industry Structure: Post-deregulation



4.10 The US natural gas market today is extremely open and competitive. It has a high degree of private ownership with little vertical integration. Production, transmission and distribution are usually carried out by separate entities with only a few cases of upstream or downstream integration. A few large gas distributors own transmission pipelines, but this is quite rare. The only public ownership in the US gas industry is found in gas distribution. Publicly-owned gas utilities (distributors) account for only about 7% of all domestic gas sales.[35]

[33] Ibid
[34] Ibid
[35] Ibid

4.11 There are over 8,000 producers of natural gas in the United States. These companies range from large integrated producers with worldwide operations and interests in all segments of the oil and gas industry, to small one or two person operations that may only have partial interest in a single well. The largest integrated production companies are termed 'Majors', and there are 24 such active 'Majors' in the USA. There are over 580 natural gas processing plants in the United States, about 160 pipeline companies, 114 natural gas storage operators, over 260 companies involved in the marketing of natural gas and are over 1,200 natural gas distribution companies.[36] The table below gives a brief outline of the natural gas industry structure in the USA.

Natural Gas Industry Structure in the USA (Year 2000)[37]:

Industry Segment	No. of Companies
Exploration and Production	8000
Value Addition(Processing)	580
Transportation and Pipelines	160
Storage	114
Marketing	260
Local Distribution Companies	1200

C. Natural Gas Sector: Regulatory Framework

4.12 The regulation of the natural gas industry in the United States dates back to the very beginning of the industry. In the beginning it was regulated mainly by the local governments. However as the industry developed and natural gas began to be shipped between municipalities, the regulations became more complex.

4.13 In 1938, the federal government became involved directly in the regulation of natural gas. The Natural Gas Act, 1938 for the first time allowed the federal government to regulate the rates charged by the interstate gas transmission companies. Further the decision of the US Supreme Court in *Phillips Petroleum Co.* v. *Wisconsin*[38] permitted the regulation of producer wellhead prices of natural gas destined for interstate transmission.

4.14 The regulation of prices by the government resulted in gas supply shortages by late 1970s and the government enacted the National Gas Policy Act in 1978 as part of the broader legislation known as National Energy Act. Through this act the government sought to revise federal regulation of the sale of natural gas, and thus began the process of natural gas sector deregulation in the US. The act had three main goals:

- Creating a single national natural gas market
- Equalizing supply with demand
- Allowing market forces to establish the wellhead price of natural gas.

[36] Ibid, based on Energy Information Administration data for the year 2000
[37] Source: Energy Information Administration
[38] 347 US 672 (1954)

4.15 The on-shore exploration, production of natural gas is regulated by each State with indigenous production. Offshore exploration and production of natural gas is regulated by the federal government. The distribution of natural gas through inter-state pipelines is regulated by the Federal Energy Regulatory Commission (FERC)[39].

4.16 ***Onshore natural gas exploration and production***: are regulated by each state with indigenous production. Drilling a new or existing well requires a permit from a regulatory agency in the state where the well is to be located. Each state determines what royalties will be paid and develops policies and regulations for licensing and leasing gas- and oil-producing properties. Gas- and oil-producing states co-ordinate their regulatory efforts through the Interstate Oil and Gas Compact Commission. The commission is an autonomous organization founded by producer states to assist states, of which 36 are members, with the development of programmes, policies and regulations for oil and gas production.[40]

4.17 ***Offshore natural gas exploration and production on the Outer Continental Shelf***: is federally regulated. Offshore drilling is regulated by the Minerals Management Service, an office within the Department of the Interior. Congress has designated about 610 million acres off limits to leasing. Leasing is effectively confined to the central and western Gulf of Mexico, a small portion of the eastern Gulf, existing leases off of California, and areas off of Alaska.[41]

4.18 ***Distribution:*** Interstate pipelines are regulated by the Federal Energy Regulatory Commission (**FERC**), which regulates pipeline rates, construction of new or expanded pipelines and facilities, and certain environmental aspects, and ensures open, non-discriminatory access to gas transport for all competing suppliers.[42] State Public Utility Commissions regulate natural gas distribution. They are responsible for regulating all aspects of gas distribution, including consumer rates.[43]

D. Natural Gas Pricing Policy:

4.19 As discussed above, the US government regulated the prices of natural gas at all the stages of sale of gas. The wellhead prices as well as the prices at which the transportation companies sold the gas to local distribution companies were regulated by the federal government, and the prices at which the local distribution companies supplied gas to individual consumers was regulated by State governments.

4.20 However with the unbundling of the pipeline services and the deregulation of the natural gas sector, the prices are no longer regulated by the US government. The deregulation process in the natural gas industry in the USA was initiated by the Natural Gas

[39] FERC obtains its authority from a number of legislations, namely the Natural Gas Act,1938, the Natural Gas Policy Act of 1978, the Outer Continental Shelf Lands Act, The Natural Gas Wellhead Decontrol Act of 1989 and the Energy Policy Act of 1992.

[40] Natural Gas Pricing in Competitive Markets, available online: http://www.iea.org/Textbase/publications/free_new_Desc.asp?PUBS_ID=1193

[41] Ibid

[42] Ibid

[43] Ibid

Policy Act of 1978. The 1978 Policy Act partially decontrolled the well-head prices and relaxed some restrictions on inter-state pipeline transportation. Thereafter the FERC Order 436 issued in 1985 paved the way for opening up access to the US gas pipeline system on a voluntary basis and increased competition in domestic markets. Thereafter the Wellhead Decontrol Act brought to force in 1989 specified the staged removal of all remaining controls on wellhead gas prices by the end of 1992. Since 1992 the well-head prices of gas in the USA are completely decontrolled and are completely market driven.[44]

4.21 **Key Dates in the Deregulation of US Natural Gas Industry:**

1978	Natural Gas Policy Act ends federal control over the wellhead price of (new) gas as of 1 January 1985, but keeps in place wellhead price controls for previously contracted gas.
1985	FERC Order 436 establishes a voluntary programme that encourages natural gas pipelines to become open access carriers of natural gas bought directly by users from producers. This order begins the separation of pipelines' merchant and transportation functions, and initiates reform of the natural gas industry's regulatory structure.
1989	Natural Gas Wellhead Decontrol Act lifts all remaining wellhead price controls.
1992	FERC Order 636 obliges interstate natural gas pipelines to unbundle. The goal of this order is to ensure that all natural gas suppliers compete for gas purchasers on equal footing.
1995	The first choice programmes for residential customers are implemented. By late 1997, local natural gas utilities in more than 20 states and the District of Columbia had proposed and/or implemented such policies or initiated pilot programmes.

4.21 FERC Order 636, which was issued in April 1992, was designed to complete the process of restructuring of the wholesale gas industry. Its objective was to subject the industry to greater competitive pressures by increasing customer choice and improving the transparency of pipeline-company pricing of transportation services, thereby reducing end-user gas supply costs and encouraging the development of the business. As per the order the pipeline companies obliged to provide access to storage and transportation facilities for all customers on a non-discriminatory basis. The order also paved way fro splitting up of the traditional pipeline sales service into its component parts, allowing customers to contract separately for gas supply, transportation, storage and backup services. Pipeline companies were prohibited from providing gas merchanting services except through affiliate companies.

4.22 ***Pipeline charges:*** The pipeline charges in the USA are determined with reference to the fixed and variable costs incurred in supplying gas to customers. The FERC Order 636 mandates "straight fixed variable" (SFV) rate design to be followed by the pipeline-companies, whereby pipeline charges are broken down into a fixed-capacity charge (reservation or booking fee) and a commodity charge (according to usage) [45] wherein the equity return and income taxes are included in the commodity charge.

[44] Ibid, Page-70

[45] Ibid, Page-72

4.23 ***Fixed costs:*** FERC makes a determination as to whether costs are fixed or variable. Fixed costs do not vary with the volume of gas transported on the pipeline. The vast majority of a pipeline's costs are, in fact, fixed, in the short run such as most salaries and the return on its investment in pipeline and compressor engines. It is a charge that is independent of the actual volume of gas transported by the customer. Pipelines are capital intensive, but that capital cannot be varied to meet seasonal swings in demand for gas. The pipe size cannot be increased or decreased to meet seasonable fluctuations. If a customer needs most of its gas in the winter, the investment necessary to serve that customer may stand idle in the summer. Consequently, a practice has been developed of charging customers for a certain portion of the space on the pipeline, whether or not it is used.[46]

4.24 ***Variable costs:*** The primary variable costs are the portion of operations and maintenance expenses directly related to volume such as compressor engine lubricants and filters. These are charges that are incurred only when a customer chooses to transport gas on the pipeline. This classification is important for the two major types of transportation services offered by a pipeline company: firm transportation and interruptible transportation. For its firm transportation service, the pipeline guarantees to make its capacity available to transport the customer's requested amount of gas at any time of the year. For this, the customer must pay the demand charge for that capacity all year around, whether or not the space is used. In contrast, the interruptible transportation service customer pays the pipeline only when its gas is actually transported (and pays only the rate close to a variable cost of transporting the gas.) However, if the pipeline's capacity is needed to serve the firm transportation customers, the pipeline can refuse to transport gas for its interruptible customers. The customers get the reliability they pay for.[47]

4.25 ***Storage charges***: US storage rates are set in a similar way to pipeline rates, but the cost allocation is different. FERC requires 50% of fixed costs (including cushion gas) to be assigned to a capacity/space component and 50% to a "deliverability" component, on the grounds that fixed costs are incurred in both storing and withdrawing gas. Variable costs are assigned to an injection and withdrawal component. Charges for storage, injection and withdrawal are then set on the basis of authorized design capacity levels. FERC is considering deregulating storage where sufficient competition between facilities is demonstrated.[48]

4.26 Even though the pipeline and storage rates remain almost entirely regulated by FERC, rates are set on the basis of cost, including a reasonable return on investment and the FERC does not directly specify the rates.[49]

4.27 The above analysis of the regulatory framework for natural gas sector in the US clearly establishes that government regulation is minimal. The natural gas sector in the USA has come a full circle and is now completely deregulated.

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[46] See, Natural Gas Pipeline Regulation and its Impact on Value, available online: http://honigman.com/db30/cgi-bin/pubs/SchneiderA67602.pdf

[47] Ibid.

[48] Ibid, Page-73

[49] Ibid

E. Natural Gas Prices in the US vis-à-vis Export Prices[50]:

4.28 As discussed above the natural gas sector in the USA is completely de-regulated and the Government intervention in the sector is minimal. The table below shows the prices of natural gas in the US domestic market and as exported from US (average of export price to Japan and Mexico) for the past six years. It clearly indicates that USA does not maintain differential prices when it comes to sale in the domestic market as compared to exports, particularly with the purpose of providing natural gas to its domestic consumers for less than adequate remuneration. To contrary the export prices of natural gas are lower than the domestic prices.

(U.S. Dollars per thousand cubic feet)

	Natural Gas Prices	2000	2001	2002	2003	2004	2005	2006	
USA	Residential	7.76	9.63	7.89	9.63	10.75	12.84	13.75	
	Commercial	6.59	8.43	6.63	8.40	9.43	11.59	11.97	
	Industry	4.45	5.24	4.02	5.89	6.53	8.56	7.89	
	Wellhead	3.68	4.00	2.95	4.88	5.46	7.53	6.42	
Export		4.10	4.19	3.41	5.54	6.09	7.59	6.83	

F. Dual Pricing Policy in Natural Gas Pricing in USA:

4.29 As discussed above, the natural gas industry in the USA is completely deregulated from the governmental control. The wellhead prices were completely decontrolled in 1989 and the transportation charges, even though regulated by the FERC are not directly fixed by it. Thus there is no dual pricing policy for natural gas in the USA. However the data on prices of natural gas for different consumers shows that there exists differential pricing for different consumers. Such a difference could very well be attributed to economic reasons, for example industrial consumers tend to be located near the gas production sites, thus cost of transmission of gas is lower and hence the prices. Thus it can be concluded that there is no existing dual pricing policy for natural gas in USA.

4.30 As far as applicability of these laws/policies is concerned, they are all sector specific laws, limited to regulation of natural gas sector in USA.

[50] Source: Energy Information Administration

Section V: Natural Gas Pricing in Russia:

A. Background:

5.1 ***Reserves:*** Russia holds the world's largest natural gas reserves, with 1,680 trillion cubic feet (Tcf) - nearly twice the reserves in the next largest country, Iran..[51]

5.2 ***Production:*** In 2004 Russia was the world's largest natural gas producer (22.4 Tcf), as well as the world's largest exporter (7.1 Tcf). According to official Russian statistics, production during 2005 and 2006 was predicted to be about the same with around 1 percent growth rate per year.[52]

5.3 ***Consumption:*** The domestic sector in Russia consumes the highest share of natural gas in Russia, followed by the industrial sector and then by the transport sector. The table below gives the break up of the consumption pattern of natural gas in Russia for the year 2002.

Consumption pattern of natural gas in Russia (2002)[53]:

User	Total Consumption in %	Specific Uses
Residential	37	Cooking, heating
Industrial	36	Fuel, heating
Transport	25	Fuel
Other	2	

5.4 In 2003, domestic natural gas consumption (residential and industrial consumption) amounted to 406 bcm, whereas Russia exported 176 bcm. In other words, domestic consumption accounted for about 70% of natural gas production in 2003, and only about 30% was exported. The share of gas in Russian total primary energy supply is forecasted to rise from 52% in 2000 to 56% in 2030. The share of natural gas in final energy consumption will increase from 27% to 32%. Natural gas therefore forms an important and integral part of Russian economy. The contribution of natural gas sector to Russian economy is huge and considering the intricate inter-linkages with other sectors of the economy, Russian government exercises strict control over the sector.[54]

B. Natural Gas Sector: Industry Structure

5.5 ***Upstream:*** Russia is the world's largest producer and exporter which holds the world's largest natural gas reserves. Gazprom is the 38% government-owned natural gas monopolist (the government own another 17% of the shares in Gazprom's subsidiaries), which dominates the sector. Gazprom accounts for about 90% of domestic production and represents the main player in gas exports, through the subsidiary Gazexport. Other emerging companies, such as Novatek, Itera and Northgaz, are deemed to be the major contributors

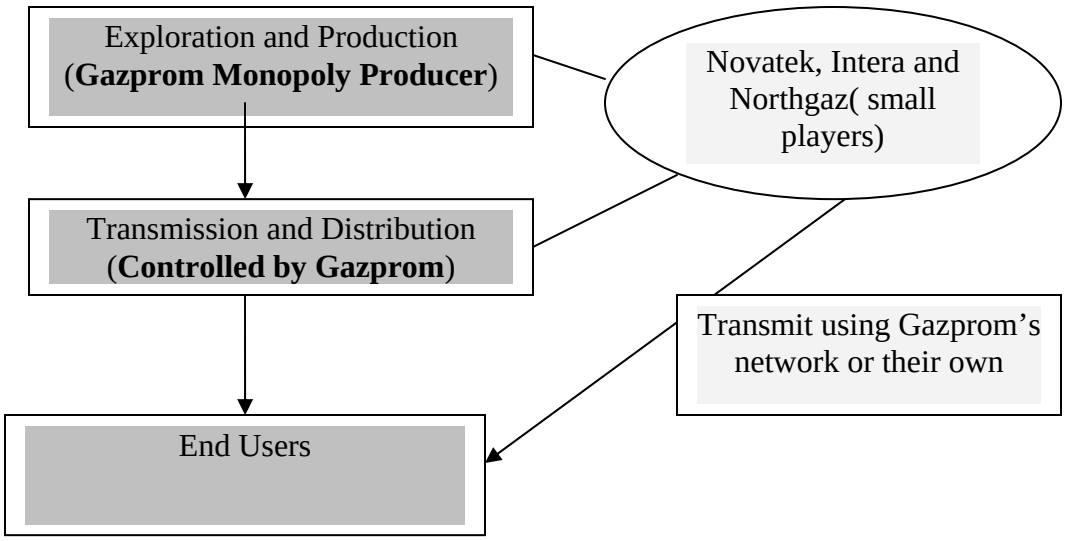
[51] Natural Gas: Russia, Country Analysis Briefs, Energy Information Administration, available online: http://www.eia.doe.gov/emeu/cabs/Russia/NaturalGas.html
[52] Ibid
[53] Robeck Katrin, "Russia's Gas Business-Facts, challenges and Roads to Reform, Bank of Finland, 2005
[54] Ibid.

to future production growth. Exports are mainly directed to Eastern and Western Europe, the Commonwealth of Independent States (CIS), Turkey, Japan and other Asian countries. Russia imports some gas from Turkmenistan in support of export long-term contracts.[55]

5.6 ***Transportation Networks:*** Gazprom controls the Russia's pipeline network, with obligations to grant access to independent gas producers.

5.7 ***Downstream:*** Gazprom has the duty to supply gas to Russian domestic market at government-regulated prices.

5.8 The diagram below depicts the structure of the natural gas sector in Russia, which consists of the vertically integrated monopoly producers Gazprom and a few finge operators such as Novatek, Intera and Northgaz.



5.9 Thus above discussion on the structure of the natural gas industry in Russia clearly indicates that the sector is far from reflecting the perfect competition situation. To the contrary it is comprises of a few players, with Gazprom (with substantial government ownership) enjoying an effective monopoly. Such an industry structure raises the presumption of extensive government regulation and control over the industry. The following section shall discuss the regulatory framework and pricing mechanism for natural gas in Russia.

C. Natural Gas Sector: Regulatory Framework

[55] Julien Lee, "Regional: The Oil and Gas Sector in Transition: Challenges and the Role of EBRD-Energy Operations Policy, Centre for Global Energy Studies, May 2005.

5.10 Over the past decade since Russia embarked on the process of economic liberalization, a number of legislations relating to the hydrocarbon sector have been passed. A number of them are common to both the Oil sector and the Natural Gas sector. Some of these legislations are:

- The Law on Underground Mineral Resources
- The (Draft) Oil and Gas Law
- The Law on the Continental Shelf
- The Law on Production Sharing
- The Law on Natural Monopolies

5.11 ***The Law on Underground Mineral Resources***: It is also known as the ***Subsurface Resources Law*** and was passed by the *Duma* in 1992. It set a legal framework for all mining operations, including natural gas. It established the state as the exclusive owner of all mineral resources, but allowed private and state-owned entities to lease exploration and production rights via licenses. The Law required that licenses be issued only through public competitive tenders. Subsequently, in July 1992, regulations were issued on the procedures for licensing to exploit mineral resources. A State Committee for Geology and the Use of Underground Resources (now the Ministry of Natural Resources) was established as the Federal body responsible for issuing licenses. "Joint licensing" is, however still the rule. Known as "*dva klucha*", this requires approval by both Federal and regional authorities. Licensing and tendering have since become the major tools used by regional administrations to regulate the development of hydrocarbons on their territories.

5.10 ***Draft Oil and Gas Law***: It was designed to complement the 1992 Law on Underground Resources by establishing new licensing and operating rules for the oil and gas industry. The *Duma* passed it in July 1995, but it failed to receive endorsement by the Federation Council and the President. The impetus behind it gradually waned, and the focus shifted to production-sharing legislation and improvements to the existing Law on Underground Mineral Resources.

5.12 ***Law on the Continental Shelf:*** It was passed by the *Duma* in October 1995 and signed into law by the then President Boris Yeltsin. It gave the Federal authorities exclusive rights to permit and regulate exploration and development of the shelf by either foreign or Russian investors after tenders and auctions. It defined Russia's jurisdiction over the shelf as applying to the exploration and production of mineral resources, the construction of facilities for drilling and the laying of cables and pipelines.

5.13 ***Law on Natural Monopolies:*** This law came into effect in August 1995 and covers many activities in the Russian energy sector. It identified "natural monopolies", such as the Gazprom in the natural gas sector, whose activities fell under its purview. It established several state monitoring and regulatory bodies, including the Anti-Monopoly Ministry and the Federal Energy Commission. A series of subsequent resolutions spelled out the organization, operations and powers of these bodies.

5.14 The above motioned laws together with the laws on taxation and pricing regulations broadly regulate the natural gas sector in Russia.

D. Natural Gas Pricing in Russia:

5.15 Prices for natural gas (as also some other commodities and services) in Russia are fixed by the Federal Tariff Service of the Russian Government. Federal Tariff Service is an executive body authorized to exercise legal control in price and tariff regulation for goods and services in compliance with the Russian Federation legislative acts as well as the control over their implementation except price and tariff regulation that is within jurisdiction of other federal executive bodies. Also Federal Tariff Service is a federal executive body that regulates natural monopolies in which case its functions encompass price (tariff) determination (setting) and control over issues related to price (tariff) determination (setting) and application in the business of natural monopoly agents[56].

5.16 As discussed above, the natural gas sector in Russia is dominated by the natural monopoly Gazprom, which is a vertically integrated company controlling most of the production and transmission of natural gas in Russia. The prices at which Gazprom(being a natural monopoly) sells its gas is therefore determined by the Federal Tariff Service of the Russian Government.

5.17 The Department for Gas and Oil Industries Regulation under the Federal Tariff Service prepares proposals to approve and amend prices (rates and fares) for gas transmission through transfer pipelines of all kinds. It also determines the wholesale prices for the outcome gas supplied through the gas trunk-line system except gas recovered by companies that are not affiliated to Gazprom OJSC, Yakutgazprom, Norilskgazprom, Kamchatgazprom and Rosneft; rates for public gas supply services to end users; wholesale prices for petroleum gas sold to Gas Treatment Plants (for further refinery), and for liquefied gas used in households.[57]

5.18 Russia maintains a system of dual pricing in natural gas, wherein the prices at which gas is sold to domestic consumers is different (much lower) than the price at which Russia exports gas to EU and other world markets. Further in the Russian domestic market itself there exist differential prices. Prices for industrial consumers are different (much higher) than the prices for domestic and municipal consumers. Further there are numerous sub-categories in pricing for domestic consumers for example pensioners and war veterans pay less than the official price level.[58]

5.19 ***Prices at which Gazprom Sells Gas:*** Gaprom is the natural monopoly in the natural gas sector and falls under the purview of the Law on Natural Monopolies[59] and thus the prices at which Gazprom sells its gas is determined by the Federal Tariff Service. The prices for gas extracted and supplied by OAO Gazprom and its affiliates are therefore annually set by the state represented by the Federal Service for Tariffs. Gas prices differentiate by price zones.

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[56] Information about Federal Tariff Service, available online: http://www.fstrf.ru/eng/about/appeal

[57] Role of Department for Oil and Gas Industries Regulation, available online: http://www.fstrf.ru/eng/about/dep/gas

[58] Russia Energy survey, 2002, International Energy Agency

[59] Law on Natural Monopolies, Federal Law of the Russian Federation, No-147-FZ, dated August 17, 1995

5.20 In 2006 wholesale gas prices were on an average increased by 11.5% and an average price of Gazprom's gas (net of VAT and excise) accounted for RUR 1,125.4 per 1,000 cu m. That increase was anticipated in both the federal and regional budgets. The prices for 2007 were set by the December 5, 2006 Order # 338-e/1 of the RF Federal Service for Tariffs.[60]

5.21 ***Pricing Reforms:*** In recent years Gazprom has been bringing forward the initiative of applying stock market technologies to set prices for gas supply to industrial consumers, with regulated gas prices to be retained exclusively for utilities, budget-sponsored customers and the population. In order to gain the practical experience in stock exchange trading in Russia, the main market players have proposed conducting a "5+5" experiment, namely selling in 2006-2007 5 bcm of OAO Gazprom's and 5 bcm of independent producers' gas at free market (contractual) prices via an electronic trading platform. The Russian Government endorsed that initiative and first gas deals within the "5+5" scheme were executed on November 22, 2006.[61]

5.22 The next four years the Government of Russia plans to increase the domestic prices of gas in a staggered manner. In November 2006, the Russian Federation Government took a decision surrounding a maximum increase in gas prices till 2010: to 15% in 2007, 25% in 2008, 20% in 2009 and 28% in 2010. By 2011 sales profitability is planned to reach European market levels (including transportation costs and customs duties).It is planned among other things that starting 2011 gas will be sold to industrial consumers at free market prices, with state regulation of gas prices for the population to be retained.[62]

E. Prices of Natural Gas in Russia vis-à-vis Export Prices[63]:

5.23 As discussed above the prices of natural gas still being fixed by the Russian government for the domestic market. The table below shows the comparative prices in the Russian domestic market and the export prices to the non-CIS European countries from the year 1997 to 2003.

(US$/1000 cubic meter)

	Natural Gas Prices	1997	1998	1999	2000	2001	2002	2003
Russia	Households	19.2	15.6	7.9	8.0	9.3	11.6	15.9
	Industry	46.0	26.5	10.6	12.2	14.9	17.6	23.8
Export Prices	Non-CIS Europe	84.2	80.5	60	103.5	119.1	107.3	128.1

[60] Information on domestic gas sales by Gazprom, available online: http://eng.gazpromquestions.ru/index.php?id=5

[61] Ibid

[62] Information on Russia's Gas Market Liberalization, available online: http://eng.gazpromquestions.ru/index.php?id=19

[63] Source: OECD Economic Department Working Paper 402, using data from the Federal Energy Commission, Goskomstat RF and United Financial Group.

5.24 The above table clearly indicates that gas is priced differentially for the domestic market and for the export market. As per the Russian Federal government decision the domestic prices for industrial consumers were to be raised by 15% by 2007, considering this raise also there would still remain significant difference in the domestic prices and the export prices.

F. Dual Pricing Policy in Natural Gas Pricing in Russia:

5.25 As discussed above there does exist a dual pricing policy for natural gas in Russia. The government fixes the prices at which natural gas can be sold by the monopoly producer of gas (Gazprom) in the domestic market. This price is considerably lower than the prices at which Gazprom sells the gas in the export market, which is based on long-term contracts entered into by Gazprom with distributors in export markets. However, as discussed in the previous section the Russian Government has decided to raise the prices of natural gas meant for sale to the domestic industrial consumers over the next few years so that the domestic sales profitability reflects the European market level.

5.26 Since the prices of natural gas for sale in the domestic industry are fixed by the government, which is significantly lower than prices in the export market, it can be said that natural gas is sold to the domestic consumers for less than adequate remuneration.

5.27 The perusal of the general regulatory framework for the natural gas sector shows that it is applicable to the whole of the hydro-carbon sector (natural gas, crude oil etc.). The prices of natural gas however are fixed by the Federal Tariff Service of the Russian Government through specific regulations applicable only to the natural gas sector. The tariffs for supply and marketing of services provided by Gas Distribution Organizations are fixed by the Government (Federal Energy Commission). [64](***We do not have the text of these regulations, thus this statement is un- verified)***

G. Provision of Natural Gas to Domestic Consumers at "Less Than Fair Value"/"Less Than Adequate Remuneration":

5.28 The WTO Agreement on Subsidies and Countervailing Measures (ASCM) does not use the phrase "less than fair value". The ASCM instead uses the phrase "less than adequate remuneration" while prescribing the rules for determining whether the provision of goods or services by a Government confers a benefit under Article 1 of the ASCM to the recipient company. Article 14 (d) of the ASCM prescribes that adequacy of remuneration shall be

> *"determined in relation to prevailing market conditions for the good or service in question in the country of provision or purchase (including price, quality, availability, marketability, transportation and other conditions of purchase or sale)."*

5.29 However this methodology for determining whether the goods or service are provided for less than adequate remuneration does not to seem to address those situations where "market conditions" do not exist i.e. the industry is characterized by a Government

[64] Resolution of the Federal Energy Commission of the Russian Federation No 8/9 dated February 6, 2002.

owned/controlled monopoly. This issue has been clarified by the WTO Appellate Body the ***US-Softwood Lumber IV***[65] dispute wherein it held that, in situations where due to the predominant role of the Government there does not exist a private market price to make a fair comparison, it can be done with reference to other benchmark prices which relates or refers to, or is connected with, prevailing market conditions in the country of provision, (including price, quality, availability, marketability, transportation and other conditions of purchase or sale).[66] The AB however did not suggest what other benchmark prices can be used for such determination.

5.30 The prices at which the goods are exported from a country may be used an alternate benchmark. In the case of provision of natural gas at a price considerably lower than the export price by Gazprom (owned/controlled by the Russian Government) to domestic consumers, it is clear that the domestic market for natural gas in Russia is distorted. Thus an analysis of whether natural gas in Russia is being supplied to domestic customers at less than adequate remuneration can be based on a comparison of domestic Russian prices for natural gas with prices at which natural gas is made available in the international market. Such comparison (***See, para 5.23 above)*** shows that the domestic consumers in Russia are getting natural gas at prices considerably lower than export prices (such high difference in prices may not be reasonably attributed to mere economic factors). Thus it can be said that natural gas is being sold to the domestic consumers in Russia at "less than adequate remuneration (**LTAR**)."

[65] Appellate Body Report, " United States-Final Countervailing Duty Determination with Respect to Certain Softwood Lumber from Canada" (*US-Softwood Lumber IV*), WT/DS257/AB/R, dated January 19, 2004

[66] Ibid, para- 120

SECTION VI: DUAL PRICING IN NATURAL GAS: CONCLUSION

6.1 As discussed above the pricing policy in natural gas is different in all the three countries. There are two kinds of pricing policies followed in India for the sale of natural gas. The gas produced by the National Oil Companies (ONGC and OIL) is sold at a price fixed by the Government. The price of natural gas produced by the private joint venture companies is fixed as per the mechanism agreed in the Production Sharing Contracts which has to be approved by the government. It cannot be said there is dual pricing in natural gas in India as there is export price to compare the domestic prices with. However the prices of APM gas do not strictly reflect the supply and demand situation thus it can be said that such natural gas is provided to the downstream consumers for less than adequate remuneration.

6.2 The natural gas sector in the United States is completely de-regulated and the Government does not fix the prices of natural gas any stage (production, transmission or distribution). The pricing mechanism through the prices of natural gas determined in the USA depends on the economic factor and thus it can be concluded that there is no dual pricing in natural gas in USA and that there is no provision of natural gas to the downstream sector for less than adequate remuneration.

6.3 As far as Russia is concerned the gas prices of gas produced by Gazprom(monopoly producer) for sale in the domestic market are fixed by the Russian Government(Federal Tariff Service of the Russian Government). The export prices are determined with reference to the long term contracts entered into by Gazprom and buyers. The domestic prices are much lower than the export prices, thus there clearly exists a dual pricing in natural gas in Russia which results in provision of natural gas to downstream industries for less than adequate remuneration.

6.4 The table below summarizes the findings of the study under this chapter:

Country	**Price Determination**	**Whether Dual Pricing**	**Whether NG provided at LTAR**	**Whether Policy applicable to other sectors**	**Whether any export ban**
India	APM Gas produced by National Oil Cos.-Prices fixed by the Govt.; Gas produced by Pvt. Cos.-Price determined as per formula in PSCs-has to be		The prices of APM gas is fixed by the government which is not strictly based on the economic factors, thus it may be said that gas is provided	Pricing policy limited to natural gas	No

	approved by the Govt.		at LTAR		
USA	Market determined prices	No	No	Natural gas sector regulated through sector specific policies/laws	No
Russia	Gas produced by Gazprom- fixed by the Federal Energy Commission; Export prices negotiated between exporter and buyers	Yes; there is a considerable variance in domestic prices and export prices	Yes; the downstream sectors such as electricity, steel etc get it at LTAR	Pricing policy limited to the natural gas sector	No

Appendix I

Note on Determination of Price based on Arm's Length Principle[67]

I. Arm's Length Principle:

1.1 The arm's length principle is an internationally recognized principle for determination of arm's length price for transfer of goods or services in the open market. This principle is used internationally for determination of arm's length price of cross-border transactions between two related parties (controlled transactions) for tax purposes. The principle helps different jurisdictions in keeping a watch on understatement or over-statement of prices by multinational enterprises.

1.2 The arm's length price of a controlled transaction is determined with reference to the price of comparable transactions between unrelated parties in an open market (comparable uncontrolled transaction).

1.3 The comparability of controlled transaction with uncontrolled transaction is judged primarily with reference to similarity of products, functions performed, assets used risks assumed, contractual terms, market conditions, economic circumstances and also similarity of significant economic attributes of enterprises.

1.4 The arm's length price of goods sold by a manufacturer or producer may normally be determined by any of the following three methods:

- Comparable Uncontrolled Price method (CUP)
- Cost Plus Method (CPM)
- Transactional Net Margin Method (TNMM) [Other methods may not be relevant for this note]

a. Comparable Uncontrolled Price method (CUP):

1.5 Under this method, arm's length price of controlled transaction is determined with reference to prices of comparable uncontrolled transactions in an open market. This method requires a very high degree of product similarity.

b. Cost Plus Method (CPM):

1.6 Under this method, arm's length price is determined by comparing the gross profit mark up on cost of production in controlled transaction with the gross profit mark-up in comparable uncontrolled transactions. The cost of production comprises direct cost as well

[67] Note on determination of price based on arm's length principle, available online: www.infraline.com

as indirect cost of production. This method requires a very high degree of functional similarity.

c. Transactional Net Margin Method (TNMM):

1.7 Under this method, arm's length price is determined by comparing the operating profit mark-up (in relation to operating cost) in controlled transaction with the operating profit mark-up arising in comparable uncontrolled transactions. The operating cost comprises cost of production and operating expenses. This method works similar to Cost Plus method except that instead of gross profit mark-up on cost of production, operating profit mark-up on operating cost is considered for comparability analysis. The method requires relatively lesser degree of functional similarity. This method is normally used in cases where either there is minor functional dissimilarity between controlled transactions and uncontrolled transactions or data in respect of comparable entities for comparability analysis at gross profit level is not available.

II. Applicability of Arm's Length Principle for Determination of Arm's Length Price of Natural Gas

2.1 Though the transaction of supply of natural gas in India is not between two related parties, yet it is essentially in the nature of a controlled transaction in view of restrictive bidding and highly imperfect market conditions prevailing in natural gas market. Therefore, the aforesaid principles can be invoked in a somewhat modified form for setting up of arm's length price for supply of natural gas by gas producers in India.

III. Appropriateness of Methods for determination of arm's length price of natural gas:

a. Comparable Uncontrolled Price method (CUP):

3.1 This method requires identification of price of identical product in uncontrolled transactions for benchmarking against the price of controlled transactions. However, since natural gas sector is operating in monopolistic market, it would not be possible to find a comparable uncontrolled transaction in gas sector in the domestic market. The arm's length price may, therefore, be benchmarked with reference to prices of natural gas prevailing in foreign markets after making suitable adjustments on account differences of geographical location & other economic circumstances and for exchange fluctuation & transportation cost etc. However, in practice, it may be very difficult to quantify these comparability adjustments and, therefore, to that extent, the application of CUP in the instant case would suffer from limitations.

b. Cost Plus Method (CPM):

3.2 This method relies more on functional similarity than on product similarity. Therefore, enterprises engaged in other comparable sectors in India and performing similar functions, employing similar assets and assuming similar risks may be considered as comparable entities for applying this method. The gross profit mark-up on cost of

production of comparable entities may be used as benchmark for determination of arm's length price of natural gas. This may ensure a fair return on investment to the contractor commensurate to the functions performed, assets employed and risks assumed in the open market and arm's length price for supply of natural gas.

c. <u>Transactional Net Margin Method (TNMM):</u>

This method works similar to Cost Plus method except that instead of gross profit mark-up on cost of production, operating profit mark-up on operating cost is considered for comparability analysis. The method is more tolerant to minor functional differences and the data at operating profit level is readily available in respect of Indian companies. Therefore, this method would also be fairly applicable for determination of arm's length price of natural gas.

IV. Conclusion:

4.1 Since Production Sharing Contract (PSC) requires the contractor to supply the natural gas at arm's length sale price, one of the above three methods may be considered for determination of arm's length sale price of natural gas.

Chapter - 3
Subsidies Disciplines in Natural Resources Pricing: Crude Oil and Petrol/Gasoline

SECTION I: BACKGROUND

1.1 Crude Oil is a mixture of hydrocarbons that exists in a liquid form in natural underground reservoirs. It accounts for 40% of the world's primary energy consumption. All industries are directly or indirectly dependent on derivatives from crude oil. Its price movements directly or indirectly affect the prices of petroleum products and all those products that use petroleum products as inputs. Prices of crude oil and petroleum are affected by a myriad of factors including[1]:

- Overall supply/demand for crude
- Supply/demand for petroleum products
- Freight rates
- Competition in the crude markets
- Competition in the regional and domestic markets for petroleum products.

1.2 They all have a role in determining the final price charged to consumers and the role that each of these elements plays can change over time. It is this very complexity in markets which makes it very difficult to determine a theoretical price as part of regulation in markets because there may be a perception that because the theoretical price is different from the market price that the market price is 'not fair' for some reason.[2]

1.3 Since crude oil is the most significant input for the production of refined products such as petroleum, the prices of petroleum have a strong correlation with the prices of crude oil. Countries which are rich in crude oil reserves also have huge refining capacities to produce petroleum. For example Saudi Arabia which has the largest crude oil reserves has the sixth largest refining capacity in the world. Similarly, Russia which has the second highest reserves of crude oil in the world also has one of the biggest refining capacities in the world[3]. The petroleum industry comprises of upstream companies engaged in the exploration and production of crude oil and downstream industries engaged in the refining of crude oil into petroleum products such as petrol, diesel etc. As discussed above countries which are rich in crude oil reserves also have significantly well developed downstream sector, and they generally establish umbrella regulatory frameworks for the whole industry. Thus it is imperative for us to study the pricing policies for crude oil and refined petroleum in conjunction with each other.

1.4 ***Components of the retail price of Crude Oil Pricing*** The price of crude oil, the raw material from which petroleum products are made, is established by the supply and

[1] International Crude Oil Pricing, Australian Institute of Petroleum, available online: http://www.aip.com.au/pricing/international.htm
[2] Ibid
[3] Country Analysis Briefs, Energy Information Administration, Department of Energy, USA

demand conditions in the global market overall, and more particularly, in the main refining centers: Singapore, Northwest Europe, and the U.S. Gulf Coast. The crude oil price forms a baseline for product prices.[4]

1.5 In the international oil market, crude oil is traded based on market related pricing. The absolute price of crude oil is not fixed at the time of finalization of the contract and the price prevailing at the time of loading of cargo is taken. For example, crude oil is sold by National Oil Companies of major exporting countries like Saudi Arabia, Iran, Iraq, Kuwait etc. on term basis for one year. However, the price for cargoes loaded in different months is different and depends -upon the price prevailing in the month of loading[5].

1.6 Further, since there are more than 100 grades of crude oils produced in the world and all are not actively traded, the methodology of pricing of crude oil is based on a "Reference" or "Marker" i.e. crude oil actively traded in a particular region. Typically there is a premium or discount over the "Marker" due to quality, locational differences, etc[6].

1.7 ***Components of the retail price of Petroleum Pricing*:** Prices of oil, like those of other goods and services, reflect both the product's underlying cost as well as market conditions at all stages of production and distribution. The price of petroleum would reflect the prices or costs incurred for[7]:

- Raw material, crude oil.
- Transportation from producing field to refinery.
- Processing that raw material into refined products (refining).
- Transportation from the refinery to the consuming market.
- Transportation, storage and distribution between the market distribution center and the retail outlet or consumer.
- Market conditions at each stage along the way, and in the local market.

1.8 This chapter shall deal with the pricing mechanism for crude oil and petrol in the selected countries-India, Russia and Saudi Arabia in three separate sections

[4] Information on Prices, Energy Information Administration, available online: http://www.eia.doe.gov/oil_gas/petroleum/info_glance/petroleum.html
[5] "Pricing Policy of Petroleum Products", available online: http://oilandgas.infraline.com
[6] Ibid
[7] Ibid

SECTION II: CRUDE OIL AND PETROLEUM SECTOR OVERVIEW: WORLD

A. Crude Oil:

2.1 ***Reserves:*** World proven crude oil reserves are estimated at more than one trillion barrels, of which the 12 OPEC Member Countries hold approximately 77 per cent. The total crude oil reserves at the end of the year 2005 were estimated at 164.5 billion tonne, with OPEC's share at 123.9 billion tonne.[8] According to current estimates, more than three-quarters of the world's oil reserves are located in OPEC countries. The bulk of OPEC oil reserves is located in the Middle East, with Saudi Arabia, Iran and Iraq contributing 56% to the OPEC total. [9]

2.2 Historically, estimates of world oil reserves have generally trended upward. As of January 1, 2007, proved world oil reserves, as reported by Oil & Gas Journal,[10] were estimated at 1,317 billion barrels—24 billion barrels (about 2 percent) higher than the estimate for 2006. In addition to growth in remaining oil reserves, production from conventional crude oil and condensate reserves, natural gas plant liquids, Canadian oil sands, and Venezuelan ultra-heavy oil during 2006 were estimated to be 30 billion barrels. Taken together, the reserve increases and production imply that 54 billion barrels of reserve discoveries and growth occurred during 2006, or an increase of about 4 percent.[11]

2.3 ***Production:*** The world production of crude oil has been steadily increasing. The total production of crude oil has increased from 3180 million tonne in 1990 to 3895 million tonne in 2005. The share of the OPEC countries in the total world crude oil production has increased from 1199 million tonne in 1990 to 1626 million tonne in 2005. The total refining capacity in the world has also increased from 3728 billion tonne/ year in 1990 to 4255 million tonne / year. The crude throughput has increased from 3099 million tonne/ year in 1990 to 3674 million tonne/ year in 2005.[12]

2.4 ***Consumption:*** The total oil consumption in the world stood at 3837 million tonne in the year 2005.[13] Oil accounts for a large percentage of the world's energy consumption. The consumption pattern of oil varies from a low of 32% for Europe and Asia, up to a high of 53% for the Middle East. The share of Oil in energy consumption in South and Central America is 44%, in Africa it is 41% and in North America it is 40%. The world at large consumes 30 billion barrels of oil per year, and the top oil consumers largely consist of developed nations[14]. United States and Japan are the top oil consuming developed nations.

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[8] International Petroleum Statistics, Ministry of Petroleum and Natural Gas

[9] Energy Information Administration, "International Petroleum (Oil) Reserves and Resources," web site www.eia.doe.gov/emeu/international/oilreserves.html.

[10] ."Worldwide Look at Reserves and Production," Oil & Gas Journal, Vol. 104, No. 47 (December 18, 2006), pp. 24-25

[11] Energy Information Administration, "International Petroleum (Oil) Reserves and Resources," web site www.eia.doe.gov/emeu/international/oilreserves.html.

[12] International Petroleum Statistics, Ministry of Petroleum and Natural Gas

[13] Ibid

[14] Robert Sobel *The Money Manias: The Eras of Great Speculation in America, 1770-1970* (1973) reprinted (2000), as quoted in Report on Petroleum Industry, available online: http://en.wikipedia.org/wiki/Petroleum_Industry

Among the developing nations, India and China have emerged as the leading consumers of oil.

2.5 ***Demand:*** Worldwide liquid oil consumption is projected to increase from 83 million barrels per day in 2004 to 97 million barrels per day in 2015 and 118 million barrels per day in 2030. Liquid oils remain the most important fuels for transportation, because there are few alternatives that can be expected to compete widely with petroleum-based liquids; however, the role of oil outside the transportation sector continues to be eroded because of high world oil prices in most regions of the world. On a global basis, the transportation sector accounts for 68 percent of the total projected increase in liquids use between 2004 and 2030, followed by the industrial sector, which accounts for another 27 percent of the increment in world liquid oil demand.[15]

[15] Energy Information Administration**, "**International Energy Outlook 2007**,"** http://www.eia.doe.gov/oiaf/ieo/world.html

SECTION III: CRUDE OIL AND PETROLEUM PRICING IN INDIA

A. Background:

3.1 ***Reserves:*** According to *Oil & Gas Journal (**OGJ**)*, India had 5.6 billion barrels of proven oil reserves as of January 2007, the second-largest amount in the Asia-Pacific region (behind China). India's crude oil reserves tend to be light and sweet, with specific gravity varying from 38° API (American Petroleum Institute gravity) in the offshore Mumbai (Bombay) High field to 32° API at other onshore basins. Much of India's crude oil reserves are located off the western coast (Mumbai High) and in the northeast of the country, although substantial undeveloped reserves are located in the offshore Bay of Bengal and in Rajasthan state[16].

3.2 ***Production and Consumption:*** The combination of rising oil consumption and fairly stable production levels leaves India increasingly dependent on imports to meet consumption needs. In 2006, the country produced an average of 846,000 barrels per day (bbl/d) of total oil liquids, of which 77 percent, or 648,000 bbl/d, was crude oil. During 2006, India consumed an estimated 2.63 million bbl/d of oil. India registered oil demand growth of 100,000 bbl/d during 2006. It is estimated that India will register similar growth in demand in the year 2007 and 2008[17].

3.3 ***Trade:*** India is a net importer of crude oil. Its imports of crude oil have increased from 57,805 Trillion Metric Tonnes (TMT) in 1999-2000 to 90,434 in 2003-2004. However while the import of crude oil has gone up in India, in the case of petroleum products India has moved from net imports of 15,861 TMT in 1999-2000 to net exports of 6,723 TMT in 2003-2004.[18]

3.4 It is clear from the above discussion that India is not a big oil producing country, it is deficient in production of crude oil, however its refining capacity is fairly developed and it has emerged as a net exporter of refined petroleum products. Since India relies on imports of crude oil to meet its domestic needs, the possibility of India negatively influencing the world market prices of crude oil does not arise. Therefore there does not arise the question of dual pricing in crude oil in India. However since India has emerged as a net exporter of refined petroleum products, it could have a dual pricing mechanism for refined petroleum products. The pricing mechanism for crude oil and petrol (refined petroleum products) are discussed in detail in the section on Pricing Policy.

B. Petroleum Sector Overview:

3.5 India's oil sector is dominated by state-owned enterprises, however in the recent years the government has taken steps to deregulate the hydrocarbons industry and encourage greater foreign involvement. State-owned Oil and Natural Gas Corporation (ONGC) is the largest oil company in India. It is the dominant player in India's upstream sector, accounting

[16] Energy Information Administration, "Country Analysis Brief-India" http://www.eia.doe.gov/emeu/cabs/India/Oil.html
[17] Ibid
[18] Chapter 1, Petroleum Sector Profile, CAG Report, Report No. 6 of 2005 (Commercial)

for roughly three-fourths of the country's oil output during 2006, according to Indian government estimates[19].

3.6 India's downstream sector is also dominated by state-owned entities, although private companies have increased their market share in recent years. The Indian Oil Corporation (IOC) is the largest state-owned company in the downstream sector, operating 10 of India's 17 refineries and controlling about three-quarters of the domestic oil transportation network. Reliance Industries, a private Indian firm, opened India's first privately-owned refinery in 1999, and has gained a considerable market share in India's oil sector[20].

3.7 The Indian petroleum industry can broadly be divided into two sub sectors:-

1. Exploration and Production
2. Refining and Marketing

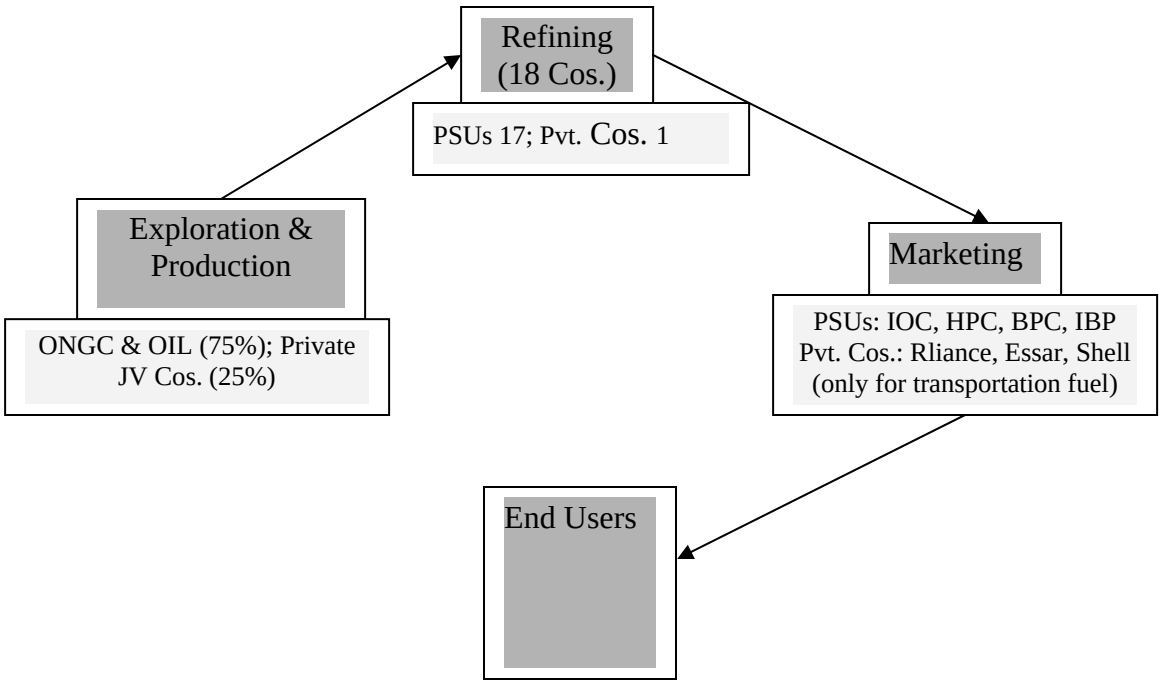
3.8 ***Exploration and Production:*** Both public sector as well as private sector companies are engaged in oil exploration and production activities in India. The Oil and Natural Gas Corporation Limited (**ONGC**) and Oil India Ltd. (**OIL**), the two public sector undertakings, apart from private and joint-venture companies like Reliance, Cairn Energy, British Gas, Essar Oil, Videocon, Prize Petroleum (HPC has a 50% stake in Prize Petroleum) etc, are engaged in the exploration and production of oil in India.

3.9 ***Refining:*** At present, there are 18 refineries operating in the country, 17 in Public Sector and 1 in Private Sector, the latter belonging to Reliance Industries Limited. The private sector's share of refining capacity, at 26%, is quite significant. The Indian refining industry has been able to cater to the demand for all products except for Liquefied Petroleum Gas (LPG). In fact, the availability of products like petrol, diesel and Aviation Turbine Fuel (ATF) was in excess of the domestic requirements in India. The refineries sector is facing challenges on account of substantial investments for meeting new environmental norms, technology up-gradation and high import dependency of about 76% on crude oil.

3.10 ***Marketing:*** At present, there are four PSUs namely, Indian Oil Corporation (IOC), Hindustan Petroleum Corporation (HPC), Bharat Petroleum Corporation (BPC) and Indo-Burma Petroleum (IBP) [now merged with IOC] marketing oil products in the country. In addition, certain private players like Reliance, Essar and Shell have also been granted marketing rights for transportation fuels. Their marketing presence today, however, is not significant and is limited to about 1370 outlets out of total retail outlet strength of about 29,380 as on 1.11.2005. Some additional players like ONGC, who have also been granted marketing rights for transportation fuels, are in the process of setting up retail outlets to integrate across the entire hydrocarbon value chain.

3.11 The diagram below depicts the structure of the petroleum industry in India.

[19] Ibid
[20] Ibid



3.12 As discussed above the petroleum sector (upstream & downstream) in India is controlled by a few large companies, owned and operated by the Government of India. The private sector has only a limited presence in both the segments of the industry. The existence of large, government owned companies virtually controlling the market raises the presumption that there could be serious distortions in the sector. Given such an industry structure wherein the government is a major stakeholder, the possibility of direct or indirect intervention, influencing the prices of the commodities increases.

C. Petroleum Sector: Regulatory Framework

3.13 The Oilfields (Regulation and Development) Act, 1948 and the Petroleum Act, 1934 are the two main legislations governing the petroleum and natural gas sector in India. The Petroleum and Natural Gas Rules framed under the Oilfields (Regulation and Development) Act, 1948 govern and lay down the conditions for the grant of Prospecting Lease, Mining Lease and Exploration Lease in this sector. These rules also prescribe the royalty rates for the oil and natural gases in India.

3.14 The Petroleum Act, 1934 and the rules framed therein (Petroleum Rules) lay down the guidelines to be followed for importation and transport of petroleum in India. In addition the Central Government under Section 3 of the Essential Commodities Act, 1955 can issue specific notifications regulating marketing of petroleum and natural gas and their pricing and distribution. The table below outlines the laws and regulations related to the petroleum sector in India, the administering authority and the coverage of these laws and regulations.

Acts/Regulations/Legal Instruments	Administering Authority	Coverage
Oilfields (Regulation and Development) Act, 1948	Officer or Authority appointed by Central Government (Sec. 8)	Regulation of Oilfields, Grant of mining lease and conditions applicable
Petroleum Act, 1934	Officer Appointed by Central Government u/s 26	Import, Transport, Storage of petroleum, Classification and Testing of Petroleum
The Petroleum and Natural Gas Rules, 1959	Agency for Supervision (Rule 32)	Conditions for the grant of Prospecting Lease, Mining Lease and Exploration Lease, Rights of licencee/lessee, Area/Term of Licence Royalty on Petroleum
Petroleum and Mineral, Pipelines(Acquisition of Right of User in and) Act, 1962	"competent authority" appointed by the Central Government under Sec 2(a)	Guidelines to be followed for importation and transport of petroleum
Essential Commodities Act, 1955	Officer Appointed by Central Government(Sec. 5), or State Government or such Officer or authority subordinate to a State Government	Powers to control production, supply, distribution, etc. of essential commodities, Control the price of commodities Regulate the licences granted in respect of essential commodities

D. Crude Oil and Petroleum Products Pricing Policy:

a. Evolution of Pricing Policy:

3.15 The history of oil pricing can be traced back to the late 1920s. During this period, the private companies were marketing imported products, mainly kerosene. No authority, either the Government or the companies, enforced any artificial controls on the prices, which were allowed to float. This situation continued till the advent of the Second World War. During the war and post war periods (1939-1948), the oil companies maintained price pools for major products[21].

3.16 ***Valued Stock Account:*** The first attempt to regulate the oil prices was based on Valued Stock Account (VSA) procedure agreed to between the Government of India and

[21] Pricing of Petroleum Products, Report of the Standing Committee on Petroleum and Natural Gas, 14th Lok Sabha, 2004-2005

Burmah Shell in 1948. The VSA was based on import parity formula with Ras Tanura as the basing point. According to this system, the basic selling prices of all the major petroleum products were determined as the sum of Free on Board (FOB) Ras Tanura price, ocean freight, insurance, ocean loss, import duty, interest and other charges, as well as 10% remuneration. Burmah Shell as market price leader maintained separate VSA's for each product. Other companies followed the prices fixed by Burmah Shell. At the end of each year, collections at provisional basic selling price were set off against actual costs. The resultant surplus/ deficit were certified by Auditors and advised to Government. The selling prices were adjusted accordingly to keep the account in balance[22].

3.17 In 1958, VSA was terminated following the decision of the Government that the basis for pricing of petroleum products should be actual (not assumed) costs with some reasonable profit. Subsequently, from 1st April 1959, a new ad-hoc arrangement was entered into following the examination of the price structure of the petroleum products by the Chief Cost-Accounts Officer, Government of India. But the first systematic attempt to regulate the prices of petroleum products was based on the recommendations of the Dalme Committee in 1961[23].

3.18 ***Oil Pricing Committees:*** The Government of India constituted a number of committees to look into the issue of pricing of crude oil and petroleum products in India. Various pricing committees appointed by the Government during the 1960s including the Dalme Committee (1961) and Talukdar Committee (1965) advocated fixing of prices of petroleum products on import parity basis as the bulk of the crude oil and major petroleum products were being imported into the country from West Asia. But the Shantilal Shah Committee (1969) which examined the whole issue de-novo felt that the Import Parity basis did not constitute the proper basis for fixation of the prices of petroleum products, as indigenous crude oil production and refining capacity had become a considerable factor by that time. Nevertheless, they recommended the continuance of import parity in view of the Government of India's commitments to the foreign oil companies in terms of `refinery agreements'[24].

3.19 ***Dismantling of Import Parity Basis:*** On 16th March, 1974, the Government appointed Oil Prices Committee (OPC) under the stewardship of Dr. K.S. Krishnaswamy, the then Executive Director, Reserve Bank of India. In November, 1976, OPC recommended discontinuance of the import parity pricing system and introduction of a pricing system based on domestic cost of production. Their recommendations led to the dawn of Administered Pricing Mechanism (APM).

3.20 ***Administered Pricing Mechanism:*** The APM continued through the late 1970s, 1980s and mid 1990s. However the ability of the oil companies to generate investible surpluses was considerable reduced due to the APM; this prompted the government to again review the pricing mechanism. Accordingly, the Government, in 1995, set up an industry study group under the Chairmanship of Mr. U. Sundararajan, to prepare the blue print of the deregulation and tariff reforms required in the oil sector. The report of this Study Group

[22] Ibid
[23] Ibid
[24] Ibid

formed the main input for the strategic Planning Group on Restructuring of the Indian Oil Industry otherwise known as the "R" Group headed by the then Secretary, P&NG, Dr. Vijay Kelkar. The "R" Group submitted its report in September, 1996, recommending dismantling of the APM for the following main reasons:

- Cost Plus compensation did not provide strong incentive for cost reduction thereby breeding inefficiencies.
- Absence of internationally competitive petroleum sector in the context of global economy.
- With the entry of private sector, gold plating of the costs would be encouraged.
- Wide distortion in consumer prices due to subsidies/ cross subsidies.
- Adverse impact on oil companies due to huge deficits in Oil Pool Accounts as price revision was not timely.

3.21 The APM was completely dismantled for upstream and refining sector in and partially for the marketing sector on 1.4.1998. Thereafter in 2002 the Government of India in 2002 completely dismantled the APM.

b. Pricing of Crude:

3.22 ***Pricing of indigenous crude:*** The pricing mechanism followed for determining the prices of domestic crude have undergone a series of changes, ranging from import parity mechanism to administered pricing mechanism (APM) to cost plus basis to market determined prices.

3.23 ***Import Parity Price and APM***: Prior to 1981, crude oil prices were fixed on various considerations like import parity, long run marginal cost etc. In 1981, Government revised crude oil pricing departing from OPC concepts. Thereafter, the prices of indigenous crude were unchanged till 1992 when the Cabinet Committee on infrastructure reviewed the crude pricing and observed that due to unremunerative price of indigenous crude oil, ONGC and OIL, the two public sector undertakings under the administrative control of the Ministry of Petroleum and Natural Gas (MOP&NG) engaged in exploration and production of oil and gas, were unable to generate resources for developing more oil fields and exploration in new areas. The Cabinet Committee recommended that the domestic well head price of crude oil should be so determined as to compensate ONGC and OIL for the cost of production and reasonable return on investment[25].

3.24 ***Cost Plus Basis:*** Thus a new system of crude oil pricing was devised by the government, wherein the prices of crude oil produced by ONGC and OIL were determined so as to compensate them for the cost of production involved and ensures certain profits as well. This system provided for reimbursement of costs based on pre-determined norms and a fixed return of 15% post tax on capital employed The basic price of crude oil produced by ONGC and OIL were revised in 1992, 1993 and 1996. This system continued till 31st March 1998[26].

[25] Ibid
[26] Ibid

3.25 ***Percentage of International FOB Prices***: From April, 1998, a new mechanism as opposed to the cost plus basis was adopted. The prices of crude oil under this mechanism were determined with reference to international FOB prices. The prices were calculated as a pre-determined percentage of the international FOB price of crude oil with a floor and ceiling price[27].

3.26 Effective 1.4.1998, the crude oil producers had been paid a pre announced increase in percentage (75% for 1998-99, 77.5% for 1999-2000, 80% for 2000-01 and 82.5% for 2001-02) of the international FOB prices on a year-to- year basis subject to a floor of Rs. 1,991/ MT and a ceiling of Rs. 5,570/ MT (Rs. 6,470/MT for March 2002)[28].

3.27 ***Post APM:*** The Administered Price Mechanism for crude oil pricing was dismantled in March, 2002. Post APM, effective 1.4.2002 the prices of indigenous crude oil are determined on the basis of the Crude Oil Sales Agreement (COSA) between the producers and the refineries by benchmarking various indigenous crude oils to equivalent international crude oils.[29]

3.28 However even though crude pricing has been decontrolled, allocation of crude oil to be used by different refineries continues to be done by MOP&NG. Allocation of offshore crudes during 2002-06 has been done (Onshore crudes are "Captive" to adjacent refineries) to allow buyer refineries time to re-configure facilities so that exclusive linkages can be terminated. The control has been extended annually till the last financial year i.e., 2005-06. MOU on crude pricing has been negotiated between producers (ONGC & OIL) and refiners (IOC, BPC, HPC and their subsidiaries) with MOP&NG intervention. Based on study by Petroleum Economics Limited, UK, ONGC/OIL crudes have benchmarked to Bonny Light, a Nigerian Sweet & Light Crude and appropriate premium/discount has been factored to comparative Gross Product Worth (GPW) differential. Accordingly, the formula for arriving at the crude price can be briefly stated as[30]:

3.29 The components of the price of offshore and onshore crude are given in the table below:

Offshore Crude	**Onshore Crude**
FOB price	FOB price
Ocean freight	Crude pipeline charges
Sharing of:	Sales tax
Custom Duty	Specific discount, viz., on

[27] "Pricing Policy of Petroleum Products", available online: http://oilandgas.infraline.com
[28] Pricing of Petroleum Products, Report of the Standing Committee on Petroleum and Natural Gas, 14th Lok Sabha, 2004-2005
[29] Ibid
[30] "Pricing Policy of Petroleum Products", available online: http://oilandgas.infraline.com

Sales tax	North Gujarat crude
Octroi	
Facilities charges	

FOB Price = Price of benchmark Crude minus/plus GPW differential.

3.30 The import parity price of ONGC crude oil from 2002-03 onwards is inclusive of the following components[31]:

- FOB price of respective marker crude adjusted for Gross Product Worth
- Ocean freight
- Ocean Loss
- Insurance
- Custom Duty
- NCCD@Rs. 50/T (applicable from 01. March 03)
- Port dues
- Octroi (applicable for Mumbai refineries of HPCL and BPCL only)

3.31 As far as OIL is concerned, since 1.4.2002, its crude oil has been bench marked to Nigerian Bonny Light due to its similarity in quality. However, OIL does not receive the full import parity price and instead receives only the FOB price adjusted for Gross Product Worth (GPW) and discount towards Base Sediment and Water (BS&W) plus 50% of pipeline transportation charges in respect of crude oil sales to all refineries except NRL (NRL does not pay any pipeline transportation charges), if the FOB price of crude oil is above US$ 21 per bbl. However, if the crude oil price is below US $21 per bbl, OIL would *receive sales tax* in addition to FOB price plus 50% of pipeline transportation charges, as stated above. However, the FOB price has always remained above US$21 per bbl since 1.4.2002[32].

3.32 The various components that are considered while determining the pricing of crude oil in terms of the Memorandum of Understanding signed by OIL are as under[33]:

- Monthly average of high – low Free on Board (FOB) price of Nigerian Bonny Light as per PLATTS Oilgram.
- Difference in quality between Bonny Light and OIL's crude oil (termed as Gross Product Worth) determined on the basis of product yield and prices on 4 cut basis. The 4 cuts are:-
    - LPG cut (Propane and Butane derived from Saudi Aramco
    - Contract price Ex. Arab Gulf) up to C4.
    - Naphtha (C5-175) FOB, Singapore.
    - Gas Oil 0.5% "S" (C-175 – 350) FOB, Singapore and

[31] Pricing of Petroleum Products, Report of the Standing Committee on Petroleum and Natural Gas, 14th Lok Sabha, 2004-2005
[32] Ibid
[33] Ibid

- Fuel oil 180 CST 2% and LSWR (in equal proportion) (C 350+) FOB, Singapore.
- Base, Sediment and Water
- RBI reference rate for conversion to India Rupees

3.33 ***Pricing of Imported Crude:*** Regarding imported crude oil, the pricing is based on the actual cost incurred by various refineries while importing the same and comprises items like FOB cost, freight to India, Insurance, ocean loss, customs duty, wharfage etc.[34]

c. *Pricing of Refined Petroleum Products*:

3.34 The pricing mechanism of refined petroleum products has gone through various phases. The various pricing mechanisms for refined petroleum products in India have been the Valued Stock Account, Import Parity Price and Retention Pricing. Presently, after the complete deregulation of the petroleum sector, the oil marketing companies are allowed to fix the prices of Petroleum products except PDS kerosene and domestic LPG which are subsidized) based on Import Parity Pricing Mechanism. Presently, products other than Petrol, Diesel, PDS (Kerosene) and LPG (Domestic) have market-determined prices based on import parity, determined by the respective companies. The prices of petrol & diesel are partially market-determined subject to modulation by the Government in view of the high and volatile international crude prices.

3.35 ***Retail Selling Price of Petroleum Products:*** The retail selling prices of petroleum products are built upon this notional price at which these products would have been imported into the country and not on the basis of the actual ex-refinery price of these products. Thus the retail selling price of petrol/diesel for the consumers is calculated by taking into account[35]:

- Basic Price at refinery level on import parity basis
- Freight up to depots
- Marketing cost and margin
- State specific irrecoverable levies
- Excise duty
- Delivery charges from depot to Retail Pump Outlet
- Sales Tax and other local levies
- Dealers commission

[34] Ibid
[35] Pricing Policy of Petroleum Products", available online: http://oilandgas.infraline.com

3.36 ***Import Parity Pricing Mechanism for Petroleum Products:*** Import parity price means the price that the actual importer would pay for the imported product. The various components of import parity price of petroleum products are given below[36]:

- Free on Board Price (FOB) as quoted in Arab Gulf Market and reported by Platt and Argus,
- Premium/ discount as published in Platt and Argus,
- Ocean freight from mid port in the Arab Gulf to Indian Ports,
- Insurance,
- Exchange rate,
- Custom Duty ,
- Ocean Loss,
- Wharfage and Port charges.

3.37 The basic ex-storage selling prices of petrol and diesel are uniform at all refinery locations throughout the country and as per the existing arrangement between the oil marketing companies and refineries, this basic price at refinery level on import parity basis is revised on fortnightly basis depending upon the prevalent international prices.

3.38 The marketing costs and margins, dealers' commission, delivery charges within free delivery zones are also uniform. The prices at various locations will vary depending upon the distance from the refinery, rate of sales tax and other local levies.

3.39 ***Decontrolled Scenario:*** As discussed above the government control over fixing of prices of crude oil and refined petroleum does not exist anymore. In law there is no specific mandate allowing the government to fix the prices of these products, however the government being the owner of the oil producing and marketing companies in India indirectly controls the prices of these products. The publicly owned oil producing and marketing companies have to seek prior approval of the government to hike the prices of their products. Thus effectively the government of India being the majority shareholder in the oil producing and marketing companies in India controls and fixes the prices of crude oil and petroleum products.[37]

3.40 The oil marketing companies (OMCs) have to market their products within a certain price band fixed by the Government. The concept of price band is based on the principles of rolling average prices of these products in the international markets. Accordingly, oil companies are permitted to carry out autonomous adjustments in prices within a band of +/- 10% of the mean of rolling average C&F prices of last 12 months and last quarter, i.e. three months. In case of breach of this band, the OMCs have to approach the Ministry of Finance through MOP&NG to modulate the excise duty rates so that the spiraling prices prevailing in the international markets do not cause undue hardships to the consumers[38].

[36] Pricing of Petroleum Products, Report of the Standing Committee on Petroleum and Natural Gas, 14th Lok Sabha, 2004-2005
[37] Pricing Policy of Petroleum Products", available online: http://oilandgas.infraline.com
[38] Ibid

d. Indirect Government Intervention affecting the prices of crude oil and refined petroleum:

3.41 As discussed above in law there does not exist any measure through which the Government fixes the prices of crude oil and refined petroleum, however it being the majority shareholder in the public sector oil producing and marketing companies it indirectly fixes the prices of these products. For various reasons the government has till date followed the policy of under pricing these products, below the market determined prices. The under-pricing of refined petroleum results in heavy losses to oil marketing companies. These losses are compensated through the following measures/policies:

3.42 **Loss Sharing Mechanism:** In order to make good the losses incurred by the OMCs due to lower prices of refined petroleum, the Government devised the novel mechanism of loss sharing between the oil producing companies and the oil marketing companies. Under this mechanism a share of the losses suffered by the OMCs due to artificially kept lower prices of refined petroleum is absorbed by the oil producing companies, and thus the financial viability of the OMCs is maintained. During the year 2007-08 35 per cent or Rs 19,227.25 crore of the total under-realizations in revenue by the OMCs would be borne by upstream firms ONGC, GAIL and OIL. Last year, the upstream firms contributed Rs 20,507 crore.

3.43 **Oil Bonds:** Another mechanism through which the Government compensates the public sector oil producing and marketing companies for the losses suffered due to artificially lower prices fixed by the Government is through issuance of Government Bonds ("Oil Bonds"). These bonds are Government Sovereign Security issued to the public sector oil companies for a limited period of time to tide over the liquidity problems arising from losses suffered due to lower prices of oil. During the year 2005-06 the government issued Oil Bonds to the PSU oil marketing companies to the extent of Rs 11,500 crore. The government has announced that Indian Oil, Bharat Petroleum and Hindustan Petroleum will get oil bonds worth Rs 23,457.24 crore, to compensate for losses suffered during the year 2007-08.[39]

3.44 **Direct Subsidy:** In addition to support to the public sector companies through oil bonds and loss sharing mechanism, the government provides direct budgetary support in the form of subsidy. The government provides about Rs 2,680 crore from the budget to subsidize the mass-consumed cooking fuels[40]. (***This subsidy is not for crude oil or refined petroleum, only for kerosene and domestic LPG***)

E. Crude Oil and Refined Petroleum Prices in India vis-à-vis World Prices:

3.45 As discussed above, post 2002, there does not exist any government administered price either for crude oil or refined petrol. This means that presently the prices of these products are strictly a function of economic factors of demand and supply situation and thus

[39] Times of India, 11 October, 2007.
[40] Ibid

there should not be any be any discrepancy between the domestic prices of these products(due adjustments being made for C.I.F.) and the world market prices. The table below shows a comparison between the prices of crude oil and petrol in India and the world market.

		2001	2002	2003	2004	2005	2006
India	**Crude#**						
	Petrol#						
World*	**Crude**	**24.46**	**24.95**	**28.90**	**37.76**	**53.37**	**64.28**
	Petrol#						

* Average of Dubai/Brent/Texas equally light weighted ($/barrel)
# Not available.

F. Conclusion:

3.41 As discussed above the prices of domestic crude oil in India are determined on the basis of the Crude Oil Sales Agreement (COSA) between the producers and the refineries by benchmarking various indigenous crude oils to equivalent international crude oils and are not fixed by the Government. Similarly imported crude oil pricing is based on the actual cost incurred by various refineries while importing the same and is not fixed by the Government. Also as discussed above India does not export any crude oil. Thus there is no dual pricing of crude oil in India. However the crude oil producing companies (ONGC & OIL) still have to comply with Government allocation orders, and have to mandatorily supply crude to certain refineries.

3.42 The prices of refined petroleum are determined on the basis of Import Parity Mechanism, after prior consultations with the MOP&NG. Since the prices of refined petroleum determined by the Oil Marketing Companies have to be approved by the MOP&NG, there is a possibility that Government influences the prices at which refined petroleum is sold in India. As noted above even after the dismantling of the APM, the OMCs have not been able to make full recoveries on the sale of their products, as the prices of refined petroleum have not been revised to reflect the full market value. The burden of these under-recoveries is borne by the Government of India and the upstream companies. Thus in practice the prices of refined petroleum products (petrol) are fixed by the government and do not strictly reflect the supply and demand situation. Such fixation of prices of refined petroleum producers by the Government can be said to result in provision of refined petroleum to other sector, such as transportation for less than adequate remuneration.

3.43 In addition, this informal mechanism through which the Government fixes the prices of refined petroleum is also applicable to other refined products such as diesel, kerosene, Liquefied Petroleum Gas (LPG) etc.

SECTION IV: CRUDE OIL AND PETROLEUM PRICING IN RUSSIA

A. Background:

4.1 The oil sector in Russia contributed an estimated 8% of its GDP and 35% of its foreign trade earnings in 2000, and supplied some 20% to 25% of Federal budget revenues of Russia. It is endowed with vast resources of oil and natural gas. Although the Russian government does not publish data on the size and location of Russia's oil reserves, Western sources place them at about 4.5% of world proven reserves. Russia ranks third in the world in oil production behind Saudi Arabia and the US.[41]

4.2 ***Reserves***: According to the *Oil and Gas Journal*, Russia has proven oil reserves of 60 billion barrels, most of which are located in Western Siberia, between the Ural Mountains and the Central Siberian Plateau. Eastern Siberia is one area where little exploration has taken place. There, only four or five oil and gas fields have been discovered, and a 1996 Petroconsultants study (the latest available) estimated that around 35 million barrels of oil and 5 Trillion Cubic feet (tcf) of natural gas exist in the region.[42]

4.3 ***Production***: In the 1980s, the Western Siberia region, also known as the "Russian Core," made the Soviet Union a major world oil producer, allowing for peak production of 12.5 million barrels per day in total liquids in 1988. Following the collapse of the Soviet Union in 1991, Russia's oil production fell precipitously, reaching a low of roughly 6 million bbl/d, or around one-half of the Soviet-era peak. According to observers, several other factors are thought to have caused the decline, including the depletion of the country's largest fields due to state-mandated production surges and the lack of investment in field maintenance.[43]

4.4 In 2006 Russian total liquids production averaged almost 9.7million bbl/d, including 9.2 million bbl/d of crude oil, a 220,000 bbl/d increase over 2005. This growth rate was down from annual growth of roughly 700,000 bbl/d between 2002 and 2004. In upcoming years, total Russian oil production is expected to grow at an annual rate of around 1.5-2.5 percent partially due to growth in output from the Sakhalin projects.[44]

4.5 ***Refining***: Russia has 41 oil refineries with a total crude oil processing capacity of 5.4 million bbl/d, but many of the refineries are inefficient, aging, and in need of modernization. According to *Energy Intelligence*, refinery throughput at Russian refineries increased by roughly 5.8 percent to around 4.4 million bbl/d in 2006. Russian refineries produced around 1.1 million bbl/d of Mazut, 1.3 million bbl/d fuel oil, and 800,000 bbl/d gasoline.[45]

4.6 ***Trade:*** During 2006, Russia produced roughly 9.8 million bbl/d of liquids (not including oil products), consumed roughly 2.8 million bbl/d in liquids, and exported (in net)

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[41] Russia: Country Analysis Brief, Energy Information Administration, Department of Energy, USA, available online: http://www.eia.doe.gov/emeu/cabs/Russia/Oil.html
[42] Ibid
[43] Ibid
[44] Ibid
[45] Ibid

around 7 million bbl/d. According to official Russian statistics, roughly 4 million of this total is crude oil. Over 70 percent of Russian crude oil production is exported, while the remaining 30 percent is refined locally. The major export destinations of Russian oil are Belarus, Ukraine, Germany, Poland, and other destinations in Central and Eastern Europe (including Hungary, Slovakia, and the Czech Republic). A small fraction of the Russian oil exports also go to the USA.[46]

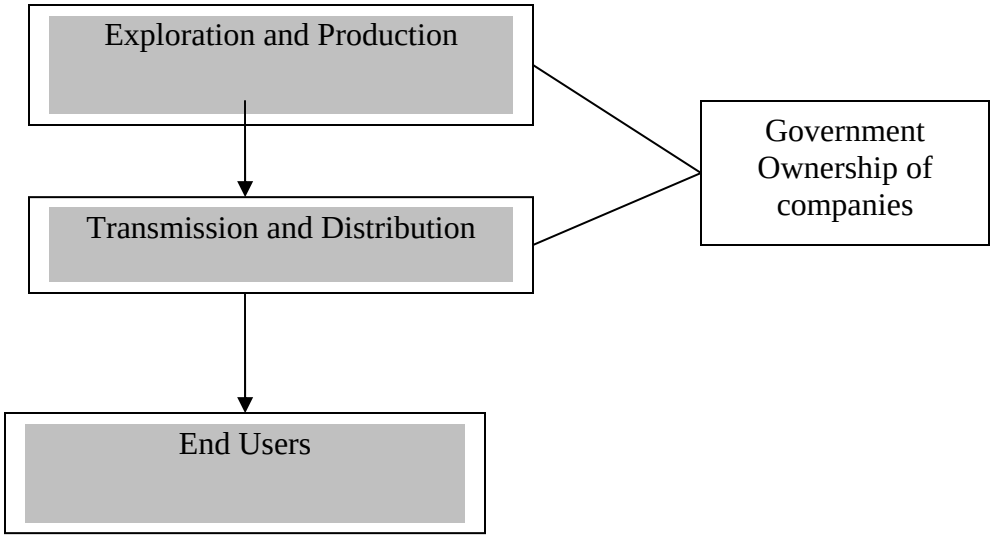
4.7 A draft plan for the refining sector's development for 2005-2008 in Russia foresees continued increases in the production of high quality light oil products, catalysts and raw material for the petrochemical industry; however it foresees a reduction in the production of fuel oil. Local refineries are able to meet only about half of the country's demand for high octane gasoline, and thus Russia imports the remaining.[47]

B. Petroleum Sector Overview:

4.8 The Russian Oil industry was reorganized in the 1990s into several large vertically integrated companies (**VICs**), each combining exploration, production, refining, distribution and retailing. Currently, the sector includes eleven large VICs, which accounted for 88% of crude production and 79% of refinery throughout in 2000. Over 100 small independent producers accounted for 3% of crude oil production in 2000. Gazprom accounted for another 3%, joint ventures for 6% and production from Production Sharing Agreements less than 1%. [48]

4.8 ***Government ownership of Oil Companies***: Despite much progress in selling off oil interests within Russia, the government interest in four of the major vertically-integrated oil companies remained large as of 2000. These included Eastern Oil Co. (37%); Roseneft (100%); Slavneft (75%); and Norsi-Oil (85%). Government ownership in the past has made restructuring and pricing transparency more difficult; it is surmised that these problems continue in areas of continuing government ownership[49]. The diagram below shows the structure of the Russian petroleum industry.

[46] Ibid
[47] Ibid
[48] International Energy Agency, Russia Energy Survey 2002(Paris: OECD/IEA, 2002)
[49] Ibid



4.9 As discussed above the petroleum industry in Russia has undergone a series of restructuring and presently comprises of several large vertically integrated companies. However interestingly the government ownership in some of the largest oil companies is significant and this makes the pricing of crude oil and refined petroleum less transparent. The pricing policy of these products and indirect factors which could affect the prices is discussed in the section on Pricing Policy.

C. Petroleum Sector Regulatory Framework:

4.10 Over the past decade since Russia embarked on the process of economic liberalization and oil sector reform, a number of legislations relating to the hydrocarbon sector have been passed. Some of the key legislations relating to the Oil sector are:

- The Law on Underground Mineral Resources
- The (Draft) Oil and Gas Law
- The Law on the Continental Shelf
- The Law on Production Sharing
- The Law on Natural Monopolies
- The(Draft) law on Trunk Pipelines

4.11 ***The Law on Underground Mineral Resources***: It is also known as the ***Subsurface Resources Law*** and was passed by the *Duma* in 1992. It set a legal framework for all mining operations, including petroleum production. It established the state as the exclusive owner of all mineral resources, but allowed private and state-owned entities to lease exploration and production rights via licenses. The Law required that licenses be issued only through public competitive tenders. Subsequently, in July 1992, regulations were issued on the procedures for licensing to exploit mineral resources. A State Committee for Geology and the Use of Underground Resources (now the Ministry of Natural Resources) was

established as the Federal body responsible for issuing licenses. "Joint licensing" is, however still the rule. Known as "*dva klucha*", this requires approval by both Federal and regional authorities. Licensing and tendering have since become the major tools used by regional administrations to regulate the development of hydrocarbons on their territories.[50]

4.12 ***Draft Oil and Gas Law:*** It was designed to complement the 1992 Law on Underground Resources by establishing new licensing and operating rules for the oil and gas industry. The *Duma* passed it in July 1995, but it failed to receive endorsement by the Federation Council and the President. The impetus behind it gradually waned, and the focus shifted to production-sharing legislation and improvements to the existing Law on Underground Mineral Resources.[51]

4.13 ***Law on the Continental Shelf:*** It was passed by the *Duma* in October 1995 and signed into law by the then President Boris Yeltsin. It gave the Federal authorities exclusive rights to permit and regulate exploration and development of the shelf by either foreign or Russian investors after tenders and auctions. It defined Russia's jurisdiction over the shelf as applying to the exploration and production of mineral resources, the construction of facilities for drilling and the laying of cables and pipelines.[52]

4.14 ***Law on Natural Monopolies:*** This law came into effect in August 1995 and covers many activities in the Russian energy sector. It identified "natural monopolies", such as the oil pipeline operator, *Transneft*, and the oil product operator, *Transnefteprodukt*, whose activities fell under its purview. It established several state monitoring and regulatory bodies, including the Anti-Monopoly Ministry and the Federal Energy Commission. A series of subsequent resolutions spelled out the organization, operations and powers of these bodies[53].

4.15 **Draft *Law on Trunk Pipelines***. This law has been under consideration in the *Duma* for some time. Its passage was one of several measures agreed to by the government to secure release of the third tranche of a $1.2 billion loan from the World Bank in May 1999. The bank required non-discriminatory access and tariffs as well as restrictions on vertical integration across oil extraction, transportation, refining and distribution. Still not approved, the bill would ensure that independent producers have guaranteed access to all pipeline systems, even those belonging to non-monopolist providers. The draft also requires state ownership of a blocking stake in any pipeline transportation system on Russian territory. It ensures the indivisibility of existing pipeline transportation systems, effectively prohibiting the break-up of the existing pipeline monopolies.[54] The table below summarizes the laws and regulations related to the petroleum sector in Russia:

Acts/Regulations/Legal Instruments	Administering Authority	Coverage
Law on Underground Mineral Resources	Ministry of Natural Resources	Regulates mining operations and licencing,

[50] Ibid
[51] Ibid
[52] Ibid
[53] Ibid
[54] Ibid

The (Draft) Oil and Gas Law		
Law on the Continental Shelf	Federal Authorities	Gives the Federal authorities exclusive rights to permit and regulate exploration and development of the shelf by either foreign or Russian investors after tenders and auctions. Defines Russia's jurisdiction over the shelf
Law on Natural Monopolies	Anti-Monopoly and Federal Energy Commission	Identifies "natural monopolies", such as the oil pipeline operator, *Transneft*, and the oil product operator, *Transnefteprodukt*, Establishment of the Administrative Authority.
Draft Law on Trunk Pipelines		

4.16 The above motioned laws together with the laws on taxation broadly regulate the petroleum sector in Russia. However the Russian Government may also intervene in the sector through some other laws and regulations, which shall be discussed in the section on State intervention in Oil sector.

D. Crude Oil and Petroleum Products Pricing Policy:

4.17 Ever since Russia embarked on the process of oil sector reforms in early 1990's Government intervention in pricing of oil has decreased. Oil pricing became largely determined by market forces after September 1992, when partial oil liberalization was introduced. Crude oil was completely liberalized on 1 January 1995, and the liberalization of oil-product prices came later in the same year. Most domestic sales of oil and refined products are now negotiated between buyers and sellers. Since 1998, however, in an effort to exert greater influence and control over the domestic oil market, the government has reintroduced domestic delivery requirements for crude oil and for some refined products.[55]

4.18 Oil prices generally increased through 1998, moving closer to parity with international prices. The average domestic price for crude oil in Russia advanced from *less than 1%* of world levels in December 1991 to close the gap with international prices in the first quarter of 1998. With the rapid run-up in international prices that began in the second quarter of 1999, Russian domestic price weakened relative to international markets. In the third quarter, it amounted to only 28% of the international price. The average domestic price finally began to gain ground in the fourth quarter of 1999 and into the first quarter of 2000, when it reached 30% of the international price and 42% by the second quarter of 2001. Many factors have restrained domestic price adjustments, including the re-imposition of administrative limits on exports of both crude and refined products. These limits are aimed deliberately at keeping the domestic market oversupplied and relatively slack.[56] Retail

[55] Ibid
[56] Ibid

product prices are typically lower than world oil product prices, hurting incentives to supply the local market. For example, in 2005 retail gasoline and automotive diesel prices in Russia were approximately $2.05 and $1.88 per gallon, respectively. In contrast, gasoline and diesel prices averaged around $5.50 and $4.90 in OECD Europe.[57]

4.19 Government purchases for state exports were a major factor holding down the domestic price of crude. They were finally being eliminated in July 1997. They accounted for a large share of exports and they maintained the role of the state as the largest single purchaser of crude oil. The state exports programme again resumed in late 1998 under the Primakov government.[58]

4.20 Another factor currently distorting the domestic crude market and keeping domestic prices down is the widespread use of "transfer pricing" within the VICs. The device is used largely to minimise taxes, as much upstream taxation is based on gross revenues. Also, a high percentage of crude deliveries occur outside the VICs through accounting practices which further reduce the amount of crude sold domestically in a truly commercial way. According to Russian experts' estimates, only about eight Million tonne of crude are sold domestically on commercial terms, less than 3% of the total amount produced. To combat this trend and to increase tax collection, a new mineral production tax was to be introduced in January 2002. It will be charged at a set rate per ton, eliminating two taxes based on gross revenues. The new will be indexed to international oil prices.[59]

E. Indirect Government Interventions Affecting Pricing of Crude Oil and Petrol:

4.21 The Oil pricing reforms initiated in Russia have minimized Government's role in fixing the prices of crude oil as well as refined petroleum. However the Russian Government still indirectly intervenes in the sector in a number of ways, and such intervention tends to influence the prices at which crude oil and petroleum products are sold. Some of these indirect interventions are discussed below:

4.22 **Tax on exports of Oil and Refined Products:** A key element of oil-pricing policy is the export tax, which serves essentially as a wedge between domestic and international prices. After abolition of the export tax in July 1996, the Primakov government re-introduced it in January 1999, to capture some of the gains made by exporters in the wake of the rouble devaluation. Because it varies with the market price, it was actually suspended in the first quarter of 1999 because of low international prices. It came into effect again following the rise in international oil prices in March 1999. The export tax was 2.5 euros per tonne in April 1999 and increased progressively with the price of oil to 42 euros in December 2000. The government subsequently announced a cut to 22 euros, which took effect on 17 March 2001, but then raised the tax back to 30.5 euros per ton on July 1, 2001 in line with the changes in export oil prices.[60]

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[57] Russia: Country Analysis Brief, Energy Information Administration, Department of Energy, USA, available online: http://www.eia.doe.gov/emeu/cabs/Russia/Oil.html
[58] Ibid
[59] Ibid
[60] International Energy Agency. Russia Energy Survey 2002. (Paris: OECD/IEA, 2002). - p. 78.

4.23 **Import-Export Restriction:** Russian government requires certain petroleum products be sold in the domestic market despite potentially higher profits from exporting. Administrative limits on exports of both crude and refined products were reinstituted in 1998. The goal of these policies is to keep the domestic market oversupplied. This has had the effect of keeping domestic prices below international prices (domestic prices ranged between 28 and 42% of international prices during 1999-2001).[61]

4.24 **No Crude Oil Quality Metrics in Pipeline Pricing:** Crude oils of varying qualities mix during process of pipeline transit. In Western countries, pipeline users receive compensation if the crude they take out of a line is of lower quality than what they put in. In Russia this does not happen, creating a cross subsidy between producers of higher grade crude and those of lower grade crude. This reduces the incentive to ship higher grade crudes.[62]

4.25 **Access Impediments to Pipelines:** Despite legislative efforts (i.e., draft Law on Trunk Pipelines) to the contrary, hydrocarbon producers did not have guaranteed competitive access to the nation's pipeline systems. Uncompetitive policies on trunk pipelines can prevent smaller producers from moving their product, and can hinder the efficient use of pipeline infrastructure, both of which would tend to drive up the market prices for oil and natural gas.[63]

4.26 **National Excise Tax on Crude Oil Production:** Russia levies special taxes on oil sales. The rates and methods of calculation of taxes have varied over time. Established in 1992, with an initial rate of 18% of the product sold, this rate was later modified to reflect the production costs at particular sites, a complex and hard-to-monitor process. In April 1994, this was changed to a flat tax per tonne produced. It was initially indexed to the rouble-dollar exchange rate, though in April 2000 it was changed to a flat tax of 55 roubles per ton for all producers. Efforts to eliminate the excise tax did not succeed; the rate was increased to 73.9 roubles/tonne as of October 1, 2001.[64]

4.27 **Government Financed Pipeline Projects:** Major pipeline construction projects in Russia are financed (in part or in total) by a special tariff (the "Investment Levy") on all oil shippers.[65]

4.28 **Access Impediments to pipelines:** Despite legislative efforts (i.e., draft Law on Trunk Pipelines) to the contrary, hydrocarbon producers did not have guaranteed competitive access to the nation's pipeline systems. Uncompetitive policies on trunk pipelines can prevent smaller producers from moving their product, and can hinder the efficient use of pipeline infrastructure, both of which would tend to drive up the market prices for oil and natural gas.[66]

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[61] International Energy Agency. Russia Energy Survey 2002. (Paris: OECD/IEA, 2002). - p. 76.
[62] International Energy Agency. Russia Energy Survey 2002. (Paris: OECD/IEA, 2002). - p. 89.
[63] International Energy Agency. Russia Energy Survey 2002. (Paris: OECD/IEA, 2002). - p. 79.
[64] International Energy Agency. Russia Energy Survey 2002. (Paris: OECD/IEA, 2002). - p. 80-81.
[65] International Energy Agency. Russia Energy Survey 2002. (Paris: OECD/IEA, 2002). - p. 90.
[66] International Energy Agency. Russia Energy Survey 2002. (Paris: OECD/IEA, 2002). - p. 79.

F. Prices of Crude Oil and Refined Petroleum in Russia vis-à-vis Export Prices: It is clear from the analysis of the pricing policy of the petroleum sector in Russia that the Russian government dos not formally fix the prices of either crude oil or refined petroleum products. Nonetheless the indirect measure as discussed above can be argued to influence the prices the prices of crude oil or refined petroleum in such a manner that it does not reflect the market determined prices. The table below shows the prices of crude oil and petrol in Russia and in the export market.

(US Dollar per Barrel)

		2001	2002	2003	2004	2005	2006	2007
Russia#	**Crude**							
	Petrol							
Export	**Crude**	**-**	**20.85**	**30.31**	**27.42**	**33.06**	**53.70**	**56.1**
	Petrol							
World*	**Crude**	**24.46**	**24.95**	**28.90**	**37.76**	**53.37**	**64.28**	**-**
	Petrol							

* Average of Dubai/Brent/Texas equally weighted
# Not available

G. Conclusion:

4.30 As discussed above, in policy the prices of crude oil and refined petroleum products are completely deregulated and the domestic sale price of both crude oil and refined product are determined through negotiations between the buyers and sellers. However the Russian Government indirectly intervenes in the sector in a number of ways such as export restraints, taxation policy etc., which could significantly drive down the prices of both crude oil and refined petroleum. In addition the Russian government is a major shareholder in some of the biggest the vertically integrated oil companies, this raises serious concerns about the possibility of government intervention in fixing the prices of crude oil as well as refined petroleum.

4.31 The data on retail product prices clearly shows that the prices in Russia are much lower than the prices in non-OECD European market. This can definitely be said to result in the provision of crude oil and refined petrol to other consumers for less than adequate remuneration.

4.32 The general laws related to the hydrocarbons sector are also applicable to the natural gas sector. However the government measures providing incentives to the petroleum industry are limited in scope and are applicable only to the petroleum sector.

SECTION V: CRUDE OIL AND PETROLEUM PRICING IN SAUDI ARABIA

A. Background:

5.1 ***Reserves:*** According to the Oil and Gas Journal, Saudi Arabia contains about 260 billion barrels of proven oil reserves (including 2.5 billion barrels in the Saudi-Kuwaiti Divided, or "Neutral" Zone), or around one-fifth of proven, conventional world oil reserves. Around two-thirds of Saudi reserves are considered "light" or "extra light" grades of oil, with the rest either "medium" or "heavy." Although Saudi Arabia has over 100 oil and gas fields (and more than 1,500 wells), over half of its oil reserves are contained in only eight fields, including the giant 1260-sq mile Ghawar (the world's largest oil field, with estimated remaining reserves of 70 billion barrels) and Safaniya, including Khafji and Hout (the world's largest offshore oilfield, with estimated reserves of 25-35 billion barrels). Ghawar's main producing structures are, from north to south: Ain Dar, Shedgum, Uthmaniyah, Hawiya, and Haradh. Ghawar alone accounts for about half of Saudi Arabia's total oil production capacity.

5.2 ***Production Capacity and Production:*** Saudi Arabia maintains the world's largest crude oil production capacity, estimated to be around 10.5-11.0 million bbl/d. In May 2006, Saudi Aramco announced the details of an $18-billion plan to increase capacity to 12.5 million bbl/d by 2009 and 15 million by 2020. Saudi Arabia produces a range of crude oils, from heavy to super light. Of Saudi Arabia's total oil production capacity, about 65-70 percent is considered light gravity, with the rest either medium or heavy; the country is moving to reduce the share of the latter two grades. Lighter grades generally are produced onshore, while medium and heavy grades come mainly from offshore fields. For 2006, the U.S. Energy Information Administration estimates that Saudi Arabia produced around 10.7 million bbl/d of total oil -- comprising crude oil, natural gas liquids, and "other liquids" (includes half of the Saudi-Kuwaiti Divided Zone's 600,000 bbl/d). In addition to crude oil, Saudi Arabia produces around 1.5 million bbl/d of natural gas liquids (NGLs) and "other liquids," not subject to OPEC quotas.

5.3 ***Refining:*** According to *Oil and Gas Journal*, Saudi Arabia has seven functioning refineries, with combined crude throughput capacity of around 2.1 million bbl/d, plus around 1.75 million bbl/d of refining capacity overseas, making it the sixth largest oil refiner in the world. The Saudi Aramco development plan calls for a $20-billion investment, increasing domestic refining capacity to 3 million bbl/d and international holdings by at least 1-2 million bbl/d by 2011, particularly in an effort to meet requirements of the fast-growing Asian market.

B. Petroleum Sector Overview:

5.4 The oil industry in Saudi Arabia has undergone significant transformation. After a long period of nationalization and consolidation, the oil industry in Saudi Arabia is now completely controlled by the Government through the Supreme Council of Petroleum. There are two dominant players in the petroleum sector in Saudi Arabia -Saudi Aramaco and Petromin.

5.5 Saudi Aramco is a government owned vertically integrated company engaged in the exploration, production, refining and distribution of crude oil. It was formed in the year 1988 to manage and takeover the assets of foreign owned Aramco. Saudi Aramco explores for and produces crude oil and natural gas. The company has the capacity to produce up to 10 million barrels of crude oil per day on a sustained basis. It manufactures a wide range of petroleum products from oil and gas. It markets crude oil, gas and petroleum products domestically and internationally[67].

5.6 It owns five refineries, at Ras Tanura, Riyadh, Jiddah, Rabigh and Yanbu. The company also has refining and marketing partnerships in Saudi Arabia (with Mobil in Yanbu and with Shell in Jubail), the United States (Star Enterprise, with Texaco), the Republic of Korea (with SsangYong Oil Refining Company) and the Philippines (with Petron Corporation). Saudi Aramco's shipping affiliate, Vela International Marine Limited, owns one of the world's largest and newest fleets of very large and ultra large crude oil tankers. Saudi Aramco also owns and operates Saudi Arabia's nationwide petroleum product-distribution network.[68]

5.7 Petromin was established by the Saudi Arabian Government as the State Petroleum Company in 1962 (1381/82 AH) to develop the entire natural resources sector and harness it to the service of overall development of the kingdom[69].

5.8 Petromin's role was to maximize the usefulness of the Kingdom's oil, gas and minerals. It was thus engaged in the production of natural resources (including, for example, the engagement of foreign partners), in the exploitation of natural resources (such as the evolution of a wide range of hydrocarbon products, like petroleum, LPG and asphalt), and in the marketing, both domestically and internationally, of these products. Its range of activity was therefore vast. Refining, pipelines, storage, power generation - all fell within Petromin's province.[70]

5.9 Under its plan, Petromin listed five principal areas of activity: the exploitation of gas; the diversification of industries within the field of fossil fuels and minerals; developing the refining of oil, including the production of benzene, toluene and xylene for the Kingdom's burgeoning petro-chemical plants; the marketing and transportation, at home and abroad, of LPG; and the speeding up of the production of mineral industries and of the prospecting for and development of precious metal resources.[71]

5.10 Towards the end of the 1980s (1400 AH), a major restructuring of the Kingdom's oil industry took place. In 1988 (1408/09 AH), Petromin formed Petrolube, a company jointly owned with Mobil. Petrolube was given responsibility for the production and marketing of the Kingdom's lube oil blending plants in Jiddah, Jubail and Riyadh[72].

5.11 As discussed above the petroleum industry in Saudi Arabia consists primarily of two government owned and operated companies; Saudi Aramaco is a vertically integrated company having an effective monopoly in exploration, production, refining and transmission

[67] Information available online: http://www.saudinf.com/main/d191.htm
[68] Ibid
[69] Information available online: http://www.saudinf.com/main/d23.htm
[70] Ibid
[71] Ibid
[72] Ibid

of crude oil and refined petroleum. The other important player is Petromin, which is again owned by the Government. Thus the petroleum industry structure in Saudi Arabia is such that the Government can exercise complete control over all the policy decisions related to the functioning of the oil companies.

C. Petroleum Sector Regulatory Framework:

5.12 The oil and gas sector in Saudi Arabia is under complete regulation of the Supreme Council for Petroleum and Mineral affairs. It was set up in January, 2000; up by Royal decree issued the Custodian of the two Holy Mosques King Fahd Bin Abdul-Aziz. The council was set up to operate for four years renewable by royal decree. The Council has the final word on all affairs of petroleum, gas and other hydrocarbon Materials including, for instance:

- Fixing and deciding the policies and strategies for petroleum, gas and other hydrocarbon materials in light of national circumstances and interests. This includes determining the size of production, deciding the pricing plans of different fuel sources in the Kingdom.
- Setting the general policy for the Saudi Aramco company, particularly:

  a) Endorsing the company's five-year plan including its program to produce crude oil and its program for exploration for new reserves of hydrocarbon materials and developing them.

  b) Endorsing the company's five-year program for capital future investments

  c) Appointing the company's chairman upon a nomination by the board of directors

  d) Appointing an auditor and fixing his financial compensations

  e) Reviewing the auditor's report and endorsing the company's budget and profit and loss accounts

  f) Accrediting the annual report of the board of directors and acquitting the board of directors for the year in question

  g) Deciding whether to increase, decrease the capital of the company or allow others to contribute in it

  h) Fixing the salaries of the chairman and members of the board of directors

  i) Appropriating any increase in the net value of the rights and assets of the company either to increase its capital or transfer it to the company's reserves.

D. Crude Oil and Petroleum Products Pricing Policy:

5.13 Saudi Arabia maintains price regulations on certain products in order to maintain price stability. These price regulations are applied on a non-discriminatory basis, regardless

of whether a product or service was supplied by the government or by the private sector and regardless of the nationality of the supplier[73]. The following table provides the list of crude oil and petroleum products subject to pricing regulations in Saudi Arabia.

Crude Oil and Petrol/Petroleum Products subject to Price Regulations:

No.	Item	Current Regulated Price	HS Classification
1	Fuel Oil	6–12 Halalas/Litre	27101140
2.	Gasoline	90 Halalas/Litre	27101121
3.	Diesel	37 Halalas/Litre	27101130-3
4.	Kerosene	43.5 Halalas/Litre	27101129
5.	Crude Oil (Used as Fuel)	10 Halalas/Litre	2709

E. Crude Oil and Refined Petrol Prices in Saudi Arabia vis-à-vis Export Prices:

5.14 It is clear from the above discussion that the petroleum industry in Saudi Arabia remains regulated by the Government and the government fixes the prices of both crude oil and refined petroleum. The table below shows the domestic prices of crude oil and petrol in Saudi Arabia as compared to the export prices.

(US Dollars per Barrel)

		2001	2002	2003	2004	2005	2006	2007
Saudi Arabia	**Crude-SA Light**							
	Crude-SA Medium							
	Crude-SA Heavy							
	Petrol							
Export	**Crude-SA Light**		**17.68**	**27.39**	**27.08**	**31.86**	**50.9**	**55.9**
	Crude-SA Medium		**17.33**	**26.44**	**26.13**	**27.96**	**48**	**54.3**
	Crude-SA Heavy		**17.03**	**25.69**	**25.38**	**25.11**	**45**	**52.8**
	Petrol							
World	**Crude**	**24.46**	**24.95**	**28.90**	**37.76**	**53.37**	**64.28**	
	Petrol							

F. Conclusion:

5.15 As discussed above the petroleum sector in Saudi Arabia is under the administrative control of the Government. The Supreme Council for Petroleum and Mineral affairs regulates the sector in all respects. Thus there is all likelihood of prices of both crude oil and petroleum products being fixed by the Government. As is evident from the Report of the Working Party on Saudi Arabia's accession to the WTO,[74] the Saudi Arabian government does fix the prices of crude oil and petrol. This raises the presumption that these commodities are being provided to the downstream industries at for less than adequate remuneration.

[73] Report of the Working Party on the Accession of the Kingdom of Saudi Arabia to the WTO, WT/ACC/SAU/61,November 1, 2005

[74] Working Party report on the accession of Saudi Arabia to the WTO, Annex A

5.16 The petroleum sector is regulated by the Supreme Council for Petroleum. The council regulates the sector through specific Royal Decrees issued for a particular purpose. These decrees are specific to the petroleum sector and are not applicable to other sectors.

SECTION VI: DUAL PRICING IN CRUDE OIL AND PETROL: CONCLUSION

6.1 As discussed in different section above the pricing policy in crude oil and petrol/gasoline is different in all the three countries.

A. India:

6.2 The prices of domestic crude oil in India are determined on the basis of the Crude Oil Sales Agreement (COSA) between the producers and the refineries by benchmarking various indigenous crude oils to equivalent international crude oils and are not fixed by the Government. Similarly imported crude oil pricing is based on the actual cost incurred by various refineries while importing the same and is not fixed by the Government. Also as discussed above India does not export any crude oil. Thus there is no dual pricing of crude oil in India. However the crude oil producing companies (ONGC & OIL) still have to comply with Government allocation orders, and have to mandatorily supply crude to certain refineries.

6.3 As far as prices of petroleum in India are concerned they are determined on the basis of Import Parity Mechanism, after prior consultations with the MOP&NG. Since the prices of refined petroleum determined by the Oil Marketing Companies have to be approved by the MOP&NG, there is a possibility that Government influences the prices at which refined petroleum is sold in India. As noted above even after the dismantling of the APM, the OMCs have not been able to make full recoveries on the sale of their products, as the prices of refined petroleum have not been revised to reflect the full market value. Thus in practice the prices of refined petroleum products (petrol) are fixed by the government. Such fixation of prices of refined petroleum producers by the Government raises the presumption that the provision of petroleum to other sectors, such as transportation for less than adequate remuneration.

6.4 In addition, this informal mechanism through which the Government fixes the prices of refined petroleum is also applicable to other refined products such as diesel, kerosene, Liquefied Petroleum Gas (LPG) etc.

B. Russia:

6.5 As far as prices of crude oil and petrol/gasoline in Russia is concerned, there is nothing in the law or policy to suggest that the prices are fixed or regulated by the Government. In policy the prices of crude oil and refined petroleum products are completely deregulated and the domestic sale price of both crude oil and refined product are determined through negotiations between the buyers and sellers. However the Russian Government indirectly intervenes in the sector in a number of ways such as export restraints, taxation policy etc., which could significantly drive down the prices of both crude oil and refined petroleum. In addition the Russian government is a major shareholder in some of the biggest the vertically integrated oil companies, this raises serious concerns about the possibility of government intervention in fixing the prices of crude oil as well as refined petroleum.

6.6 The data on retail product prices clearly shows that the prices in Russia are much lower than the prices in non-OECD European market. This raises the presumption that theses products are provided to the domestic consumers at lees than adequate remuneration.

6.7 As far as the applicability of laws governing crude oil and petrol to other sectors is concerned, the general laws related to the hydrocarbons sector are also applicable to the natural gas sector. However the government measures providing incentives to the petroleum industry are limited in scope and are applicable only to the petroleum sector.

C. Saudi Arabia:

6.8 The petroleum sector in Saudi Arabia is under the administrative control of the Government. The Supreme Council for Petroleum and Mineral affairs regulates the sector in all respects. Thus there is all likelihood of prices of both crude oil and petroleum products being fixed by the Government. As is evident from the Report of the Working Party on Saudi Arabia's accession to the WTO,[75] the Saudi Arabian government does fix the prices of crude oil and petrol. This raises the presumption that these commodities are being provided to the downstream industries for less than adequate remuneration.

6.9 The petroleum sector is regulated by the Supreme Council for Petroleum. The council regulates the sector through specific Royal Decrees issued for a particular purpose. These decrees are specific to the petroleum sector and are not applicable to other sectors.

6.10 The table below summarizes the findings of the study under this chapter:

Country	**Price Determination**	**Whether there is Dual Pricing**	**Whether Crude Oil & Petrol is provided at LTAR**	**Whether Policy applicable to other sectors**	**Whether there are any export restrictions**
India	**Crude Oil:** on the basis of the Crude Oil Sales Agreement (COSA) between the producers and the refineries **Petrol:** on the basis of Import Parity Mechanism, after prior consultations	No significant exports to arrive at a finding on dual pricing.	Since in practice the prices of petrol are still fixed by the Government and they do not reflect the market prices, it can be said that it is provided to consumers for less than adequate	The informal mechanism through which the Government fixes the prices of refined petroleum is also applicable to other refined products such as diesel, kerosene,	India does not have any export potential

[75] Working Party report on the accession of Saudi Arabia to the WTO, Annex A

	with the MOP&NG.		remuneration.	Liquefied Petroleum Gas (LPG) etc.	
Russia	Market determined prices.	No evidence of dual pricing as such	Prices are driven down because of indirect government intervention; raising the presumption that crude oil/gasoline could be sold for less than adequate remuneration.	The general law related to hydrocarbons sector is applicable to natural gas sector as well. However the specific intervention measures are crude oil/petroleum sector specific.	Yes, export restrictions exist.
Saudi Arabia	Prices fixed by the Government	No evidence of dual pricing as such; in the absence of relevant data on prices at which crude oil and petrol are sold domestically, it is difficult to arrive at any conclusive finding on dual pricing.	Prices of crude oil and petrol are fixed by the Government, raising the presumption that they could be sold for less than adequate remuneration.	The applicability of these policies is limited to the crude oil and petrol sector.	Saudi Arabia is one of the biggest exporters of both crude oil and petrol; it is unlikely that there are any export restrictions.

Chapter - 4
Subsidies Disciplines in Natural Resources Pricing: Bauxite/Aluminium

Section I: Background

A. Introduction:

1.1 Bauxite is a general term for a rock composed of hydrated aluminum oxides. It is a naturally occurring, heterogeneous material composed primarily of one or more aluminum hydroxide minerals, plus various mixtures of silica, iron oxide, titania, aluminosilicate, and other impurities in minor or trace amounts. It is the main ore of alumina to make aluminum. It is also used in the production of synthetic corundum and aluminous refractories.[1] Most bauxite is first processed to make alumina, or aluminum oxide, a white granular material. Sometimes, raw bauxite is shipped overseas for processing to alumina, while in other cases it is processed near the mine.[2]

1.2 Aluminum is a silver-white metal, very light in weight, yet relatively strong. In addition, aluminum is ductile, that is, it can be drawn into wires or pressed into sheets or foil. It is the most abundant metallic element, and the third most abundant of all elements in the Earth's crust, making up 8% of the crust by weight.[3]

1.3 Bauxite resources are estimated to be 55 to 75 billion tons, located in South America (33%), Africa (27%), Asia (17%), Oceania (13%), and elsewhere (10%)[4]. Australia has huge reserves of bauxite, and produces over 40% of the world's ore. Brazil, Guinea, and Jamaica are important producers, with lesser production from about 20 other countries.

1.4 The largest producers of aluminum metal are Russia, China, the United States, and Canada, countries which have abundant hydroelectric power. More than 40 other countries also produce aluminum, including Norway, Iceland, Switzerland, Tajikistan, and New Zealand, which are small but mountainous, and have many rivers to provide hydroelectric power. Other areas of the world with access to abundant and cheap electricity, such as the Middle East, are also expanding their metal production capacities. Recycling of aluminum by melting cans and other products is an important source of metal in many developed countries[5].

B. Bauxite Pricing:

1.5 Prices for bauxite like any other mineral resources would reflect both the overall cost of production(inclusive of the costs related to acquisition of mining concessions, lease and other taxes and charges imposed by the Government) and market conditions. The price at which bauxite is sold to refiners would ideally cover the cost of production and a certain profit margin and would depend upon the supply and demand conditions in the market. Since most of the bauxite mined is used for the production of aluminium, prices of bauxite

[1] Bauxite, Minerals Information, USGS, available online: http://minerals.usgs.gov/minerals/pubs/commodity/bauxite/
[2] Aluminium and Bauxite, Mineral Information Institute, available online: http://www.mii.org/Minerals/photoal.html
[3] Ibid
[4] Bauxite and Alumina, USGS Mineral Commodity Summary, 2007, available online: http://minerals.usgs.gov/minerals/pubs/commodity/bauxite/bauximcs07.pdf
[5] Aluminium and Bauxite, Mineral Information Institute, available online: http://www.mii.org/Minerals/photoal.html

could very well be influenced by the overall supply and demand conditions in the aluminium market. Therefore, in order to understand the pricing policy for bauxite it is important to study the pricing policy for aluminium as well. Governments can regulate the prices of bauxite by fixing the prices of aluminium and vice-versa. The prices of bauxite/aluminum should ideally be determined with reference to their overall demand and supply, however it may also be influenced by certain extraneous factors such as government intervention. Such government intervention could be either at the time of fixing the final price at which bauxite is sold or it could be at different stages of production(for example provisions of mining lease at concessional rates).

1.6 In order to comprehensively understand whether there exists any dual pricing mechanism in the pricing of bauxite/aluminium, it is imperative to understand and analyze the factors which could influence the prices of bauxite/aluminium, both economic as well as non-economic(direct and indirect government intervention).

1.7 This chapter shall deal with the pricing mechanism for bauxite/aluminium in the selected countries-India, China and Russia in three separate sections.

Section II: Overview of Bauxite/Aluminium Sector: World

2.1 ***Reserves:*** Australia has the world's largest reserves of Bauxite and produces about 40 % of the world's total produce. Brazil, Guinea, and Jamaica are important producers, with lesser production from about 20 other countries.

2.2 Most of the bauxite ore is used in the production of Aluminium which is a highly energy intensive process. The biggest producers of Aluminium in the world are therefore, those countries which have huge electricity production. The largest producers of aluminum metal are Russia, China, the United States, and Canada, countries which have abundant hydroelectric power. More than 40 other countries also produce aluminum, including India, Norway, Iceland, Switzerland, Tajikistan, and New Zealand.

2.3 ***Production:*** The global production of refined aluminium has been steadily growing over the years. It has increased from 24,418 metric tonnes in the year 2000 to 31,895 metric tonnes in the year 2005. The table below gives the world total production of refined aluminum for the period 2000 to 2005.

Total Production of Refined Aluminium in the World (in thousand metric tonnes)[6]:

Year	Production
2000	24,418
2001	24,436
2002	26076
2003	28001
2004	29922
2005	31895

2.4 ***Consumption:*** In 2003, global aluminium consumption showed a sharp growth rate of nearly 6%, which was primarily a factor of the Chinese demand for the metal. China's consumption continued to register a blistering growth rate of over 25% in 2003 and the trend has continued in 2004. Newer packaging applications and increased usage in automobiles is expected to keep the international demand growth for aluminium between 3% & 4% in the long-term. Asia will continue to be the high consumption growth area led by China and India. The table below gives the consumption of refined aluminium from the year 2000 to 2005.

Total Production of Refined Aluminium in the World (in thousand metric tonne)[7]:

Year	Consumption
2000	25,059
2001	23,721
2002	25,370
2003	27,605

[6] S&P Report on Industrial Metals, 18.01.2007
[7] S&P Report on Industrial Metals, 18.01.2007

2004	29,888
2005	31,622

2.5 ***Usage:*** Aluminium is the most widely used non-ferrous metal. Some of the many uses of aluminium metal are in[8]:

- Transportation (automobiles, aircraft, trucks, railway cars, marine vessels, bicycles etc.)
- Packaging (cans, foils, etc.)
- Construction (windows, doors, siding, building wire etc.)
- Cooking utensils
- Electrical transmissions lines for power distribution
- Super purity aluminium, used in electronics and CDs.
- Heat sinks for electronic appliances such as transistors and CPUs
- Powdered aluminium is used in paint, and in pyrotechnics such as solid rocket fuels and thermite.

[8] Ibid.

Section III: Bauxite Pricing in India:

A. Background:

3.1 ***Reserves:*** India has huge reserves of high-grade bauxite. It is estimated at about 3037 million tonnes for all categories of bauxite (proved, probable and possible). With the present level of consumption of aluminum (assuming 1.2 million tonnes of aluminium production with 7 million tonnes of bauxite), the identified reserves would have an estimated life of over 350 years. India's reserves are estimated to be 7.5 per cent of the total deposits and installed capacity is about 3 per cent of the world. In terms of demand and supply, the situation is not only self-sufficient, but it also has export potential on a competitive basis. India's annual export of aluminium is about 82,000 tonnes.[9]

3.2 ***Production:*** India is considered the fifth largest producer of aluminium in the world, following Australia, Guinea, Brazil and Jamaica. The total mine production of bauxite in India has gone up from 12000 thousand metric tonnes in the year 2005 to 13000 metric tonnes in the year 2006[10].

3.3 ***Consumption:*** The consumption pattern of aluminum in India is different from the global consumption pattern. The demand for the aluminum industry has been predominantly from the electrical sector. This sector is the largest end user of aluminum in India accounting for 36 % of the total aluminum demand. The transport sector contributes to another 22 % of the total demand while the consumer durable and packaging sectors consume 12 % each. The construction sector consumes 7% of the total aluminum demand[11]. The table below describes the consumption pattern of aluminium in India.

User	Total Consumption in %	Specific Uses
Electricity/Electrical	36	Transmission cable
Transport	22	Machinery, body
Consumer durable/packaging	12	Packaging
Construction	7	Construction material(rods, beams)

3.4 India's reserves in bauxite and the production capacity of bauxite/aluminium provide it a prominent place in the world bauxite/aluminium map. The production as well as consumption of aluminium is increasing in India and it has definitely emerged as a metal of strategic importance to it.

B. Bauxite/Aluminum Sector: Industry Structure

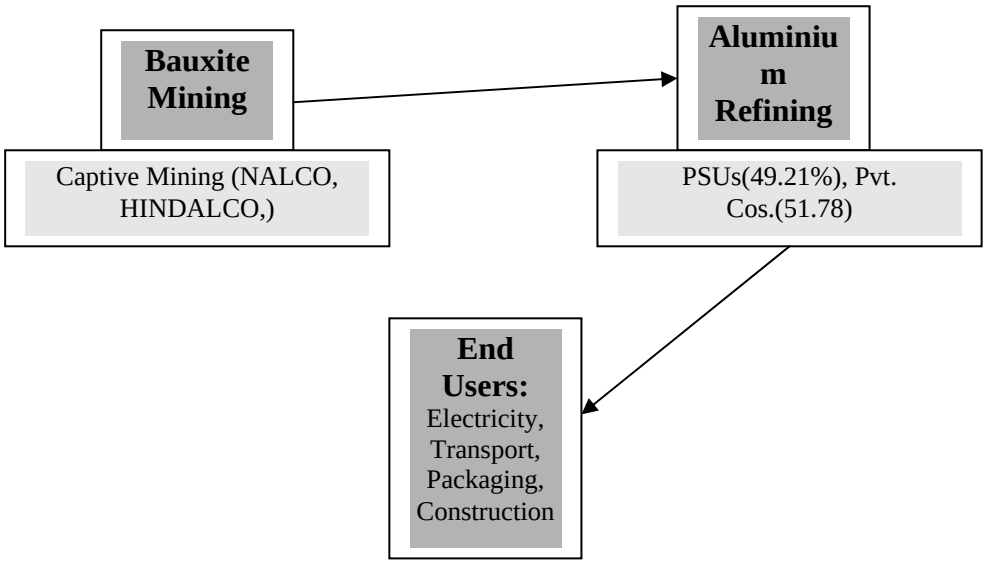
3.5 ***Industry Structure:*** About a decade back, the primary Indian aluminium producers were BALCO, NALCO, INDAL, HINDALCO and MALCO. Of the five, two (BALCO and NALCO) were in the public sector while the other three were in the private sector. The shift from the private to the public sector and again from the public sector back to the private sector has been a notable change in Indian industry. Presently, of the 714,000 tonnes per annum (**TPA**) installed capacity in the country for production of primary aluminium, the public sector commands 330,000 TPA (49.21 per cent) and the private sector accounts for

[9] Information on bauxite/aluminium, Multi-commodity Exchange of India, www.mcxonline.com
[10] USGS Country Report, available online: www.usgs.org
[11] Indiainfoline, Aluminium Sector Report, available online: http://www.indiainfoline.com/sect/alum/ch05.html

384,000 TPA (51.78per cent.) This represents a gradual but deterministic shift in the production pattern.

3.6 Indian aluminum producers are one of the lowest cost producers in the world. Abundant bauxite reserves and access to cheap labor have given aluminium manufacturers an edge over their international peers. Further, with relatively lesser fragmentation in the industry, companies have a greater control over pricing.

3.7 The bauxite/aluminium industry in India is vertically integrated i.e. most of the companies involved in production of aluminium are also involved in mining of bauxite. The aluminium refining companies procure most of the bauxite for their needs through captive mining and very little bauxite is procured from the open market. The diagram below depicts the bauxite/aluminium industry structure in India:



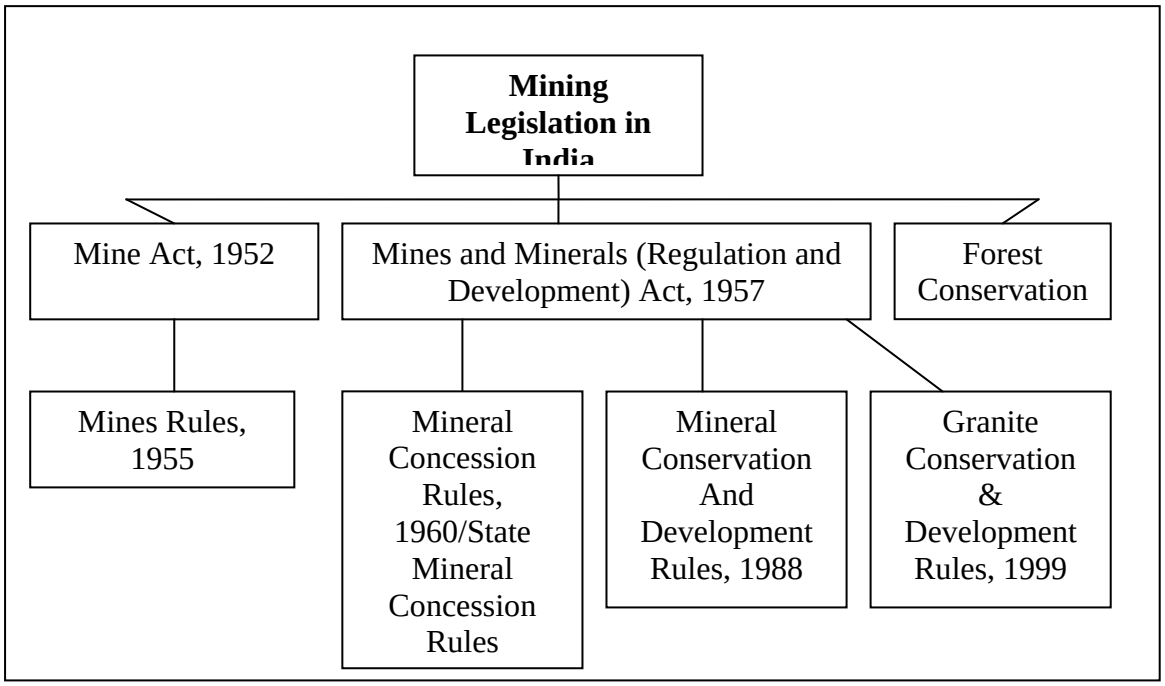
C. Bauxite/ Aluminium Sector: Regulatory Framework

3.8 Management of mineral resources is the responsibility of the Central and State Governments in terms of Entry 54 of the Union List (List I) and Entry 23 of the State List (List II) of the Seventh Schedule of the Constitution of India. Considering the importance of minerals for the growth and development of the country, the Government of India formulated the National Mineral Policy in 1993 (**NMP**), which lays down the broad parameters for the exploitation and use of mineral resources. The NMP was formulated in the wake of the New Industrialization Policy of 1991 which started the process of de-regulation of the mineral sector in India.

3.9 The government of India is in the process of revising the NMP of 1993 and a new Mineral Policy is being formulated, which would further de-regulate the mineral sector. The Government of India has appointed a High Level Committee headed by Mr. Anwarul Hoda

to look into the reforms in the mining sector and suggest changes in the NMP of 1993. A new Mineral Policy is being formulated further liberalizing the mineral sector in India. Apart from the NMP, there are numerous Acts governing the extraction and use of mineral resources.

3.10 ***Legislative Framework for Mineral Sector in India:*** As per the Constitution of India, the management of mineral resources in India is the responsibility of the Central and State Governments. The legislative framework governing the mining industry can be broadly represented as follows:



3.11 The Mines and Minerals (Development and Regulation) Act, 1957, ("**MMDR**") and the Mines Act, 1952, together with the rules and regulations framed under them, constitute the basic laws governing the mining sector in India.

3.12 The MMDR Act lays down the legal framework for the regulation of mines and development of all minerals *other than petroleum and natural gas*. Important rules in force under the MMDR Act are the Mineral Concession Rules, 1960, the Mineral Conservation and Development Rules, 1988 and Granite Conservation & Development Rules, 1999. The Mineral Concession Rules, 1960 outlines the procedures and conditions for obtaining a Prospecting Licence or Mining Lease. The Mineral Conservation and Development Rules, 1988 lays down guidelines for ensuring mining on a scientific basis, while at the same time, conserving the environment. The minor minerals are separately notified and come under the purview of the State Governments. The State Governments have for this purpose formulated the Minor Mineral Concession Rules. The MMDR also provides regulations relating to prospecting fee, royalties, and dead rent in respect of the prospecting and mining leases for minerals other than minor minerals, payable to the State Government.

3.13 The provisions of Mineral Concession Rules and Mineral Conservation and Development Rules are, however, not applicable to coal, atomic minerals and minor minerals.

In the case of coal mining, the operators have to comply with inspection and appropriate enforcement of conservation measures by the Coal Controller under the Coal Mines (Conservation and Development) Act, 1974 with a view to ensuring scientific mining.

3.14 The health and safety of the workers is governed by the Mines Rules, 1955 created under the jurisdiction of the Mines Act, 1952.The Director General of Mines Safety (DGMS) is responsible to enforce the provisions of the Mines Act.

3.14 All mining activities have to comply with the environmental legislation of India. The relevant acts in respect of environment protection are Forest (Conservation) Act 1980 and Environment Protection Act and Rules 1986. The Forest (Conservation) Rules, 1981 (amended up to May 1992) and the Environmental Impact Assessment Notification, 1994 also apply for all the mining projects.

3.15 Apart from the National Mineral Policy and the legislations related to mining and mineral in India, mineral resources can also be regulated under the Essential Commodities Act, under which the Central government is empowered to issue notifications/orders establishing price or distribution control on a particular commodity. The table below summarizes the laws and regulation relating to the mining sector in general and bauxite/aluminium sector in particular:

Law/Orders	**Issued by/Administering Authority**	**Applicability**	**Mechanism**
National Mineral Policy, 1991.	Government of India, Ministry of Mines	Broad policy guidelines for the mining sector	Removal of restriction on foreign equity in the mining sector. Longer tenure of concession, i.e. a minimum of 20 years and a maximum of 30 years. Minerals reserved earlier by the public sector now open to private entities. Guidelines for computation of royalty on ad valorem rates for different minerals
Mines & Minerals (Development & Regulation) Act, 1957.	Government of India, Ministry of Mines	Regulation of mines and development of all minerals *other than petroleum and natural gas*	Through grant of reconnaissance permit or of a prospecting license or, a mining lease which is given only to Indian nationals and companies. Rules are made in this regard as given below.
Mineral Concession Rules, 1960	Controller General or the Regional Controller or an officer of the Indian Bureau of mines duly authorised in writing by the Controller General, Indian Bureau of Mines	The procedures and conditions for obtaining a Prospecting Licence or Mining Lease	Procedure for grant of reconnaissance permits, prospecting licences and mining licence. Revision procedure by the Central Government to address grievances against orders of the State Government or any other authority.
Mineral Conservation & Development Rules, 1988	Controller General or the Regional Controller or an	Guidelines for ensuring mining on a scientific basis and conservation of	Regulates the reconnaissance, prospecting and mining operations. Introduces environmental

	officer of the Indian Bureau of mines duly authorised in writing by the Controller General, Indian Bureau of Mines	environment	protection measures.
Mines Act, 1952 Mines Rules, 1955.	Director General of Mines Safety (DGMS) under the Minisry of Employment and Labour	Health and safety of workers	The Act is implement through the DGMS, which conducts inspections and inquiries, issues competency tests for the purpose of appointment to various posts in the mines, organises seminars/conferences on various aspects of safety of workers. The mission of DGMS is to reduce the risk of occupational diseases and injury to persons employed in mines and to continually improve safety and health standards, practices and performance in the mining industry.
Income Tax Concessions/Rebates: S.10 I.T. Act – Exemptions; S.80 I.T. Act – Deductions		Tax concessions for mining and related activities	

D. Bauxite/Aluminium Pricing Policy in India:

3.16 As discussed in Section I the prices of a mineral ore as well as a refined product could depend upon both economic and non-economic factors. One of the factors which could influence the price of mineral ore in India is the levies imposed under the MMDR Act. The following are the levies imposed under the MMDR Act:

3.17 ***Prospecting Fee***: The holder of a Prospecting License is required to pay annually, in advance, a prospecting fee in respect of the ensuring year or part of the year at such rates and time as may be fixed by the State Government, being not less than 50 paise and not more than 5 rupees per hectare of land. He or she is also liable to pay royalties at the rates specified in Schedule II to the MMDR Act, in the case of minerals to be removed for commercial purposes and on quantities removed in excess of those specified in Schedule III of the Mineral Concession Rules of 1960.

3.18 ***Surface Rent*****:** The lessee is required to pay for the surface area used for mining operations, at a rate not exceeding the land revenue, as may be specified by the State Government in the Mining Lease.[12]

3.19 ***Dead Rent***: The holder of a Mining Lease in India must pay to the State Government annual dead rent at such a rate as may be specified in the MMDR Act, for all areas included in the Mining Lease.[13]

3.20 ***Royalties:*** The holder of a Mining Lease in India is liable to pay royalties in respect of any mineral removed or consumed by him or her from the leased areas at the rate specified in the MMDR Act.[14] The Central Government is empowered to increase or reduce the rate of royalty, but it cannot increase the rate in respect of any minerals more than once during any three-year period. In case of minerals containing copper, lead, zinc, nickel, aluminium, tin, gold and silver, the rates of royalty are fixed in reference to the international benchmark prices, i.e. the London Metal Exchange (**LME**) Prices.

3.21 The prices of a mineral ore or a refined metal can also be directly fixed through government regulations on pricing and distribution. The Indian aluminum industry had been under government regulation on pricing and distribution (Aluminum Control Order) since 1970. In the early stages control related only to the production of electrical grade metals. Thereafter in 1975, the government came out with distribution control order. The distribution control of 1975 mandated manufacturers to produce 50% EC grade metal of their total production. The rationale behind this policy was to make aluminum available for the country's power sector which reflected the extent to which aluminum could be used in transport, building, construction and packaging.

3.22 In 1978, the price control was extended to all types of aluminum. The retention prices were based on cost calculations plus a post standard tax return on share holders' funds but could not always keep pace with actual cost increases at a specific plant. In the late 1970s and early 1980s costs of production of aluminum at BALCO, for example, were higher than at other industries and the retention price could not cover these costs. Retention prices were revised regularly as production costs increased sharply particularly due to escalating costs for power generation.

3.23 Prices were administered by the government to protect the 'infant' industry in its early stages of development. It was thought to balance the interest of consumers and producers in India ensuring

[12] Section 15(1A) (g), MMDR Act,1957
[13] Section 9A, MMDR Act,1957
[14] Section 9, MMDR Act,1957

availability of aluminum to the consumers at a fair price while at the same time ensuring steady and foreseeable returns to producers. With the commissioning of NALCO in 1987 and the resulting surplus in indigenous aluminum production, the control over prices and distribution of aluminum was rendered redundant. Price and distribution controls were finally dispensed in 1989. The Bauxite/aluminium sector is completely deregulated from Governmental control and prices for bauxite/aluminum in the domestic market as well as for exports are based on the London Metal Exchange Prices.[15] The following table gives and overview of pricing related regulations in bauxite/aluminium sector in India:

Overview of Policies in the Aluminium Industry:

Period	Policy	Specifics
1970	Aluminium Control Order	Dual Pricing, price control for electrical grade (EC) metals only
1975	Distribution Control	50% of the output has to be produced as electrical grade metals.
Oct. 1978	Price and Distribution Control	Administered prices for all types .of aluminum, distribution control continued
Prior 1985	Export Control on Bauxite	
April 1985	Liberalization of Bauxite Export	
March 1989	Decontrol	Complete decontrol of distribution, and prices
1990	Restrictive List	Aluminum items set from Open General Licences (OGL) to the Restrictive List of controlled imports and high customs duty

E. <u>Prices of Bauxite/Aluminium in India vis-à-vis LME Prices:</u> The table below gives the LME prices of aluminium as compared to the prices of Aluminum in India.

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
India#							
LME*	1549	1444	1350	1431	1716	1898	2569

* Aluminium High Grade LME, Cash (US$/Tonne)
# Not available

F. <u>Dual Pricing Policy in Bauxite/Aluminium in India:</u>

3.23 As discussed above the mining sector in India has been completely deregulated from governmental control and no pricing or distribution control in relation to bauxite/aluminium exists in India. The prices of bauxite/aluminium in India are fixed in accordance with the LME prices. Thus there is no dual pricing policy for bauxite/aluminium in India.

[15] Information gathered from industry interaction, Mr. P.R.S Mani and Mr. R.K. Kasaliwal, CFO, HINDALCO; Mr. P. K. Mishra, Deputy Secretary, Federation of Indian Mineral Industries.

Section IV: Bauxite Pricing in China:

A. Background:

4.1 ***Reserves:*** China has abundant but expensive to process bauxite reserves.[16] The total reserves of bauxite in the year 2005 was 700,000 thousand metric tonnes, with the total reserve base of 2,300,000 thousand metric tonnes.[17]

4.2 ***Production:***. The total mine production of bauxite in China has gone up from 18,000 metric tonnes to 20,000 metric tonnes, however in 2005; the utilization rate of the aluminum industry in china was merely 75%, implying a substantial amount of idle capacity.[18] As of the end of 2007, total alumina refining capacity in China was expected to reach 27.7 million tpy, an increase of 4.4 million-tpy over year-end 2006 and a 17 million tpy increase over year end 2005.[19](China is the second largest producer (and the largest consumer) of alumina in the world, with production in 2002 reaching 5.4 Mt. That places it far behind Australia (16.5 Mt), but ahead of the United States (4.5 Mt). In 2003, China's alumina production is expected to reach 6.1 Mt. By way of comparison, China's alumina production back in 1995 was 2.2 Mt, suggesting a compounded annual growth rate of 13.6%.[20]

4.3 ***Consumption:*** According to the National Development and Reform Commission (NDRC), the aluminum industry is an industry with serious overcapacity in China, and the industry is lowly concentrated with lots of companies involved in aluminium production. China's aluminum industry lacks economies of scale and is thus running at low efficiency. China does not export any metallurgical-grade bauxite. Most of China's bauxite is supplied to Chalco, the state-controlled aluminum company that owns all the alumina refineries in the country. In 2002, Chalco consumed 9.33 million tonnes of domestic bauxite. About 40% of that amount originated from Chalco's own mines, at an estimated average cost of US$19/t. However, Chalco purchases 60% of its domestic bauxite supply (or 5.6 Mt) from non-owned local mines, in order to benefit from lower costs (about $10/t) and better quality. Finally, bauxite imports represent an alternative source of supply for Chalco. In 2003, total bauxite imports by Chalco amounted to 618 kt, up 53% y/y.[21]

4.4 The aluminium industry in China is a highly fragmented one, this results in over-supply of aluminium. Until 2000, most of China's aluminum production was consumed internally. In 2000, however, there was a sudden surge in aluminum consumption. Thus, China imported aluminum in 2000. In order to meet increased demand, China increased its production in 2001 and overtook the United States and Russia, becoming the leading producer of refined aluminum in the world. After 2001, China's production grew at a much faster rate than its consumption, thus China started exporting the excess to the rest of the world. China's conversion from a net importer to a net exporter added to the surplus, putting pressure on the price of aluminum. In 2000, China's production was 11.4% of the total aluminum production in the world, while it rose to 24.5% in 2005. On the other hand, in 2000, China's consumption was 13.96% of the total aluminum consumption in the world, which rose to 22.5% in 2005. Thus, it is clear that China's consumption has not kept pace with its production and is the main reason for the aluminum glut.[22]

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[16] See, "Setting the Record Staright on China", available online: http://www.alcan.com/web/publishing.nsf/AttachmentsByTitle/Investors OtherPublications/$file/Broch_Chine_AN_v8a.pdf.
[17] US Geological Survey, available online: www.usgs.org
[18] China aluminium: Peak Ahead, Quam Research, Industry Analysis Series, available online: www.quamnet.com
[19] See, "Price-Fixing in China? Case-in-point: the Aluminum Industry" Asia Business Intelligence, July 31, 2007
[20] Ibid
[21] Ibid
[22] Kadu Swapnil, "Metals: Industrial (aluminium), Henry Fund Research, University of Iowa, February 2007

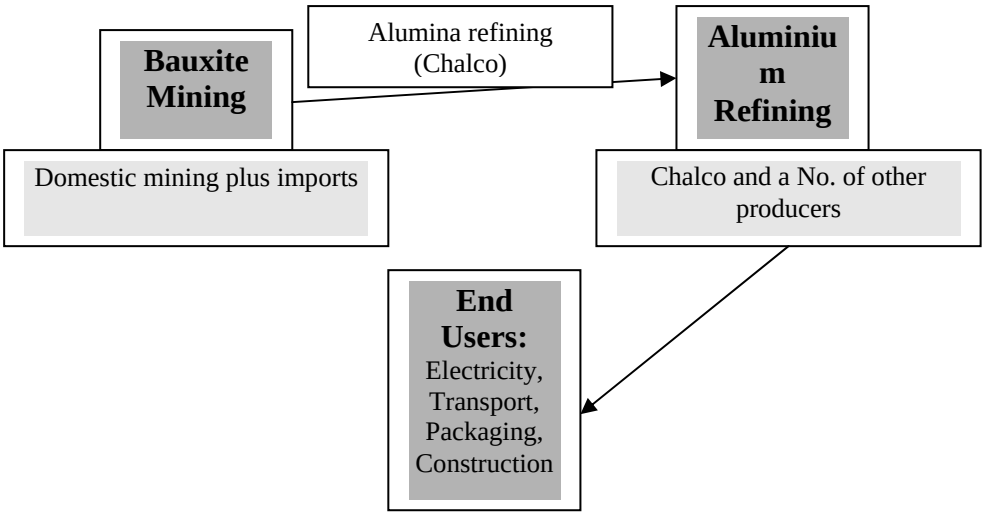
4.5 The Chinese government has taken initiatives to curb the exports of Aluminium from China. In 2006 it cancelled the 15% export tax refund available to Chinese exporters and introduced a 5% export tax on aluminium exports.[23] (***Do not have the NDRC Order***) In 2007 China put a ban on exports of aluminum.[24](***Export of aluminium is in effect export of electricity which is a major component in refining of aluminium, electricity being subsidized in China, the Government thought that exports of aluminum were not a prudent economic policy***). Effective on 22 August 2005, exports of alumina and ferro-alloy ore are prohibited under processing trade. The authorities state that the prohibition indicates that the Government does not encourage export of these products under the export processing regime, which allows "in-bond" import of inputs.[25]

B. Bauxite/Aluminium Sector: Industry Structure

4.6 The aluminum industry in China is fragmented with a number of manufacturers of primary aluminum. The largest aluminum company in China, Aluminum Corporation of China produces about 14.9% of the total aluminum produced in China. Since, the industry is fragmented it results in usual oversupply.[26]

4.7 China's alumina refining industry is dominated by the State controlled Aluminium Corporation of China (Chalco). China's alumina production originates from six refineries, all owned and operated by Chalco.[27] It is the sole producer of alumina and gallium and also the largest producer of primary aluminum, alumina chemicals, anode and cathode blocks in China. Its main assets include four integrated alumina and aluminum plants (Shandong Branch , Zhengzhou Branch , Guizhou Branch and Pingguo Branch) , two alumina refineries (Shanxi Branch and Zhongzhou Branch) , one aluminum smelter (Qinghai Branch) and one research institute (Zhengzhou Light Metals Research Institute).[28] The predominant primary producer of aluminium in China is the Chalco. Three other primary aluminum producers, Shandong Huaxin Aluminum Company, Shanxi Guanlv Holding Co. Ltd., and Qingtongxia Aluminum Group Co. also have significant production capacity.[29] The diagram below shows the bauxite/aluminium industry structure in China:

[23] National Development and Reform Commission Order
[24] Ibid
[25] Trade Policy Review People's Republic of China available online: http://www.wto.org/english/tratop_e/tpr_e/tpr_e.htm
[26] See, "Price-Fixing in China? Case-in-point: the Aluminum Industry" Asia Business Intelligence, July 31, 2007
[27] Ibid.
[28] Information on Chalco's operations, available online:
http://www.chinalco.com.cn/chalco.3w/english/pages/index2.jsp?channelid=118&siteid=0002
[29] The China Factor: aluminium Industry Impact, available online: http://www.tms.org/pubs/journals/JOM/0409/Hunt-0409.html



4.8 The Chinese bauxite/aluminium industry is highly fragmented. Chalco(a government owned company) is a dominant player however it can not be said to enjoy monopoly status. The only sector in which Chalco enjoys monopoly status is the alumina production sector and all the alumina refining plants in China are owned and operated by China. Alumina is derived from the processing and reefing of bauxite is in turn used to produces bauxite. This could be an important factor in the determination of bauxite/aluminium prices. The pricing mechanism for bauxite/aluminium in China shall be discussed in detail the section on Pricing Policy.

C. Bauxite/Aluminium Sector: Regulatory Framework

4.9 In China, the provincial, autonomous regions and municipal governments, in conjunction with the local departments of the Ministry of Land and Resources, are responsible for supervising and administering exploration and mining[30]. The Mineral Resources Law of the People's Republic of China (PRC) is the principal mining law of the State. Together with the Constitution of China, it stipulates that rights to the mineral resources within the territories of China vest in the State.[31] Under the Chinese Constitution, all mineral resources occurring within China's territorial boundaries belong to the State.[32]

4.10 The Mineral Resources Law of the PRC, adopted March 19, 1986, amended on August 29, 1996 ("Amendments") and effective as amended as of January 1, 1997 (after passage of the 21st Session of the Standing Committee of the 8th National People's Congress on August 29, 1996), is the principal mining law. Under the amended Mineral Resources Law same treatment is accorded to foreign investment enterprises as to the domestic enterprises, regarding exploration rights, mining rights and the transfer of those rights.[33]

[30] Zhong Ziran, Overview of National Mineral Policy in China Opportunities and Challenges for Mineral Industries, Ministry of Geology & Mineral Resources, P.R.C. (1998), 1.
[31] The Chinese Constitution, Article 9; Mineral Resources Law, Art. 3
[32] The Chinese Constitution, Article 62 and 89.
[33] Zhong Ziran, New Updated Foreign Investment Policy in the Mineral Industries of China, Ministry of Land and Resources, P.R.C. (1999), 2.

4.11 Significant regulations also exist in the areas of taxation and environmental issues affecting mining in China. There are numerous taxes, charges and fees that apply to the mineral industries, including the value added tax, resources tax, mineral resources compensation (royalties), corporate income tax, city construction tax, land use tax, business tax and other taxes or assessments. As for environmental regulations, the basic laws in China governing environmental protection in the mineral industry sector of the economy are the Environmental Protection Law and the Mineral Resources Law.[34]

D. Bauxite/Aluminium Pricing Policy in China:

4.9 China's economy has been under governmental control for long. The Chinese government through its various organs and agencies has been regulating and fixing the prices of various commodities. The principle law relating to price control in China is the "Price Law of the People's Republic of China".[35] This legislation empowers the Chinese government to fix the prices of certain commodities in services. Under Article 18 of the Act, the Chinese government is empowered to issue government-set or guided prices for the following merchandises and services if necessary:

- The few merchandises that are of great importance to development of the national economy and the people's livelihood;
- The few merchandises that are in shortage of resources;
- Merchandises of monopoly in nature;
- Important public utilities;
- Important services of public welfare in nature.

4.10 The prices of a commodity in China could be fixed by adopting any one of the following three mechanisms:

4.11 ***Government Price:*** The government price is set by price administration authorities in China and could not be changed without the approval of these authorities. Products and services subject to government pricing were those having a direct bearing on the national economy and the basic needs of the people's livelihood, including those products that were scarce in China. Meanwhile, government pricing is product- or service-specific, regardless of the ownership of the enterprises concerned. National treatment is applied in the areas of government pricing for all imported goods.[36]

4.12 ***Government Guidance Price:*** The government guidance price mechanism is a more flexible form of pricing mechanism. Under this mechanism, the price administration authorities stipulate either a basic price or floating ranges for a commodity. Enterprises could, within the limits of the guidance and taking into account the market situation, make their own decisions on prices.[37]

[34] William L. Macbirdie and Wang Bei, " Chinese Mining Law Overview",
[35] Issued on December 29, 1997 and by President's decree of PRC (No. 92). Adopted at the 29th Meeting of the Standing Committee of the Eighth National People's Congress and implementation as of May 1, 1998.
[36] Ibid
[37] Ibid

4.13 ***Market Regulated Prices:*** Under this mechanism enterprises are free to set prices in accordance with supply and demand to the extent permitted by generally applicable laws, regulations and policies concerning prices.[38]

4.14 ***Pricing Reforms:*** In its accession agreement entered into by China while acceding to the WTO, China agreed that it would not use price controls to restrict the level of imports of goods or services. In addition, in an annex to the agreement, China listed the limited number of products and services remaining subject to price control or government guidance pricing. Such price controls extended to commodities and services such as pharmaceuticals, natural gas, transportation (including freight transportation), and tobacco and certain other agricultural products. Bauxite/aluminium was not one of the commodities for which China fixes prices.[39]

4.15 ***Indirect Government intervention influencing the prices of Bauxite/Aluminium:*** Even though the Chinese Government does not directly fix the prices of bauxite/aluminium, it can indirectly affect the prices of these products through various means such as substantial ownership of a monopoly producer, provision of tax incentives at different stages of production, providing favorable terms for grant of mining leases, etc. Some of these measures[40] in place in China are being provided in the table below[41]:

[38] Ibid
[39] China Trade Policy Review, Report of the Secretariat, WT/TPR/S/161
[40] Notified to the WTO Committee on Agreements on Subsidies and Countervailing Measures(ASCM)
[41] Ibid

Sl.No.	Title	Period covered	Objective/Purpose	Legislation	Form	Duration
1	**SUBSIDIES FROM CENTRAL BUDGET PROVIDED TO CERTAIN STATE-OWNED ENTERPRISES WHICH ARE RUNNING AT A LOSS**					
	Subsidies provided to certain State-owned enterprises which are running at a loss.	1990-1998.	To promote restructuring of those State-owned enterprises which are running at a loss, while keeping employment by means of promoting rationalization and maintaining stable production and safety of the society (compensation for the lack of social security system).	Assistance by budget	Grant and Tax Forgiving	1949-2000
2	**SUBSIDIES FROM LOCAL BUDGET PROVIDED TO LOSS MAKING STATE OWNED ENTERPRISES**					
	Subsidies provided to certain State-owned enterprises which are running at a loss.	1990-1999.	To promote restructuring of those State-owned enterprises which are running at a loss, while keeping employment by means of promoting rationalization and maintaining stable production and safety of the society (compensation for the lack of social security system).	Assistance by local budget.	Grant and Tax Forgiving	1949-2000
3	**THE PRIORITY IN OBTAINING LOANS AND FOREIGN CURRENCIES BASED ON EXPORT PERFORMANCE**					
	The priority in obtaining	1994-1999.	To promote the exportation of automobiles	State Council Circular on	Priority in	China commit

	loans and foreign currencies based on export performance.			Industrial Policy on Automobiles	obtaining loans and foreign currencies	s itself to eliminate this measure by the year of 2000.
4	**PREFERENTIAL POLICIES FOR THE SPECIAL ECONOMIC ZONES (EXCLUDING THE PUDONG AREA OF SHANGHAI)**					
	Preferential income tax policies for foreign-invested enterprises in the Special Economic Zones of Shenzhen, Zhuhai, Shantou, Xiamen, Hainan.	1984 – Now.	To promote regional development and absorb foreign investment.	Before1991, Income Tax Law of the People's Republic of China Concerning Chinese-Foreign Equity Joint Ventures and Income Tax Law of the People's Republic of China for Foreign Enterprises. After 1991, Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and	Application of preferential income tax rate, and exemption of income tax.	1984 -

				Foreign Enterprises.		
5	**PREFERENTIAL POLICIES FOR THE ECONOMIC AND TECHNOLOGY DEVELOPMENT AREAS**					
	Preferential income tax policies for foreign-invested enterprises in the economic and technology development areas in Dalian, Qinhuangdao Tianjin, Yantai, Qingdao, Lianyungang, Nantong, Ningbo, Fuzhou, Guangzhou, Zhanjiang, Shanghai (Minhang, Hongqiao, Caohejing), Beihai, Shenyang,	1984 - now.	To accelerate the opening-up of the region and absorb foreign investment.	Before 1991, Income Tax Law of the People's Republic of China Concerning Chinese-Foreign Equity Joint Ventures and Income Tax Law of the People's Republic of China for Foreign Enterprises. After 1991, Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises.	The preferential income tax rate applied is 24 or 15 per cent. .	1984 -

	Wenzhou, Harbin, Changchun, Hangzhou, Wuhan, Chongqing, Wuhu, Xiaoshan, Huizhou, Nansha, Kunshan, Rongqiao, Weihai, Yingkou, Dongshan.					
6.	**PREFERENTIAL POLICIES FOR THE SPECIAL ECONOMIC ZONE OF THE PUDONG AREA OF SHANGHAI"**					
	Preferential income tax policies for foreign-invested enterprises in the Special Economic Zone of the Pudong area of Shanghai.	1991 - now.	To accelerate the opening-up of the region and absorb foreign investment.	Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises.	Application of preferential income tax rate, and exemption of income tax.	1991
7	**PREFERENTIAL POLICIES FOR FOREIGN INVESTED ENTERPRISES**					

	Preferential income tax policies for foreign-invested enterprises in China.	1985 - now	To absorb foreign investment and expand economic cooperation	Before 1991, Income Tax Law of the People's Republic of China Concerning Chinese-Foreign Equity Joint Ventures and Income Tax Law of the People's Republic of China for Foreign Enterprises. After 1991, Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises.	Application of preferential income tax rate, and exemption of income tax.	1985-
8	**LOANS FROM THE STATE POLICY BANKS**					
	Loans of the State Policy Banks (the State Development Bank, the	For the State Development Bank, 1994 - 1996;	To adjust investment structure.	None.	Loans	1991 -

	Export and Import Bank of China, and the Agriculture Development Bank of China).	For the Export and Import Bank of China, 1991 - 1995 For the Agriculture Development Bank of China, 1994 - 1996.				
9	**FINANCIAL SUBSIDIES FOR POVERTY ALLEVIATION**					
	Financial subsidies for poverty alleviation.	For direct allocation of funds, 1991 -now For poverty alleviation loans, 1994 -now.	To alleviate poverty.	Assistance by budget.	Direct appropriation and provision of poverty alleviation loans.	1991 -

4.16 Thus in law there does not exist any mechanism through which the Chinese Government directly fixes the prices of bauxite/aluminium. However it could indirectly influence the prices of bauxite/aluminium by providing incentives (as specified in the table above). The Chinese government owned Chalco Corporation produces the whole of the Alumina produced in China; this could also affect the prices of aluminium. The table below shows the comparative prices of bauxite/aluminium in China and the LME prices for analyzing whether there is any difference in the two prices.

E. <u>Prices of Bauxite/aluminium in china vis-à-vis LME Prices:</u> The table below gives the LME prices of aluminium as compared to the prices of Aluminum in China.

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
China#							
LME*	1549	1444	1350	1431	1716	1898	2569

***** Aluminium High Grade LME,Cash
# Not Available

F. <u>Dual Pricing in Bauxite/Aluminium in China:</u>

4.15 As discussed above the Chinese government does not fix the prices of Bauxite/Aluminum. The prices for these commodities are determined by the supply and demand conditions. However, China has introduced a ban on exports of Aluminium in 2007 that could influence the prices of Aluminium in the domestic market. In addition, there exists, as discussed above, indirect support measures in China, which can influence the prices of bauxite/aluminium.

Section V: Bauxite Pricing in Russia

A. Background:

5.1 ***Reserves:*** More than 50% of the explored bauxite reserves in Russia are in the North-West economic region, and 28% are in the Ural Mountains. Deposits in the Urals are characterized by complex geologic and hydrological conditions. These deposits accounted for more than 80% of Russian bauxite production. The highest quality bauxite reserves are in deposits of the North-Urals bauxite mining stock company (Sevuralboksitruda), which controlled 24% of all explored bauxite reserves. These reserves, however, are at great depths and characterized by complex mining and hydrological conditions.[42]

5.2 ***Production:*** In 1999, Russia ranked second in the world in primary aluminum output; Russian output increased compared with that of 1998. In 1999, Russia ranked sixth in the world in alumina production and eighth in the world in bauxite output.[43] The production of refined aluminium in Russia has increased from 3,478 metric tonnes in 2003 to 3,718 metric tonnes in 2006.[44]

5.3 ***Consumption:*** The consumption of Aluminium in Russia is not significant. Domestic aluminium consumption has fallen dramatically (97%) since 1991 and has just started increasing. The reason behind the fall was declined demand from the military-industrial complex. Future demand depends on needs in the aviation and car manufacturing industries.[45] This leaves Russia with huge export capacity. The table below gives the total production, consumption and exports of aluminium in Russia from the year 2003 to 2006[46].

Year	2003	2004	2005	2006
Production	3478	3594	3647	3718
Consumption	802	11020	1020	1047
Exports	3108	3700	2740	3183

5.4 Russia is the biggest producer of refined aluminium in the world. However the consumption of aluminium in Russia is not huge and most of its aluminium is exported. Given this situation the probability of dual pricing in aluminium decreases. The pricing mechanism for bauxite/aluminium is discussed in the section on Pricing Policy.

B. Bauxite/Aluminium Sector: Industry Sector

5.5 The aluminium industry in Russia has gone through a significant phase of reorganization since 1990 and presently two private companies namely *Russian Aluminium (RusAl)* and SUAL Holdings dominate the Russian market for aluminium. *Russian Aluminium* is the largest domestic producer of aluminium and is number two in the world aluminum market. It controls 75% of the domestic market and, according to different estimations, from 5% to 10% of the world market of aluminium. *RusAl* is a part of one of the largest and still forming financial and industrial groups – *Siberian Aluminium* (*SibAl).* The group has its own banks, insurance companies and different production facilities. According to different estimations, *SibAl* is now growing faster

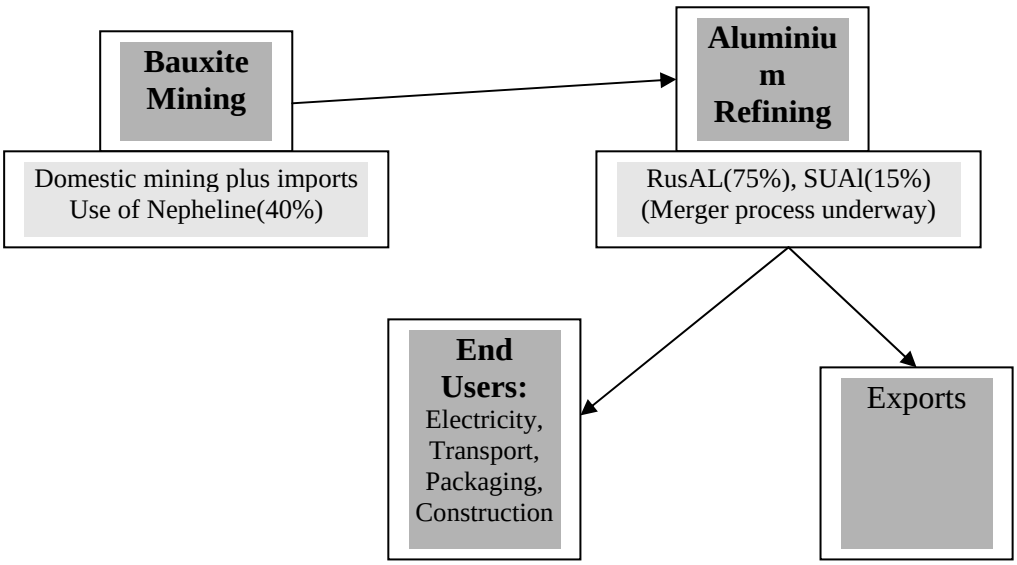
[42] Richard M. Levin, "Mineral Industry of Russia, 1999", Available online: www.usgs.org
[43] Ibid
[44] World Metal Statistics, The World Bank, April 27,2007
[45] Leijonhielm Jan & Larsson L. Robert, " Russia's Strategic Commoditiies", Swedish Defense Research Agency
[46] Source: World Metal Statistics, The World Bank, April 27,2007

than any other group in Russia. Another significant producer of aluminium in Russia is SUAL Holdings, which controls about 15 % of the market of the Russian Aluminium market. [47]

5.6 However the Russian aluminium industry is further getting consolidated and the Russian government has approved the merger between RusAL and SUAL Holdings making the emerging entity the monopoly producer of aluminium in Russia.[48]

5.7 Russia's share in world production of bauxite is very low and in 2001 it was only about 3.5% of the total world production of bauxite. In addition, the bauxite ore found in Russia is of low quality and thus Russian producers of aluminium depend upon nepheline for the production of aluminium. Almost 40% of the aluminium produced in Russia is from use of nepheline as feedstock. Nepheline has a natural disadvantage over bauxite, it require upto 2-4 time more power in its processing.[49] One of the biggest reasons for the growth of Russian Aluminium industry is the availability of cheap energy (power) which accounts for close to 30% of the cost of production of aluminium.

5.8 The diagram below shows the structure of the bauxite/aluminium industry in Russia:



5.9 The analysis of the bauxite/aluminium industry clearly indicates that there are a few large dominant players in the market and post the merger between RusAL and SUAL, the emerging entity will have an effective monopoly in the market, however RusAL is a privately held company and the government. Thus the chances of government intervention are diminished. (The government could however fix/regulate the prices in case the monopoly player abuses its dominant position). The next section provides the regulatory framework for the bauxite/aluminium sector in Russia.

[47] Oleg Ustenko, Russia' Accession into WTO: A Case Study of Aluminium Industry, Centre for Economic And Financial Research.
[48] The Russian Journal, 2 February, 2007, available online: http://www.russiajournal.com/node/286
[49] Leijonhielm Jan & Larsson L. Robert, " Russia's Strategic Commodities", Swedish Defense Research Agency

C. Bauxite/Aluminium Sector Regulatory Framework:

5.10 The main legislative document regulating the mining sector in Russia is the 'Federal Law Concerning Mineral Resources'. This bill was passed in February 1992, with a later amended version published in 1995. Subsequent changes to the amended bill have not significantly altered the basic law covering mining activities. However, a more substantial revision to the law is currently in process.

5.11 In Russia, all rights related to mineral resources belong to the state. Mineral licences are only granted to companies under certain conditions and strict procedures. These licences specify the quantity and quality of resources that can be extracted within a project's fixed life-span. They also require that the licensee make a positive contribution to the income of the landowner and their neighbours. By law, no irreversible detrimental impact on health or the environment is permitted.

5.12 Russia applies a six per cent gross royalty tax on all mining activity. This means the royalty is determined with reference to, for example, the volume of aluminium produced.

D. Bauxite/Aluminium Pricing Policy in Russia:

5.13 The Russian state has no direct control over the aluminium market. The primary means of managing the sector are by tariffs, quotas, taxes, regulations and permits et cetera that are powerful enough to affect market supply and world market prices. Governmental bodies as *Rosrezerv*, enjoy strong power over the resources rather than firms operating on the market. Additionally, informal networks and political connections of key-actors can be expected to have an impact.[50]

5.14 Russia relies on imports of bauxite to meet the demand from its Aluminium industry. The imports of bauxite for subsequent refining into aluminium and export (tolling) had been exempted from VAT and certain other taxes in Russia. However the Customs Code of 2004 abolishes tolling and imposes a VAT of 18% on imports.[51]

E. Prices of Bauxite/Aluminium in Russia vis-à-vis LME Prices: The table below gives the LME prices of aluminium as compared to the prices of Aluminum in Russia

	2000	2001	2002	2003	2004	2005	2006
Russia#							
LME*	1549	1444	1350	1431	1716	1898	2569

Not Available
***** Aluminium High Grade LME, Cash

F. Dual Pricing in Bauxite/Aluminium in Russia:

5.15 As discussed above, Russia is deficient in its bauxite reserves; however it is one of the largest producers of refined aluminium in the world. The Russian aluminum industry relies on use of alternate sources of raw materials and on imports for the production of aluminium. it consists primarily of two large privately held commercial houses RuSAL and SUAL Holdings,

[50] Ibid
[51] Ibid

which produce close to 90% of the Russian aluminium. The Russian state does not have much say in the fixing of prices of bauxite/aluminium and the prices are determined by the market factors of demand and supply.

5.16 Since the Russian aluminium industry post the merger between RusAL and SUAL Holdings will be dominated by a monopoly player the Russian Federal Anti-Monopoly Service has mandated that the new RusAl shall price its aluminium to consumers in line with the LME prices, with a markup of no more than 5% for domestic consumers; 10% for foreign consumers.[52] Thus there does not exist any dual pricing for aluminium in Russia.

5.17 As far as applicability of the bauxite/aluminum related laws is concerned the general mineral laws are applicable to other mineral resources as well. However the ruling of the Russian Federal Anti-monopoly Service mandating the sale of aluminum at the LME prices is applicable only to the aluminium sector.

[52] The Russian Journal, 2 February, 2007, available online: http://www.russiajournal.com/node/286

SECTION VI: DUAL PRICING IN BAUXITE/ALUMINIUM: CONCLUSION

6.1 As discussed above the prices of bauxite/aluminium are not fixed by the government in any of the three countries that we have studied.

A. India:

6.2 The bauxite/aluminium sector in India is completely de-regulated from Governmental control and the prices of bauxite/aluminium in India reflective of the overall supply and demand scenario. Since there is no government regulated prices in the sector, there is no possibility of dual pricing and subsequent provision of the goods for less than adequate remuneration.

B. China:

6.3 The Chinese government does not fix the prices of Bauxite/Aluminum. The prices for these commodities are determined by the supply and demand conditions. However, China has introduced a ban on exports of Aluminium in 2007 that could influence the prices of Aluminium in the domestic market. In addition, the Chinese Government can also influence the prices of these commodities through indirect support measures such as tax benefits, subsidies etc.

C. Russia:

6.4 The prices of bauxite/aluminium in Russia are reflective of the overall demand and supply situation and as per the ruling of Russian Federal Anti-Monopoly Service, the prices of aluminium sold by the RuSAL (monopoly producer) shall be pegged with the LME prices. Thus there is no possibility of dual pricing in this sector.

6.5 The table below summarizes the findings of the study under this chapter:

Country	Price Determination	Whether Dual Pricing	Whether Bauxite/Aluminium is provided at LTAR	Whether Policy applicable to other sectors	Whether any export ban
India	Market determined	No	No	General policy & law related to mining sector is applicable to all metals and minerals.	No
China	Market determined, however the government can influence the prices through the indirect support measures.	No.	No	The general policy & law related to mining sector is applicable to all metals and minerals. The indirect support measures also are not specific to and limited in their application to only bauxite/aluminium.	China currently maintains a ban on exports of aluminium.

Russia	Market determined	No	No	The general mining law is applicable to all metals and minerals.	No

Chapter - 5
Subsidies Disciplines in Natural Resources Pricing: Copper

SECTION I: BACKGROUND

A. Introduction:

1.1 Copper is not a rare metal. No shortage of copper due to the depletion of copper ore is anticipated in the foreseeable future. Even though its average concentration in the earth's crust is only about 70 parts per million, its reserves are sufficient for an uninterrupted supply well into the future. It is produced in many countries[1]. Today copper supply arises from two sources; majority of it comes from primary production-new copper that is mined from the ground, however a significant percentage of the total refined copper supply comes from recycling of copper scrap.

1.2 Copper finds widespread use in a wide range of applications. It is widely used in electrical applications (electrical generators and motors, electrical power and lighting fixtures, electrical wiring, radio and television sets, computers, etc), plumbing (water pipes), heating and cooling (air-conditioning systems, refrigeration units, motor vehicle radiators, home heating systems, steam condensers), roofing (roof coverings), building construction, household goods (kitchenware), ammunition, coins, and pharmaceutical and chemical equipment. The majority of the copper consumed is used in electrical applications. Copper forms many alloys such as bronze (with tin), brass (with zinc) and Monel metal (with nickel). Copper compounds are also used as inorganic dyes, feed additives, seed disinfectants, foliage sprays, fertilizers, fungicides and algaecides, antifouling agents, wood preservatives, and photography. The major consuming industries include telecom, power, construction, transportation, handicrafts, engineering, consumer durables, and defence.

1.3 There are numerous factors that can influence production and consumption of copper and so its prices. Copper production is often affected by labor and political unrest and additional influences can be from weather, floods and droughts either hitting the production process to the transport of raw materials. Also, new production takes years to commission as the scale of mining is large, requires enormous financing and needs extensive infrastructure as well. Copper prices change frequently as the market attempts to balance the supply and demand at any given time. Copper being an internationally traded commodity, its prices are effectively determined by the three major metals exchanges-New York Commodities Exchange (COMEX), London Metal Exchange (LME) and Shanghai Futures Exchange (SHFE). The prices on these exchanges generally reflect the worldwide balance of copper demand and supply, but are also influenced significantly from time to time by speculative actions and by currency exchange rates.

B. Copper Pricing:

1.4 The price of copper is established by the supply and demand conditions in the global market overall, its prices like those of other commodities, reflect both the product's

[1] Information on Copper, Multi Commodity Exchange, India, available online: www.mcxindia.com

underlying cost as well as market conditions at all stages of production and distribution. The prices of copper would reflect the costs involved in:

- Exploration and prospecting
- Excavation
- Refining
- Transportation
- Fees/Rents paid as royalty, lease rent, dead rent, taxes etc.

1.5 This chapter shall deal with the pricing mechanism for copper in the selected countries-India, Chile and USA in three separate sections.

SECTION II: OVERVIEW OF THE COPPER SECTOR: WORLD

2.1 ***Reserves:*** World reserves of copper are estimated at 470 metric tonne (mt), with the reserve base at 940 mt. World resources of copper are estimated at 2.3 billion tonnes. Annual world mine production of copper was around 14.9 mt in 2005. At forecast production levels of 16.2 mt for 2007, the reserve base of copper is expected to last for 30 years, and copper resources for more than 140 years. Historically, the copper industry has been successfully dealing with the problem of extracting copper from lower concentration ores by employing new and improving existing technologies, even with declining prices.[2]

2.2 Five countries (Chile, USA, China, Japan and Russia) together produced around two thirds of the total mined copper worldwide in 2005. Approximately two thirds of the global mined copper production is integrated, and the remaining is sold in the copper smelting market.[3]

2.3 World mine production of copper has increased from 13,624 metric tonnes in 2001 to 15,057 metric tonnes in 2006.[4] The total uses of refined copper in the world have during the same period gone up from 14,935 to 17,004 metric tonnes.

2.4 It is clear from the above discussion that copper industry the world over has been successful in producing sufficient copper to meet the demand. However, much of the copper produced in the world comes from a few countries. Therefore the likelihood of government intervention in these countries increases and such intervention could very well extend to pricing controls. The next three sections shall analyze the regulatory framework and pricing policy for copper in the three countries (India, Chile and USA) to determine whether such interventionist policies exist in these countries in this sector.

[2] Information on copper reserves, available online: www.icsg.org
[3] Information on Copper, Multi Commodity Exchange, India, available online: www.mcxindia.com
[4] Information on copper reserves, available online: www.icsg.org

SECTION III: COPPER PRICING IN INDIA:

A. Background:

3.1 ***Reserves:*** The total recoverable reserves of copper in the country are 416.8 million tones equivalent to 4.37 million tones of metal content. Major and important copper deposits are located in Singhbhum district (Bihar), Balaghat (Madhya Pradesh) and Jhunjunu and Alwar, (Rajasthan).[5]

3.2 ***Production:*** India's copper production is estimated to have increased 26.8% during financial year 2006 to 0.52 metric tonne, as compared with an increase of 3.2% during the financial year 2005. India's cumulative copper production during the first quarter of the financial year 2007 (April-June 2006) was 130,870 tonnes, representing an increase of 23.5% over the corresponding previous fiscal[6].

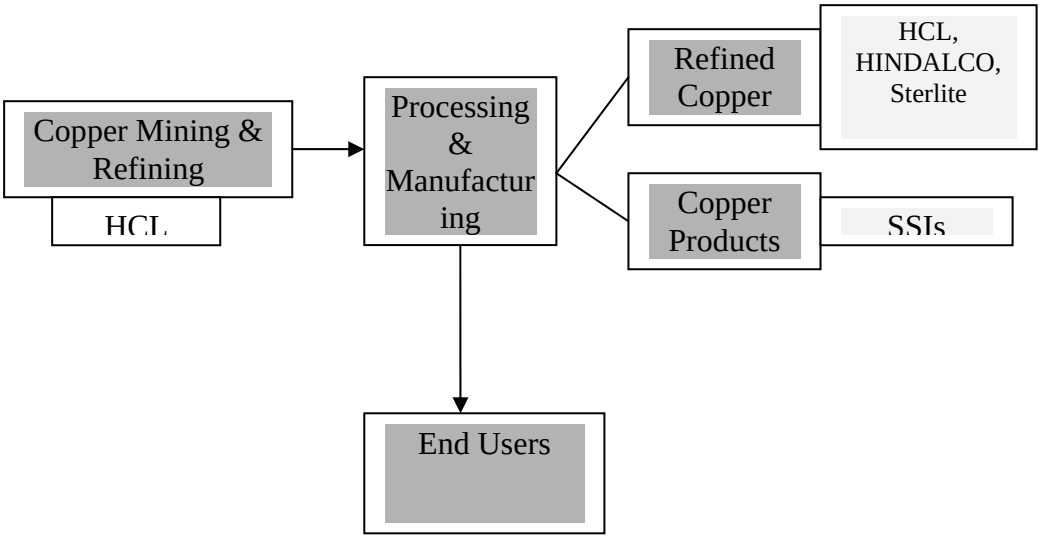
3.3 ***Consumption:*** India's Primary copper consumption increased 5.9% in financial year 2005 to 0.27 mt. Consumption increased 6% during financial year 2006 to 0.29 mt. Between financial year 2004-06, consumption has increased at a 3-year compound average growth rate (CAGR) of 4.8%. The total copper usage, including recycled scrap, is estimated to have increased from 0.335 mt in 2004 to 0.386 mt in 2005 and to 0.413 mt in 2006. India's copper consumption is expected to grow at around 8% per annum in the medium-term driven by growth in key end-use segments such as electricity, consumer electronics, industrial machinery and equipments, and construction.[7]

3.4 The above analysis shows that the demand for copper in India has been steadily increasing and simultaneously the copper industry in India has managed to increase its production.

B. Copper Industry: Structural Overview

3.5 The Indian copper industry can be classified into two broad categories-manufacturers of refined copper (copper cathodes) and manufacturers of copper products. In India, the three main manufacturers of refined copper are Hindalco Industries, Sterlite Industries Limited (SIL), and Hindustan Copper Limited (HCL). While HCL is the only primary producer, which mines and refines copper; Hindalco and SIL are secondary producers, who process indigenous and/or imported copper concentrate to produce end products like copper bars, rods and wires. Till 1997, the only producer of primary refined copper was HCL. Other players in the industry include around 1000 small-scale industries (SSI), which are primarily involved in converting scrap into ingots. The SSIs, which are primarily involved in converting scraps into ingot, do not provide major competition to the larger players. The diagram below shows the structure of the copper industry in India:

[5] India Country Profile, available online: http://www.maps-india.com/overview/metallicminerals.htm
[6] The Indian copper Industry, October 2006, Copper Sector Analysis, ICRA, available online: www.icra.in
[7] Ibid



3.6 The structure of the copper industry in India is simple, with only one company (HCL) engaged in extraction, refining and manufacture of refined copper. The rest of the industry is engaged only in refining and manufacturing of copper products. HCL procures most of its copper ore from its captive mines. The other companies meet their needs through imports or secondary sources. The existing structure of the industry presents little scope for government intervention, particularly since the deregulation of the mining sector the role of the government has further diminished. There is only a limited possibility of the government being able to intervene and distort the prices of copper, i.e. in case of copper produced by HCL. However the policy of the government has been to fix the prices in reference with the LME prices.

C. Copper Sector: Regulatory Framework

3.7 The broad policy guidelines for the mining and exploration of copper are laid down in the National Mineral Policy. In addition, the Mines and Mineral (Regulation and Development) Act, the Mines Act and the rules made therein provide specific regulations for the regulation of copper sector in India. (***Discussed in detail in the Section on Aluminium***)

D. Copper Pricing Policy in India:

3.8 The copper sector in India is completely deregulated and prices of copper are determined in reference to the London Metal Exchange Prices.[8]

E. Prices of Copper in India vis-à-vis LME Prices:

3.9 The following table provides both the LME as well as the prices at which copper has been traded in India from the year 2001 to 2006 in order to establish the co-relation between the two prices:

	2001	2002	2003	2004	2005	2006

[8] Annual Report, Ministry of Mines; information on copper, available online: www.macxindia.com

India#						
LME*	1578	1558	1780	2868	3684	6727

Not Available
* Aggregate LME prices

F. Dual Pricing in copper in India:

3.10 As discussed above the Government of India does not regulate and fix the prices of copper in India. The prices of copper in India are determined in reference with the LME prices. Thus there is no existing dual pricing policy with regard to copper in India. However to the limited extent that HCL (a government owned entity) has the captive mining rights over all the copper mines in India, there is a possibility that it gets its copper ore for less than adequate remuneration. (Nonetheless the industry structure and broad pricing policy does not seem to support this assumption)

SECTION IV: COPPER PRICING IN CHILE

A. Background:

4.1 ***Reserves:*** Chile is the world's leading supplier of copper and copper ores and concentrates, with 165 million tonnes of proved copper reserves.

4.2 ***Production:*** Chile is the world's largest copper producer and hosts about 30% of the globes known copper resources and accounts for over 35% of global copper production... The country's copper production accounts for 40% of the world's annual output, with state owned Codelco remaining one of the country's largest copper producers, producing 74% of the country's copper in 2003 compared to 33% in 2002. Codelco sells 17% of its copper to China, followed by the US, France and South Korea for the other 30%. Prior to the 90's, Codelco had the monopoly on all mining prospects in Chile, however interest from foreign investors found Codelco entering several joint ventures.[9] Chile's production of copper has gone up from 1,836 thousand metric tonnes in 2003 to 2,999 thousand metric tonnes in 2006.[10]

4.3 ***Trade:*** Most of the copper produced by Chile is exported. Within the Chilean economy, copper accounts for 45% of exports. Its exports to the world in 2003 were 2,614 thousand metric tonnes and at the end of 2006 they were at 2,606 thousand metric tonnes.[11] The table below provides the data on total production, and exports of copper from Chile[12].

Year	2003	2004	2005	2006
Production	1,836	2,199	2,600	2,999
Exports	2,614	2,954	2,799	2,606

4.4 The above discussion shows that copper industry is one of the most important segments of Chilean economy. This raises the presumption the industry could be closely regulated by the government and the Chilean government could intervene in price fixation of copper.

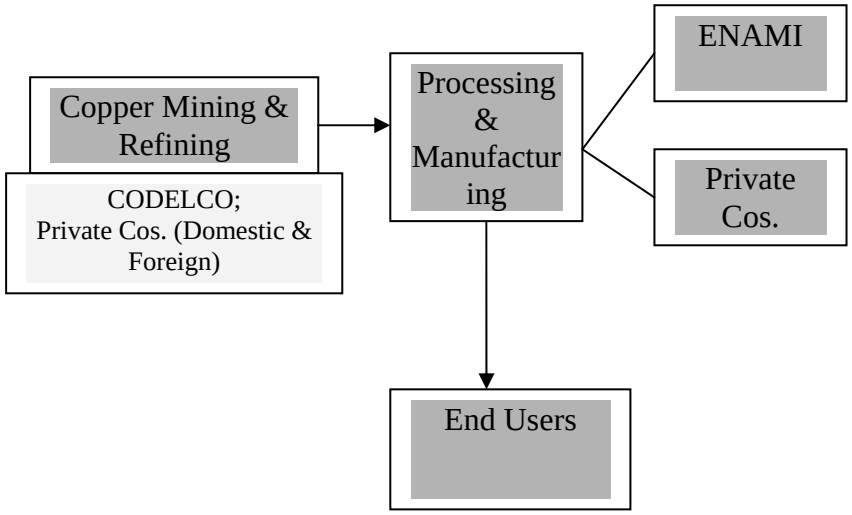
B. Copper Sector: Industry Structure

4.5 The Chilean Government still plays a crucial role in Chile's mining sector, especially in the production of copper. Currently, copper production in Chile comes from both the state-owned enterprises as well as private sector enterprises. The State participates in production through two enterprises, Chile's National Copper Corporation (CODELCO), which concentrates mainly on exploitation of copper and molybdenum, and the National Mining Company (ENAMI) which owns two copper processing plants and an electrolytic refinery, and purchases copper, gold and silver from small-scale producers. These state-owned enterprises are the world's first and the eighth exporters of copper products. There are also 27 private Chilean companies, and 17 foreign companies engaged in exploration and 27 in exploitation.

[9]Chile-Mining: Copper Mining, available online: http://www.mbendi.co.za/indy/ming/cppr/sa/cl/p0005.htm
[10] World Metal Statistics, The World Bank, April 27,2007
[11] Ibid
[12] Source: Ibid

4.6 **CODELCO** *(Corporation National del Cobre de Chile)* is Chile's state-owned company dedicated to the extracting and selling copper from the state-owned mines. CODELCO is wholly owned by the Chilean government which receives under various forms the company's entire annual profits, which have been around US $1 billion per year in the 1990s, representing on average 11 percent of Chile's fiscal revenues. CODELCO continues to be the world's single largest producer of copper; it is also one of the main producers of molybdenum. In 2001, CODELCO produced 1.7 million tonnes of copper, equivalent to about 12.5% of world output, up from 1.2 million tonnes in 1996. A fixed 10% of the value of CODELCO's external sales is allocated to the Armed Forces, whereas CODELCO's profits are paid into the general State budget. CODELCO also has joint ventures both with national and foreign companies, in Chile and abroad, for exploration, production of electricity, production of mining equipment, and production of manufactured products such as metal wires.

4.7 The diagram below shows the structure of the copper industry in Chile:



4.8 A primary glance at the structure of Chilean copper industry shows that it is completely de-regulated and supports a free market structure wherein both public and private players can participate in all segments of the industry. Given such an industry structure the likelihood of Government intervention in price fixation is limited.

C. Copper Sector: Regulatory Framework

4.9 Under the Chilean Constitution, State is the sole owner of all the mines, independently of who owns the surface land. The Ministry of Mines is responsible for mining policy and regulating the sector. It has several advisory bodies: (i) the Chilean Copper Commission (COCHILCO), which advises on mining policy, supervises and evaluates the performance of the state-owned mining enterprises and advises the Foreign Investment Committee on the approval of investment contracts; (ii) the National Service of Geology and Mining (SERNAGEOMIN), which is responsible for the geological survey of Chile, for updating data on mineral resources, for keeping and updating a registry of all mining

concessions and the official land registry, and for monitoring safety conditions in the mining sector; and (iii) the Mining Metallurgic Research Center (CIMM), which specializes in applied research for technological development and serves both the state-owned and private companies.

4.10 Procedures for the granting of exploration and exploitation licences are laid down in the Constitutional Organic Law on Mining Concessions (Law No. 18.097) of 21 January 1982 and the Mining Law (Law No. 18.248) of 14 October 1983. Concessions may be granted on all mineral substances, including minerals that lie under the ocean and are accessible from land through tunnels[13].

4.11 There is no special tax treatment for mining sector in Chile. Law No. 16,624 of 15 May 1967 established the Copper Reserve. Pursuant to this law, all copper mining companies with an annual output of more than 75,000 tonnes of refined, electrolytic or blister copper are obliged to supply the national manufacturing industry at prevailing international f.o.b. prices. To this end, national manufacturing enterprises submit an annual request specifying their copper demand to COCHILCO, which administers the Reserve. According to the authorities, the volume of copper administered under this scheme is about 80,000 tonnes annually.[14]

4.12 The following are the mining related laws in Chile:

4.13 ***Mining Code:*** The State has absolute, exclusive, in alienable and imprescriptive ownership of all mines regardless of property rights of natural or legal individuals over lands were they may be found. The Code determines the scope of mining concessions for exploiting and exploring minerals, which are rights claimed against the State. The State acts through companies in which it holds interest and the said companies shall create/ acquire concessions according to the Code.

4.14 ***Organic Constitutional Law on Mining Concessions, 1982:*** This law aligns itself with the Right to Property guaranteed in the Chilean Political Constitution. Accordingly, mining can either be for exploration or exploitation. It lays down that that mining rights are real, immovable rights which are different and independent form the surface land ownership rights. The law is applicable to mining of substances including metallic substances like copper, and also recognizes the concept of easement over mining properties. Exploration Concessions are given strictly for a period of four years only while exploitation concessions can last indefinitely.

4.15 ***Foreign Investment Statute 1993:*** This law applies to foreign investment made by the transfer of foreign capital into Chile and the regulations that influence the foreign investment contracts henceforth. The contracts shall not exceed 8 years in the case of mining investments, except in case where the limit has been extended by the unanimous agreement of the members of the Foreign Investment Committee, in which case, the duration shall be for 12 years. This will be in consideration of a scenario where previous exploration is required, depending on the nature and estimated duration thereof.

4.16 ***General Bases for Environment Law:*** This law emphasizes the requirement of Environmental Impact assessment for projects or activities likely to cause environmental

[13] Report of the WTO Secretariat, Chile Trade Policy Review, WT/TPR/S/124
[14] Ibid

harm or pollution, and mining is included as an activity attracting strict compliance of this norm. Mining development plans including exploration, prospecting, exploitation as well as industrial extraction would compulsorily require to be assessed for the environmental impact that it may cause.

Acts/Regulations/Legal Instruments	Administering Authority	Coverage
Mining Code, 1982	Bureau (Servicio) , Ministry of Mining	State's absolute ownership of all mines. Scope of mining concessions is explained. Activities of State-owned corporations in giving concessions and other discretionary powers are recognized.
Organic Constitutional Law on Mining Concessions, 1982, Law N^0 18.097	Ministry of Mining	Implements through this law, the right to property under the Political Constitution. Explains the scope of mining concessions, and the nature of mining rights.
Decree Law N^{0}600 Foreign Investment Statute 1993	Foreign Investment Committee	It regulates foreign investments in mining projects, and the duration of the foreign investment contracts in accordance to the specific conditions of the Project.
General Bases for Environment, Law N^{0}19.300	National Commission on the Environment	Environmental Impact Assessment for mining industry and presentation of Environmental Impact Case Study/Statement by the Head of the Mining Project.
Regulations for Mining Safety, 1986	(not available in English)	

4.17 ***State Intervention in Copper Industry:*** Chilean economy's reliance on copper industry has been huge, making it susceptible to volatility with any upheaval in world copper industry. Thus the Chilean government has intervened in the sector to maintain stability in its economy.

4.18 Chile has been a leading copper producer since the middle of the nineteenth century. Until the 1950s, Chile's copper industry was dominated by US firms. Copper exports consistently accounted for more than half of total exports, while copper revenues have made an important contribution to government revenues. The government imposed high taxes on the foreign firms in order to increase its share of copper revenues.

4.19 In 1955, a Chilean-US agreement, known as the New Treatment Law, changed this taxation system. Lower taxes and other benefits for US companies were exchanged for investments in new industrial plants to increase Chilean participation in world copper output. The 'Departamento del Cobra' was set up to oversee the copper policies. The Departemento implemented a "buy national" policy to increase the integration of the copper companies into the local economy. But the promise to increase industries' demand for domestic

products failed to materialize. The left-wing coalition of Salvador Allende, elected in 1970, pursued a nationalization of the copper industry. He introduced the state-owned copper producer CODELCO which boosted the copper share in government revenues.

4.20 Chile established a Copper Stabilisation Fund (CSF) in 1985 which came into full operation in 1987 when CODELCO made its first deposits to the Central Bank. This fund was designed to smooth the impact of copper price fluctuations on the economy, particularly on the real exchange rate and on government revenues.

4.21 This fund was established as part of a structural adjustment program prescribed by the World Bank. Its goal was to stabilize the income generated by CODELCO's copper exports. To do so, CODELCO's surplus (what it earned in excess based on the pre-established reference price), in foreign currency, was to be deposited on a quarterly basis in the fund's Central Bank account. More recently, the windfalls deposited in this fund were intended to cover budget spending in case of a drop in copper prices. If the copper price dropped more than four cents below the market-based reference price, the fund was activated. If the quarterly average showed a 4–10-cent decrease, the equivalent of 50 per cent of the lost revenue is withdrawn from the fund and used to cover budget expenses that might otherwise be threatened and keep the economy afloat without having to borrow from abroad. The desired effect was to shield the economy from these price fluctuations. Likewise, when the copper price exceeded the reference price by more than four cents, 50 per cent of the difference was deposited into the fund. Any amount exceeding the 10-cent ceiling is deposited or withdrawn in full.

4.22 The analysis of the government interventionist policies in the copper sector suggest that even though the government has intervened in the sector it has not been directed at fixing or regulating the prices of copper. The government intervention has been in the nature of broad economic policies targeted at smoothening the impact of instability in the copper market on the Chilean economy (e.g. through the Copper stabilization fund).

D. Copper Pricing Policy in Chile:

4.23 As discussed above the Chilean copper industry is completely deregulated from Government control, there is very limited chance of the Government intervening in the fixation of copper prices. Copper prices in Chile are reflective of the world supply-demand scenario and reflect the LME/COMEX prices.

E. Prices of Copper in Chile vis-à-vis LME/COMEX Prices[15]:

4.24 the table below shows the comparative prices of copper in Chile and the prices at the LME and COMEX, in order to establish that the prices in Chile are reflective of the LME/COMEX prices and are not fixed by the Government.

	2001	**2002**	**2003**	**2004**	**2005**	**2006**
Chile√						
LME#	1578	1558	1780	2868	3684	6727
COMEX*	72.57	71.69	80.99	129.17	168.31	309.42

[15] Source: www.icsg.org

* Averages for the period in US cents per pound of copper
# Averages for the period in US dollars per tonne of copper
√ Not Available

F. Dual Pricing Policy in Copper:

4.25 As discussed above the copper sector in Chile is completely deregulated from government control and prices of copper are fixed in reference to the LME/COMEX prices. Thus there are no dual pricing policies in place for copper in Chile.

SECTION V: COPPER PRICING IN THE USA

A. Background:

5.1 ***Reserves:*** Of the world's reserves of copper about one-quarter of the deposits are economically recoverable now or in the near future. Of this reserve base about 16% (198 billion pounds of copper) is in the USA. The U.S. Geological Survey estimated that world copper reserves were 480 Mt and that the world copper reserve base was 940 Mt. The United States had 7% each of the world's copper reserves and reserve base. A recent assessment of U.S. copper resources indicated 550 Mt of copper in identified (260 Mt) and undiscovered resources (290 Mt).[16]

5.2 ***Production and Consumption:*** The USA had estimated mine production of 1.120 Mt in 2003 compared to 1.140 Mt in 2002. In 2005, copper recovered from refined or remelted scrap composed 30% of the total U.S. copper supply. The conversion of old scrap to alloys and refined copper fell by 5% to 182,000 t of recoverable copper. The quantity of copper recovered from new scrap (769,000 t) was essentially unchanged from that of the previous year. Copper was consumed as refined copper and as direct melt scrap at approximately 30 brass mills, 14 wire-rod mills, and 500 chemical plants, foundries, and miscellaneous operations.[17]

5.3 The total production of copper in the US has marginally decreased from 1,310 thousand metric tonnes in 2003 to 1,252 thousand metric tonnes in 2006. During the same period the total consumption of copper in the US has also marginally reduced from 2,290 thousand metric tonnes. USA meets its excess demand for copper through imports. Its imports during the same period have increased from 687 thousand metric tonnes to 1,076 thousand metric tonnes. The table below gives the data on total production, consumption and imports of copper in USA (in thousand metric tonnes)[18]:

Year	2003	2004	2005	2006
Production	1,310	1,310	1,260	1,252
Consumption	2,290	2,410	2,270	2,127
Imports	687	704	977	1,076

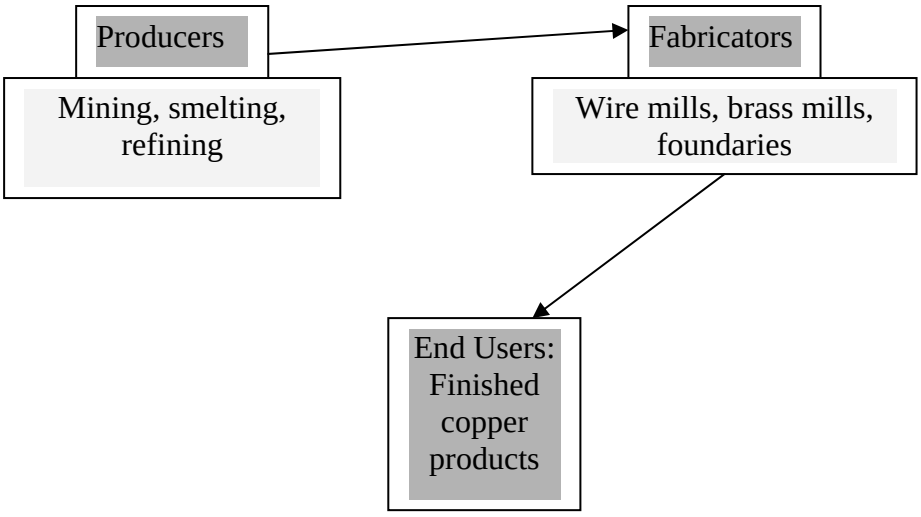
5.4 It is evident from the above discussion that USA is rich in copper resources. However the production of copper in the US over the last few years has declined to an extent and it has been relying on imports to fulfill its demand.

[16] Copper, available online: http://minerals.usgs.gov
[17] Ibid
[18] Source: World Metal Statistics, The World Bank, April 27,2007

B. Copper Sector: Industry Overview

5.5 The copper industry in the United States has two main segments: producers-mining, smelting, refining companies; and fabricators-wire mills, brass mills, foundries, powder plants. The structure of the US copper and copper alloy industry has undergone dramatic changes over the last ten or twenty years. In 1966, for example, the United States was by far the largest producer of newly mined copper, as well as the largest consumer. In addition, US companies accounted for most of the output of the copper mines in South America, chiefly Chile and Peru, thus representing effective US control of about 45% of free world production.[19]

5.6 Rio Tinto and Phelps Dodge and BHP are the major producers of copper in USA. However BHP has drastically reduced its presence in the USA copper scene, placing all three (Pinto, Robinson and San Manuel) of its copper operations on care and maintenance. Phelps Dodge is the USA's largest copper and molybdenum producer. It has operations throughout the USA, mainly in Arizona and New Mexico. Through its wholly owned subsidiary, Kennecott Utah Copper, Rio Tinto is the second largest copper producer in USA.[20] The diagram below shows the structure of the copper industry in the USA:



5.7 The copper industry in the USA comprises of a large number of players (small and big) engaged in both production and fabrication activities. The industry remains de-regulated from government control and enlists free participation.

C. Copper Industry: Regulatory Framework

[19] Copper, available online: http://minerals.usgs.gov

[20] Overview: United States: Copper Mining, available online: http://www.mbendi.co.za/indy/ming/cppr/am/us/p0005.htm

5.8 The copper industry is broadly regulated under the mining and mineral sector laws of the US. The mining and mineral sector in the USA is regulated under the following laws and regulations.

5.9 **General Mining Act 1872:** This law governs the location of metallic minerals such as gold, silver tin and copper.

5.10 **Minerals Materials Act 1947:** This Act deals with the sale of mineral materials and is regulation by the Bureau of Land Management (BLM). Separating naturally occurring mineral materials from the earth is neither easy nor inexpensive. The sheer weight of materials like stone makes their transportation costs high. Therefore, adequate local supplies of these basic resources are vital to the economic life of every community. It is the BLM's policy to make these materials available to the public and local governmental agencies whenever possible and wherever it is environmentally acceptable. The BLM issues about 2,000 permits and sales contracts annually, with a total value exceeding $5 million.

5.11 **Multiple Minerals Act, 1954** It deals with the multiple use of land for both mining as well as lease operations and the conflicts that could arise in such connection. Firstly, there is a reservation to the US for the exploration and exploitation of minerals and confers it with right to perform any functions in furtherance thereto. The Act envisages that, where the same lands are being utilized for mining operations and Leasing Act operations, each of such operations shall be conducted, so far as reasonably practicable, in a manner compatible with such multiple use.

Acts/Regulations/Legal Instruments	Administering Authority	Coverage
General Mining Act 1872, 30 U.S.C. §§ 22-42	Bureau of Mines	The original mining law which is still in operation in relation to all metallic substances including copper. Regulates the location of mines, and
Mineral Materials Act 1947	Bureau of Land Management, US Department of the Interior	Authorizes the BLM to sell mineral materials at fair market value and to grant free use permits for mineral materials to Government agencies. It also allows the BLM to issue free use permits for a limited amount of material to nonprofit organizations.
Multiple Mineral Use Act 1954	Secretary of Interior or office designated by the Secretary	Reserves the right to the minerals, its exploration and exploitation to the government of the US. Determines the scheme of multiple use in case of mining operations as well as Leasing Act mineral operations performed simultaneously.

D. Government Intervention:

5.12 Even though the mining industry in general and copper industry in particular remains completely de-regulated in the USA, there have been instances of government intervention in the sector. Such interventions in economic policies or directly in copper markets have had significant effects on copper prices. The U.S. Government has taken action during periods of

war and national emergency to control prices and levy tariffs, to impose export quotas, to provide price supports, lend monies for expansion and exploration, to guarantee production purchases, and to buy and sell for the national stockpile.

5.13 Most of these strategies, including the use of price controls were applied most recently during the Vietnam War (1971-74). Beginning in the middle 1960's with the nationalization of copper mines in Chile, the Democratic Republic of the Congo (formerly Zaire) and Zambia, the world's private copper-mining industry (principally American) lost a significant share of its net equity and influence in copper and its ability to modulate production at times of surplus.

5.14 In 1978 and 1983, which were periods of depressed copper prices, the U.S. industry unsuccessfully filed suit with the International Trade Commission to restrict imports of "lowpriced" copper. Currency devaluations by copper-exporting counties also served to lower their costs to and maintain production levels. In 1967, the Inter-governmental CIPEC was formed. Its attempt to intervene in the depressed copper market in 1975 by limiting production of member countries to 90% of normal production and by reducing CIPEC-country copper exports by 15% was not fully observed and was unsuccessful in stimulating a price rise (Mikesell, 1979, p. 187-215)[21].

5.15 Although the price of copper has been influenced by business cycles, government policy and technological changes, production costs and the balance between supply and demand have ultimately been the principal determinants.[22] The government intervention in the sector in the USA have been only in times of certain exigencies such as war or the 1978-1983 period of depressed copper prices.

E. Copper Pricing Policy in the USA

5.16 The copper industry in the USA is completely de-regulated.(barring the limited intervention as discussed above). The government's role is limited to the grant of mineral concessions and establishing general guidelines for the mining and exploitation of mineral resources. The government does not intervene in the price determination of copper. The prices of copper are reflective of the supply and demand situation and are fixed in reference to the LME/COMEX prices.

F. Prices of Copper in USA vis-à-vis the LME/COMEX Prices:

5.17 the table below shows the comparative prices of copper in the USA and the prices at the LME and COMEX to establish that the prices of copper in the USA with reference to the general supply and demand situation and reflect the LME/COMEX prices.

	2001	**2002**	**2003**	**2004**	**2005**	**2006**
USA√						
LME#	1578	1558	1780	2868	3684	6727
COMEX*	72.57	71.69	80.99	129.17	168.31	309.42

* Averages for the period in US cents per pound of copper

[21] Daniel Edelstein, Prices of Copper, Available online: http://minerals.usgs.gov
[22] Ibid

Averages for the period in US dollars per tonne of copper
√ Not Available

G. Dual Pricing Policy in Copper in USA:

5.18 As discussed above the copper sector in the USA is completely deregulated from Government control and the prices are not fixed by the government. Thus there does not exist any dual pricing in copper in the USA.

5.19 As far as applicability of the laws and regulation to other sectors is concerned, the general mining laws are applicable to all the minerals.

SECTION VI: DUAL PRICING IN COPPER: CONCLUSION

6.1 As discussed above the prices of copper are not fixed by the government in any of the three countries that we have studied.

A. India:

6.2 Government of India does not regulate and fix the prices of copper in India. The prices of copper in India are determined in reference with the LME prices. Thus there is no existing dual pricing policy with regard to copper in India. However to the limited extent that HCL (a government owned entity) has the captive mining rights over all the copper mines in India, there is a possibility that it gets its copper ore for less than adequate remuneration. (Nonetheless the industry structure and broad pricing policy does not seem to support this assumption)

B. Chile:

6.3 The copper sector in Chile is completely deregulated from government control and prices of copper are fixed in reference to the LME/COMEX prices. Thus there are no dual pricing policies in place for copper in Chile.

C. USA:

6.4 The copper sector in the USA is completely deregulated from Government control and the prices are not fixed by the government. Thus there does not exist any dual pricing in copper in the USA.

6.5 The table below summarizes the findings of the study under this chapter:

Country	Price Determination	Whether Dual Pricing	Whether Copper provided at LTAR	Whether Policy applicable to other sectors	Whether any export ban
India	Market determined	No	No	General policy & law related to mining sector is applicable to all metals and minerals.	No
Chile	Market determined.	No.	No	The general policy & law related to mining sector is applicable to all metals and	No

				minerals.	
USA	Market determined	No	No	The general mining law is applicable to all metals and minerals.	No

Chapter - 6
Subsidies Disciplines in Natural Resources Pricing: Rock Phosphate and Diammonium Phosphate (DAP)

Section I- Background

A. Introduction

1.1 Diammonium Phosphate (DAP) is the major solid phosphate fertilizer. It is one of a series of water-soluble ammonium phosphate salts. It can be produced when ammonia reacts with phosphoric acid. The chemical formula for DAP is $(NH_4)_2HPO_4$. DAP is a mixed fertilizer and its product specification is 18% Nitrogen (of which min.15.5% is Ammonical Nitrogen and max.2.5% in form of Urea), 46% Phosphorous (P_2O_5) and 0% Potassium (K_2O) and it is expressed as 18-46-0[1].

1.2 Diammonium phosphate (DAP) is used as a fertilizer and a fire retardant. Its excellent handling properties and its N-P-K composition of 18-46-0 make it well suited for large and small scale farms. DAP is sometimes used as a yeast nutrient for brewing mead, and is an additive in some brands of cigarettes.

1.3 When DAP is applied as plant food, it temporarily increases the soil pH but over a long term the treated ground becomes more acidic than before upon nitrification of the ammonium. It is incompatible with alkaline chemicals because its ammonium ion is more likely to convert to ammonia in a high-pH environment.

1.3.1 Publicly available sources of data and information do not provide information about the pricing policies that are followed for rock phosphate in Morocco and the US. As regards India, the country does not have potential rock phosphate reserve, and it is therefore completely dependent on import of either rock phosphate or phosphoric acid or di- ammonium phosphate (DAP).

B. DAP Pricing:

1.4 The world market for DAP is disjointed for different regions and there does not exist any common world market price for DAP. The extent of opening up of the market for DAP and government regulation or support given to the producers of DAP vary considerably for different countries thus prices of DAP also vary considerably for different countries.

1.5 It has been observed that the cost of raw materials and the operating rate have typically been key indicators of DAP prices. The operating rate has historically been the most important factor, however this is changing. With the given operating rates of DAP, prices of DAP is likely to be driven by fluctuations in input costs, such as sulfur and ammonia. The market experienced this in 2003 as DAP prices rose in response to price increases of these raw materials[2].

1.6 Given the cost of raw materials and operating rate, government intervention in any form i.e., directly specifying the sale price of DAP, controlling the distribution of DAP or

[1] Information on DAP is available online: http://en.wikipedia.org/wiki/Diammonium_phosphate, http://mmtclimited.org/diammonium_phosphate.html.
[2] http://www.potashcorp.com/investor relations/ industry overview/2004/phosphate/page 13.zsp

fiscal concession in the form of tax concession or subsidy may distort price of DAP. In order to understand the government intervention in this sector and to come to the conclusion whether there exist any dual pricing policy or not we should go by understanding the industry structure first and then by analyzing government policies undertaken in this sector.

Section II: Overview of DAP Sector: World

2.1 ***Production:*** USA is the largest producer of DAP in the world. In the year 2003, world production of DAP was 25.2 million tones and USA alone accounted for 40% of that total DAP production. In the same year India produced around 4.5 million tones and China produced 3.5 million tones of DAP. In 2003 China brought new excess capacity on stream leading to increasing Asia's excess capacity for DAP production and it is expected that in the coming years the growth in excess capacity for the production of DAP is going to surpass the growth in demand for DAP3.

2.2**.** ***Consumption:*** Starting from less than 15 million tones world consumption of DAP have exceeded 25 million tones by the end of the year 2003 . DAP consumption generally experiences a higher growth rate from total phosphate fertilizer consumption as farmers switch from low to high analysis phosphate fertilizers.

2.3 ***Trade***: Total trade in DAP has undergone several fluctuations over time. Trade for DAP peaked in 1995 when trade for DAP reached almost 65% of total consumption but after that it started declining and in the year 2003 it came down to nearly 45% percent. New capacity startups in this field have displaced trade and reduced DAP trade. China's DAP imports in 2003 were down 45% from 1999, Australia's were cut by 55% and India's by close to 80%[4].

[3]http://www.potashcorp.com/investor relations/ industry overview/2004/phosphate/page 11.zsp
[4] http://www.potashcorp.com/investor relations/ industry overview/2004/phosphate/page 5.zsp

Section III: DAP Pricing in India

A. Background

3.1 ***Production:*** Production of DAP has experienced a steady rise over time in India. Starting from 28 lakh MT in1991-92 the production figure of DAP reached 50 lakh MT in just one decade5. But over the last 3-4 years production of DAP could not maintain the same growth. The estimated production of DAP over the period April 2002-March 2003 was 52.4 lakh MT but over April 2003-March 2004 production declined by nearly 10 percent.

Production of DAP in India over 2001 to 2006

(000MT)

Period	April 2006.-July 2006.	April 2005.-March 2006	April 2004.-March 2005	April 2003.-March 2004	April 2002.-March 2003	April 2001.-March 2002
DAP	1376.4	4627.8	5184.5	4731.8	5241	5095.2

Source: Department of Fertilizers, GoI[6]

3.2. DAP plant of Oswal Chemical & Fertilizers Ltd. (OCFL), Paradeep was under unscheduled shutdown during this time. This was the primary reason behind the huge decline of production of DAP in 2004.

3.3 ***Consumption :*** Consumption of DAP has increased considerably over time in India. In 1996-97 the estimated consumption of DAP was 36 lakh MT and in 2001-02 consumption of DAP exceeded 61 lakh MT[7]. According to the data provided by the Department of Fertilizer, GoI, in 2000 there were 64 large size fertilizer units in the country, manufacturing a wide range of nitrogenous and phosphatic/complex fertilizers. Of these 18 units produced DAP and complex fertilizers. At present there are 56 large size fertilizer units in the country and of these 20 units produce DAP and complex fertilizers[8]. In December 1999, the installed capacity of DAP in India was 36 lakh MT. In terms of installed capacity of different units for production of DAP in December 1999, PPL-Paradeep (a public sector unit) was the largest unit for DAP production. In 1999 it's installed capacity for DAP production was 7 lakh MT. Though PPL-Paradeep, a public sector unit was the largest unit in terms of DAP production the number of units producing DAP in India is max in private sector compared to public and cooperative sector units producing DAP.

Consumption of DAP in India over 1996-1999

(000MT)

[5] http://fert.nic.in/production/export_pw_dap.asp
[6] http://fert.nic.in/production/prod-summary.pdf
[7] http://fert.nic.in/production/export_pw_dap.asp
[8] Annual Report 2006-2007, Government of India, Ministry of Chemical and Fertilizers, Department of Fertilizers, http://fert.nic.in/annualreport/annual-report-0607-english.pdf.

Products / Nutrients	1996-97			1997-98			1998-99		
	Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Total
DAP	1542.67	2081.31	3623.98	2842.73	2529.46	5372.1	2674.78	3153.48	5828.26

Source: Department of Fertilizers, GoI[9]

B. ***Industry Structure:***

Plant-wise Installed Capacity of DAP
As on 1st December, 1999

Name of the Plant	Installed Capacity (000MT)
Public Sector	
Cochin-II	20.0
PPL : Parade	720.0
Cooperative Sector	
Kandla	472.0
Private Sector	
GSFC:Baroda	108.0
ZAC: Goa	300.0
SPIC : Tuticorin	415.0
MCF: Mangalore	138.0
HLL : Haldia	675.0
GSFC : Sikka	326.0
GFC : Kakinada	472.5

Source: Depart of Fertilizers, GoI[10]

3.4 Thus in India DAP is produced both in public sector units & cooperative sector units and also in private sector units. The private sector units have the total maximum installed capacity to produce DAP in the aggregate.

C. Regulatory Framework applicable to DAP

3.5 Application of chemical fertilizers was a very important factor behind the green revolution in the sixties. In India where most of the farmers are marginal farmers with limited capacity to invest in agriculture, the Government of India tried to make fertilizers available to the farmers at affordable prices. With the purpose of making fertilizers affordable to the farmers, to ensure reasonable return on investment and to facilitate the growth of fertilizer industry Government started guiding production and use of fertilizers in the economy. The main objective of controlling production and consumption of fertilizers

[9] http://fert.nic.in/consumption/allindia.asp
[10] http://fert.nic.in/production/installed_capacity_of_fertilizer_plans.asp

was to protect farmers from the rising trend in fertilizer prices and to ensure that fertilizer consumption should not suffer as it is a necessary input for the development of agricultural sector in the country.

3.6 The policies underlying the control of production and use of fertilizers have gone through several adjustments over time. The main policy instrument to control production and consumption of fertilizers was introduced in 1977, which is the Retention Price cum Subsidy Scheme (RPS). When the scheme was first introduced by the Government of India (with effect from 1.11.1977) it covered only the indigenous nitrogenous fertilizer units but later, phosphatic and complex fertilizers were also brought under the net. At present, the scheme has been restricted to urea only. According to the scheme retention prices (based on cost of production) and sale prices are fixed in respect of controlled fertilizers and the difference between them minus the distribution margin is paid as subsidy to the manufacturing units. The Government has adopted industry as a medium to pass the concession to the farmers. A freight subsidy is also paid to the manufacturing units to cover the cost of transportation from the production points to the consumption points. Similarly for imported fertilizers the difference between the cost of import and the statutorily fixed consumer price is borne by the Government as subsidy.

3.7 To check the rising bill of expenditure on subsidies, the Government undertook a major step in 1992. The price, distribution and movement of Phosphatic and Potassic (P &K) fertilizers which were under the Retention Price cum Subsidy Scheme (RPS) from November 1977 were decontrolled. The Government in August 1992, decontrolled Phosphatic and Potassic (P &K) fertilizers, and the subsidy were completely withdrawn following the recommendations of the Joint Parliamentary Committee on Fertilizer Pricing.

3.8 After decontrol the prices of P&K fertilizers increased substantially and the consumption of these fertilizers came down sharply. This led to distortion of balanced fertilization as the proportion of P&K fertilizers declined considerably in total use of fertilizers. The Government apprehending the sharp drop of consumption of P&K fertilizers and to supply the decontrolled fertilizers at affordable price introduced a Scheme of Concession on sale of decontrolled P&K fertilizers in 1992-93 and announced concession on DAP and MOP.

3.9 The Scheme of Concession on sale of decontrolled P&K fertilizers has increased and widened the scale and coverage of special concession with time to give impetus to the stagnant demand for decontrolled fertilizers. In August 1992, the Government announced an ad-hoc concession (subsidy) of Rs.1000 per MT on DAP. The State/UT Governments disbursed the payment of concession up to 1993-94 from grants-in-aid received from the Central Government for this purpose. The impact of these rates of concession on increased prices of fertilizers was, however, nullified gradually by the increase in prices of inputs as well as the dollar-rupee parity. In order to improve consumption of phosphatic and potassic fertilizers for improving nutrient balance, Government enhanced the rate of concession on indigenous DAP from Rs.1000 per MT to Rs.3000 per MT and fixed a concession of Rs.1500 per MT for imported DAP in July 1996. To keep the supply price of DAP low the concession on DAP was increased to Rs.3750 per MT for indigenous DAP in 1997-98. At the same time under the Concession Scheme freight support for transportation of indigenous and imported DAP to hilly and difficult/remote areas was introduced from 1.4.97, intially for Jammu & Kashmir and North East States. From Rabi 1998-99, it has been extended to State of Himachal Pradesh, hilly areas of West Bengal and Uttaranchal.

3.10 The Government took further steps in this regard and the pricing of DAP was taken over by the Central Government (from 1.4.1997) and uniform maximum retail price (MRP) was fixed for the whole country. The difference between the cost of sales (industry level average cost of production is taken into account) and the MRP forms the concession. According to the scheme, in order to avail of concession the producers and importers are required to sell the fertilizer at the MRP set by the Government. In April 1998 the Government appointed the Tariff Commission to undertake a cost-price study to recommend the concession rates to be paid to the manufacturers and the importers of DAP. In May 1999 the Government constituted an Inter-Ministerial Group for determining the concession rates. The concession rate for DAP was based on the cost price study of DAP (indigenous and imported) conducted by the Tariff Commission in 1998 along with the modifications proposed by an Inter Ministerial Group (IMG).

3.11 The concession rates for DAP (indigenous and imported) are arrived at by subtracting the cost of sales from the Maximum Retail Prices (MRPs) indicated under the Concession Scheme. For indigenous DAP, the cost of sales is the sum of the normative industry price (including cost of raw materials, conversion cost and return) and the selling and distribution cost; for imported DAP the industry cost of sales includes average C&F cost of imported material, customs duties, selling and distribution cost and reasonable return. The policy of the Government is to maintain a reasonable differential in the rates of concession in favor of indigenous DAP vis-a-vis imported DAP and as the domestic industry faces certain disadvantages in the availability of raw materials used in the manufacture of DAP in the country. The payments made under the scheme include 'on-account payment' and 'balance payment'. Under the concession scheme, base rates of concession are announced annually for making on-account payment whereas the final rates of concession are announced on quarterly basis. Department of Fertilizer is also entrusted with the responsibility of maintaining a buffer stock of DAP to meet the emergent requirement of this fertilizer.

3.12 From 1.10.2000 the responsibility for the administration of the scheme was transferred from the Department of Agriculture & Cooperation to the Department of Fertilizers. Based on the recommendations of the Tariff Commission Government has implemented a revised methodology of working out concession rates for indigenous and imported DAP w.e.f. 1.4.2003. Under this revised scheme for DAP, separate concessions are given for (1) plants using imported rock phosphate and imported sulphur for manufacturing phosphoric acid and subsequently converting into DAP and (2) plants using imported phosphoric acid for manufacturing DAP. Methodology to work out the concession rate for DAP here is the cost plus approach. The department takes into consideration the cost of purchases by the manufacturers for the various fertilizer inputs and accordingly announces the final concession rates.

3.13 In 2004-05 Cabinet Committee on Economic Affairs directed Department of Fertilizers to evolve a methodology for working out concession rates for DAP based on the international prices of DAP as a benchmark. Accordingly, Department of Fertilizers constituted an Expert Group under the Chairmanship of Prof. Abhijit Sen (member of Planning Commission) to examine the issues related to the pricing of P&K fertilizers. The Expert Group has suggested a methodology for working out concession rates for indigenous DAP based on prices of imported DAP. The report is under examination of the Department of Fertilizers.

3.14 As per the Industrial Licensing Policy of July 1991, license for setting up of new fertilizer unit is not need any more[11].

Year-Wise Rates of Concession under the Concession Scheme

Rates Of Concession from 1992-93 to 1996-97

(Figures in Rs./MT)

Fertilizers	1992-93	1993-94	Up to 5.7.96	6.7.96 to 31.3.97
DAP(Indigenous)	1000	1000	1000	3000
DAP (Imported)	1000	Nil	Nil	1500

(Source: Department of Fertilizers, website, GoI)

Rates of Concession in 1997-98

(Figures in Rs./MT)

Fertilizers	Kharif'97	Rabi'97-98
DAP(Indigenous)	3750	3500
DAP (Imported)	2250	2000

(Source: Department of Fertilizers, website, GoI)

Rates of Concession in 1998-99

(Figures in Rs./MT)

Fertilizers	Kharif'98	Rabi'98-99	
		Ist Half (1.10.98 - 31.12.98)	IInd Half (1.1.99 - 31.3.99)
DAP(Indigenous)	4400	4285	4000
DAP (Imported)	3400	3400	3200

(Source: Department of Fertilizers, website, GoI)

On Account and Final Rates of Concession for 1999-2000

(Figures in Rs./MT)

	`On-Account'		Final Rates of Concession				
	Upto 28.2.2k	From 29.2.2k to 31.3.2k	Ist Quarter 1.4.99-30.6.99	IInd Quarter 1.7.99-30.9.99	IIIrd Quarter 1.10.99-31.12.99	IVth Quarter	
						1.1.2k-28.2.2k	29.2.2k-31.3.2k
Indigenous DAP	4500	3900	4150	4250	4300	4550	3900
Imported DAP	3050	900	3050	3200	3200	3250	1050

(Source: Department of Fertilizers, website, GoI)

On Account and Final Rates of Concession for 2000-2001

[11] Chandra S. (2004); 'WTO Consistency of Indian Fertilizers Policy' World Trade Institute, Switzerland, http://wti.nccrtrade.org/images/stories/MILE/MILE%20Theses/WTO%20Consistency%20of%20Indian%20Fertilizers%20policy.pdf

(amount in Rs. per MT)

Fertilizer	`On-Account'	Final Rates of Concession			
		1st Quarter 1.4.2000-30.6.2000	2nd Quarter 1.7.2000-30.9.2000	3rd Quarter 1.10.2000-31.12.2000	4th Quarter 1.1.2001-31.3.2001
Indigenous DAP	2800	4450	3700	3900	4100
Imported DAP	950*	1050	1350	1550	2550

(Source: Department of Fertilizers, website, GoI)
*The on account rate of concession on imported DAP for making 80% on account payment w.e.f. 1.1.2001 has been revised to Rs.1850/-.

On Account and Final Rates of Concession for 2001-2002

(amount in Rs. per MT)

Product	Base rate (upto 27.2.02)	Base rate (from 28.2.02)	Ist quarter	IInd Quarter	IIIrd Quarter	Ivth Quarter (1.1.02 - 27.2.02)	Ivth Quarter (28.2.02 - 31.3.02)
Indigenous DAP	3700*	2950	4100	3600	3400	3450	3000
Imported DAP	1550#	900	1650	1700	1350	1750	1250

(Source: Department of Fertilizers, website, GoI)
Rs 3600 per MT w.e.f 1.10.2001 and Rs 3400 per MT from 1.1.2002 to 27.2.2002
Rs 1350 per MT from 1.1.2001 to 27.2.2002
The base rate for making on-account payment for the sales of DAP during the years 2004-05 and 2006-07
(In Rs./MT)

DAP	Base rate of concession w.e.f. 1.7.2004	Base rate of concession w.e.f. 1.4.2006	Base rate of concession w.e.f. 1.4.2007
DAP (indigenous) – Group I	3843	6173	9398
DAP (indigenous) – Group II	3843	355	398
DAP (Imported)	43	5206	9398

(Source: Annual Report 2004-05, Annual Report 2006-07, Ministry of Chemical and Fertilizers, GoI)

D. DAP pricing in India:

3.15 ***Pricing Mechanism***: As discussed in the above section, fertilizer industry is very much regulated by the Government of India. Though since 1992 the Government has decontrolled the movement of Phosphatic and Potassic (P&K) fertilizers, the Government started providing concession on DAP to keep the supply price low. From 1997 the pricing of DAP was taken over by the Central Government and uniform maximum retail price (MRP) are fixed for the whole country. In the year 1997 MRP of DAP was fixed at Rs.8300 per MT by an Empowered Committee. The MRP of DAP was maintained at this level till February 2000 and after that the MRP for DAP was increased by 7%. The MRP of DAP was further increased by 5% from 2002.

Maximum Retail Prices (MRPs)

Product	MRPs from 1.4.97 to 28.2.00	MRPs from 29.2.00	MRPs from 28.2.02
Ind. DAP	8300	8900	9350
Imp. DAP	8300	8900	9350

(Source: Department of Fertilizer, website, GoI)

3.16 ***Dual Pricing Policy in DAP in India:*** As discussed above the central government declares uniform MRP for DAP (produced by any plant) for the whole country. As concession scheme is associated with it, any producer or importer who wants to get the benefit of the scheme are required to sell the fertilizer at the MRP set by the Government. Thus, there does not exist any differential pricing in DAP in India for DAP produced by different producers, DAP importers and also DAP sold to different consumers. But the concession scheme favors the domestic producers DAP compared to the importers.

Section IV: DAP pricing in Jordan

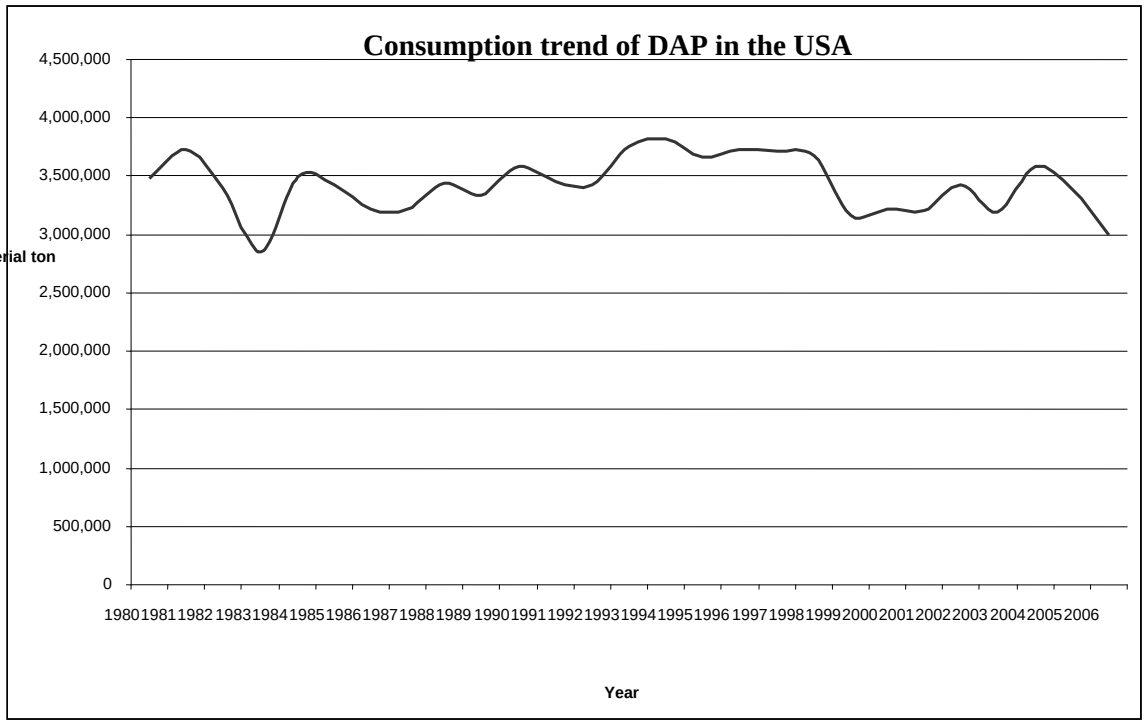
4.1 Policies for determining the price of DAP was not available for Jordan. Jordanian Phosphate Mines Company (JPMC) is the sole authority responsible for the exploration, production, transportation and sales of Jordanian phosphate. Eighty per cent of the shares of Jordanian phosphate Mines Company are held by various agencies of the government of Jordan, the largest being held by Jordanian investment Agency.

Section V: DAP pricing in USA

A. Background

5.1. ***Production:*** The US is the biggest DAP player in the world. The US produces more DAP than any other country in the world. In 2003, it alone contributed 40% of world production (25.2 million tons)[12]. In US, DAP is produced mostly near the harbors of Gulf coast and in North Carolina. Of the total domestically produced DAP a larger share is used for export rather than domestic consumption.

5.2 ***Consumption:*** From 1960 the use of fertilizer form has shifted from mixed fertilizers (containing two or more nutrients) to direct application materials (containing primarily one nutrient). At the same time the use of DAP, a mixed fertilizer containing 18 percent nitrogen and 46 percent phosphate, has increased dramatically in US since the 1960's, reflecting its low production cost, high phosphate analysis, high water solubility, and good handling and storage characteristics[13].



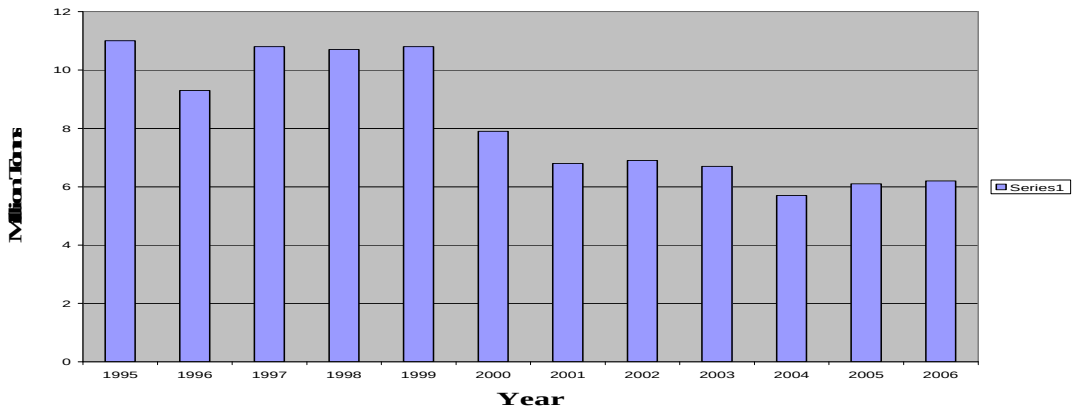
Source: Data from http://www.ers.usda.gov/Data/FertilizerUse/Tables/Table5.xls

5.3 ***Trade:*** DAP accounts for a major share of total trade of fertilizers in the US. Compared to exports of DAP imports constitute a minimal share in the US fertilizer trade. The US exports DAP in almost every corner of the world. It is the largest supplier to India, China and Australia. After 1999, due to the increase in internal production capacity these countries have reduced imports of DAP from US. As a result, US exports declined sharply since 2000. This is clearly visible from the following diagram.

U.S. Exports of DAP

(Quantity in Million Tonnes)

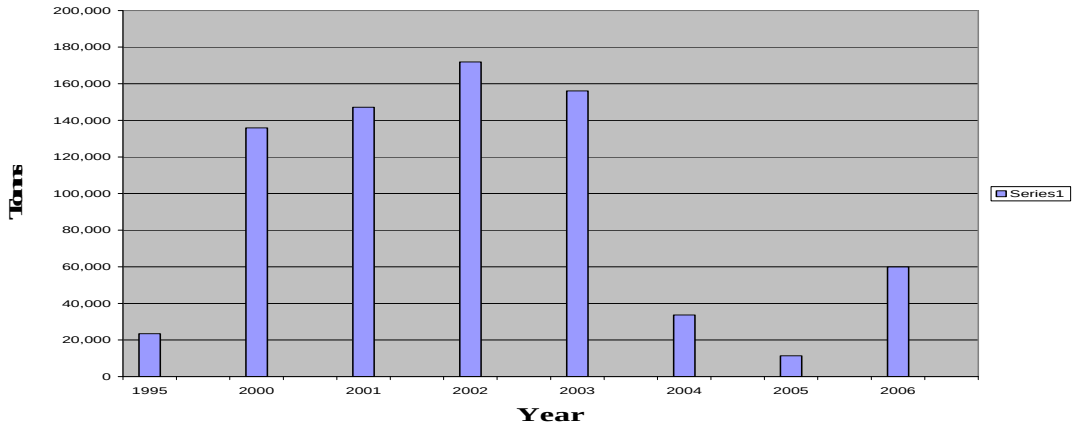
[12] http://www.potashcorp.com/investor relations/ industry overview/2004/phosphate/page 7.zsp
[13] http://www.ers.usda.gov/Briefing/AgChemicals/nutrientmangement.html



Source: http://www.ers.usda.gov/data/FertilizerTrade/mainpage

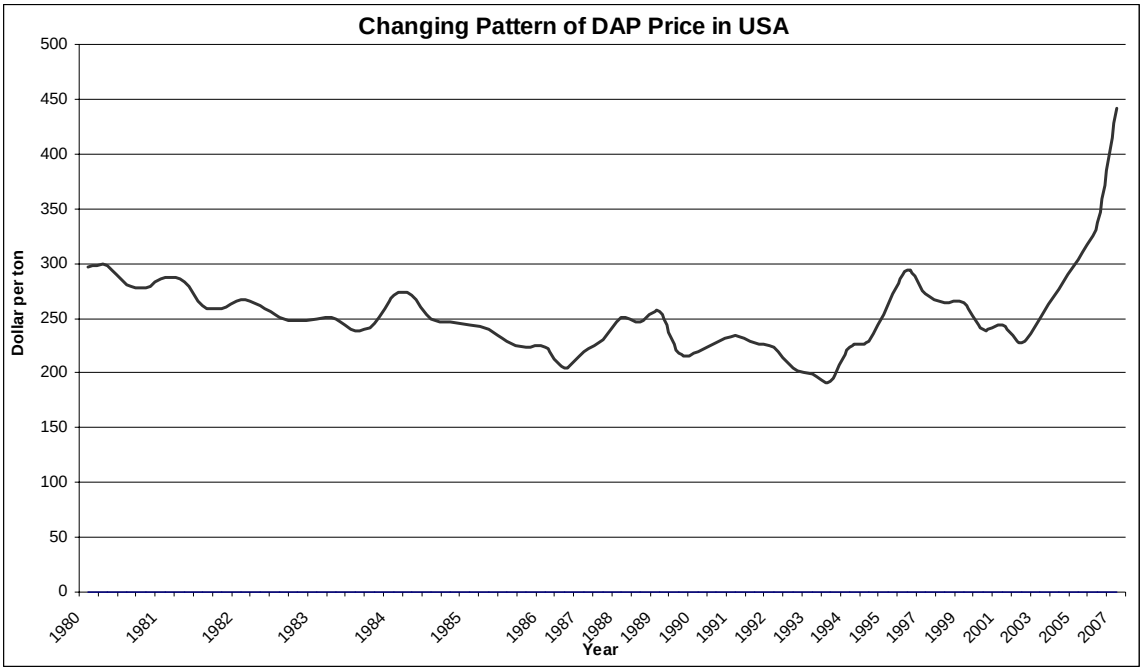
U.S. Imports of DAP

(Quantity in Short Tons)



Source: http://www.ers.usda.gov/data/FertilizerTrade/mainpage

5.4 ***Price trend of DAP in US:*** Like production nominal prices of DAP have exhibited ups and downs with time. Since 1990 diammonium phosphate (DAP) a major source of phosphate, has demonstrated much more price variability—peaking in 1995, declining steadily through 2002, then rising again in 2003 and 2004.



Source: data from http://www.ers.usda.gov/Data/FertilizerUse/Tables/Table7.xls

5.5 One important factor behind the volatility of DAP prices in US is the instability of input prices and their availability. Ammonia is used as a raw material to produce diammonium phosphate (DAP). Natural gas is the primary raw material used to produce ammonia. Natural gas accounts for 72-85 percent of the ammonia production cost[14], depending on the size of the ammonia plant and the price of ammonia. Thus any increase in price of natural gas leads to increase in price of ammonia and which in turn increases the price of DAP. After the deregulation of the natural gas market in the 1980s, monthly average prices of natural gas were relatively stable over the period 1985-99 and in the same period, monthly average ammonia prices were relatively stable, except in 1994-97. From 2000 to 2005, however, natural gas prices became volatile and trended upward.

5.6 Since 2000, the volatile and upward trend in U.S. natural gas prices has led to a significant change in the supply of ammonia in the United States. Its impact on the prices of DAP is also visible as from 2003 prices of DAP have experienced a sharp increase and it reached 442 dollar per ton in 2007. It also led to a reduction of consumption of DAP from 2000 compared to the previous decade.

5.7 Recently fertilizer use efficiency is receiving increased attention because of growing pressure for agriculture to minimize negative environmental impacts. The Natural Resources Conservation Service (NRCS) in the U.S. is in the process of developing an incentive program to subsidize farmer practices that improve nutrient use efficiency.

[14] Huang W. (1997); 'Impact of Rising Natural Gas Prices on U.S. Ammonia Supply', A report from the Economic Research services, USDA, www.ers.usda.gov

Fertilizer purchases have historically represented about 6 percent of total farm production costs. Throughout the 1960's, domestic prices of most fertilizer products declined as growth in industry capacity exceeded growth in demand. Economic Stabilization Program regulations froze domestic fertilizer prices at the producer level in 1971 (USDA, 1971-81), but prices were decontrolled in 1973. Farm fertilizer prices fell during 1983 and again in 1985/86 as a record level of crop acreage was diverted first by the payment-in-kind program (PIK) and later by the ARP and CRP programs and excess supplies (Taylor, 1994). Prices rose steadily from 1986 to 1989. Prices of most fertilizer materials have fallen from 1989 levels, but remained relatively stable through 1992. April 1994 prices increased over 1993 prices due to increased planted acres. However, real fertilizer prices (fertilizer price index adjusted by the implicit price deflator in the United States) have declined from an index of 110 in 1964 to 63 in 1992.

World fertilizer supplies have been in excess since the economic restructuring began in Eastern Europe and the former Soviet Union. World demand should rebound as affected countries improve their economic situations.

Source: www.ers.usda.gov/publications/arei/ah705/AREI3-1.PDF

Chapter - 7
Subsidies Disciplines in Natural Resources Pricing: Iron ore

SECTION I: BACKGROUND

A. Introduction

1.1. Five per cent of the earth's crust contains iron. Geological surveys have surmised that though deposits of iron ore exist in more than 58 countries, 70 per cent of the world's huge iron ore resources are distributed in about eight large pockets, some of which are in the northern hemisphere and some in the southern hemisphere. The northern hemisphere comprising China, Russia–Kazakhstan–Ukraine, Sweden, and USA–Canada have a geological setting which is different from the southern Gondwanaland setting, comprising Australia, India, Southern Africa, and Brazil. The main differentiating feature between the two is that much of the iron ore in the southern hemisphere is superior grade haemetite with iron (Fe) content of 62 per cent or more. With the exception of Sweden, the northern iron ore is mostly of low grade magnetite. Hence, India is among the few countries in the world with very large pockets of high grade iron ore deposits.

1.2 As per the United Nations Framework Classification (UNFC) system, resources are divided into reserves and remaining resources. Reserves are further classified as proven reserves and base reserves. For discovering resources, regional exploration is required. For converting resources into base reserves and proven reserves, detailed exploration is required. The world's resources and reserves are not static and have been growing over the years. According to the United States Geological Survey, the world's reserve base of iron ore is 370 billion tonnes and the reserves (ready for recovery) are 160 billion tonnes. The current rate of consumption being one billion tonne a year, the reserves can last for 160–370 years. Countries with steel mills can access iron ore from countries with iron ore. The steel mills of Japan and Korea, two of the main producers of steel, access their iron ore from Australia and Brazil, two of the main producers of iron ore.

Section - II: Iron Ore Pricing in India

A. Background

2.1 ***Reserves:*** Indian resources and reserves of iron ore, which have now been made compatible with the international UNFC classification, have also not been static and have been increasing over the years. The resource position as on 1 January 1980, 1 April 1990, and 1 April 2000 is shown below:

Iron Ore Resources and Production, 1980, 1990, and 2000

Grade	Resources as on 1 January 1980	Production during 1980–90	Resources as on 1 April 1990	Difference In resources between 1980 and 1990	Produc-tion during 1990–2000	Resources as on 1 April 2000*	Difference in resources between 1990 and 2000
Iron ore	11,469		12,197	+728		(a)Reserves: 6025 (b) Remaining resources: 6881** Total: 12,906**	+709
Magnetite	6095		10,590	+4495		(a)Reserves: 286 (b) Remaining resources: 10,396 Total: 10,682	+92
Total	17,564	470	22,787	+5223	656	(a)Reserves: 6311 (b) Remaining resources: 17,277** Total: 23,588**	+801

Note: * Reassessed as per UNFC; **Includes 1480 million tonnes of prospective resources
Source: Indian Bureau of Mines, Nagpur.

2.2 It can be observed from Table above that while resources as on 1 April 2000 were estimated at 23.58 billion tonnes, between 1980 and 1990 iron ore reserves rose by 5.22 billion tonnes and between 1990 and 2000 by another 0.801 billion tonnes. In other words, despite havingmined 1.12 billion tonnes of iron ore, the resources increased from 17.56 billion tonnes in 1980 to 23.58 billion tonnes in 2000. Thus, the new finds actually amounted

to 7.15 billion tonnes during the 20-year period, averaging a little over 257 million tonnes a year. The average production in India during 2000–01 to 2004–05 was around 100 million tonnes, and in 2004–05 it was 142.71 million tonnes, which implies that new discoveries have been greater than production.

2.3 The steel industry has argued that the figure of 23.58 billion tonnes should not be the basis for determining the useable reserves, and instead mineable reserves should be taken into account, as for a number of reasons all the reserves may not be accessible to mining. Particular mention is made by it of the fact that iron ore reserves occurring in dense and reserve forests, national parks, sanctuaries, and ecologically fragile areas (Western Ghats, Kudremukh, etc.) may not be available for mining. The industry has drawn attention to the problem faced in Kudremukh where mining operations had to be closed down for environmental reasons.

2.4. On the other hand, unlike Australia and Brazil, in India there have been no exploration programmes undertaken for locating new additional deposits of iron ore since the mid 1980s. The example of Australia shows that advances in the technology of exploration have led to increased reserves. The Australian resources in 1960 were established at 400 million tonnes. In 1966, the Australian mining sector opened up and vigorous exploration programmes were taken up. Between 1960 and 2004, Australia produced 3.95 billion tonnes of iron ore and yet today Australia's reserves are estimated at 40 billion tonnes. The reason is that in Australia more and more finds came up as superior technology for exploration was used. In India, GSI and MECL are the main survey and exploration agencies and the technology used by them is near obsolete. The technologies used by resource companies for reconnaissance surveys, prospecting, drilling, and geochemical analysis in laboratories have improved vastly. In this context, attention is also drawn to the fact that a number of iron ore belts are still unexplored and no formal resource assessment has been attempted since the early 1980s.

2.5. Most magnetite findings are entirely incidental and since, unlike haematite, magnetite does not occur with specified groups of rocks, not even an estimate is available. It has been argued that India's current resource estimates were based on a 50 metre (Max) Type-II series horizon. With the advent of satellite imagery, aero- magnetic data techniques, modern core-drilling methodology, a Type-I + Type-II series horizon of up to 500 metres and taking into account beneficiation potential of low grades, the resources can rise up to 40–50 billion tonnes, matching that of Australia and Brazil.

2.6 In the UNFC system, the cut-off grade for estimating haematite resources has been taken as 55 per cent Fe component and above. If the cut-off grade is reduced to say 45 per cent Fe, the iron ore resources will increase. With the modern beneficiation technology used for improving the quality of magnetite ore, it should also be possible to utilize haematite iron ore of 45 per cent Fe and above through beneficiation. Therefore, the resources would be higher than shown above.

2.7. At this point, we may also deal with the issue of magnetite vs. haematite. As mentioned above, the main distinguishing feature of magnetite ore is that the Fe content is low. Most of China's huge reserves are magnetite and the average Fe content is only 35 per cent. Yet China uses all its magnetite ore by beneficiating it to the grade required for making steel. The cost of beneficiated magnetite ore locally produced in China is not too far above the cost of imported haematite iron ore from Brazil, Australia, and India. Instead of persisting with existing technologies and depending on haematite ore, the Indian steel industry of the future is likely to recognise the vast potential for magnetite in the country and

make the necessary adjustment in the production processes. Besides, only about 20 per cent of the country's hard rock area is under forest cover and in any case, the SDF should make it possible to overcome the problem of extracting iron ore from areas under forest cover.

2.8. All 23.58 billion tonnes of resources may not turn out to be mineable, but it took into account the fact that with exploration, particularly exploration on the basis of improved techniques, which would become available in India once the suggested changes in the law and policy is carried out, the resources would increase. The resource estimates would also increase for haematite if the Fe content cut-off is lowered from 55 per cent to 45 per cent. For the present, it would be quite safe to take 23.58 billion tones as the basis for determining the adequacy of resources in the country. However, to determine the adequacy of resources the demand side also ne eds to be looked at. The demand for iron ore is a function of the demand for steel. The thumb-rule for ratio of iron ore to steel is 1.6:1.

2.9. The world produces 1 billion tonnes of steel a year, for which it needs 1.6 billion tonnes of iron ore. The world's iron ore reserves are estimated to be 370 billion tonnes. So even ignoring the aspect of new finds, the world has resources for 230 years at current levels of production. Similarly, according to the National Steel Policy document, India produced 35 million tonnes of steel, for which it needed 54 million tonnes of iron ore. At 110 million tonnes of steel as envisioned by the Ministry of Steel for 2020, India will need 176 million tonnes of iron ore every year for the local industry. At the 2004–05 rate of production of million tonnes per annum, the depletion of iron ore reserves would be about 2 billion tones until 2020, leaving a balance of 21.58 billion tonnes. If the domestic production grows and the exports also rise to 100 million tonnes by that year the level of resources would be about 21 billion tonnes in 2020. On the basis of these estimates, the annual depletion of reserves would be 276 million tonnes beyond 2020. At this rate, in 2020, India would have enough reserves for about 75 years. In this calculation, we do not take into account either the further increase in domestic steel capacity or the new finds of reserves beyond 2020.

2.10. On the basis of current assumptions of demand and supply of iron ore in the country and of the growth in both, India would have enough resources to last until the end of the twenty- first century and there is no basis for basing policy changes on the exhaustion of these resources in the near future. However, the position would need to be kept under review and adjustments made in it in light of the emerging situation from time to time.

2.11. Iron ore reserves and resources estimated on the UNFC basis as on 1.4.2005 are about 14630 million Tonnes of Haematite ore and about 10619 million Tonnes of magnetite ores. Almost the entire Magnetite resource is presently not available for extraction because of the ban imposed by the Supreme Court for reasons of environmental protection. Of the Haematite resource, only about 1 billion Tonnes are high quality reserves containing +65% Fe.

Grade-wise share of Reserves are:
(As on 1.4.2005)

Grade		**Approx % share of recoverable reserve**
High Grade	Fe + 65	18.6
Medium	Fe 62-	50.6

Grade	65	
Low Grade	Fe -62	28.4
Others		2.4

2.12 ***Production:*** Iron ore production in the country has been on the rise steadily since 2000-01. While domestic consumption exhibited significant growth, the bulk of the production increase seems to have been triggered by rising exports. Around 60 percent of the production of iron ore comes in the form of fines (including concentrates) during the course of mining operations itself. A further 5-6 per cent of the lump gets broken into fines in transit and handling. This creates a mismatch between demand and supply in the case of lumps and fines. The existing sintering and pelletisation capacity in the country is not sufficient to make full use of the fines and concentrates and therefore the bulk of it are exported.

2.13 In order to assure the availability of iron ore to domestic steel producers, India has adopted a policy of granting captive mines. The necessity was felt in the context of tight supplies and sharp volatility in prices of inputs. However, due to the existing allocation criterion based on considerations of value addition within state and other constraints, not all steel producers have got the facility of captive mines. Therefore, these plants are disadvantaged in comparison to plants with captive mines. Freight costs are also significant due to poor transport infrastructure.

2.14 The current cost advantage for steel plants with captive mines is due to the high prices of iron ore worldwide. The massive rise in demand for it, mainly from China, was largely unanticipated and the global iron ore industry was not prepared for such a rapid rise in its demand. Not only that mining capacity globally had to be raised, significant investments were to be made on infrastructure to make the iron ore move to the ports of the respective countries for export destinations. While the iron ore market is expected to remain tight at least for another 3-4 years, it is also believed that the current price levels are not sustainable in the long run and corrections will take place by the beginning of 2011. If the global iron ore prices fall, the competitive advantage for the Indian steel makers will also drop proportionately.

2.15 The iron ore advantage remains for Indian steel plants as long as there is sufficient iron ore available within the country, captive or otherwise. The steel industry has viewed that, given the steel output growth potential within the country and the mineable reserves plus remaining resources of iron ore, this will not last for more than 40 years (estimates vary from 20 to 40 years) if exports are to continue at the current or increased level and the full production potential of the industry is also to be met. The life will be shorter if the magnetite ores, not currently preferred by the Indian steel makers, are excluded. Further, the mining costs will rise incrementally in absolute terms at higher rate of exploitation taking away a part of the cost advantage that the Indian steel industry today enjoys. It is also being seen that the country's high quality reserves are limited as can be seen from **Table** below. Of the 7004.17 Million Tonnes of hematite reserves (as on 1.4.2005), only about 1304 Million Tonnes belong to 65% + (plus) Fe grade. Given the strong demand for these both from the domestic steel and DRI industries and for exports, these 65%+ reserves are expected to be depleted in less than 15 years.

IRON ORE AVAILABILITY- Haematite

As on 1.4.2005

Qty. in Million Tonnes

Grade	Reserves	Remaining Resources	Total
High Grade(Fe +65%)	1304.3	629.03	1933.33
Medium Grade(Fe 62-65%)	3544.03	3062.02	6606.05
Low Grade(Fe below 62%)	1989.75	1686.94	3676.69
Unclassified	159.23	743.67	902.90
Black Iron Ore	2.52	12.72	15.24
Others	1.62	5.05	6.67
Unclassified	1.98	0	1.98
Not-known	0.73	1486.79	1487.52
Grand Total	**7004.17**	**7626.22**	**14630.39**

IRON ORE AVAILABILITY- Magnetite

As on 1.4.2005

Qty. in Million Tonnes

Grade	Reserves	Remaining	Total
		sources	
Metallurgical	687	185.05	185.74
Coal Washery	3.33	5.0	8.33
Foundry	0.46	0.3	0.76
Others	0.97	24.16	25.13
Unclassified	52.64	060.34	112.98
Not Known	0.43	286.12	286.55
Grand-Total	58.5	0560.98	0619.48

2.16 On the question of supply of iron ore, it has also been seen that much of the iron ore reserves are in thick forest and ecologically sensitive areas. This may make their extraction difficult in the face of stringent forest and environment protection laws in the country. While alternative technologies are possible to execute mining in such areas, the initial costs of those may be very high and in the short term the steel industry may not be able to bear the burden of the same. They may, in fact, lose competitive strength given the future supply of iron ore at lower incremental costs.

2.17 The investors both domestic and foreign have shown a great deal of interest in setting up large steel capacities in the coming years. The intended capacity is around 96 million Tonnes by 2011-12 and 208 million Tonnes by 2019-20. Though only a part of intended capacity will be converted into reality, the attractiveness of India as global production centre lies in expectations of easy availability of iron ore at affordable prices in the long run.

2.18 ***Consumption:***

Consumption of iron ore by steel mills

(000 tonnes)

	2001-02	2002-03	2003-04	2004-05	2005-06
Steel					
(A) Main producers	17762	18982	20012	20015	21694
(B)Secondary producers	10202	11461	14236	18471	19966
TOTAL	**27964**	**30443**	**34248**	**38486**	**41660**
Iron Ore					
Production	**86226**	**99072**	**122838**	**145942**	**154436**
Consumption (e)					
Captive	23483	24988	26348	26261	28894
Non-Captive	14230	15948	18626	21889	23629
Total	**37713**	**40936**	**44974**	**48150**	**52523**
Exports	**41640**	**48020**	**62570**	**78145**	**89277**
Surplus	**6873**	**10116**	**15294**	**19647**	**12636**

Source: 1. Joint Plant Committee, Kolkata - for steel production
2. Indian Bureau of Mines, Nagpur – for iron ore production
3. MMTC Ltd., New Delhi – for iron ore exports

STATE-WISE PRODUCTION OF IRON ORE:
RATIO OF LUMPS, FINES AND CONCENTRATES

Quantity : '000 tonnes

		2003-04				2004-05				2005-06(p)		
	Lumps	**Fines**	**Conc.**	**Total**	**Lumps**	**Fines**	**Conc.**	**Total**	**Lumps**	**Fines**	**Conc.**	**Total**
Chhattisgarh	10707	12654		**23361**	10342	12776		**23118**	11301	13449		**24750**
	(46)	(54)		**(100)**	(45)	(55)		**(100)**	(46)	(54)		**(100)**
Goa	3891	15246	1109	**20246**	4243	17526	903	**22672**	4328	18445	971	**23744**
	(19)	(75)	(6)	**(100)**	(19)	(77)	(4)	**(100)**	(18)	(78)	(4)	**(100)**
Jharkhand	6486	8196		**14682**	7538	9181		**16719**	6675	10760		**17435**
	(44)	(56)		**(100)**	(45)	(55)		**(100)**	(38)	(62)		**(100)**
Karnataka	8902	17643	5090	**31635**	12288	21324	4350	**37962**	11332	19415	2922	**33669**
	(28)	(56)	(16)	**(100)**	(32)	(56)	(12)	**(100)**	(33)	(58)	(9)	**(100)**
Orissa	18573	12715		**31288**	22884	18866		**41750**	27777	22103		**49880**
	(59)	(41)		**(100)**	(55)	(45)		**(100)**	(56)	(44)		**(100)**
Others	401	1225		**1626**	857	2864		**3721**	1230	3728		**4958**
	(25)	((75)		**(100)**	(23)	(77)		**(100)**	(25)	(75)		**(100)**
ALL INDIA	48960	67679	6199	**122838**	58152	82537	5253	**145942**	62643	87900	3893	**154436**
TOTAL	(40)	(55)	(5)	**(100)**	(40)	(56)	(4)	**(100)**	(41)	(57)	(2)	**(100)**

B. Iron Ore Sector: Industry Structure

2.19 It can be seen that 75.45 per cent of India's 142.71 million tonnes of iron ore was produced in the non-captive private sector. Of this, the 11 large miners produced 50 million tonnes, implying that as much as 57.7 million tones came from the SME sector. Of this, 41.5 million tonnes or 72 per cent was produced in the western states of Goa and Karnataka. The entire SME mining sector is in the non-captive mining segment.

Eleven Large Non-captive Iron Ore Mines in 2004–05

Sl. No.	**Names of mine owners**
Eastern Sector (Orissa–Jharkhand):	

1.	Essel Mining and Industries Ltd.
2.	Rungta Mines Ltd.
3.	Sunderlal Mohanlal Sharda (operated by Jindal Steel & Power Ltd.)
4.	Orissa Mining Corporation
Bellary–Hospet Sector:	
5.	MSPL Ltd. (Group)
6.	V.S. Lad & Sons
7.	Mysore Minerals Ltd.
8.	Kariganur Mineral Mining Industry
Goa Sector:	
9.	Sesa Goa Ltd. (Group) operating in Chitradurga–Shimoga and Bellary-Hospet in Karnataka and Orissa (5.5 million tonnes in Goa)
10.	V.S. Dempo & Co. (P) Ltd.
11.	V.M. Salgaocar & Bro. (P) Ltd.

2.20 SME mining is not efficient in terms of any of the parameters, viz. exploration, efficiency of use, technology, infrastructure, and environment. However, the SME sector has emerged, primarily in the south-western part of India, comprising Karnataka and Goa, for the reasons outlined below.

2.21 First, the possibility of many more large integrated steel plants coming up in the south-western region is limited mainly because of inadequate availability of power and water. Movement of iron ore to the steel plants in eastern and central India is not attractive because the long haul makes the operation economically unviable. As a result, small sponge/pig iron/pellet plants in the SME sector are being established. These industries cannot be expected to invest in and operate captive mines on any significant scale but instead rely on supplies from the SME miners. Secondly, there are a large number of small deposits in the region that are too small to be mined by captive miners. If stand alone SME miners are not allowed to exploit these deposits they would remain unexploited. For these reasons captive mining cannot be prioritised in the south-western region. Jindal Steel Works (JSW) is the only major steel plant in the region and it proposes to increase its steel making capacity from 3.8 million tonnes to 7 million tonnes per annum by 2009–10. The company was earlier purchasing iron ore from the NMDC at formula based rates but is now purchasing ore at market rates. Although this has not affected its profits the company seeks a level playing field with other captive miners.

2.22 Despite the fact that SME mining is suboptimal, puts pressure on public utilities, and is not environment friendly, the SME sector represents almost 40 per cent of the current iron ore mining industry. Therefore, the SME sector comprising stand alone miners will have to be helped to overcome bottlenecks so that they become efficient miners. This can be done through a combination of regulatory and development measures. Unless stand alone miners are encouraged to produce and sell ore to local users in the market, both SME miners as well as the downstream SME operations (sponge/pig iron units) will suffer.

I. Allocation of Captive Iron Ore Mines

2.23 Captive mining of iron ore refers to the allocation of iron ore mines to steel makers so that they can extract iron ore according to the needs of the steel unit and utilise the same in steel making without the intermediation of stand alone mining companies. There are four clear interest groups in the debate on whether captive mining should receive priority in the

allocation of iron ore mines *vis-à-vis* stand alone mines, viz. the steel mill owners with captive mines, steel mill owners without captive mines, stand alone mines, and the SME sector.

2.24 The first group is comprised of steel mill owners who already have captive mines with reserves enough to meet their requirements for 10–30 years or more. The Steel Authority of India Limited (SAIL) and Tata Steel belong to this group. This group argues that iron ore bodies should be reserved for steel makers because iron ore is a limited resource and the indigenous steel industry should have the benefit of iron ore at extraction cost rather than at market prices. The 'limited resource' theory is built primarily on the argument that the proven reserves of haematite iron ore, being very limited, will not last beyond 40–50 years, and hence this ore should be conserved and allotted only to local steel mills to ensure long term supplies. Another justification given is that there is a need to balance the disadvantages faced by the steel industry in respect of freight costs, financial costs, and the cost of the other two raw materials used in steel making, viz. coking coal and energy. Coking coal has to be imported at international prices, which are currently at a high level. The cost of energy in India is much higher than the cost of energy abroad. It is argued that the higher costs in India need to be neutralised by giving direct access to steel mills to the mines so that such mills can get iron ore supplies at the cost of extraction (US$ 5–10 as compared to the peak market price of US$ 50). It is stated further that the value added by the steel mill to the economy as a whole far outweighs the price advantage obtained by it by getting the raw material at cost rather than at market price. As the steel industry is the engine that drives manufactures in some key areas such as automobile, machinery, white goods, appliances, and construction, it is necessary that the production of steel benefits from supplies of cheap iron ore and finished steel is made available in turn at international prices to manufacturers and builders. The group has drawn attention to the report of the Dang Committee set up by the Ministry of Steel in 2005 for framing guidelines on preferent ial allocation of leases for iron ore mines. The Dang Committee had made detailed recommendations concerning captive and non-captive mines, giving priority to steel producers over commercial miners. The group further argues that historically, steel production has developed in Western countries on the basis of captive mining. Steel production first started in the US and Europe on the basis of captive mines for iron ore and coal. New mines were developed in Australia, Brazil, and other countries and the process of commercial exploitation of iron ore and coal started. Looking at countries that have got iron ore and coal and a sizeable domestic market, the Committee finds that their steel producers have captive mines, for example Baosteel (China); Defasco (Canada); Severstal (Russia); Kirivorog (Ukraine); and Companhia Siderurgica Nacional (CSN) (Brazil). Companies that do not have captive mines or have small holdings that are not adequate for their production/expansion are going in for acquisition of iron ore mines in other countries.

2.25 Arcelor, until recently the second largest steel company in the world, has acquired Companhia Siderurgica de Tubarao (CST) (Brazil) and Defasco (Canada), both of which have captive iron ore mines. Mittal Steel has acquired Krivoyrog for its iron ore mines.

2.26 Thyssenkrupp (Germany) has acquired Companhia Siderurgica do Atlantico (CSA) (Brazil)Pohang Steel Company (POSCO) has now come to India in search of captive mines. Thus, in the view of this group, captive mining is a growing phenomenon.

2.27 This group adds that in India, SAIL and Tata Steel follow modern and scientific methods of mining while many non-captive miners do not follow good practices. Of the total iron ore mined in the country, only about 50 per cent is beneficiated. This is done by companies such as SAIL, Tata Steel, Kudremukh Iron Ore Company Limited (KIOCL),

National Mineral Development Corporation (NMDC), and Goan mining companies such as Sesa Goa Ltd, Chowgule and Company Limited, and Salgaocar Mining Industries. The rest 50 per cent comes mostly from stand alone / SME mining companies that neither beneficiate nor follow scientific mining practices. The work done by captive miners for preservation of environment, development of social infrastructure in mining areas, and for tribals in neighbouring areas has been recognised in international forums such as the United Nations' Global Compact.

2.28 The second interest group is that of steel mill owners who do not have captive iron ore mines or have very few of them and would like to own captive mines, as is done by the first group. At present, this group of steel makers is served by the iron ore mines of the NMDC, which sells iron ore to them at the interna tional market price, much above the cost of extraction. Owing to their capacity expansion plans, this group is unsure that NMDC will continue to service their enhanced iron ore needs, as the NMDC's expansion plans are much lower than theirs. While this group does not agree with the claim that steel making is nonviable without iron ore at extraction cost from captive mines their main ground for seeking captive mines is that a level playing field is necessary between steel makers who own captive mines and those without captive mines. The group strongly argues in favour of captive mining *per se* in the belief that iron ore resources are limited and they should be reserved for steel makers.

2.29 The third interest group is that of the stand alone miners who wish to develop iron ore mines as independent industrial units. According to them, but for a few exceptions such as Baosteel (China), Mittal (CIS), and Arcelor (through acquisitions in Luxembourg), which are partly served by captive mines, stand alone mining is the model followed all over the world and the major steel producing countries such as Korea and Japan source their iron ore from iron ore producing countries, including Australia, Brazil, and to some extent, India. This group argues that reliance on captive mining in iron ore would be detrimental to the full development and growth of the mining sector as well as the economy as a whole, as captive miners distort the market for their (miners') product by paying less than market prices for the ore extracted by them. This shrinks the size of the free market for iron ore and inhibits the growth not only of the mining industry but also of the steel industry, which develops along fundamentally unsound lines based on preferential access to iron ore at cost. They argue that this amounts to a hidden subsidy at the expense of the mining sector. It is also argued that captive miners do not normally mine efficiently and only extract the best and most easily extractable iron ore, leaving low grade ores to go waste. Stand alone miners, on the other hand, utilise all the run of mines and undertake value addition activities such as calibration, beneficiation, pelletisation, and blending, thereby making the best use of mineral resources. This group argues that iron ore resources are not limited as a number of haematite mineral belts are yet to be explored in detail and the country also has vast resources of magnetite iron ore that can be beneficiated and used, as is done in some other countries, especially in China.

2.30 Finally, it is argued that stand alone mines or resource companies invest in resource augmentation (exploration and prospecting), create their own infrastructure, and have a stake in ecology and community development. In the main, this group argues that in today's global scenario it is world resources that matter and not national resources. There are enough iron ore resources in the world for steel makers of the future as long as they are willing to pay international prices. India's downstream steel using industry will also not suffer because there is enough steel making capacity in the world and if local steel makers cannot supply at international cost then steel can be accessed from elsewhere. Thus, the group argues there is no need to give preferential access to steel makers to iron ore mines. An essential part of this

argument is that domestic steel is being sold at international prices to Indian downstream steel users and the benefit of preferential access to iron ore is not passed on to it. Implicitly subsidised supply of iron ore to steel mills in the country merely covers up other diseconomies of some of the major steel makers. The group points out that in most cases, energy supplied to steel mills is also subsidised through captive power plants with assured coal linkages at less than the market price. This group is particularly against captive mines to multinational steel makers.

2.31 The fourth interest group is that of the SME sector miners of iron ore, especially in the states of Karnataka and Goa. For various reasons such as lack of power, water, and other infrastructure, these states have not been able to attract steel mills in a significant way and if iron ore mines are reserved for captive users, as the steel makers have proposed, then the mines in these states will remain undeveloped. Representatives of this group, such as the Goa Mineral Foundation, have argued that iron ore mining is a major industrial activity in these states, employing lakhs of people directly and indirectly, and if iron ore is to be reserved exclusively for captive miners, the local economy would be drastically affected. The first three groups are all against SME mining, arguing that in the absence of economies of scale, mining activities of SMEs result in suboptimal mining, greater pressure on existing public utilities, and environmental degradation.

2.32 In 2005 the Ministry of Steel had set up a committee chaired by R. K. Dang for framing guidelines for preferential allocation of iron ore MLs to steel makers and the Committee submitted its Report in August 2005. The Committee was of the view that iron ore was a scarce commodity, and for that reason iron ore mines should be allocated to steel producers in accordance with a hierarchy, with PSUs at the top followed by existing private sector producers, new private sector players, foreign investors, and stand alone mining companies, in that order. FIMI, which was represented on the Committee, had submitted a note of dissent, arguing that the approach of rationing out mines among users was a reversion to the licence–permit system that the country had given up after the introduction of economic reforms in 1991–92. In its view, there was no shortage of iron ore either nationally or internationally and for a thriving steel industry there was no need to give access to iron ore at extraction cost. Federation of Indian Mining Industry (FIMI) has also pointed out that the Ministry of Mines did not associate itself with this committee. In fact, while the Ministry of Steel has supported the Dang Committee report the Ministry of Mines submitted a copy of its Policy Paper in September 2005 on the Allocation of Iron Ore Mines prepared by a committee headed by the Joint Secretary, which included representatives from the GSI and IBM. The Policy Paper has dealt with both the issue of resources and also the concept of captive mining. This paper took the view that on the present reckoning, iron ore is not a scarce commodity in the long term because a great deal of exploration work is still to be done. It disagreed with the Dang

2.33 Committee's recommendation of rationing out ore bodies explored by GSI and MECL to steel makers and recommended that all those engaged in mining should be treated as miners regardless of whether they are stand alone or captive and the end use of their produce should be determined by the forces of demand and supply rather than by the government. It also argued that cheap iron ore to some steel makers through captive mining as a special dispensation was not justified since all iron ore is only used for steel making and steel makers should buy their iron ore from the open market by paying market prices. It did not recommend any change in the current dispensation, which treats all miners alike.

C. Iron Ore Sector: Regulatory framework:

Granting of mining lease

2.34 The current law does not make investment in industry based on the mineral a necessary condition for grant of a ML, nor does it mandate any outright preference to be given to metal producers. It does, however, envisage that investment in industry based on the mineral should be one of the factors influencing the decision to grant a ML in favour of a particular applicant when one among multiple applicants is to be selected. Thus, in the framework of the current law it is possible to grant MLs for captive mines provided the applicant separately fulfils the condition of special knowledge or experience of operations connected with mining, as laid down in Section 11(3)(a) of the MMDR Act. The scheme of the MMDR separately envisages that a RP/PL applicant would get priority when a PL/ML is to be granted in the applicant's area and that if an area is not notified by the state government inviting applications for concessions then the first-in-time principle is to be followed. It is after an area is notified that all applications are to be treated as equal, and in such cases, Section 11(3)(d) of the MMDR Act lays down that among the factors that a state government should consider before granting a lease would be '…the investment which the applicant proposes to make in the mines and in the industry based on the minerals'.

2.35 The MMDR Act does not rule out captive mining and such mining, while not dominant, is a reality in the country. The Table shows the production figures separately for public and private sectors and of captive and non-captive mines. It can be seen that of the total estimated production of 143 million tonnes in 2004–05, about 25 per cent was from captive mines. In the public sector, the percentage of captive mine production was 39 per cent whereas in the private sector it was about 15 per cent. For the year 2003–04, the corresponding figures were 27 per cent, 41 per cent, and 15 per cent respectively. Thus, more than 75 per cent of the iron ore mining industry is in the non-captive segment.

Table: Iron Ore Production by Sectors: Captive vs. Non-captive
(million tonnes)

Sector	**2003-04**			**2004-05**			**2005-06(p)**		
	Captive	**Non-Captive**	**Total**	**Captive**	**Non-Captive**	**Total**	**Captive**	**Non-Captive**	**Total**
Public Sector	23.43 (40.72)	34.11 (59.28)	57.54 (100)	NA	NA	57.03	NA	NA	58.81
Private Sector	10.06 (15.41)	55.24 (84.59)	65.30 (100)	NA	NA	88.91	NA	NA	95.63
Total	**33.49 (27.26)**	**89.35 (72.74)**	**122.84 (100)**	**35.20 (24.12)**	**110.74 (75.88)**	**145.94 (100)**	**35.08 (22.71)**	**119.36 (77.29)**	**154.44 (100)**

Note: p: provisional figures; Figures in parenthes es indicate the percentage contribution of captive and noncaptive
by public and private sectors respectively in the total production.
Source: Indian Bureau of Mines, Nagpur.

2.36 For taking a view on whether it would be appropriate for the mining policy and laws to allocate MLs exclusively for captive mining, it will be necessary to examine the position of iron ore resources in the country and also to look closely at the benefits of stand alone mining. It is also necessary to look at the possible impact on the SME sector if a change in the policy were to be effected. Finally, it is necessary to consider whether captive mining of iron ore is essential for the viability of the steel industry and whether such mining enables the

steel industry to contribute more to the GDP through the multiplier effect and value addition than it would if there were no captive mining.

Large scale stand-alone mining

2.37 It is claimed by the mining companies that globally mining is an independent industry and iron ore mining is no different. The idea of making iron ore mining a handmaiden of local steel makers as a matter of policy is unique to India. By doing this, the country deprives itself of a number of optimalities that stand alone mining brings, such as investment in mining and exploration leading to new finds, efficiency, and high technology in both mining and beneficiation, mining (linking) infrastructure because of the need to transfer the produce from mine to market, and environment management in the mining sector as a specialized activity. The steel industry, on the other hand, maintains that captive mining is a globally rising trend and is needed to promote competitiveness.

238 On the benefits of large-scale stand alone mining, the large-scale captive miners also could deliver many of these benefits. As far as detailed exploration is concerned, there is not much to choose between captive miners and India's nine large-scale (those with production more than 3 million tonnes per annum) stand alone miners. What is true of prospecting is also true to some extent of mining efficiency, infrastructure creation, and environment management. In this context, it is necessary to distinguish stand alone mining in the large-scale sector from the SME sector. While the latter is found to be lacking in all these aspects it cannot be said that iron ore mining by SAIL and Tata Steel is less efficient or technically inferior than iron ore mining by the nine large stand alone miners in India. India's large stand alone and captive miners are, however, not in the same league as the mining majors of the world and by world standards a mining company with a production of 3 million tonnes of iron ore is not big enough to be described as a mining major. Mining majors in all parts of the world are involved in prospecting on a large scale, deploy the latest technology, and create mining infrastructure on a massive scale. They are also in the forefront of setting and following sustainable development standards for mining. The issue is, therefore, to decide whether mining majors should be encouraged to enter the Indian iron ore sector. Some of the advantages that could result from this are discussed below.

2.39 Modern resource companies use the latest 'state of the art' technologies in exploration and mining. Billiton's Falcon airborne gravity gradiometer (developed in collaboration with Lockheed Martin), with its specially developed system software, has made the discovery of new iron ore deposits in both greenfield and mature settings possible. It is claimed that this technology can delineate major undiscovered high grade iron ore deposits to a depth of 90 metres. The use of down hole drill cameras that detect faults behind pit walls, showing details in millimetres, is now possible. Radar technology is used for monitoring pit wall stability and to improve productivity and safety in the mines.

2.40 The same also applies to value addition activities through beneficiation, blending, and calibration. Iron ore yields can be of different grades in terms of iron (Fe) content. Lower grade ores are required to be upgraded by way of beneficiation. Blending and calibration are processes that lead to the creation of customised ore of the exact type, size, and grade required by a specific steel mill. This is not only value addition for the miner but also leads to more cost-effective steel making. However, sometimes captive miners may not optimise their mining operations due to market considerations, leading to accumulation and even wastage of low grade ores, especially of the non- lumpy category. The stand alone miners in India also do not always beneficiate, calibrate, or blend because they are mainly

servicing the export market and these processes are undertaken at the importers' end. Their scale of operations does not permit them to spend the requisite time, effort, and investment to add this value. Thus, lower grade ores remain in the ground, leading to wastage of national resources. This may be contrasted with the international scenario where major resource companies have developed high technologies for beneficiating, calibrating, and blending and are thus able to mine optimally and add value to the ore itself. Billiton's customised proprietary IT systems in mining yields information on all elements of ore available, guides geologists in blending different ores, and eliminates disruption in blends with shift changes. It has been seen in some cases that recoverable reserves at market grade have been uplifted by 38 per cent by beneficiation alone and by using the appropriate blending technology the resource uplift may be made up to 156 per cent, thereby enhancing the total recoverable reserves by as much as 188 per cent. Thus the use of technology not only gives resource optimisation but also leads to overall resource augmentation. The large mining companies of the world have been responsible for investment in and creation of infrastructure on a massive scale. The concept of environmental management in mining is becoming increasingly sophisticated and environmental management has become a highly professional activity requiring great expertise. The focus on sustainable development requires that the mined area be brought back to the same or better state after mining operations are over than it was at the outset. Mining operations are required to be planned in such a way as to mitigate the impact on flora and fauna, minimise land degradation during the life of the mine, reduce dust generation and air pollution during the mining operations, and control water contamination and pollution. The mining majors have set up the International Council for Mining and Metals (ICMM) which is an arm's length body for researching, setting standards, and monitoring sustainable development in the mining sector in close association with the World Conservation Union (WCU).

II. Multiplier effect of Iron Ore

2.41 The Indian Steel Alliance4 and steel producers is of the opinion that iron ore at extraction cost yields substantial savings, which are required for setting off against the high cost of infrastructure, freight, and energy to make steel making a viable operation in India. However, this claim is contested by steel makers who do not have captive mines and have to buy their iron ore at market prices but are still operating viably and making good profits. Their support for captive mines is driven more by the need for a level playing field than by any need for cheap or free iron ore. Even if it is true that there are steel mills in the world that have captive mines, the large steel makers of Japan and Korea purchase their iron ore on longterm contracts from countries such as Australia and Brazil and are highly efficient in the production of steel.

2.42 It is argued that the downstream use of steel is fundamental to much of manufacturing and infrastructure and if the multiplier effect of steel on downstream industry is considered then the value addition potential of steel is immense. However, the concern of the downstream user is not so much with the source from which the steel comes as with the price at which it comes. If the price at which steel is sold is the (international) market price then it does not matter to the downstream user as to who produces the steel and whether the steel is imported or purchased locally. Thus the multiplier effect cannot be an argument for allocation of iron ore mines exclusively to steel mills.

2.43 Finally, the argument presented is that steel makers with captive mines add much greater value than stand alone miners. A basic reality is that iron ore cannot be used for any purpose other than steel making and its intermediates like pig iron and sponge iron. Stand

alone miners must also sell their product to steel makers and pig iron and sponge iron producers. These steel makers and sponge/pig iron producers add the same value as the steel makers with captive mines. In evaluating the value addition argument, the comparison has to be of like with like. The value added by stand alone miners has to be compared with the value added by captive miners in their mining operations only and not in their steel making operations. The value added by steel makers with captive mines has to be compared with the value added by the steel maker without captive mines and not with stand alone miners. From this perspective, there does not appear to be any rationale for reserving iron ore mines for captive operation.

2.44 From the above discussion, it may be concluded that a case has not been made for allocation of iron ore mines to the steel plants for captive mining. The example of the steel mills in East Asia and the mills in India that do not have captive mines show that captive mining is not a prerequisite for efficient production of steel. A thriving steel industry does not need to rely on captive mining. However, captive mines are a reality in India, and many of them are run efficiently. At the same time, there are benefits that large-scale stand alone mining can bring that the country cannot afford to ignore, such as induction of advanced technology in exploration as well as optimum mining operations. It would be in the country's interest to have a mining regime in which space exists for both captive and stand alone mines.

III. Export of Iron ore

Grade-wise Exports

Quantity in million tonnes

		2004-05				**2005-06(P)**		
Grade	Prod.	Exports	% of prod.	Balance	Prod.	Exports	% of prod.	Balance
62% Fe and	24	23.77	100	0.23	27	31.94	118	(-)4.94
Below								
62% Fe and	119	54.37	46	64.63	128	57.33	45	70.67
Above								
Total	**143**	**78.14**	**55**	**64.86**	**155**	**89.27**	**58**	**65.73**

Note: (1) Pellets included in lumps and concentrates in fines
Source: GMOEA, KIOCL, NMDC, MMTC ROS/PRIVATE MINEOWNERS

Country-wise Exports

Quantity: Million tonnes

Country	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06(p)**
China	19.22	26.27	42.06	60.46	74.13
	(46.16)	(54.71)	(67.22)	(77.37)	(83.04)
Japan	15.62	15.75	13.10	10.91	10.33
	(37.51)	(32.80)	(20.93)	(13.96)	(11.57)
South Korea	3.00	2.41	2.14	2.17	1.32
	(7.20)	(5.02)	(3.42)	(2.78)	(1.48)
Taiwan	0.43	0.58	0.88	0.57	0.14
	(1.03)	(1.20)	(1.41)	(0.73)	(0.16)
Europe	1.81	2.04	2.47	2.82	2.10
	(4.35)	(4.25)	(3.95)	(3.61)	(2.35)
Others	1.56	0.97	1.92	1.21	1.25

	(3.75)	(2.02)	(3.07)	(1.55)	(1.40)
Total	**41.64**	**48.02**	**62.57**	**78.14**	**89.27**
	(100)	**(100)**	**(100)**	**(100)**	**(100)**

Note: p : provisional figures
Source: GMOEA, KIOCL,NMDC,MMTC ROS/PRIVATE MINEOWNERS
Figures in paranthesis indicate the %age to the total exports

2.45 In the current EXIM policy, exports of higher grades of iron ore (above 64 per cent Fe content, whether lumps or fines) are canalised through a State Trading Enterprise, the Mineral and Metals Trading Corporation (MMTC). Exports of iron ore with lower Fe content are free and do not need a licence. Exports of iron ore of Goa origin for certain destinations (China, Europe, Japan, South Korea, and Japan) and of Redi origin for all destinations are also free from export control, irrespective of Fe content. Export licences are issued by the Department of Commerce from time to time to mining companies, which hold MLs, for direct exports of iron ore of grades above 64 per cent Fe content. The NMDC, which is a Central PSU under the administrative control of the Ministry of Steel and has been exporting through MMTC, has decided that exports of NMDC of higher grade would be under a quantitative limit of 6.8 million tonnes per annum from its Bailadila mines in Chhattisgarh. However, actual quantities made available for exports by NMDC of the higher-grade iron ore have been below this ceiling

2.46 The steel industry in the country is against exports of any category of iron ore altogether, and would like the iron ore resources of the country to be reserved for the exclusive use of the domestic industry in future. Their demand is based principally on two arguments. First, in their assessment the iron ore resources are limited both in India and the world. They argue that if iron ore is allowed to be exported India's limited reserves would get exhausted and thereafter the Indian steel industry would have to depend on importing it from other countries, and this would no t be in its best interest. Secondly, it is necessary to ensure perennial supplies of cheap iron ore to local steel makers because of the multiplier effect of value addition on the economy. The steel plants constitute the core of the secondary sector and lay down the foundations for industrialisation and urbanisation, with whole townships coming into being. They also leverage technology, capital resources, and energy- intensive industries. Production of each tonne of steel creates seven to ten times more value addition than the iron ore used in the process. While there are no forward linkages for the iron ore mined for the external market, production of steel creates the highest amount of forward linkages in the economy in the secondary sector. Moreover, mining and steel production taken together create five times more direct and permanent employment than just mining alone. In terms of foreign exchange earnings, a tonne of steel earns seven to ten times more than the 1.6 tonne of iron ore that goes into its production. The steel industry also generates 10 times more government revenue than iron ore. The steel industry argues that taking all these aspects into account, it would be better to add value through production of steel within the country than to export iron ore. If export earnings are the objective it is more advantageous to export steel after adding value to iron ore than to export iron ore.

2.47 The mining industry gives its own arguments against any restriction being imposed on the exports of iron ore. The stand alone miners would like to be able to sell iron ore produced by them at the best international prices. In their view, it is not necessary to ban exports to ensure availability of iron ore to the domestic industry. If steel makers are willing to pay the price at which iron ore is purchased across the world there is no reason for stand

alone miners not to sell the iron ore to the domestic user- industry. If exports are banned the market would shrink to about one-third of its current size. This would exercise a downward pressure on the price, reduce profitability, and put many of the mines, particularly those in the SME sector, out of business. The mining sector would like the user industry to pay international prices for iron ore. It has been argued that iron ore is not in short supply regardless of how fast the demand for steel grows because conversion of resources into proven reserves is simply a function of exploration which will inevitably occur if demand for iron ore rises. They also argue that supply of iron ore at prices lower than international prices is not necessary for the steel industry to flourish, as is proved by many steel makers in India and the steel industry as a whole in the world. They further argue that value addition and the multiplier effect have no relation to export because a steel industry based on iron ore at market prices will inevitably come up if the demand for steel so dictates. It is not necessary to give up export earnings, jobs, and revenues from the mining sector because once steel units come up exports will automatically fall and the value addition from steel units with all its attendant benefits will follow.

2.48 The mining industry also draws attention to the important regional implications of export policy, especially on employment. A very substantial proportion of the iron ore produced in the south-western states of Karnataka and Goa is exported. There are impediments in the establishment of steel mills in that region on a significant scale because of infrastructure problems. Transportation to the eastern region where the steel plants are located is not economical because of the long haul, and much of the steel capacity there already has access to captive mines. The mining industry also believes that the current demand for exports is due to a surge in China's demand and a spot market has got created because of a temporary boom in that country. Iron ore fines are lying in dumps in the country for lack of domestic demand and the temporary boom presents a good opportunity to dispose of the surplus.

Resources scarcity argument

2.49 On the present assumptions of demand and supply and the expected rate of growth, the resources in the country would last until the end of the twenty- first century. It is possible that the demand projections of the Ministry of Steel do not prove valid and the country replicates the rate of economic growth of China and the domestic demand for steel grows much more rapidly than what can be visualised today. In that event, a review of the policy would be called for. For the present, there does not appear to be justification for prohibiting exports of iron ore from the perspective of availability or rate of depletion of reserves. According to the National Steel Policy, 2005 document, annual export of iron ore, which is currently at 78 million tonnes, is likely to grow to about 110 million tonnes by 2020. If this estimation holds good the depletion of iron ore resources resulting from exports 10 years from today, after which we have suggested a review, would be between 0.8 and 1.0 billion tonnes, out of the current resources of 23.58 billion tonnes.

Value addition argument

2.50 While it cannot be denied that value addition from steel is more than value addition from iron ore alone there is no basis for comparing these two value additions because they are not mutually exclusive. All iron ore extracted is used for steel making, so the value addition in producing steel is over and above the value addition in the extraction of iron ore. If local iron ore demand rises, exports will automatically fall, but if there is no increase in

local demand and export restrictions are put in place then there will be no value addition either from steel making or from mining. The value addition argument of the steel industry could have been supported if there were no value addition in mining at all. However, this is obviously not the case. There is value addition and emp loyment generation in mining and related processing and in transportation activities flowing from mining operations. In fact, if the value addition per unit of capital employed in mining were estimated, it is likely that productivity in iron ore mining would be higher than in steel making. Nevertheless, if it were a clear choice between exporting iron ore or finished steel at the same point in time there would be no doubt where the policy choice should fall. However, the argument really is also that iron ore should not be exported today so that more steel can be exported tomorrow. By the same token it could also be argued that we should not be producing steel for exports today and wait until we can add value further and export automobiles or white goods or products of other industries that can add value to steel. The problem is that there is a need to stimulate economic growth, provide employment, and also look for opportunities for earning foreign exchange today. The mining sector must grow if the country ha s to reach a GDP growth rate above 8 per cent. After many decades of stagnation, international iron ore prices have been at a historically high level over the last two years or so, and the time is not opportune for putting a ban on exports of the commodity.

Impact on domestic prices of Iron ore due to possible ban on exports

2.51 There may be substance in the argument of the mining industry that a ban on the exports of iron ore would have an adverse impact on domestic prices of the commodity and, conseque ntly, on the development of iron ore mining as a whole. Economic theory tells us that if exports are restricted leading to excess local supplies, the price will fall to the point when marginally profitable units may shut down. In the case of iron ore, as in other minerals, the adverse consequences of a ban on exports can be even more far-reaching as it would affect prospecting. It would not be appropriate for government to make a trade policy intervention that increases the profitability of one sector and lowers that of another, and that too when the steel industry is earning high profits. Restriction on exports of any mineral would constitute a further disincentive for the flow of FDI into the mining sector, at a time when the country needs it most for exploration using the latest technology and also for efficient mining operations. As mentioned earlier, the economics of mining is a little more complicated than that of industry in general, because investment for mining operations can flow only after success in prospecting, and prospecting itself needs finance in the nature of venture capital with the appetite for risk. Mining itself is a long-term operation of 20–30 years with a gestation lag of more than two to three years. An investment of Rs 100 crore is required for mining one million tonnes per year. For meeting the requirement of the domestic steel industry, which is expected to produce 110 million tonnes of crude steel by 2020 and needs 175 million tonnes of iron ore (as against the current requirement of about 64 million tonnes), fresh investment in mining of about Rs 12,000 crore would be required. While this could come from the indigenous mining community it would also need to be supplemented by FDI. Imposing further restrictions on exports would send a wrong signal to prospective investors in mining and would make the target of 110 million tonnes of steel production unachievable. Investors like freedom to seek returns to their investment from all markets, both in the country and abroad.

2.52 Iron ore production in India in 2003–04 was 122.84 million tonnes (pre-revised 120.60 million tonnes). Of the total production, 44.97 million tonnes was used by indigenous steel units to produce 34.25 million tonnes of crude steel. Of the balance, 62.57 million tonnes was exported and 15.30 million tonnes remained surplus. For 2004–05, iron ore

production was 142.71 million tonnes, out of which exports were 78.14 million tonnes. It would be seen that for 2004–05 exports amounted for as much as 50.94 per cent of the production and a significant part of the exports is from the south-western region. A restriction on exports would straightaway hit half the iron ore mining industry, and many mines, particularly in the south-western region, may have to close down. Paragraphs 7.40 and 7.41 above deal with the regional aspect of the issue in greater detail. A special mention has also been made there of Jindal Steel Works, which advocates a ban on exports from the region so that assured iron ore becomes available to it in the future. However, as mentioned earlier, a shortage scenario based purely on proven reserves of haematite is not warranted at this stage of development of the country's mine and steel development. For the nation as a whole the non-captive segment in the mining industry accounts for 75.44 per cent of the total production, and if we leave aside PSUs such as Orissa Mining Corporation (OMC) and NMDC and the 11 large stand alone miners then the rest of iron ore mining is entirely in the SME sector. According to the National Steel Policy document too, the indigenous demand for iron ore will take more than 11 years to reach the level of 145 million tonnes. In addition, export of iron ore provides employment on a large scale to the people of Goa, Karnataka, as well as in the SME and larger mines in the eastern and central parts of the country and is a significant catalyst of socio-economic development in the backward and tribal belts. As will be seen from Annexure 13, the increase in production over the last three years has been mainly from the non-captive SME mines and is export-driven. Since steel production has increased marginally, there is only a small increase in domestic consumption. As against this, the states of Goa, Karnataka, and Orissa, which have a large number of non-captive mines, have seen a surge in the production of iron ore. Apart from mining proper, associated sectors such as transportation, ore handling, minor and major ports, and service providers such as shipping lines and vessel yards all gain from the export activity. Employment-wise, if exports are banned 70,000 persons will become jobless, and due to tertiary sector linkages, at least half a million more would lose their livelihood. For this reason alone, any severe restriction or ban on exports of iron ore is not conceivable.

Export of Fines

2.53 of the total iron ore exports from India of 78 million tonnes in 2004–05 as much as 65 million tonnes or 83 per cent was exported in the form of fines. Domestic demand for fines is only to the extent of the sintering and pelletisation capacity available. If surplus fines are not exported, they will go waste. If exports were further restricted in any manner, its main impact would be on fines. In that event, SME miners, especially in south-western India, will have no market left for their fines.

2.54 Export of iron ore fines on a significant scale is a recent phenomenon, which has become possible because of the unexpected and huge demand from China. The major steel plants in China, Japan, and South Korea have long-term contracts with resource miners in Australia and Brazil and to some extent South Africa and India for their iron ore supplies, for which they negotiate prices every year. If the Chinese demand declines, Indian miners will find their markets for fines dwindling. The SME sector mines will once again reduce their operations or become inactive. It is, therefore, in the national interest to promote pelletisation, calibration, beneficiation, and blending for exports on a large scale and to attempt to compete with Brazil and Australia in the export market. This needs to be done especially in the southwestern region where the fines have a limited outlet. Some new technologies in steel making that may make the distinction between fines and lumps irrelevant are being developed. Examples are corex, finex, and hismelt, where the blast furnace may be capable of accepting ores of various types directly. However, the commercial

application of these technologies is not yet certain. All these aspects have to be borne in mind while reviewing the export regime for iron ore.

Export regime

2.55 The MMTC has been engaged in Long Term Agreements (LTAs) with one Korean and five Japanese steel companies to supply iron ore of higher grades. These agreements are basically framework agreements indicating quantities and the price is negotiated every year. The government attaches importance to the implementation of these agreements as the buyers have been purchasing iron ore from India for many decades, when iron ore prices were low. The canalisation helps the MMTC to implement these LTAs. Apart from this, MMTC also carries out export operations on behalf of small miners who do not have the wherewithal to enter international operations by themselves.

2.56 As stated earlier, the export licences are separately issued by virtue of the provision in paragraph 2.11 of the chapter on the General Provisions on Imports and Exports in the Exim Policy, which enables the government to issue licences even where a particular commodity has been canalised for import or export. The Department of Commerce issues such licences on the basis of applications filed by individual miners after ascertaining the position of production and domestic demand from the Ministries of Steel and Mines and after checking that the requirements of MMTC for exports under LTAs have been met. These licences have been freely given, and generally actual exports have been lower than the quantity authorised.

2.57 It is clear from the description of the export licence regime given above that it is GOI's intention to restrict exports of iron ore with Fe content higher than 64 per cent, with a view to ensuring that the exports do not take place at the cost of supplies to domestic steel producers. Exports of Goa and Redi origin are free because it is not economical to move the ore from these origins to the plants in the eastern and central parts of the country. Control on exports of Goa origin to certain destinations is perhaps meant to ensure that the implementation of LTAs with Japanese and Korean companies is not hampered. However, if the objective is to restrict exports the means adopted to achieve this objective are not optimal. The MMTC helps smaller exporters of higher-grade iron ore to export and these quantities escape any government check to ensure that they are surplus to the needs of the domestic steel industry. Furthermore, the check for ensuring supplies to domestic users is only after ascertaining the current production, which can rise and fall on the basis of current demand. There is no check against the availability of resources, which is plentiful as shown elsewhere in this report. The policy of canalisatio n appears to have been dictated primarily to enable implementation of the LTAs. Exports are regulated through a dual mechanism of canalisation as well as export licensing.

2.58 The export regime for iron ore of higher grade does not make any distinction between fines and lumps although, as noted earlier, fines are particularly in surplus in the country. The rationale for the 64 per cent cut-off of Fe content is also not clear, as the cut-off in IBM classification is 65 per cent.

2.59 In light of the above analysis and particularly the assessment regarding availability of iron ore resources in relation to current domestic production, and the appraisal of the impact of export controls on the health of the mining industry and its attractiveness for investment, there is no need to impose any quantitative restrictions on exports but that the position should be revisited after 10 years. However, by way of abundant precaution, an export duty

may be levied on exports of iron ore in lump form with Fe content above 65 per cent. The system of licensing and canalisation currently in operation may be discontinued. Also captive miners may not be allowed to export either fines or lumps. They may sinter the former and use the latter in their own blast furnaces.

E. Conclusion

2.60 At present, the in-situ reserves of relatively rich iron ore in India are 11.43 billion tonnes of haematite and 10.68 billion tonnes of magnetite ores. Though the reserves of haematite ore appear to be large, high-grade lumpy reserves constitute only 8.7 percent of the total. Further, the present commercial mining capacity for iron ore is only 175 mT3. Production of iron ore in 2004-05 was 145 mT, of which 54 mT was domestically consumed and 78 mT was exported. Of the 600 mining leases, only 246 were operated in 2003-04.

2.61 In order to ensure availability of 190 mT of iron ore for domestic production of steel by 2019-20, Government would encourage investments in creation of an additional modern mining and beneficiation capacity of 200 mT. The size of these investments will be around Rs. 20,000 crore. The current policy of captive mining leases for the private sector would continue, but it is necessary that investment plans be put in place for idle mining leases. State governments would recommend renewal of existing leases only against credible mining investment plans in a specified period. The Government would lay down priorities and guidelines for the State governments to recommend fresh mining leases, having regard to the entrepreneur's mining investment plans, and technical and financial capabilities. Environmental and forest clearances would be granted within a pre-specified time frame. Though local value addition would be given priority, the Government would encourage iron ore trading in order to make this essential raw material available to the iron and steel industry throughout the country. The Government would encourage investments in adding value to iron ore fines. Scientific mining and economies of scale would also be encouraged through consortia of small users and by prescribing a minimum economic size for mines of the steel companies and its loose amalgam Indian Steel Alliance (ISA) (which made its debut in October, 2001) bothered about iron ore exports till February 2004 because it suited them to get iron ore at a throw-away price. Iron ore industry has the inherent capacity to produce more, but exports had dried up thanks to the incapacity of MMTC, the canalizing agency. There was hardly any domestic demand because the existing steel plants had captive mines and the new ones (such as JSP, JSW, Essar, RINL, Grasim, Ispat, etc.) did not wish to have any captive mines because they were getting iron ore virtually at no cost. SAIL had one time thought of handing over its iron ore mines to NMDC at the dawn of this century.

2.62 The situation changed since February 2004, when Chinese demand started picking up and the iron ore industry started getting additional outlet. The prices zoomed and spot market boomed. The steel industry panicked not because it would not get iron ore (which was in surplus) but because they have now to match their price with export price. Till then the mining companies would often visit the steel mills and plead for their product (iron ore) at a price which will be dictated by them (steel mills) and payments made sporadically at leisurely intervals. Now the steel mills would have to come to the mining companies for iron ore and pay the price dictated by market conditions.

Section - III: Iron Ore Pricing in Brazil and China

3.1 Available data are not comparable because of the differences in the quality of iron ore in the countries.

Chapter - 8
Subsidies Disciplines in Natural Resources Pricing: Iron and Steel

Section I: Overview of the Iron and Steel Sector: World

1.1. ***Production:*** In 2005 World Crude Steel output at 1129.4 million metric tonne was 5.9% more than the previous year. (Source: IISI). China remained the world's largest Crude Steel producer in 2005 also (349.4 million metric tonne) followed by Japan (112.47 million metric tons) and USA (93.89 million metric tons). India occupied the 8th position (38.08 million metric tons). (Source: IISI) .The International Iron & Steel Institute (IISI) in its forecast for 2006 has confirmed the trend of recent years of an increase in steel use in-line with general economic growth and with the fastest growth occurring in the countries with the highest GDP growth such as India and China. Apparent world-wide Steel Demand is forecast to grow to between 1,040 and 1,053 million tonnes in 2006 from a total of 972 million tonnes in 2004. This is a growth of 4-5% over the two year period. However, according to IISI the cost of raw materials and energy would continue to represent a major challenge for the world steel industry.

Section II: Iron and Steel Sector: India

A. Background

2.1 The points below summarize the market scenario of iron and steel in India

1. After liberalization, there have been no shortages of iron and steel materials in the country.
2. Apparent consumption of finished (carbon) steel increased from 14.84 Million Tonnes in 1991-92 to 43.471 million tonnes (Provissional) in 2006-07. During April-June, 2007, apparent consumption of finished (carbon) steel was 10.103 million tonnes(Provisionally estimated)
3. Steel industry that was facing a recession for some time has staged a turnaround since the beginning of 2002.
4. Efforts are being made to boost demand.
5. China has been an important export destination for Indian steel.
6. The steel industry is buoyant due to strong growth in demand particularly by the demand for steel in China.

2.2 ***Production:*** The production situation is briefly indicated below:Steel industry was delicensed and decontrolled in 1991 & 1992 respectively. Today, India is the 7th largest crude steel producer of steel in the world. In 2007-08(Apri-June"07), production of Finished (Carbon) Steel was 12.088 million tonnes(Prov). Production of Pig Iron in 2007-08(April-June'07) was 1.165 million tonnes (Prov). The share of Main Producers (i.e SAIL, RINL and TSL) and secondary producers in the total production of Finished (Carbon) steel was 33% and 67% respectively during the period 2007-08 (April-June, 2007).

2.3 Production of pig iron and finished (carbon) steel in recent years is given below:

Production of pig iron and finished (carbon) steel

(In million tonnes)

Category	2003-04	2004-05	2005-06	2006-07 (Provisional)	2007-08(April-June'07) (Prov. estimated)
Pig Iron	3.764	3.228	4.695	4.960	1.165
Finished Carbon Steel	36.957	40.055	44.544	49.391	12.088

(Source: Joint Plant Committee)

2.4 Data regarding the production of various types of steel is as follows:

(a) Finished Carbon Steel Production

The total production of finished carbon steel in the country has been 30.11 million tonnes in 2001-02 as compared to 14.33 million tonnes in 1991-92, indicating an increase of 110.12%. Producer-wise production of finished steel. The high share of the secondary sector in finished steel production is largely due to substantial supplies of semis, the basic feed material from the main producers for conversion to needed shapes by rolling.

Production of Finished Carbon Steel

(In million tonnes)

Year	Main	Secondary	Grand	% of share of

	Producers	Producers	Total	Secondary Producers
1991-92	7.96	6.37	14.33	14.5%
1992-93	8.41	6.79	15.20	44.7%
1993-94	8.77	6.43	15.20	42.3%
1994-95	9.57	8.25	17.82	46.3%
1995-96	10.59	10.81	21.40	50.6%
1996-97	10.54	12.18	22.72	53.6%
1997-98	10.44	12.93	23.37	55.32%
1998-99	9.86	13.24	23.82	57.32%
1999-00	11.20	15.51	26.71	58.07%
2000-01	12.51	17.19	29.7	57.88%
2001-02	13.05	17.58	30.63	57.4 %
2002-03	14.39	19.28	33.67	57.27 %
2003-04	15.19	21.00	36.19	58.03 %
2004-05	15.61	24.44	40.05	61.02 %
2005-06 (Prov.)	16.236	26.400	42.636	61.92 %
2006-07	17.390	32.000	49.390	64.79 %
2007-08 (Apr-August 07)	6.901	15.600	20.501	76.09 %

(b) Pig Iron Production

The total production of Pig Iron was 3.946 million tonnes in 2001-02 as compared to 1.59 million tonnes in 1991-92 registering an increase of 148.18% during the considered period. Earlier Pig Iron was produced primarily by the integrated steel plant of SAIL and RINL. Of late, the share of stand-alone pig iron units has increased significantly.

Producer - Wise Production of Pig Iron

(in million tonnes)

Year	Main producers	Secondary producers	Grand total	%age share of the Secondary Producers
1991-92	1.49	0.10	1.59	6.3%
1992-93	1.68	0.17	1.85	9.2%
1993-94	1.98	0.27	2.25	12.0%
1994-95	2.01	0.78	2.79	28.0%
1995-96	1.74	1.06	2.80	37.9%
1996-97	1.73	1.57	3.30	47.5%
1997-98	1.70	1.68	3.39	49.5%
1998-99	1.37	1.60	2.97	53.87%
1999-00	1.24	1.94	3.18	61.08%
2000-01	0.96	2.15	3.11	69.13%
2001-02	1.02	3.05	4.07	75.04 %
2002-03	1.11	4.18	5.29	79.05 %
2003-04	0.97	4.25	5.22	81.48 %
2004-05	0.625	2.603	3.228	80.63 %
2005-06 (Prov)	1.006	2.850	3.856	73.91 %
2006-07	0.860	4.100	4.960	82.66%

2007-08 (Apr-August 07)	0.414	1.750	2.154	81.24 %

(c) Direct Reduced Iron Production

Production of direct reduced iron (DRI) has increased from 1.31 million tonnes in 1991-92 to 5.403 million tonnes in 2001-02, registering an increase of nearly 4.12 times over the considered period. India has emerged as the second largest producer of DRI in the world after Venezuela.

Production of Direct Reduced Iron (In million tonnes)

Year	Production	% increase
1991-92	1.31	-
1992-93	1.60	22.1%
1993-94	2.40	50 %
1994-95	3.39	41.3%
1995-96	4.34	28.02%
1996-97	5.05	16.4 %
1997-98	5.32	5.34%
1998-99	5.12	(-)3.8%
1999-00	5.34	4.30%
2000-01	5.44	1.90%
2001-02	5.40	(-) 0.70 %
2002-03	6.91	27.96 %
2003-04	8.08	16.93 %
2004-05	10.296	-
2005-06 (Apr-Dec)	12.50	21.4 %
2006-07	15.75	-
2007-08 (Apr-August 07)	7.750	

2.5 ***Consumption:***

Demand - Availability Projection

- Demand – Availability of iron and steel in the country is projected by Ministry of Steel annually.
- Gaps in Availability are met mostly through imports.
- Interface with consumers by way of a Steel Consumer Council exists, which is conducted on regular basis.
- Interface helps in redressing availability problems, complaints related to quality.

2.6 ***Apparent Consumption of Finished Carbon Steel***

Apparent consumption (i.e production + imports - exports +/- variation in stocks) of finished steel, year-wise, has been shown below. Apparent consumption represents the actual demand of steel in a particular period/year. It has increased from 14.84 million tonnes in 1991-92 to 27.35 in 2001-02. Increase in apparent consumption has not been uniform, fluctuating from a high of 21.8% to low of 1.2 % reflecting uneven growth in steel demand.

Apparent Consumption of Finished Steel(Carbon)

(in million tonnes)

Year	Apparent Consumption of Finished Steel
1991-92	14.84
1992-93	15.00 (1.2 %)
1993-94	15.32 (2.0 %)
1994-95	18.66 (21.8 %)
1995-96	21.43 (14.8 %)
1996-97	22.12 (3.2%)
1997-98	22.63(2.3%)
1998-99	23.15(2.3%)
1999-20	25.01(8.03%)
2000-20	26.87(7.44%)
2001-20	27.350 (3.1%)
2002-20	28.897 (5.32%)
2003-04	31.169 (7.88%)
2004-05	34.389 (10.33%)
2005-06 (Prov)	38.151 (10.9%)
2006-07	43.743
2007-08 (Apr-Aug' 07)	20.015

(The figures in brackets indicate the percent increase over the previous year/corresponding period.)

2.7 ***International comparison in steel consumption***

Consumption of steel rises with the demand for housing, other commercial construction, and infrastructure. It is argued that once the construction boom in the country is over then its steel requirement stabilises, as it mainly needs steel for maintaining its housing and industrial base. In 2003, the per capita consumption of steel in the US was 337 kg, in Europe (16 countries) it was 361 kg, in UK 206 kg, and in China it grew from 97 kg in 2000 to 178 kg in 2003.3 The world average per capita consumption of steel was 149 kg. In India, in 2004–05 the per capita consumption of steel was about 30 kg, of which the urban consumption was 77 kg and the rural consumption was only 2 kg. The Ministry of Steel has estimated that consumption per capita can increase to 70 kg by 2020 if infrastructure takes off, if rural demand is stimulated, and if a compound annual growth rate (CAGR) of 7.43 per cent for steel production is achieved. It is, of course, possible to posit an argument that steel demand may surge well beyond the estimation of the Ministry of Steel and follow the Chinese path where production has risen to 350 million tonnes. This may well happen if India achieves a sustained growth in GDP at or above 10 per cent, as China has done. If the indications during the next 10 years or so are that such a situation is likely to emerge the policy on exploitation of natural resources, including iron ore, would have to be reviewed. In the meantime, however, it would be prudent to rely on the projections made by the Ministry of Steel and base policies on the present estimate of resources and the projected rise in domestic demand/production of steel. As seen above, on this basis India would still have enough resources to last up to the end of the century. Being overcautious in exploiting the resources of iron ore may result in a situation in which the mineral resource is being overtaken by developments in technology and reduced in economic value. It is well known that India had and has the largest deposits of mica sheet (80 per cent) in the world but the mica mines were not developed in the 1960s when mica was in great demand and the prices were high. With six different synthetic substitutes of mica now available, the demand has

fallen to a tenth of what it was in the 1960s. The demand having disappeared, India's mica, still under the ground, is of little value now. There is already credible talk of titanium becoming the metal of the future and replacing steel 50 years from now.

2.8 *Duties on Iron & Steel*

Customs Duty

- Customs Duty on stainless steel and other alloy steel has been reduced from 10 % to 7.5 %.
- Duty on non- alloy steel remains unchanged at 5%.
- Duty for ferro alloys reduced from 10% to 7.5%.
- Customs Duty on primary and secondary forms of non-ferrous metals viz. Zinc has been reduced from 10% to 7.5%.
- Duty on steel melting scrap has been raised to 5%.
- Duty on refractories reduced to 7.5 %. Duty most of the raw material for manufacture of refractories has also been reduced to 7.5%.
- Duty on ores and concentrates reduced from 5 % to 2 %. In respect of Ministry of Steel this would mean a reduction in duty of 3% on iron ore, manganese ore and chrome ore.
- The Special Countervailing Duty (CVD) of 4 % to be imposed on all imports with a few exceptions viz. ships for breaking, coal and coke etc. Full credit to be allowed to manufacturers of excisable goods.

Service tax:

Service tax rate increased from 10% to 12%.

Direct Taxes:

No change in rates of personal income tax or corporate income tax. No new taxes are also being imposed.

2.9 *Levies on Iron & Steel*

SDF LEVY- This was a levy started for funding modernisation, expansion and development of steel sector.

The Fund, inter-alia, supports:

1) Capital expenditure for modernisation, rehabilitation, diversification, renewal & replacement of Integrated Steel Plants.
2) Research & Development
3) Rebates to SSI Corporations
4) Expenditure on ERU of JPC

- SDF levy was abolished on 21.4.94
- Cabinet decided that corpus could be recycled for loans to Main producers
- Interest on loans to Main Producers be set aside for promotion of R&D on steel etc.
- An Empowered Committee has been set up to guide the R&D effort in this sector.
- EGEAF – Was a levy started for reimbursing the price differential cost of inputs used for engineering exporters. Fund was discontinued on 19.2.96.

2.10 ***Imports and export :***

The following are the key features of the policies governing import and export of iron and steel:

1. Iron & Steel are freely importable as per the extant policy.
2. Iron & Steel are freely exportable.
3. Advance Licensing Scheme allows duty free import of raw materials for exports.
4. Duty Entitlement Pass Book Scheme (DEPB) introduced to facilitate exports. Under this scheme exporters on the basis of notified entitlement rates, are granted due credits which would entitle them to import duty free goods. The DEPB scheme was temporarily suspended from 27th March 2004 to 12 July, 2004 for export of steel items. The Scheme has since been restarted. The DEPB rates have also been substantially reduced.

The long term trend in the import and export of iron and steel are captured in the tables below:

Import of Iron and Steel

(in '000 tonnes)

Year	Pig Iron	Steel TOTAL(CARBON)	Total Value (Pig Iron + Steel) (Rs. In Crores)
1991-92	152	1043	1441.32
1992-93	73	1115	1676.00
1993-94	21	1153	1613.00
1994-95	1	1936	2536.00
1995-96	8	1864	3181.00
1996-97	15	1822	3053.00
1997-98	3	1815	2904
1998-99	2	1637	N.A.
1999-00	3	2200	N.A.
2000-01	2	1632	N.A.
2001-02	2	1375	N.A.
2002-03	1	1510	N.A.
2003-04	2	1650	.N.A.
2004-05	8	2109	N.A.
2005-06 (Prv)	3	3765	N.A.
2006-07 (Partly Estamited)	3	4100	N.A.
2007-08 (Partly Estamited) (Apr-August 07)	3	1950	

2.11 Although India started exporting steel way back in 1964, exports were not regulated and depended largely on domestic surpluses. However, in the years following economic liberalisation, export of steel recorded a quantum jump.

Export of Iron and Steel

(in '000 Tonnes)

Year	Pig Iron	Semis	Finished Carbon Steel	Total Steel	Total Value (Rs. Crores)
1991-92	-	5	368	373	283
1992-93	16	154	741	895	708
1993-94	620	585	1020	1605	1678
1994-95	466	399	873	1272	1438
1995-96	502	395	925	1320	1939
1996-97	451	300	1622	1922	2231
1997-98	785	503	1880	2383	2512
1998-99	281	174	1770	1944	N.A.
1999-00	290	328	2670	2998	N.A.
2000-01	230	195	2805	3000	N.A.
2001-02	242	270	2730	3000	N.A.
2002-03	629	460	4506	5966	N.A.
2003-04	576	701	5221	6922	N.A.
2004-05	393	261	4381	4903	N.A.
2005-06 (Prov)	300	350	4350	4700	N.A.
2006-07 (Partly Estamited)	359	375	4750	5125	N.A.
2007-08 (Partly Estamited) (Apr-Aug' 07)	176	181	2167	2348	N.A.

2.12 Prior to deregulation imports of steel took place under a rigorously defined import plan designed to bridge the gap between domestic demand and domestic availability. The Indian steel industry remained protected from foreign competition by high import tariff rates and physical restrictions operating via canalization and import licensing. On the other hand, exports took place only on rare occasions when domestic demand fell short of production.

2.13 Deregulation brought about far-reaching changes in the international trading scene for the globally integrated Indian steel industry. Import duty rates have been progressively reduced from above 100% to 5% during the last 15 years. All quantitative controls on exports and imports stand withdrawn today. Protection from unfair import competition is currently being provided through the mechanism of Trade Actions (Anti-Dumping, Anti-Subsidy and Safeguard actions) as permitted under the WTO dispensation – of which India is a member. Most importantly, the 10th Five Year Plan period has witnessed one of the sharpest cuts in peak duty rates from around 25% to 5%. The government, however, maintains a higher import duty rate of 20 per cent on seconds and defective steel products. There is a system of floor prices too for such products to discourage their imports.

2.14 Liberalization of the foreign trade regime has had a favourable effect on Indian exports. Exports grew fast at a rate exceeding 25% per annum between 1991-92 and 2002-03. Thereafter, till 2005-06 export levels stagnated at around 4- 4.5 Million Tonnes per year. During this period, the country's export basket also changed in favour of more value added and sophisticated products. The export destination also got widened with Indian steel reaching a very large number of countries in all the continents of the world.

2.15 Imports, on the other hand, followed a different growth path. Import of steel remained static around the pre-liberalization annual level of 1- 2 Million Tonnes per year till 2003-04 but increased dramatically between 2003-04 and 2005- 06 doubling itself from 1.7 Million Tonnes to 4.1 Million Tonnes over just three years.

2.16 As a result, for a major part of the post deregulation years India enjoyed the status of a net exporter of steel, even though the net export levels varied widely between a low of 0.06 Million Tonne in 1996-97 to a high of 3.8 Million Tonnes in 2003-04

2.17 Available data show an interesting correlation between the movements in net export levels and rate of growth in domestic consumption. Based on the associated movements, the data on import and export can be split into three distinct periods, namely, 1992-93 to 1996-97, 1997-98 to 2001-02 and 2003-04 to 2005-06. The period 1992-93 to 1996-97 was marked by high rates of growth in domestic consumption at around 8.3% per annum while net export levels remained depressed. The period 1997-98 to 2001-02 was marked by sluggish growth in domestic demand at around 4.4% while net export levels rose at a fast pace. The high net export level was maintained into 2002-03 with moderate consumption growth at 7% and net exports peaking at around 5 Million Tonnes. And, finally, 2003-04 to 2005-06 has been marked by high growth rates in domestic consumption around 10% per annum. This period saw net export levels start its southward movement. As imports more than doubled and exports remained stagnant net export levels fell to the low levels of the early nineties at less than 1 Million Tonne.

2.18 It may be noted, between growth in domestic demand and relative movements in imports and exports (i.e., net exports), it shows that the Indian steel industry has geared itself fully to operate in an open economy where exports and imports are seen to respond to increases or decreases in domestic demand driven by primarily market signals (i.e., relative domestic and international price and relative realization on domestic versus international sales) and appropriate fiscal adjustments (i.e., changes in tax rate). The observed relative movements in exports and imports underpin the following important developments in the Indian steel industry:

a) Over the past 15 years the Indian steel industry has developed significant competitive strength, which enabled it to sell in the world market and to hold its own against imports in the domestic market.

b) Exports have become an integral part of the business strategy of the Indian steel producers, especially of the private players. It also implies that the level of exports in the globally integrated steel sector will be determined at the margin by relative realization of the producers in the domestic market vis-à-vis that in export destinations. While the PSUs are still committed to catering to the domestic market first, the private producers have utilized the opportunity offered by the opening up of the steel market's, export reimbursements etc.) in a free market environment.

2.19 The experience of the last three Five Year Plans also underscores some important changes and new decision parameters in the evolving structure of the Indian steel industry that needs to be taken note of:

2.20 Firstly, decline in net export levels can be seen as a signal for the need to add to domestic supply through better capacity utilization and/or expansion of domestic capacity to meet rising domestic demand. For example, the sudden rise in imports accompanied by static export levels in the last 2 years had taken place not because of a fall in competitiveness of Indian steel but to fill the supply demand gap in the domestic market. In fact, exports of value-added products have increased in the last few years.

2.21 Secondly, the related movements in net exports and domestic consumption also underscore the strategic importance of building up export capabilities in the long run because such a strategy provides an important flexibility to the industry in terms of an extra window of demand when domestic demand is slack and as an additional source of domestic supply when domestic demand rises fast. Building up an export presence is of strategic importance to this industry where investments are lumpy.

2.22 The other important outcome of globalization has been the parallel movement in international and domestic prices – the margin between the two being determined by the external value of the Rupee and the import duty rates. In other words, domestic prices are now being determined at the margin by international prices as is expected in a free and open market situation. Progressive reduction in custom duty rates has over the years reduced the margin between the landed cost of imports and the domestic market prices. Under the current policy circumstances, vulnerability of the domestic suppliers from competing imports increases if the value of the Rupee appreciates or international prices fall sharply and vice versa.

2.23 As it is not viable (technologically or economically on scale considerations) for any country at a given time period to produce domestically all the different grades of steel required by the downstream industries, some imports are bound to take place. However, under the current trade regime of low import duties and no physical controls, there is every possibility of imports taking place not only to bridge the gap between domestic availability and demand but also on price considerations as a substitute for dearer domestic supplies. Hence vulnerability of Indian domestic industry to cheap imports has increased manifold.

B. Iron Ore Sector: Industry Structure

2.24 After the adoption of the New Industrial policy the iron and steel sector was opened up for private investment. This occurred as the iron and steel sector was removed from the list of industries reserved for public sector. At the same time, the sector was largely freed from the erstwhile licensing policy that limited its capacity expansion. Imports of foreign technology as well as foreign direct investment are freely permitted up to certain limits under an automatic route. Ministry of Steel plays the role of facilitator, providing broad directions and assistance to new and existing steel plants, in the liberalized scenario.

Profile of steel industry

(i) Steel

2.25 The liberalization of industrial policy and other initiatives taken by the Government have given a definite impetus for entry, participation and growth of the private sector in the steel industry. While the existing units are being modernized/expanded, a large number of new/greenfield steel plants have also come up in different parts of the country based on modern, cost effective, state of-the-art technologies.

2.26 At present, total (crude) steel making capacity is over 34 million tonnes and India, the 8th largest producer of steel in the world, has to its credit, the capability to produce a variety of grades and that too, of international quality standards. As per the ratings of the World Steel Dynamics, Indian HR Products are classified in the Tier II category quality products – a major reason behind their acceptance in the world market. EU, Japan have qualified for the top slot, while countries like South Korea, USA share the same class as India.

(ii) Pig Iron

2.27 In pig iron also, the growth has been substantial. Prior to 1991, there was only one unit in the secondary sector. Post liberalization, the AIFIs has sanctioned 21 new projects with a total capacity of approx 3.9 million tonnes. Of these, 16 units have already been commissioned. The production of pig iron has also increased from 1.6 million tonnes in 1991-92 to 5.28 million tonnes in 2002-03.

Major producers of Iron and Steel

2.28 Structure of the Indian steel industry as of 2005-06 with its various segments can be described as below:

i) **The Main Producers**: In order to maintain homogeneity with past data, the old classification of Integrated Plants has been renamed **Main Producers**. This category includes the public sector plants of SAIL (including its subsidiaries - IISCO, Alloy Steel Plant, Salem and VISL), RINL and the lone private sector plant – TISCO. The Main Producers have a combined capacity of around 19 Million Tonnes per annum with current capacity utilization rates exceeding 100%.

ii) **Other Major Producers:** This category includes the integrated steel plants (other than Main Producers) with crude steel capacity 0.5 million and above – irrespective of technology route. The Other Major Producers comprising of ESSAR, ISPAT and JVSL are estimated to have a total of 8 Million Tonnes of crude steel capacity. However, the official estimates lie at about 5.8 Million Tonnes. These are primary steel makers with diverse technology routes such as DRI-EAF DRI/BF-EAF, COREX/BF- BOF etc.

iii) **Other Secondary Producers:** This category is comprised of the mini steel plants with Electric Arc Furnaces (EAF) and Induction Furnaces (IF) with capacity below 0.5 Million Tonnes. All EoF units also come under this category. Moreover, this category includes the stand -alone processors without backward integration of steel making. Re-rolling (RR) Units, Cold Rolling (CR) Units, GP/GC Sheets Units, Pig Iron & Sponge Iron Plants (other than those of main/major producers) fall under this category.

2.29 The last two categories, namely the '**Other Major Producers'** and the '**Other Secondary Producers'** together form the consolidated category of **'Secondary Producers'**. The **'Other Secondary Producers'**, being mainly Mini Steel Plants and stand-alone processors, have been categorized into segments according to their items of production.

Producer Group-wise Production of Crude Steel, 2001-02 to 2005-06

PRODUCER	PRODUCTION OF CRUDE STEEL (Million Tonnes)				
	2001-02	2002-03	2003-04	2004-05	2005-06 P
SAIL	11.023	11.628	12.385	12.460	13.470
RINL	2.990	3.256	3.403	3.452	3.494
TATA STEEL	3.749	4.098	4.224	4.103	4.730
MAIN PRODUCERS TOTAL	**17.762**	**18.982**	**20.012**	**20.015**	**21.694**
EAF/COREX-BOF/MBF-EOF	5.904	6.711	8.238	10.229	11.273
INDUCTION FURNACE	4.298	4.750	5.998	8.242	8.693
SECONDARY PRODUCERS TOTAL	**10.202**	**11.461**	**14.236**	**18.471**	**19.966**
GRAND TOTAL	**27.964**	**30.443**	**34.248**	**38.486**	**41.660**

2.30 The main producers and other major producers have integrated steel making facility with plant capacities over 0.5 mT and utilize iron ore and coal/gas for production of steel. In 2004-05, the main producers i.e. SAIL, TISCO and RINL had a combined capacity of around 19.3 mT and capacity utilization was 104 percent. The other major producers comprising of ESSAR, ISPAT and JVSL had a capacity of 6.4 mT with capacity utilization of 97 percent. The secondary sector is dispersed and consists of:

(a) Backward linkage from about 120 sponge iron producers that use iron ore and noncoking coal, with a capacity of around 13 mT, providing feedstock for steel producers. The capacity utilization in 2004-05 was 75 percent.

(b) About 650 mini blast furnaces, electric arc furnaces, induction furnaces and energy optimizing furnaces that use iron ore, sponge iron and melting scrap to produce steel. Their capacity is around 14.7 mT, and capacity utilization in 2004-05 was 58 percent.

(c) Forward linkage with about 1,200 re-rollers that roll out semis into finished steel products for consumer use. These are small and medium enterprises, whose reported capacity is around 15 mT, and capacity utilization in 2004-05 was 55 percent.

C. Regulatory Framework:

(a) Changes in the government policies since 1991

2.31 The economic reforms initiated by the Government since 1991 have added new dimensions to industrial growth in general and steel industry in particular. Licensing requirement for capacity creation has been abolished, except for certain locational restrictions. As indicated above, steel industry was removed from the list of industries reserved for the public sector. Automatic approval of foreign equity investment upto 100% is now available.

2.32 With effect from 24.5.92, Iron and Steel industry was included in the list of `high priority' industries for automatic approval for foreign equity investment upto 51%. This limit has been recently increased to 100%.

2.33 Price and distribution controls were removed from January, 1992, removed except 5 priority sectors, viz. Defence, Railways, Small Scale Industries Corporations, Exporters of Engineering Goods and North Eastern Region.

2.34 Restrictions on external trade, both in import and export were removed. Import duty rates have been reduced drastically. Advance Licensing Scheme allows duty free import of raw materials for exports.

2.35 Certain other policy measures such as reduction in import duty of capital goods, convertibility of rupee on trade account, permission to mobilise resources from overseas financial markets and rationalisation of existing tax structure for a period of time have also benefited the Indian Steel Industry.

(b) Assistance being provided by Ministry of Steel to Private Sector

2.36 Ministry of Steel is extending all possible support, as detailed below, for the development of Iron and Steel Sector in the country:

a) The Ministry is providing linkage for raw materials, rail movement clearance etc. for new plants and expansion of existing ones, wherever applied for. There are two linkage committees, viz.,

- Linkage Committee for finalising and reviewing the linkage of coal as well as iron ore supply to the Sponge Iron Plants being set up in the country; and
- Linkage Committee for finalising and reviewing the linkage of coal as well as Iron Ore supply to the Pig Iron plants, new steel plants and coke oven setup/ being set up in the country.

b) For movement of raw materials other than coal, a quarterly meeting of Central board of Transport (CBT) is held under the Chairmanship of Development Commissioner for Iron and Steel wherein the major producers and consumers of Iron and Steel units and representatives of railways are co-opted. The primary function of this committee is to finalise the wagon requirements and ensure an un-interrupted supply of raw materials to the producers. With closure of the office of DCI&S this task is being co-ordinated by a Jt. Secretary in the Ministry of Steel who has been disignated as the DCI&S.

c) The Ministry has been interacting with All India Financial institutions to expedite clearance of projects. The ministry has also been making presentations to the financial institutions and banks highlighting the emerging scenario in steel sector, technological issues need for development of the steel industry in India etc.

d) In order to review the progress of implementation of new steel projects and assess the problems faced by new units, regular interactions with Entrepreneurs proposing to setup Iron and Steel Plants are held at the level of Secretary.

e) Ministry of Steel identifies infra-structural and related facilities required by steel industry so that their absence does not lead to bottlenecks in the future growth of the Iron and Steel Sector, and takes up these issues with the concerned ministries.

f) The Ministry has encouraged the setting up of "Institute for Steel Development and Growth (INSDAG)" in Calcutta in August, 1996. The leading steel producers in the country are members of this Institute, which has been set up with the objective of promoting, developing and propagating the proper and effective use of steel and increasing intensity of steel usage particularly in the construction sector and in rural and semi urban areas.

g) In order to resolve the problems faced by existing & new steel plants & to assist major steel plants being implemented, Govt. has setup a Project Coordination Group under the Chairmanship of Steel Minister.

(c)Additional Capacity Creation in Private Sector Since 1991

2.37 After de-licensing of Indian Iron and Steel Industry and as a result of the steps taken for creation of additional capacity in the private sector, 19 projects involving a total investment of Rs. 30,835 crores equivalent to a capacity of approx. 13 million tonnes per annum have already been cleared by Financial Institutions and are in various stages of implementation. Already 8 units with a total capacity of Approx 5.45 million tonnes have already been commissioned

(d)Captive Mines

2.38 In order to assure the availability of iron ore to domestic steel producers, India has adopted a policy of granting captive mines. The necessity of such a policy framework is even more important in the context of tight supplies and sharp volatility in prices of inputs. However, due to the existing allocation criterion based on considerations of value addition within state and other constraints, not all steel producers have got the facility of captive mines. Therefore, these plants are disadvantaged in comparison to plants with captive mines. This anomaly needs to be corrected, as freight costs are also significant due to poor transport infrastructure.

2.39 The current cost advantage for steel plants with captive mines is due to the high prices of iron ore worldwide. The massive rise in demand for it, mainly from China, was largely unanticipated and the global iron ore industry was not prepared for such a rapid rise in its demand. Not only that mining capacity globally had to be raised, significant investments were to be made on infrastructure to make the iron ore move to the ports of the respective countries for export destinations. While the iron ore market is expected to remain tight at least for another 3-4 years, it is also believed that the current price levels are not sustainable in the long run and corrections will take place by the beginning of 2011. If the global iron ore prices fall, the competitive advantage for the Indian steel makers will also drop proportionately.

2.40 The iron ore advantage remains for Indian steel plants as long as there is sufficient iron ore available within the country, captive or otherwise. The steel industry has viewed that, given the steel output growth potential within the country and the mineable reserves plus remaining resources of iron ore, this will not last for more than 40 years (estimates vary from 20 to 40 years) if exports are to continue at the current or increased level and the full production potential of the industry is also to be met. The life will be shorter if the magnetite ores, not currently preferred by the Indian steel makers, are excluded. Further, the mining costs will rise incrementally in absolute terms at higher rate of exploitation taking away a part

of the cost advantage that the Indian steel industry today enjoys. It is also being seen that the country's high quality reserves are limited. Of the 7004.17 Million Tonnes of hematite reserves (as on 1.4.2005), only about 1304 Million Tonnes belong to 65% + (plus) Fe grade. Given the strong demand for these both from the domestic steel and DRI industries and for exports, these 65%+ reserves are expected to be depleted in less than 15 years.

D. Pricing

2.41 Following de-regulation of prices for integrated steel plants in 1991-92, the domestic prices of steel have become market-determined. Market prices remain in step with international prices, though generally lower. During industry downturns, prices fall and during upturns, they rise. While rationalization of the customs and excise duty structure is aimed primarily at reducing fiscal and revenue deficits, it has an indirect influence on consumer prices. At present, there are around three thousand units manufacturing steel and steel products, which are marketed by over 100,000 traders for ultimate consumers. This dispersal of the distribution chain has been the principal reason why no price regulation of the steel trade has ever been in force. Government has recently set up a Competition Commission to look into complaints of monopolistic pricing.

2.42 ***Steel futures:*** The cyclical nature of the steel industry deters fresh investments due to risks of recession. The mismatch between demand and supply also leads to price volatility witnessed during recent times. Stagnation in steel prices for long periods followed by sudden spurt also affects the consumers and the infrastructure industry. Therefore, the efforts of various stakeholders to develop risk-hedging instruments like futures and derivatives would be supported.

2.43 ***Trends in Domestic Market Price, 2003-04 to 2006-07:*** An important feature of post de-regulated era is that prices of both finished steel and its inputs have risen at a much faster rate and with a lot of volatility, compared to the past. This is especially true in the context of the period pertaining to the recent past. Table below gives changes in WPI (with base year 1993-94 =100) for iron and steel and major inputs of steel production between 1995-96 and 2005-06.

Movement in Wholesale Price Index of Steel and its Inputs (1993-94=100)

Year	All Commodities	Iron & Steel	Iron Ore	Coking Coal	Non-Coking Coal
1995-96	121.6	116.6	74.2	106.2	106.1
1996-97	127.2	124.1	96.6	131.8	115.4
1997-98	132.8	129.8	88.1	151.1	139.3
1998-99	140.7	132.8	121.8	156.1	143
1999-00	145.3	134.5	120.6	156.1	148.2
2000-01	155.7	136.8	122.4	158.9	156.7
2001-02	161.3	136.6	127	173.2	183.6
2002-03	166.8	143.5	127	173.2	183.6
2003-04	175.9	181.1	135.4	184.6	196.9
2004-05	187.3	232.9	448.3	227.2	225.6
2005-06	195.6	250.1	601.5	239	232.8

2.44 Steel prices have seen an upsurge from the last quarter of FY2002. The upward momentum has been maintained throughout the 10th Five Year Plan period. The last two quarters of 2005 –06 **(see Table below)** have seen some deceleration in the rate of price rise as compared to the base level average price prevailing in the 2nd Quarter of 2003-04. However, the opening quarter of 2006-07 has once again experienced sharp rise in domestic market prices. The indices are based on monthly spot market prices in Mumbai collected by the Joint Plant Committee. The prices are inclusive of transportation costs, excise duty and local sales tax.

2.45 Domestic price increases have been in tandem with the international price rise. The government, in a bid to curb domestic price rise and offer the user industries greater access to imported material, reduced customs duty rates sharply in quick succession since January 2004. Excise duty rates were also reduced as an interim measure for price management. However, upward pressure on prices has continued notwithstanding some relief towards the middle of the last fiscal.

Index of Quarterly Movement in Domestic Market Price for Select Categories in Mumbai Market, 2002-03 to 2006-07

Quarter	Wire Rods	Q2 (03-04)=100 HR Coils	GP Sheets
Q2- (03-04)	100.0	100.0	100.0
Q3- (03-04)	99.6	102.6	101.0
Q4- (03-04)	108.9	132.8	121.2
Q1- (04-05)	127.1	130.3	120.5
Q2- (04-05)	129.8	135.3	119.0
Q3- (04-05)	128.5	136.4	124.9
Q4- (04-05)	126.9	146.9	128.8
Q1- (05-06)	138.1	145.9	133.8
Q2- (05-06)	128.6	118.9	125.9
Q3- (05-06)	112.6	113.6	122.6
Q4- (05-06)	112.1	112.2	114.3
Q1- (06-07)	127.8	135.8	124.3

2.46 The net result of the changes in the prices of finished steel and inputs has been quite positive for the financial health of the steel industry. The Indian steel industry, during the 9th Five Year Plan, suffered on account of poor profitability, cash crunch and in some cases inability to pay its dues to financial institutions. The Government of India and various financial institutions facilitated the process of business and financial restructuring in the steel

sector. This strategy has paid rich dividends both to the Government as well as to the financial institutions. The return on capital employed, during the Tenth Five-Year plan, has improved significantly, both in the public and private sector steel firms. Presently, the Indian steel industry is capable and credit worthy to fund future plans of expansion through internal resources and market borrowings.

2.47 ***Domestic and international price movements:***

The other important outcome of globalization has been the parallel movement in international and domestic prices – the margin between the two being determined by the external value of the Rupee and the import duty rates. In other words, domestic prices are now being determined at the margin by international prices as is expected in a free and open market situation. Progressive reduction in custom duty rates has over the years reduced the margin between the landed cost of imports and the domestic market prices. Under the current policy circumstances, vulnerability of the domestic suppliers from competing imports increases if the value of the Rupee appreciates or international prices fall sharply and vice versa. (Relative movements in domestic and international prices of selected steel products, and rates of custom duty are placed in the **Tables** below**)**

Relative movements of steel prices - Imported vs Domestic

(June 2003=100)

Month,Year	**HR Coil**		**Wire Rod**	
	International	**Domestic**	**International**	**Domestic**
June,03	100.00	100.00	100.00	100.00
July,03	98.15	104.00	100.00	104.97
Aug,03	105.56	119.00	100.00	120.42
Sept,03	105.56	105.00	100.00	109.95
Oct,03	105.56	105.00	100.00	112.57
Nov,03	107.41	111.00	100.00	115.18
Dec,03	109.26	118.50	100.00	125.65
Jan,04	122.22	130.00	100.00	131.94
Feb,04	155.56	150.00	154.84	139.79
Mar,04	177.78	150.00	177.42	139.79
Aprl,04	177.78	149.00	161.29	145.03
May,04	207.41	150.00	148.39	149.21
June,04	207.41	137.50	141.94	130.89
July,04	207.41	154.00	141.94	159.69
Aug,04	214.81	150.00	141.94	148.69
Sept,04	214.81	149.00	161.29	127.75
Oct,04	214.81	154.00	177.42	146.60
Nov,04	214.81	156.00	170.97	138.74
Dec,04	214.81	154.00	154.84	133.51
Jan,05	211.11	165.00	154.84	145.55
Feb,05	211.11	167.50	151.61	141.36
Mar,05	211.11	177.00	148.39	147.91
April,05	192.59	185.00	141.94	151.83
May,05	192.59	170.00	135.48	130.89
June,05	166.67	160.00	135.48	125.65

July,05	144.44	141.00	135.48	124.08
Aug,05	138.89	140.50	135.48	133.51
Sept,05	133.33	133.50	135.48	139.27
Oct,05	133.33	131.50	135.48	125.65
Nov,05	133.33	130.00	135.48	125.65
Dec,05	133.33	125.00	135.48	122.51
Jan,06	133.33	130.00	138.71	129.84
Feb,06	133.33	127.50	135.48	133.51
Mar,06	159.26	138.00	158.06	138.74
Aprl,06	159.26	155.00	158.06	147.12
May,06	159.26	156.00	158.06	141.88
June,06	159.26	158.00	161.29	133.51
July,06	177.78	167.50	158.06	141.36
Aug,06	177.78	164.00	158.06	137.70

Changes in Customs Duty on Steel Items

(Percentage)

Product	**1993-94**	**1996-97**	**1999-2000**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**
Structurals/ Wire Rods	85	30	35	30	25	10	5	5
Plates/ HR Sheets	75	30	35	30	25	10	5	5
CR Coil	75	30	35	25	25	10	5	5
CR Sheet	75	30	35	25	25	10	5	5
HR Coils	50	25	25	25	25	10	5	5
GP/GC	85	30	35	30	25	10	5	5
Semis	30	20	25	25	25	10	5	5
ig Iron	20	20	15	15	15	5	5	5

E. Conclusion

2.48 The steel industry is on an upswing the world over. Indian steel making units, both in private and public sectors, remain upbeat about their improved volume of turnover, capacity utilization, sales and profit margins. A number of MOUs have been signed by major steel producers, both domestic and international, with the mineral rich states signifying possibilities of marked increase in both greenfield and brownfield production capacities. While private steel majors like Tata Steel have moved towards a globalised growth strategy based on mergers and foreign acquisitions, the public sector majors like Steel Authority of Il'}dia Limited (SAIL) or Rashtriya lspat Nigam Limited (RINL) have eliminated huge accumulated losses and become commercially buoyant.

2.49 This turnaround is to some extent a result of favourable global market conditions created by a huge surge in steel production and consumption in China. But the stimulus has also been the demonstration effect of a booming economy. In fact, the resurgence of Indian steel industry has moved parallel to the post liberalization economic revival and the resultant buoyancy in sectors like construction, infrastructure, real estate and transport which account for most of the total steel usage in the country. An important potential area for steel usage

resulting from economic growth and rising income levels is the household sector, especially rural households. However, unlike urban areas, in the rural areas concerted efforts would be required to convert this potential into actual consumption of steel and steel based products.

2.50 Despite the improved commercial viability and business optimism, one cannot ignore the fact that the sector continues to be plagued by a number of constraints. Some of these concerns may be common to other manufacturing sectors like need for supportive infrastructural facilities, adequate power/fuel, skilled personnel, modern testing and quality control equipment, product diversification, and marketing. There are, however, constraints which are specific to steel making. These are assured supply linkages to iron ore, coal and gas. Today criticality of these inputs constitutes one of the major areas of concern in steel making and specially for units without any captive mines.

2.51 There are also issues requiring attention such as Research & Development for cost effective production techniques utilizing indigenous raw material, modernization and upgradation of technology particularly in small and medium scale secondary level units, provision of training facilities for manpower development, diversification of steel products and markets, building up a reformed and consolidated data base for the steel sector etc.

2.52 National Steel Policy (NSP) announced on 3rd November, 2005 aims at building a modern and efficient domestic steel industry of global standards with a capacity to cater to diversified product demand. To realize this goal in a largely market driven environment, the industry will have to ensure efficiency and productivity of each and every component of operations including management.

2.53 India has necessary resources and capabilities to become a global supplier of quality steel. Also there exists ample market opportunities in the neighbouring regions of Asia, Africa and the Middle East. The policy framework while according top priority to meet domestic demand should also take into account the large export possibilities. Recognizing this potential, the National Steel Policy, 2005 has estimated an annual growth of around 13% in export of steel in the next decade and a half – a rate slightly higher than the achieved growth of around 11% during the post deregulation years.

2.54 Extrapolating this growth rate, the National Steel Policy projects an export ratio (i.e., percentage of production exported) in the range of 25-26% by 2019-20. Currently, India exports about 10% of its total finished steel production. Additionally, it exports semi-finished steel. In line with the achieved export ratio and the export possibilities indicated in the NSP, the milestone export ratio for the Eleventh Plan period is estimated to remain within a range of 12% - 15% of total production. The large-scale capacity additions envisaged during the Eleventh Five Year Plan period confirm the possibility of achieving the targets set in the National Steel Policy, 2005.

2.55 The post-deregulation period has seen significant changes in the structure of the Indian steel industry in terms of ownership. Capacity creation during the last decade after deregulation has taken place entirely at the behest of the private sector. As a result, there has been a noticeable shift towards the private sector both at the crude and finished steel stages. Private sector now accounts for 59% of total crude steel output compared to 37% in 1992-93 and 71% of total finished steel output compared to 67% in 1992-93.

2.56 Advent of new production technologies has brought about a significant change in the route-wise composition of the Indian steel industry. Capacities created in the aftermath of deregulation have been based on technologies as diverse as COREX (JSW Steel Ltd.), large-scale hybrid technologies combining Electric Steel making with BF hot metal with downstream rolling of flat products (Ispat Industries Ltd.) and large-scale integrated 'DRI-EAF-Flat products Rolling' capacities (Essar Steel Ltd.) etc. In the post deregulation years, the Secondary sector has doubled its contribution to crude steel production from 23% to 48% and for finished steel from 45% to 64% respectively.

2.57 In the last five years the Indian Sponge Iron industry grew at an annual rate of 23.5%. Today, India has become the largest producer of sponge iron in the world with a total production of 12.6 Million Tonnes in 2005-06 as against 5.4 Million Tonnes in 2001-02. Expansion of this sector supplying a substitute for scrap, has been helped by limited scrap availability and resultant high prices with a rapid rise in production in the secondary sector. This growth Is the result of a remarkable expansion in the small-scale coal based units with short gestation period and low capital intensity – concentrated largely in the iron-rich states of Jharkhand, Orissa and Chhattisgarh. On the other hand, in the large-scale technologically sophisticated gas based sponge iron units, production has remained stagnant.

2.58 During the four years period between 2000 – 01 to 2003 - 04, production of merchant Pig Iron remained at around 3-3.8 Million Tonnes till 2004-05. However, Pig Iron production has once again recorded a robust growth increasing 45% in a single year from 3.2 Million Tonnes in 2004-05 to 4.7 Million Tonnes in 2005-06. The noticeable trend with respect to this sector has been the gradual decline in the supply of merchant pig iron from the integrated Main Producers (e.g. SAIL and RINL) and the rise of the Secondary Sector Producers whose contribution increased from 64% in 2001-02 to nearly 79% in 2005-06. This trend is expected to continue in future, as the Main Producers have not planned for significant increase in pig iron production.

2.59 Between 2001-02 and 2005-06, production of Special and Alloy steel has grown from 0.99 Million Tonnes to 2.28 Million Tonnes and consumption from 1.09 Million Tonnes to 2.25 Million Tonnes. Of the total output, Stainless Steel accounted for about 1.7 Million Tonnes in 2004-05. India is currently the 7th largest producer of stainless steel in the world and has developed niche export markets in countries like China. The recent growth in this segment has been stimulated by use of stainless steel in sophisticated industrial applications and also in construction activities.

2.60 Performance of the domestic Ferro Alloy industry, although operating at 68% capacity utilisation, has been in line with the Indian and global steel industry.

2.61 Production increased at a healthy annual average rate of 18.6% from 0.828 Million Tonnes in 2001-02 to 1.65 Million Tonnes in 2005-06. Export performance of this sector also remained robust with export share in production going up steadily from 18.4% to 27.6% in the last four years despite uncompetitive power rates. In the case of this industry, while Chrome Alloys dominated the export basket, imports have been mostly of Ferro Silicon.

2.62 The Indian Refractory industry caters to a wide range of end-using sectors such as steel, cement, non-ferrous metals, glass etc. Production in this sector recorded a double-digit growth of 12.3% annually in the four years – increasing from 754.9 Thousand Tonnes to 1069.9 Thousand Tonnes - between 2002-03 and 2005-06. However, there still exists, substantial unutilized capacity in this segment (utilization rate being 55% in 2004-05). The industry is constrained by long term deceleration in volume growth in demand because of improved technology and operating practices leading to increased refractory life cycle in critical areas of steel making which accounts for about 75% of the total Refractory consumption in India.

2.63 Liberalization of the foreign trade regime has had a favourable effect on Indian exports. Exports have grown fast and at a rate exceeding 25% per annum between 1991-92 and 2002-03. Thereafter, till 2005-06 export levels stagnated at around 4-4.5 Million Tonnes per year. This period also coincided with a change in the country's export basket in favour of more value added and sophisticated products. The export destinations have also become diversified with the inclusion of new markets in Africa and the Middle East. On the other hand, imports followed a different growth path. In spite of progressive reduction in customs duty levels after deregulation, imports remained around 1-2 Million Tonnes per year till 2003-04 and rose rapidly in the last two fiscals. As a result, for a major part of the post deregulation years the country remained a net exporter of steel, even though the net export levels fluctuated between a low of 0.06 Million Tonne in 1996-97 to a high of 3.8 Million Tonnes in 2003-04.

2.64 It is important to note that there has been a change in the relative movements of exports and imports in the last 2-3 years. This period also saw very steep cut in customs duty rate on steel imports from 15% to 5% and within one single year (i.e., between February 2004 and August 2004). The reduction in import duty rates was undertaken to provide steel users easier access to global supplies and thereby stem the abnormal rise in domestic prices and also to avoid possibilities of a supply shortfall in the domestic market. Subsequently, i.e. in the last three years, imports of saleable steel more than doubled from 1.7 Million Tonnes in 2003-04 to 4.1 Million Tonnes in 2005-06. The surge in imports, however, has been accompanied by a decline in exports and also by falling net exports levels.

2.65 These developments would imply that the rise in imports is, to a very large extent, the result of increased domestic demand and not of erosion in the competitiveness of Indian steel.

2.66 Another important outcome of globalisation has been the parallel movement in international and domestic prices – the difference between the two is largely dependent on the external value of the Rupee and the import duty rates. In other words, domestic prices are now being determined at the margin by international prices as expected in a free and open market situation. In fact, progressive reduction in custom duty rates has over the years reduced the margin between the landed cost of imports and the domestic market prices.

2.67 Currently, world steel prices have become more volatile with sharp fluctuations within short time gaps. The differences between the contracted price and spot prices have also widened in the recent years. This is more apparent in the case of flat products, especially Hot Rolled flat products, as against the long products.

2.68 This volatility has been reflected in the globalised Indian steel market as domestic prices in the de-regulated market tend to move in tandem with international prices. In reflection of the global situation, in the last three years, prices of both finished steel and those of its inputs such as iron ore and coal have also risen at a much faster rate and with a lot of volatility compared to the pre- deregulated era.

2.69 Overall, the net result of the changes in the prices of finished steel and its inputs has been quite positive for the financial health of the Indian steel industry. The restructuring efforts of the Government of India after opening up of the economy, i.e. between 1998 and 2001) and the favourable current domestic and international markets have gone a long way in restoring the health of the Indian steel industry. The return on capital invested has improved significantly for both Public Sector and Private Sector players. Currently, the Indian steel industry has both the potential and the creditworthiness to fund future plans of expansion through generation of internal resources and by directly raising capital from the market.

2.70 The world steel industry is currently going through an extraordinary phase of growth and all round prosperity, fuelled primarily by the frenetic pace of growth in consumption and production of steel in China. World crude steel production grew from 0.850 billion Tonnes in 2001 to approximately 1.13 billion Tonnes in 2004 – recording a growth of 7.5% per annum compared to a mere 2% annual growth recorded between 1995 and 2001.

2.71 The major trends observed in the structure of the world steel industry are:
• Continuous shift of the industry– both in terms of production and consumption– from the West towards the East;
• Ensuring control over raw materials has become a very important component of steel business strategy in the aftermath of tight supply conditions and inflated prices caused by China's entry into the raw materials market; taking place through mergers and acquisitions, often across boundaries, as companies acquired downstream facilities for assured markets and upstream facilities for assured raw material/feed material supplies;
• Increased volatility of steel prices globally and widening of the gap between spot and contracted prices;
• Significant increase in the market valuation of the steel companies worldwide resulting from rising prices and successful cost reduction efforts.
Outlook for world steel market remains good for the coming next 2-3 years in the light of the expected robust global economic conditions. The short range forecast of steel consumption made by the International Iron & Steel Institute (IISI) estimates world steel demand to touch 1150 Million Tonnes in the calendar year 2007.

2.72 The greatest downside risks, however, may result from the possibility of a decline in the growth of domestic steel demand in China and the subsequent possibility of huge net exports from that country. Observers feel that any slowdown in the largely state-sponsored and highly steel-intensive 'Fixed Asset Investments' could create substantial over supply of steel within China with adverse impact on business globally.

2.73 Further, potentially tight supply conditions of mined raw materials like coal and iron ore, shortage of international bulk carrying capacities and high transportation costs, possibilities of global destabilization through rising oil prices and high rates of inflation and

interest in the developed world – also remain major causes of concern for the world steel industry including India.

Section - III: Iron and Steel Pricing in Brazil and China

3.1 Publicly available sources do not provide any information of pricing policies for iron and steel in Brazil and China.

Chapter - 9

Subsidies Disciplines in Natural Resources Pricing: Coal

Section I: Coal Pricing in India

A. Background

1.1 ***Reserves***

(a) Inventory of coal resources:

1.2 As a result of exploration carried out up to the depth of 1200m by the GSI, CMPDI and MECL etc, a cumulative total of 253.30 Billion tonnes of Geological Resources of Coal have so far been estimated in the country as on 1.1.2006. The state-wise distribution of coal resources and its categorisation are as follows:

State	Coal Resources in Million Tonnes			
	Proven	Indicated	Inferred	Total
Andhra Pradesh	8403	6158	2584	17145
Arunachal Pradesh	31	40	19	90
Assam	315	27	34	376
Bihar	0	0	160	160
Chhattisgarh	9570	27433	4439	41442
Jharkhand	36148	31411	6339	73898
Madhya Pradesh	7565	9258	2935	19758
Maharashtra	4653	2432	1992	9077
Meghalaya	117	41	301	459
Nagaland	4	1	15	20
Orissa	16911	30793	14295	61999
Uttar Pradesh	766	296	0	1062
West Bengal	11383	11879	4553	27815
Total	95866	119769	37666	253301

(b) Categorisation of Resources:

1.3 The coal resources of India are available in sedimentary rocks of older Gondwana Formations of peninsular India and younger Tertiary formations of north-eastern/ northern hilly region. Based on the results of Regional/ Promotional Exploration, where the boreholes are normally placed 1-2 Km apart, the resources are classified into Indicated or Inferred category. Subsequent Detailed Exploration in selected blocks, where boreholes are less than 400 meters apart, upgrades the resources into more reliable 'Proved' category. The Formation-wise and Category-wise coal resources of India as on 1.1.2006 are given below:

(in million tonnes)

Formation	Proven	Indicated	Inferred	Total
Gondwana Coals	95399	119663	37297	252359
Tertiary Coals	467	106	369	942
Total	95866	119769	37666	253301

Type-wise and Category-wise coal resources of India as on 1.1.2006 are given below:

(in million tonnes)

Type of Coal	Proven	Indicated	Inferred	Total
(A) Coking :-				
-Prime Coking	4614	699	-	5313
-Medium Coking	11445	11751	1880	25076
-Semi-Coking	482	1003	222	1707
Sub-Total Coking	16541	13453	2102	32096
(B) Non-Coking*:-	79325	106316	35564	221205
Total (Coking & Non-Coking)	95866	119769	37666	253301

* Including total coal of North Eastern Region.

(c) Status of Coal Resources in India during Last Five Years:

1.4 As a result of Regional, Promotional and Detailed Exploration by GSI, CMPDI and SCCL etc, the estimation of coal resources of India has reached 253.30 billion tonnes. The estimates of coal resources in the country during last 5 years are given below:

(in million tonnes)

As on	Proven	Indicated	Inferred	Total
1.1.2002	87320	109377	37417	234114
1.1.2003	90085	112613	38050	240748
1.1.2004	91631	116174	37888	245693
1.1.2005	92960	117090	37797	247847
1.1.2006	95866	119769	37666	253301

1.5 ***Production:*** India has a long history of commercial coal mining covering nearly 220 years starting from 1774 by M/s Sumner and Heatly of East India Company in the Raniganj Coalfield along the Western bank of river Damodar. However, for about a century the growth of Indian coal mining remained sluggish for want of demand but the introduction of steam locomotives in 1853 gave a fillip to it. Within a short span, production rose to an annual average of 1 million tonne (mt) and India could produce 6.12 mts. per year by 1900

and 18 mts per year by 1920. The production got a sudden boost from the First World War but went through a slump in the early thirties. The production reached a level of 29 mts. by 1942 and 30 mts. by 1946.

1.6 With the advent of Independence, the country embarked upon the 5-year development plans. At the beginning of the 1st Plan, annual production went upto 33 mts. During the 1st Plan period itself, the need for increasing coal production efficiently by systematic and scientific development of the coal industry was being felt. Setting up of the National Coal Development Corporation (NCDC), a Government of India Undertaking in 1956 with the collieries owned by the railways as its nucleus was the first major step towards planned development of Indian Coal Industry. Along with the Singareni Collieries Company Ltd. (SCCL) which was already in operation since 1945 and which became a Government company under the control of Government of Andhra Pradesh in 1956, India thus had two Government coal companies in the fifties. SCCL is now a joint undertaking of Government of Andhra Pradesh and Government of India sharing its equity in 51:49 ratio.

1.7 **Nationalisation of Coal Mines**: Right from its genesis, the commercial coal mining in modern times in India has been dictated by the needs of the domestic consumption. On account of the growing needs of the steel industry, a thrust had to be given on systematic exploitation of coking coal reserves in Jharia Coalfield. Adequate capital investment to meet the burgeoning energy needs of the country was not forthcoming from the private coal mine owners. Unscientific mining practices adopted by some of them and poor working conditions of labour in some of the private coal mines became matters of concern for the Government. On account of these reasons, the Central Government took a decision to nationalise the private coal mines. The nationalisation was done in two phases, the first with the coking coal mines in 1971-72 and then with the non-coking coal mines in 1973. In October, 1971, the Coking Coal Mines (Emergency Provisions) Act, 1971 provided for taking over in public interest of the management of coking coal mines and coke oven plants pending nationalisation. This was followed by the Coking Coal Mines (Nationalisation) Act, 1972 under which the coking coal mines and the coke oven plants other than those with the Tata Iron & Steel Company Limited and Indian Iron & Steel Company Limited, were nationalised on 1.5.1972 and brought under the Bharat Coking Coal Limited (BCCL), a new Central Government Undertaking. Another enactment, namely the Coal Mines (Taking Over of Management) Act, 1973, extended the right of the Government of India to take over the management of the coking and non-coking coal mines in seven States including the coking coal mines taken over in 1971. This was followed by the nationalisation of all these mines on 1.5.1973 with the enactment of the Coal Mines (Nationalisation) Act, 1973 which now is the piece of Central legislation determining the eligibility of coal mining in India.

1.8 India now ranks 3rd amongst the coal producing countries in the world. Through a sustained programme of investment and greater thrust on application of modern technologies, it has been possible to raise the production of Coal from a level of about 70 million tonnes at the time of nationalisation in early 1970's to 355 million tonnes (provisional - excluding Meghalaya) in 2003-04. Most of the coal production in India comes from openpit mines contributing over 81% of the total production. A number of large openpit mines of over 10 million tonnes per annum capacity are in operation. Shovels with capacity upto 25 cu. m. , Dumpers upto 170 tonnes , Draglines upt 24/96 capacity and inpit crushing conveying system are deployed in hard coal openpit mines. Large capacity bucket wheel excavators are in operation for lignite mining.

1.9 Underground mining currently accounts for around 19% of national output. Most of the production is achieved by conventional Bord and Pillar mining methods. Side by side , intermediate technologies using Side Discharge Loaders (SDL) and Load Haul Dumpers

(LHD) in Bord and Pillar method of working have been introduced . Contemporary technology in the form of Longwall Powered support has also been introduced in a limited scale.

1.10 Coal production achieved in the country (excluding Meghlaya) during the year 2003-04 has been 355.72 million tonnes (provisional) as compared to the production of 336.87 m.t. achieved during same period of the previous year i.e. 2002-2003 showing a growth of 5.6%.

Company-wise details are given below:

(In million tonnes)

Company	Target (2003-04)	Actual Production * (2003-04)	Actual Production (2002-03)
CIL	298.50	306.38	290.69
SCCL	33.50	33.85	33.24
OTHERS	13.05	15.49	12.94
TOTAL	345.05	355.72	336.87

* Provisional

Note: Figures exclude Meghalaya.

About 86% of the total coal production in the country comes from the collieries of Coal India Ltd. CIL is also the biggest supplier of coal in the country. During the year 2003-04, CIL and SCCL supplied the following quantities of coal to various consumers:

COAL INDIA LTD.

(Million Tonnes) (Provisional)

Sector	Target Offtake	Actual Offtake	Supply % against Target
Power	223.50 (3.01)	233.06 (1.45)	104
Steel	13.51	11.42	85
Loco	0.00	0.00	-
Cement	8.51	8.87	104
Fertilizer	3.14	2.30	73
Others	49.67	47.45	96
Colly.Cons.	1.52	1.19	78
Total	299.85	304.29	101

(Figures in bracket indicate middling

SINGARENI COLLIERIES COMPANY LTD.

(Million Tonnes) (Provisional)

Sector	Target Offtake	Actual Offtake	Supply % against Target
Power	25.73	25.65	100

Loco	0.00	0.00	-
Cement	4.90	4.55	93
Fertilizer	0.00	0.02	-
Others	2.75	3.61	132
Colly.Cons.	0.12	0.12	98
Total	33.50	33.95	101

During 2003-04 offtake of coal from SCCL has been 33.95 million tonnes against target of 33.50 million tonnes. This reflects a demand satisfaction of 101%.

1.11 ***Consumption:*** Coal has been recognized as the most important source of energy for electricity generation in India. About 75% of the coal in the country is consumed in the power sector. In addition, other industries like steel, cement, fertilizers, chemicals, paper and thousands of medium and small-scale industries are also dependent on coal for their process and energy requirements. In the transport sector, though direct consumption of coal by the Railways is going down on account of phasing out of steam locomotives, the energy requirement for electric traction is still dependent on coal converted into electric power. The Department of Coal is engaged in developing coal resources of this country in a manner to meet the requirements of coal of different consuming sectors. Performance of coal sector in this respect has been impressive.

B. **Coal Sector: Industry structure**

1.12 Through a program of investment and greater thrust on application of modern technologies, production of coal has been raised from a level of about 70 million tonnes at the time of nationalization of coal mines in early 1970's to 355.72 million tonnes (Provisional) (All India – excluding Meghalaya) in 2003-04.

1.13 Coal India limited and its subsidiaries are the major producers of coal. 306.38 million tonnes (provisional) of coal were produced by Coal India Ltd. and its subsidiaries during 2003-2004 as against the production of 290.69 million tonnes in the year 2002-03. Showing a growth of 5.4%.

1.14 Singareni Collieries Company Limited (SCCL) is the main source for supply of coal to the southern region. The company produced 33.85 million tonnes(provisional) of coal during 2003-2004 as against 33.24 million tonnes during the corresponding period last year. Small quantities of coal are also produced by TISCO, IISCO, DVC and others.

(a) Productivity

1.15 Productivity is measured in terms of raw coal output in tonnes per manshift (OMS). There has been substantial improvement in OMS in Coal Companies during the last decade for CIL group of companies. As against an OMS of 0.58 tonne at the time of nationalization, OMS in Coal India Limited during 2003-2004 has been 2.82 tonnes (provisional). In SCCL the OMS during 2002-2003 was 1.89 tonnes and during 2003-2004 was 1.81 tonnes.

(b) Distribution

Distribution of coal to core sector:

1.16 Core sector consists of Power, Steel, Cement, Defence, Fertilizer and Railways. Power and Cement sectors are allocated coal through Standing Linkage Committee (SLC) operating in the Ministry of Coal.

Linkage Committee:

1.17 Two types of linkage committees function for deciding the coal linkage to the core sector consumers –

(i) Standing Linkage Committee (Long-term)

(ii) Standing Linkage Committee (Short-term)

Standing Linkage Committee (Long-term):

1.18 SLC(Long-term) considers requirement of coal of consumers at the planning stage and links the requirement in the long-term perspective from a rational source after examining the factors like quantity and quality required, time frame, location of the consuming plants, transport logistics, development plan for the coal mine etc. These Committees for Power and Cement function in the Ministry of Coal.

1.19 The Long-term Linkage Committee is Chaired by Additional Secretary, Ministry of Coal and have representatives from Ministry of Power, Ministry of Railways, Ministry of Surface Transport, Planning Commission, Central Electricity Authority, Coal India Limited, CMPDIL and SCCL.

Standing Linkage Committee (Short-term) for power and cement

1.20 SLC functioning in Ministry of Coal, under the chairmanship of Additional Secretary has representatives from Railways, Ministry of Power, Central Electricity Authority, CIL, SCCL, coal companies, Department of Industrial Policy & Promotion, Cement Manufacturers' Association etc. The short-term linkages to power and cement industries are granted once every quarter. SLC also takes care of mid-term deviations from planned linkages, and movement of coal. Although, price and distribution of all grades of coal have been deregulated with effect form 1.1.2000, SLC still continues as an administrative mechanism, and provides a common platform to the coal producers, consumers as well as the transporters. Majority of consumers in Power and Cement sectors have expressed their opinion in favour of continuation of the SLC, as it operates as a facilitating forum.

1.21 Linkages of coal to thermal power stations are sanctioned by the Standing Linkage Committee on quarterly basis on the basis of recommendation made by the Central Electricity Authority(CEA). The CEA recommendation is based on the power generation programme, ground stock with individual power houses etc. Factors for deciding the linkages are power generation programme, availability of coal and the rail transport as well as feasibility of movement by other modes.

(A) POWER HOUSES

1.22 Off-take of coal by thermal power stations during the year 2002-03 was 246.81 million tonnes. During the year 2003-2004, the total despatch to power houses (from CIL and SCCL) has been 258.71 million tonnes (Provisional).

(B) CEMENT PLANTS

1.23 The despatch to cement plants from CIL and SCCL during 2002-03 was 12.56 million tonnes. During the year 2003-2004, 13.42 million tonnes (Provisional) of coal has been despatched to cement plants from CIL and SCCL.

1.24 Linkages of coal to cement plants are also sanctioned by the Standing Linkage Committee (Short-term) on quarterly basis. Department of Industrial Policy and Promotion recommends cement plant wise linkages on the basis of feed back they receive from the Cement Manufacturers Association.

(C) STEEL PLANTS

1.25 The Standing Linkage Committee for sanctioning coal linkages to Steel plants/Pig Iron/Sponge Iron/ Cokereis etc. on long term basis is functioning in the Ministry of Steel. Based on recommendation of SLC, CIL makes allocation to units of this sector.

1.26 The allocation of coking coal to steel plants was earlier made by the Coal Controller. However, after deregulation of coking coal, the supplies of coking coal are being made by the coal companies themselves on the basis of linkages established by a competent linkage committee or on the basis of their existing commitments.

1.27 During the year 2002-03, 4.78 million tonnes of washed and direct feed coal was despatched by CIL to steel plants and 4.91 million tonnes (Provisional) during the year 2003-2004 showing a positive growth of 2.7%.

Supply of Coal to Bulk Consumers

1.28 Consumer-wise off-take of coal from Coal India Limited by major consuming sectors is indicated in Annexure-VI. The main consumers are the power houses, steel plants, cement industry and fertilizer industry. Almost 85% of the total production of coal is consumed by these sectors.

Coal Despatches and Stocks

1.29 All India figures of production, despatches and Vendible stocks of coal for the previous years are shown in Annexure-V The despatches (excluding Meghalaya) during the year 2002-2003 were of the order of 334.20 million tonnes. The overall despatches during 2003-2004 have been 352.32 million tonnes (provisional) .The Vendible stock as on 31.03.2003 was at a level of 19.70 million tonnes (All India) and as on 31.3.2004 was 21.84 million tonnes (Provisional).

1.30 Coal Mining is affected by seasonal factors. Large build up of pithead stocks occurs during the winter months. Production drops during summer and monsoon period. During the period April-September each year, part of the requirements of the consumers is met by drawing down of stocks from the pitheads.

Marketing and Distribution

1.31 The Marketing Division of CIL coordinates marketing activities for all its subsidiaries. CIL has set up Regional Sales Offices and Sub-Sales Offices at selected places in the country to cater to the needs of the consuming sectors at various regions.

Mode of Transport

1.32 Important modes of transport of coal in CIL are Railways, Road, Merry-go-Round Systems, Conveyor Belts and the Rail-cum-Sea Route. The share of these modes of transport in the total movement of coal is approximately as under:

(a) Railways 52.6% (b) Road 16.9% (c) MGR System 23.8% (d) Other (Belt Conveyor Ropeways, Rail-cum-Sea Routes etc) 6.7%

(A) RAIL MOVEMENT

1.33 Railways constitute the major system of coal transportation in India as about 53% of the coal, the largest single commodity is transported by the Railways. The despatch of coal by rail is governed by the Preferential Traffic Schedule of the Indian Railways, under which the programme of movement is to be sponsored by the various sponsoring authorities and accepted by the coal companies. In case of deregulated coal, Railways have allowed coal companies to sponsor the movement of coal.

(B) RAIL-CUM-SEA-MOVEMENT

1.34 Coal requirement of some consumers in Southern India, which include power stations and cement plants, are met by moving coal by Rail-cum-Sea Route. This is done in view of the difficulties experienced in moving coal via all Rail Routes from Bengal-Bihar and Main Line-Talcher Coalfields. The requirement of power stations of Tamil Nadu Electricity Board (TNEB) is met by Rail-cum-Sea Route. Haldia, Paradip and Vizag Ports handle the shipments.

Distribution of Coal to Non -Core Sector

1.35 Non-core sector comprises linked industrial consumers, captive power plants of such industries, brick manufacturing (BRK) and other seasonal consumers/customers. The non-core sector units used to be granted linkage by CIL till recently. The system of linkages to non-core sector consumers was introduced by CIL in 1978 with a view to rationalizing coal demand vis-à-vis availability. This system of sale of coal to non-core consumers has since been replaced by the introduction of New Coal Sales Policy for sale of coal to non-core consumers in January,2003. In this policy, the arrangement of Fuel Supply Agreement (FSA) between the coal company and non-core consumers is introduced. Also coal companies can enter into FSA with Central/State level nominated agencies for distribution of coal to SSI and small consumers

1.36 Non-linked consumers like brick manufacturing units (BRK Sector) are seasonal consumers and had been kept outside the purview of the linkage system. Supply to this sector is made against State Sponsorship where existing and under Open Sales Scheme subject to availability of coal in respective subsidiaries.

I. EXPORT OF COAL

1.37 Coal is under Open General Licence (OGL) list. India exports coal to the neighbouring countries to meet their demand of coal. The traditional buyers of Indian coal are Nepal, Bangladesh and Bhutan. Export to Nepal and Bhutan is done in rupee exchange as per the protocol between the two countries and with Bangladesh it is done in US Dollar. Export of coal to the neighbouring countries was earlier canalised through the Mineral and Metal trading Corporation, but for the last few years it has been decanalised. Export of coal by CIL is made through tender route. The quantum of coal exported by CIL during 2002-03 to the neighbouring countries was 12,650 tonnes. During 2003-2004 the quantity of coal exported by CIL was 35,831 tonnes.

II. IMPORT OF COAL

1.38 As per the present Import policy, coal can be freely imported (under Open General Licence) by the consumers themselves considering their needs and exercising their own commercial judgments.

1.39 Coking coal is being imported by Steel Authority of India Limited (SAIL) and other Steel sector manufacturing mainly to bridge the gap between the requirement and indigenous availability and to improve the quality of overall blend for technological reasons. Coal based power plants, cement plants, captive power plants, sponge iron plants, industrial consumers and coal traders are importing non-coking coal on consideration of transport logistic and commercial prudence as well as against export entitlements. Coke is imported mainly by Pig-Iron manufacturers and Iron & Steel sector consumers using mini-blast furnace.

1.40 Details of import of coal and products during the last five years (as per DOC's records) as under:

(in million tonnes)

Coal	1999-00	2000-01	2001-02	2002-03	2003-04*
Coking Coal	10.99	11.06	11.11	12.95	12.00
Non-coking Coal	8.71	9.87	9.44	10.31	9.50
Coke	2.41	2.42	2.28	2.25	2.00
Total Import	22.11	23.35	22.83	25.51	23.50

* Provisional and estimated.

The current duty (during 2003-04) on imported coal as amended on 28.2.2004 is as under:-

Type of coal		Import Duty
Coking Coal	Having upto 12% ash	0%
	Having ash 12% and more	15%
Coke		5%
Non-Coking Coal		5%

Note: With effect from 9.1.2004 the Central Government has withdrawn the Special Additional Duty.

C. Regulatory framework

Broad policy covering natural resources

1.41 The Mines and Minerals (Regulation and Development) Act, 1948 and Industrial Policy Resolution, 1956 (IPR) constitute the fundamental broad policy framework for natural resources classified as minerals including coal. These Acts have been modified several times to keep pace with the changing requirements of contemporary time to finally evolve the present policy regime. Other than these two Acts the present National Mineral Policy (NMP) also constitutes a broad policy covering natural resources.

1.42 The Mineral Policy Conference held in January 1947 resulted in the enactment of the Mines and Minerals (Regulation and Development) Act, 1948, the first legal framework in independent India for the regulation and development of mines and minerals. The conference also resulted in the establishment of the Indian Bureau of Mines (IBM) in March 1948 as the main regulatory agency for monitoring and supervising mining activity in the country. With the adoption of the Constitution of India on 26 January 1950, the legislative powers of the Central government and the state governments were clearly defined. Entry 54 of List I in the Seventh Schedule of the Constitution empowered the Central government to regulate mining activities and the development of minerals. Entry 23 of List II in the Seventh Schedule empowered the state governments to frame rules and regulations in respect of mining activities and mineral development, subject to the provisions of List I.

1.43 The Industrial Policy Resolution, 1956 (IPR) put major minerals such as coal, lignite, mineral oils, iron ore, copper, zinc, atomic minerals, etc. in Schedule A, which was reserved exclusively for the public sector, and minor minerals in Schedule B, in which the private sector was allowed to participate in mining activities along with the public sector. In pursuance of the IPR, the Parliament enacted the Mines and Minerals (Regulation and Development) Act, 1957 for the regulation of mines and development of minerals, applicable to all minerals except mineral oils. Two Rules, viz. MCR and MCDR, were framed under the Act. While the MCR deals with the major minerals the state governments are free to frame their own rules for mineral concessions with respect to minor minerals. Accordingly, most states have framed their own minor Mineral Concession Rules.

1.44 The Mines and Minerals (Regulation and Development) Act, 1957 was first amended in 1972, enhancing government control over mining through such measures as premature termination of mining lease (MLs), lowering of ceiling on individual holdings, power to modify MLs and for the Central government to undertake prospecting and mining operations in certain areas, removal of ceiling on royalty charged on minerals, inclusion of provision of dead rent as part of the Act,1 and enhancement of penalties. In 1986, even more stringent amendments were made. First Schedule minerals, in which prior approval of the Central government had to be obtained under the Act, were increased in number from 27 to 38, the Central government was authorised to reserve areas for Public Sector Undertakings (PSUs), and mining plan approval was made compulsory. In 1988, the MCDR was revised to enable IBM to monitor and regulate mining activity**.** This severe regulatory regime introduced by the IPR and the statutory amendments of 1972 and 1986 continued till the early 1990s.

1.45 Alongside the economic liberalisation introduced by GOI in 1991, a comprehensive National Mineral Policy (NMP) was announced in March 1993. The policy introduced for the first time the idea of encouraging private investment in exploration and mining. Thirteen major minerals—iron ore, manganese ore, chrome ore, sulphur, gold, diamond, copper, lead, zinc, molybdenum, tungsten, nickel, and platinum group of minerals—hitherto reserved exclusively for the public sector were opened up to the private sector. Induction of foreign technology and foreign participation in exploration and mining was encouraged and foreign equity investment in joint ventures (JVs) in mining promoted by Indian companies was allowed. While generally there was a limit of 50 per cent on foreign equity the government announced its intention to consider relaxation of this limit on a case-by-case basis.

1.46 Consequently, amendments were carried out in the Mines and Minerals (Regulation and Development) Act in January 1994 and soon after in the mineral concession rules (MCR) and mineral concession and development rules (MCDR). These amendments sought to simplify the procedure for grant of mineral concessions so as to attract large investment

through private sector participation, including foreign direct investment (FDI), and thereby, induct modern technology into the mining sector.

1.47 Recognising the lack of resources and up-to-date technology with the GeologicalSurvey of India (GSI) for carrying out even regional (or preliminary) exploration and the consequential need to attract private investment, especially FDI, in exploration and prospecting, the concept of Large Area Prospecting Licence (LAPL) was introduced and guidelines were issued in October 1996, whereby the area for a single prospecting licence (PL) for facilitating aerial prospecting was enhanced from 25 sq. km to 5000 sq. km, with a proviso that the aggregate area held by a single party would not exceed 10,000 sq. km in the whole country. Simultaneously, a scheme of gradual relinquishment in a time-bound framework was introduced, whereby the search for detailed exploration was to be narrowed down to 25 sq. km at the end of the third year.

1.48 The changes in the Act and the Rules mentioned above were intended to accelerate private sector investment and FDI in the mining sector. Despite this, prospecting and mining activity failed to pick up and in February 1997, the Ministry of Mines constituted a committee, headed by the then Additional Secretary, Ministry of Mines, to go into the reasons for this failure. The committee submitted its report in January 1998, suggesting wide-ranging amendments in the Mines and Minerals (Development and Regulation) Act.

1.49 Amendments were made in line with these suggestions in the MMDR Act, 1957 in December 1999 as well as the MCR and MCDR in January 2000.
The major changes carried out in the MMDR Act, 1957 were as follows:

1. Introduction of the concept of reconnaissance operations as a distinct stage prior to prospecting, and replacement of LAPL by the instrument of reconnaissance permit (RP); RP holder to progressively relinquish the area down to 1000 sq. km or 50 per cent of the area granted, whichever was less, at the end of two years and to 25 sq. km at the end of three years;
2. RP holder to get priority in the grant of prospecting license (PLs) within reconnaissance areas subject to certain conditions;
3. Minerals listed in the First Schedule requiring prior approval of the Centre were brought down from 11 to 10;

1.50 Further delegation of powers to state governments was as follows:

1. Power to renew lapsed PLs/MLs;
2. Power to grant RP/PL/ML for areas that were not compact or contiguous;
3. Power to transfer MLs in respect of minerals under Part C of the First Schedule;
4. Power to permit amalgamation of two or more adjoining MLs;
5. Liberalisation of area restrictions of RP/PL/ML by making such restrictions applicable state-wise;
6. In the case of large mining operations, the ML would not lapse if mine development did not take place in a period of two years.

1.51 The major changes carried out in the two Rules were as follows:

I. Mineral Concession Rules, 1960:

1. Rule 75(2) of MCR enabling the Agency System was deleted;
2. State governments could undertake prospecting or mining operations after notification of areas;

3. Charging of premium by government companies in case of transfer of ML to a private venture was deleted.

II. Mineral Conservation and Development Rules, 1988:

1. State governments would approve mining plan in respect of 29 nonmetallic/ industrial minerals for open cast mines (the remaining being retained with IBM);
2. Once approved, mining plan would be valid for the entire duration of the ML;
3. Relevant modifications, such as mining plan and mine closure plan, were made to take account of the qualitatively different impact on environment due to prospecting operations as compared to that of mining operations;
4. In addition to the tentative scheme of mining plan for the first five years of the ML, an annual programme from year to year for five years would also be submitted.

1.52 Thus, after the Act was promulgated in 1957, the Act was amended four times, i.e. in 1972, 1986, 1994, and 1999, and after each amendment corresponding changes were carried out in the two Rules, viz. MCR and MCDR. While the first two amendments increased governmental control, the last two relaxed them. The changes in the regulatory dispensation in 1994 and 1999 envisaged considerable devolution of authority from the Centre to the states.

National Mineral Policy

1.53 The NMP (1993) is ambiguous about the relative roles of the State and the private sector. India officially relies primarily on the public sector to explore for minerals. While geological information collection is the domain of the GSI, the fact is that, as mentioned earlier, GSI has been spending a large part of its scarce resources on coal while a vast amount of work still remains to be done in the area of regional exploration for the other major minerals. Given the technology and resource limitations of GSI, it is necessary for the policy to envisage private sector initiative to be the main driver of investment in exploration even as the GSI is strengthened to access the latest technologies such as deep imaging and electromagnetic probing. This should be the case not only in detailed exploration but also in regional exploration where substantial private investment is needed to supplement the work of GSI in the areas of geophysical and geochemical mapping, which are the main components of reconnaissance or regional exploration. This implies that as a rule, the policy should encourage access of the mining industry to global markets rather than restricting them to producing minerals only for the domestic market, and simultaneously, the policy should enable the end-user industry to access global resources rather than depending only on local resources for their raw material.

1.54 The NMP makes no mention of security of tenure. The MMDR Act states that the holder of a PL has a preferential right to obtain an ML over any other person, provided certain requirements are met, but this does not provide an actual right to obtain an ML. Companies that propose to invest heavily in the risky venture of detailed prospecting view the lack of a security of tenure provision in the NMP and the MMDR Act and the Rules as a major weakness in the regulatory system. It is necessary that the NMP declare the absolute right of a RP holder to a PL and of a PL holder to obtain an ML in the areas where they have done the prospecting.

1.55 Para 7.1.1 of the NMP lays down that the State may undertake the development of any mineral deposit in the public interest to ensure unhindered availability of mineral raw materials. Detailed enabling provisions in the MMDR Act, MCR, and MCDR have been framed for this purpose. The existing Indian mineral policy and laws provide for State

organisations to undertake mining and give a clearly preferential treatment to PSUs undertaking prospecting and mining, even in respect of areas prospected by private sector investors.

1.56 The NMP states that the states and Centre will play their regulatory roles in their respective domains. In fact, one of the most serious concerns relates to the confusion between the relative roles of the states *vis-à-vis* the Centre. States disregard the spirit of the MMDR Act with respect to statutory and procedural issues in the NMP.

1.57 The NMP, MMDR Act, MCR, and MCDR provide for Central and state organisations to prospect for minerals but do not lay down separate guidelines for allocation of mines prospected by public agencies. The lack of a clear system for disposal of government prospected mineral ore bodies can provide an opportunity for arbitrary practices. In India, the main government bodies engaged in detailed exploration activity are the MECL, which undertakes promotional exploration on behalf of the government, GSI in a few rare cases, and the state Directorates of Mining and Geology (DMGs). The current provision for disposal (or allocation) is mainly through discretionary decision by the state governments (in some cases, with the approval of the Centre) on the basis of some very broad parameters. In non-notified areas (areas for which applications have not been invited through publication in the official Gazette), state governments are expected to follow the first-come- first-served principle. While, all applications in notified areas (areas for which applications have been invited) are to be considered in terms of the parameters laid down in Section 11(3) of the MMDR Act. However, in all cases, the state governments, and in some cases, even the Central government, are authorised to bypass these provisions at their discretion. It is necessary to introduce transparency in the allocation of ore bodies either through a tender/auction system or by spelling out in very precise detail the method of ascertaining who best satisfies the requirements of Section 11(3) and making the same binding. Ideally, a tender/auction system would be most suitable inasmuch as such a system would have the additional advantage of augmenting state revenues, which is a major concern of the state governments. The tender/auction system may also be applied to ore bodies in respect of which prospecting data has come into the public domain after the lock- in period has expired without the prospector having filed a ML application. Hence, subject to some exceptions mentioned in Chapter 5 of the NMR, the tender/auction system should be used for disposing of ore bodies prospected by State agencies at public expense. Para 7.12 of the NMP states that efforts will be made to promote small-scale mining for exploiting small and scattered deposits as the capital required is low and mining is employment- intensive. One of the geological peculiarities is the occurrence of small mineral deposits. However, it is also recognised that economies of scale are particularly important for mining. Small ore bodies either remain unexploited or are mined intermittently by miners in the small scale, depending on the price of ore prevailing in the local market, resulting in inefficient or suboptimal mining. While small-scale mining may be allowed to flourish wherever feasible, it has been argued that such small deposits that would otherwise remain unexploited could be given, wherever possible, on priority basis as a cluster of mines to individual miners/ end users who are otherwise qualified. This would reduce the phenomenon of non-operating leases by enabling investors to reap the benefits of scale economies. In the case of iron ore, for instance, as against 600 MLs actually issued, only 240 leases are currently operational, with most of the small mines being operated either intermittently or not at all. Para 7.13 of the NMP deals extensively with the issue of environment, forests, and the need to restore ecological balance. This aspect of mining development is now an area of prime importance. With the Samatha judgment 5 of the Hon'ble Supreme Court, the right to compensation of local populations, not only in cash through usual relief and rehabilitation (R&R) packages but also to a fuller life, now requires to be written into the law. While the NMP speaks

extensively of environment-related issues the issue of Scheduled Tribes (ST) is mentioned only in passing in paragraph 1.3. The issue of compensation for local tribal populations as a primary charge on the minerals extracted from their land needs to be built into the policy and given primacy along with the issues of deforestation, pollution, and other disturbances caused in the ecology by mining activity.

1.58 As regards exports, broadly it may be said that financing of exploration projects carries with it the element of risk and returns are not always guaranteed. A limitation on exports would also amount to restricting the market for Indian ores, thereby depriving the miner of the best international price for his product. This would have consequences in terms of profitability of mining operations and, therefore, on investment decisions. The mining industry would be doubly handicapped in that not only would normal investment be adversely affected, so would also risk investment in exploration, which is vital for establishing new and recoverable finds. A selective ban or limitation on exports would be a direct disincentive to FDI in the mining sector. The policy should stress on linkages with global demand and global supply rather than domestic industry. Local industry can gain from economies flowing from the country's comparative advantage rather than ownership of minerals.

Commodity specific policy and regulations

1.59 Regulations in the coal sector mainly relates to administrative approvals, clearance for environment and forestry clearance for mining purposes. The rules for taking up Coal mining now are as follows:

1. Administrative approvals from the Boards of Management of the subsidiaries/CIL and the Government;
2. Clearance for environment by way of approval of the Environmental Impact Analysis (EIA) and the Environment Management Plan (EMP); and
3. The Forestry Clearance, if the proposed mine is located in a forest area.

1.60 The current procedures in respect of these three, the contributory causes and remedial actions to cut down the delays are discussed below.

Administrative Approvals

1.61 In Government, it is unavoidable that any proposal for approval of an investment plan by a Government agency has to go through several stages before it comes to Government where the administrative Ministry would process the case in consultation with several other Ministries. But the limits of approval for projects have been enhanced from time to time in different Ministries keeping in view the inflation and the move towards larger projects. In respect of coal this has not happened to the required level. The limits of authority to the subsidiaries are only Rs. 20 crores and that for the CIL Board is Rs. 100 crores; all projects above Rs. 100 crores have to get an approval from the Government. This has led to a situation where almost all projects have to get administrative approval at Government level.

1.62 The role of the MoC and Planning Commission should be limited in keeping up with the liberalization. The Planning Commission could assess the coal requirement of the nation and advice MoC who in turn will give the necessary directions to the PSUs. The PSUs namely, CIL, SCCL and NLC would discuss with MoC and settle the Annual and Five Year Plan targets. As there is very little budgetary support to the PSUs, they should be given full

flexibility in selecting specific mines and planning the relative priority and expenditure stream. At the Annual Plan stage, the role of MoC/Planning Commission should not become an exercise in micro management by fixing mine unit targets. CIL and SCCL should be held fully accountable to fulfill the targets in general and meeting the loading point wise target in terms of the long term FSTAs they had entered into with consumer. For this materialize, several of the uncertainties should be removed by planning in advance adequately.

1.63 After the administrative approval is obtained, the number of approvals from different agencies and the different procedures are still complicated without adequate reasons for keeping them unchanged. The number of approvals depends on the ownership nature of the land on which the coal mining operations have to be commenced. If, the land is located outside the forest area or area under the control of the Forest Department, there need only be one approval namely environmental clearance. If, however, the mine is to be located in land which is classified as Reserve Forest or under the management of the Forest Department, there has to be a separate approval from several agencies concerned for conversion of the forest land to non-forest uses.

Environmental Clearance:

1.64 Till recently, environmental clearance involved EIA procedure involved a two – stage clearance under which in Stage 1, in principle Forestry Clearance should be obtained and filed and Stage 2, after stage1 clearance is received, the environmental clearance procedure will be commenced. The steps to be covered are more or less common to both. Recent amendment to the rules and guidelines led to the abolition of the two-stage clearance procedure and has allowed the two clearance procedures to be pursued simultaneously.

1.65 Environmental clearance includes approving the Environmental Impact Analysis (EIA) and the Environment Management Plan (EMP). There were very well designed procedures for giving such clearances and specific time limits have been fixed for each which should lead to an EIA clearance within 15 to 16 months from the date of filing of the application. But, in reality, there are very few cases where clearance has been given within this period prescribed, prior to the recent amendments.

1.66 Recent amendment to the rules and guidelines led to abolition of the two-stage clearance procedure and has allowed the two clearance procedures to be pursued simultaneously. Furthermore, under the new rules, the public hearing has to be fixed within 45 days of publishing the notice in the newspapers. If, there is a failure to do so, hearing will be held by a different agency and the entire public hearing (PH) proceedings will be covered by videography and preserved for use by the other agencies to give their approvals later. While holding the PH, it is necessary for all parties to keep in mind that the basic objectives of PH is to focus on the environmental impact issues arising out of the mining project. No doubt, the objective is also to protect the stakes of local people on environmental aspects effectively mitigate all possible adverse ecological damages. The rehabilitation and land compensation packages have to be decided on the basis of national policy and norms and not to be given importance during the PH.

1.67 With these changes it should be possible to complete the whole process in nine steps as follows:

Step I: Application for consent capacity of mine/project as per PR for Air and water along with requisite money to State Pollution Control Board (SPCB) and submission of PH documents and 15 copies of Environmental Impact Appraisal (EIA) to SPCB.

Step II: Recommendation by RO, SPCB and Isssue of NoC by SPCB – 30 days.

Step III: Submission of EIA along with NoC to MoEF – 30 days

Step IV: Examination/assessment of EIA – 60 days (as per EIA notification)

Step V: Communication of decision of assessment to proponents – 30 days

Step VI: Expert Committee (EC) Hearing – 30 days

Step VII: Recommendation of the Expert Committee – 30 days

Step VIII: Approval of Hon'ble Minister, MoEF – 30 days or availability of Hon'ble

Minister whichever is less.

Step IX: Issue of EIA clearance – 30 days

Total days: 330 days

1.68 Furthermore, there are some issues like, giving Temporary Work Permission (TWP) for taking up some essential infrastructure development prior to commencing the mining operation and extending the validity time of the EMP clearance, etc, which needs to be discussed between the concerned Ministries and settled. In the preparation of the EIA reports, the absence of proper pollution modeling in the mining area surrounded by other polluting entities like power stations, cement factories and large industries, it is difficult to arrive at the Base Line Data (BLD). The Environmental Ministry needs to take up the task of modeling the air pollution and water characteristics of these areas and update them periodically.

1.69 The coordination between the Ministries of Coal and MoEF is inadequate and the coal PSUs are made to face enormous problems. For example, in view of the acute coal shortage in some periods of the previous year and current year, the MoC encouraged CIL subsidiaries to increase marginally production from existing mines. When this work was taken up, the environmental officials launched criminal prosecutions against CIL officials, even though the application for increasing the production was earlier filed and was pending.

Forestry Clearance:

1.70 The procedures are governed by the Forest (Conservation) Act 1980 and the Forest (Conservation) Rules 2003. The attempts to ensure compensatory forestation and collection of Net Present Value (NPV) of the forest yields are steps in the right direction but the irrationality in their observance while dealing with applications from industries including coal mining industry (which are essential activities to sustain economic development), the defeats the very purpose of the Act and Rules.

1.71 The Forest Clearance procedures are recognized as very complicated and long drawn. But nothing has been done so far to improve this. Under the existing rules covering forest clearance approvals, the State Government has to process and forward it to the Central Government in cases, which require the Central Government approval within 210 days. The Nodal Officer of the State Government after satisfying himself shall send the report to the Divisional Forest Officer. The Divisional Forest Officer/Conservator of Forest has to examine the factual details, carry out site inspection and enumeration of the forest trees and shall forward its findings to the Nodal Officer of the State in about 90 days. The Nodal Officer will send up the proposal to Government of India. The State Government will forward the complete report to the Regional Office of MOEF. There should be very strong incentives and penalties for observance and non-observance of the stipulated times in which the different steps have to be completed. There is an inordinate delay / submission of additional proposals for forest land diversion on account of identification of forest lands are the outcome of the above situation. This also leads to undue harassment to the proponent.

The directive of the Hon'ble Supreme Court for disposing of such cases within two weeks by State Government and 6 weeks by Central Government is totally ignored with impunity. These directions add to the time taken to obtaining clearance with added confusion and attached violations, etc.

1.72 The Indian coal industry is poised for high production growth and major structural changes. The nationalisation of the coal industry in the seventies brought the entire coal industry under government ownership baring a few minor exceptions. The two major public sector coal companies, namely, CIL and SCCL dominated the production to meet the demand for coal, as per targets set by the Government. The coal industry has slowly increased its production from around 70 million tonnes at the time of nationalisation to 460 million tonnes. But if the coal demand in the next ten years has to be substantially met from indigenous production of coal, the industry has to increase at a faster pace and reach a level 1100 million tonnes by the end of the 12th Plan i.e., 2017-18. In order to ensure this growth, Government has revised the rules to permit coal mining by major users by way of captive coal mining and further liberalized the rules regarding mining and trade by public sector companies such as mining corporations under state control. This has led to a number of companies undertaking coal mining in a systematic manner to over 30. These companies have taken up coal mining by getting coal blocks allotted to them by the Ministry of Coal under the liberalized rules. While each of the mines are subjected to approval by different agencies, there is no comprehensive law requiring the licensing, the setting up and operations of a coal mining company or coal trading company. The issue of having a regulatory mechanism for coal has been examined on several occasions in the past in the narrow context of determining coal price.

1.73 The coal industry which is becoming the main pillar of national energy security, needs a new and comprehensive governance structure which could lead to optimal and appropriate resource management including a regulatory mechanism to attend to all issues relevant for development of coal resources, regulation of coal price, wherever necessary. And, nurturing level playing field between the influential large public sector coal companies and the emerging small coal companies in the State public sector and the captive mining sector.

1.74 Coal industry is today governed by a large number of Acts and Rules, which are administered by diverse agencies. Most importantly the industry has to plan its growth on the basis of sound reliable data and competitiveness of the industry can be ensured only if such data is available on a neutral basis to all for all existing and prospective players in the industry

D. Pricing

1.75 Coal Prices was partially deregulated in 1997 (grades A to D) and completely deregulated in January 2000 (grades E to G). This, in theory, conferred the right to fix the price of coal on the two public sector companies CIL and SCCL, which operate as exclusive producer-cum-traders of coal in India. However, the price fixed by the companies is, in reality, "guided" by the Ministry of Coal (MOC) Government of India (GOI). Though the principles of fixing prices have not been set out explicitly, it is, in essence, determined on the basis of costs incurred in its production from different mines in a coal company plus a reasonable profit margin. This has proved to be unsatisfactory as the "demand" for coal from non-power users at the price fixed, is far in excess of the available supply at this price. The margin to be charged over the costs of production as reasonable rate of return on investment has not been defined and coal companies have recently increased the coal price on the ground that there is evidence of demand at higher price! This situation has aggravated the various ills of the coal industry, including the deterioration of governance in coal mines and the interference of middlemen, musclemen and mafia in the coal industry. This also

affects the long-term growth prospects of coal production and the potential to introduce competition in coal industry. The determination of the principles and procedure for pricing of coal in India with reference to the special characteristics of the fuel producing industries and fuel consuming industries is of great importance to enable the industry to continue as the primary source of commercial energy in India.

1.76 Like in all commodities, the price of domestic coal should determine the level of supply and demand. However, response of overall demand and supply to price variations is slow due to the structure of the coal industry as well as the nature of the user industries. Coal industry is dominated by two fully Government owned companies operating in two different geographical regions. These two companies have never had to compete in the market place and as such have had no interest in creating a vibrant and competitive coal market. These two companies see their role as one of fulfilling the production targets fixed by the Government and take up plans and projects to just meet the targets, with very little surplus to serve any unanticipated or sudden increase in demand. New players in coal mining face huge entry barriers and thus the supply response tends to be slow and demand-supply gaps persist. Finally, only miniscule quantities of coal are available for trading freely.

1.77 To understand the demand response to domestic coal price variations, one has to first recognize that some 80% of the domestic production is actually used for power generation (utilities plus captive). The power sector uses coal that is commonly referred to as Thermal Coal. Typically, the poorest quality of domestic thermal coal (grades E to G) is supplied to the power industry. The demand of the steel sector is just under 9% of domestic production while that of the cement sector is just under 5% of the domestic production. The blast furnace based steel industry and mini blast furnaces for the pig iron industry need good quality coking coal. Since India is deficient in good quality coking coals, the steel producers requiring such coal have, over the years, depended primarily upon imported coking coal with imports rising in step with metal production. The sponge iron industry, the corex steel industry and the cement industry are the typical consumers of higher grades of domestic thermal coal (grades A to D). Finally, there is an estimated demand of the brick kiln industry and other industries that is currently put at 12 to 13 percent of the domestic production. This last category of consumer is not particularly concerned with quality; supply at a viable price is the main issue. While the demand for the power, steel and cement sectors is fairly well established based on the output of these sectors, the demand for the brick kiln industry and other industries has never been fully tested as the country has not experienced coal surpluses in recent history. It is likely that the demand estimates for this last category of consumers are suppressed demand numbers as a result of constrained supply and trade of coal. The demand-supply gap is being met by imports primarily of coking coal for the steel sector.

1.78 Power generation, the biggest consumer of domestic coal, is a regulated industry and fuel cost is a pass through at a liberal heat rate. This makes the demand for power practically insensitive to the price of coal. Oil as fuel for power generation out priced itself in 1973 and large-scale availability of gas for power generation remains uncertain. In any event, as explained below, gas cannot compete with either domestic or imported coal unless made available at or below $4/MMBTU. Indian coking coal has to compete with imported coking coal on quality and cost and domestic availability is, in any event, less than 30% of the demand. The cement, sponge iron and corex steel consumers also face shortages of domestic supplies but find imported coal expensive and logistically difficult to use because of small individual demands and constrained port and rail capacity to move coal freely as also restrictions on trading of coal. Although technically the consumers of high-grade domestic thermal coal can switch to alternate fuels, existing plants are mostly designed for coal. In any event, alternate fuels are neither easily available nor cost competitive with coal. Hence, here too, there is relative price inelasticity. These users attempt to source most, if not all, their

requirements from domestic supply and supplement domestic supply with imports, which are costly as they entail spot purchases, shipping in smaller vessels and inland transportation in India and the attendant multiple handling. The brick kiln and other industrial consumers are the only consumers that remain truly price sensitive and, on the margin, remain willing to pay up to Rs. 5000 to 5500 per ton of coal (compared to a pit head price ranging from Rs. 400 to Rs. 1000/ton). Consumers in this category are the marginal consumers who depend on the grey market and are not averse to using biomass or other alternatives if coal availability and prices make their operations non-remunerative. Thus this marginal segment, left without linkages and made to fend for itself, is the only segment wherein demand is price sensitive because this is the segment wherein market forces are in full play.

1.79 It is important here to understand the dynamics of coal pricing for the power sector in India and the pricing of alternative primary energy sources for power generation that consumes about 80% of domestic production. The power sector primarily consumes 'E', 'F' and 'G' grade thermal coals, which also constitute the bulk of India's coal production. Although the stated calorific values, under the current grading system, for these grades vary over a wide range, actual calorific value of domestic coals received at the power stations is only about 3500 kilocalories/kilogram on an average. The ash content, on average, of the lower grades of Indian coal is around 40% while the sulfur content is below 1%. Imported coals have high calorific values (around 6200-6500 kilocalories/kilogram) low ash content (about 10-12%) but are high on sulfur (2 –3%). The weighted average free-on-rail price of domestic thermal coals sold to the power plants is just under $5/million kilocalories inclusive of royalty and tax. Freight and handling then adds $ 7 to $ 11 for distances between 1000 to 2000 kilometers making the delivered price of domestic coal $12-$16 per million kilocalories for distances of 1000 to 2000 kilometers from the mines. Imported coal, even when it was selling at its all time high prices, in comparison, could be delivered at a cif price of about $13 per million kilocalories inclusive of a 5% custom duty at a coastal location. Thus imported coal is cost competitive at coastal locations on the West coast and Southern shores of Tamil Nadu especially if it requires no transportation or very minimal transportation on land, in India, to reach the consumption point.

1.80 To illustrate the fact that coal (even imported coal) will remain the preferred fuel for power generation, it is pointed out that the domestic gas priced under the Administered Price Mechanism (APM) translates to a land-fall price of just over $8 per million kilocalories without royalty and taxes. And this APM gas transported to a point along the HBJ pipeline would translate to a sale price of about $12-13 per million kilocalories inclusive of royalty, taxes and transportation. However, APM gas at the landfall point is currently priced at less than 30% of prevailing LNG prices.

1.81 Further, availability of APM gas is falling and the share of market priced gas is increasing. Imported LNG offers an alternative to coal for the purposes of power generation. However, even if re-gasified LNG were used at the landfall point (involving zero inland transportation), it would not cost less than $31-32 per million kilocalories at current market prices inclusive of custom duties and taxes. Although,

1.82 LNG yields some 25% higher fuel efficiency in power generation compared to coal plants, the fuel cost based on imported LNG would still be about 1.9 to 2.0 times the fuel cost of imported-coal based coastal power plants at current prices of imported LNG and coal. Even if one adjusts the fuel cost of gas based power plants to reflect the lower capital cost of gas based power stations, the fuel cost of imported LNG based generation will be 1.6 to 1.7 times that for imported coal based generation at coastal locations. For gas to be competitive with imported coal as a fuel source, at coastal locations, re-gasified LNG would need to become available at below $4 per million BTUs inclusive of all taxes compared to the

current level of about $7 per million BTUs. It is stressed that these comparisons are being made at the all time high prices of imported coal unlike the oil prices which have been higher in real terms for extended periods (as much as 12 years) of time in the past. Coal prices in the international market have recently dropped sharply from their highs.

1.83 The rapid growth of the coal industry is dependent on the level of use of coal for power generation. The power industry uses coal in preference to other fuels because of the lower price and greater predictability of its future price as compared to natural gas. Freight plays a key role in changing the economics of domestic coal usage in India and the location of power plants. The large quantities of coal used in specific power plant locations require huge infrastructure facilities to be created in such locations. The first comprehensive energy policy document in India, namely The Report of the Fuel Policy Committee in 1975 highlighted the need for integrated planning for production and transportation of coal and synchronized investments in the coal and railway sectors.

1.84 The above clearly demonstrates that establishing a market mechanism for pricing coal in India is not a simple task of having multiple producers and consumers with minimal entry barriers. Relative fuel prices of competing fuels, their relative convenience of use, flexibility of equipment in place and/or environmental impact may fail to yield the theoretically optimal fuel choice in view of the market characteristics outlined above. Competition and the price determining the demand supply balance for coal and its alternatives is intricately tied up with transport costs, availability of rail and port infrastructure for coal and shipping, port and pipeline infrastructure for gas the key alternative fuel that competes with coal in Europe and USA. The regulatory environment created in the power industry much ahead of regulation of primary fuel industries has further complicated the scenario with domestic gas seeking import parity pricing like the rest of the petroleum sector products even when power prices are regulated.

1.85 Coal prices would need to be regulated in light of the above market realities. Further, the regulation of coal price has to differentiate the pricing of coal for power generation since it consumes 80% of the domestic production and the quality of coal it consumes is not easily salable to the steel and cement sectors. Further, the power sector has to be serviced with long-term contracts and special investments in transport. There is need for long-term supply and price contracts between the power and coal industry that involve the critical third party namely the Railways.

1.86 Another peculiarity of the Indian system of coal pricing that has to be kept in mind is that coal is priced in India based on grades of coal. Each grade of coal is identified by a very broad band of 'Useful Heat Value' (UHV), a concept unique to India. Apart from the fact that the UHV concept is a legacy of the past without any scientific basis, it promotes a slab rate with increasing bandwidth with progressively lower grades of coal as opposed to a fully variable rate linked to the precise calorific value of the coal under consideration. This encourages coal companies to supply coal at the bottom of the grade bands and pass of the coal as belonging to the next higher band.

1.87 The rest of the world as also the design and scientific community the world over (including India) uses the Gross Calorific Value (GCV) to specify coal quality. And the price of coal in the rest of the world is fully variable with coal quality.

1.88 Finally, pricing of coal in India must also recognize that coal trade and movement are controlled under the Essential Commodities Act and The Colliery Control Order which is a legacy of market situation prevailing during and after World War II and no longer reflects the market realities of today. There is no legal bar to trading coal under any act governing the Coal sector. Such restrictions are purely contractual and determined by the contracted end-use of coal. However, the truth is that each coal consumer in the core sector is required to

obtain a coal linkage based on the railway link/capacity available and is practically tied down to a coal mine or basket of mines. This market reality has limited the amount of coal available for trading.

1.89 Alternate pricing options must recognize that there are serious entry barriers to coal mining and only marginal quantities of coal are currently available for trading. Further, coal is not currently priced in accordance with GCV and other relevant quality determinants such as moisture and the price is not completely variable with quality as measured by these parameters. Finally, as stated above, most Indian thermal coal is not tradable across borders without significant preparation and beneficiation.

Section - II: Coal Pricing in the US

2.1 Coal prices are determined by long term contracts that the coal producing firms have entered into with the power utilities. The power utilities consume almost 92 per cent of the coal produced in the US.

Section - III: Coal Pricing in China

I. China's Coal Industry

3.1 China's coal industry presents a picture of mind-boggling growth achieved under fast changing conditions. China's coal industry stagnated during 1995 – 2001. However within three years since 2001 production has increased to nearly 2000 m.t.

3.2 The ownership of coalmines was transferred from the Central Government to Provincial governments at the turn of the century. Small mines have now grouped themselves and have increased production without adequate safety arrangements. Asset Supervision and Administration Commission (SOASAC) regulates the industry, which today comprises over 2000 de-centralized producers.

3.3 The price of coal for power sector is discussed annually at a "Coal Order Meeting" under the auspices of the National Development and Reform Commission (NDRC), which is attended by all electricity generators, railways and coal producers. The meeting has to arrive at the quantity and prices of coal to be delivered to power industry from specific mines. At the Annual Coal Order Meeting 2004 in Fuzhou no agreement could be reached even though NDRC set a high price increase. It is reported that at the Annual Coal Order Meeting 2005 the price was increased further and a settlement was reached. Prevailing price of delivered coal for power is around $ 30 per tonne. Rest of the coal is sold at market determined price which is today around $ 50 per tonne.

II. Conclusion

3.4 On pricing of coal the Expert Committee on Road Map for Coal Sector Reforms (2005,2007) has recommended that coal prices should be totally deregulated. Industry may be allowed to sell coal at any price on the basis of mutual agreements between buyers and sellers. Such an approach in the prevailing market structure described above could be highly disruptive. Success of such a pricing mechanism depends critically on the availability of multiple producers and/or sources of supply with no entry barriers and a level playing field for everyone. Even though bulk of coal produced in India can only be sold to the domestic power generation industry, the constrained supply situation, existence of just two suppliers with one clearly dominant, strong entry barriers, the non-level playing field for private mining, and above all the port and transport constraints would raise prices of coal and may actually lower production even more in order to milk the market. Prices may exceed import parity prices till such time that the physical bottlenecks to large-scale imports are removed. Domestic coal would still have a huge price advantage over imported coal at pithead and inland locations far from the coast. In a limited sense, the availability for the cement industry, the brick kiln industry and other industries may improve but they would all have to pay import parity prices at the factory gate as that would be their only other option. The power sector and the rest of the economy would suffer and the steel sector would mop up the higher-grade domestic coals and continue to rely on imports for the balance. Clearly this option is unworkable till the industry structure changes significantly, the coal bill becomes a reality and the required infrastructure is put in place.

3.5 As in the case of oil industry, Coal price could be fixed on import parity basis. It is pointed out that there is no universally accepted international price of coal. However, some countries like Japan and China adopt a price index for their long term coal supply contracts. In theory Indian coal industry could be allowed to fix the prices daily on the basis of what is known as Japan or China Coal price Index and in due time develop its own index. The

normal understanding is that contracts for coal sales as per a selected Index results in obtaining coal at less cost over a period of time than through Spot purchases. In effect, however, the Index reflects the prevailing price at which the transactions of a short term or medium term basis can be made. The information of the quantities of coal traded on a long-term basis on negotiated prices is often not available. The main reason for support to this option, from different influential quarters, appears to be that such an approach towards Import Parity Pricing has been adopted in the other major fuel industry, namely, oil and gas. There has been no evaluation study available regarding the benefits, which have accrued to the country due to the adoption of such a pricing principle for the oil and gas sectors. The adoption of Import Parity pricing may not be appropriate for Indian coal Industry for the following reasons:

1. The Fuel policy Committee (FPC) made in 1975 and accepted by the GOI is valid even today. The FPC 1975 states "From the national point of view, the fuel prices should ensure that the pattern of use of fuels is in keeping with the optimal pattern of production determined with reference to the long–term availability of fuels and their costs."
2. Import parity price could increase dependence on imported coal, as many Indian consumers may prefer imported coal. This may aggravate India's energy security concerns.
3. Countries, which adopted import parity pricing principles, are increasingly recognizing the need to review their choice. The President of South Africa raised this issue in his last State of the Nation Address. In UK and South Africa the Competition commissions have raised several issues on how the adoption of this pricing policy is violative of the Competition Laws.
4. The bulk of the Indian coal as mined is non-tradable across borders as it has an average ash content of 40%, high moisture and a consequent low calorific value averaging 3500 kcal/kg. To make it acceptable for even neighboring countries it has to be washed and beneficiated. The economic rationale for import parity pricing for such a commodity is highly questionable.

3.6 The other option mentioned by the Expert Committee on Road Map for Coal Sector Reforms (2005,2007) is to regulate only the price of the power sector. The final option is to take note of the quality of domestic coal and recognize its fit with the economically critical thermal power sector whose large coal needs are not only best met by domestic coal but also need long term transport and other infrastructure arrangements. The coal price system designed should also take note of the price regulation prevailing in the power sector. With the increase in the share of coal based power production in the total power generation, over time, the average cost of bulk power would depend on the price at which coal is sold to power industry. In national interest it is imperative that power costs are kept at the lowest level so that Indian industrial production can be globally competitive and the poor among the domestic consumers could all be supplied electricity at affordable prices. It is noteworthy that till a few years back Indian coal was costlier than imported coal and a customs duty of 30% had to be levied

Chapter - 10
Subsidies Disciplines in Natural Resources Pricing: Conclusion

I. Introduction:

1.1 The preceding chapters of the report have extensively dealt with the policy framework and pricing mechanisms adopted by the select countries for the natural resources as identified for the purpose of the Study. The focus of the Study has been to understand the industry structure for each select commodity in the subject countries and the regulatory framework governing the trade of these commodities, thereby determining whether there exists a policy of dual pricing with respect to these commodities.

1.2 The Study has revealed that the degree of control and regulation that the subject countries exercise with respect to the commodities under the Study vary from commodity to commodity and country to country. In general, countries seem to exercise greater control in the pricing of natural resources in the energy sector, viz. natural gas, crude oil, petrol etc. The metals and mineral sectors in all the subject countries remain relatively decontrolled. The Study reveals that governmental control over the sectors can be either de-jure or de-facto or both. De-facto control over the sectors is particularly evident in countries where the government through a government-owned-company is the pre-dominant producer or distributor of the commodity, viz. natural gas in Russia, crude oil and petrol in Saudi Arabia etc. Our interaction with the industry has revealed that the monopoly gas producers/suppliers tend to abuse their dominant position in the market, and extract or charge different prices from different consumers. For instance Gazprom could charge different (higher) prices from foreign companies operating in Russia or may even refuse to sell gas to them.

1.3 De-jure control over the sector is exercised by the governments vide pricing related regulations, restrictions on free trade of the commodity etc. Such exercise of control over the sector influences the prices at which the commodities are made available to the consumers, both in the domestic market and export market.

1.4 Governments' influence over the pricing of these commodities can take the form of dual pricing of the commodities and thereby result in provision of these commodities to domestic consumers for less than adequate remuneration.

II. Commodity-Country specific Findings:

A. Natural Gas:

2.1 As noted above, energy sector markets are most closely regulated by governments and do not seem to be functioning on fair competition principles. This raises the chances of price distortion and thereby the possibility of dual pricing.

2.2 As far as natural gas is concerned we have come to a finding that there clearly exists a system of dual pricing of natural gas in Russia, with the domestic prices remaining considerably lower than prices at which natural gas is sold in the international market. Because of the Government's pervasive control over the sector through the publicly owned monopoly gas producer and supplier Gazprom, there is virtually no private operators in the domestic market for natural gas in Russia. To determine whether natural gas in Russia is provided to domestic consumers for less than adequate remuneration, a comparison between the domestic prices and export prices was made and it is found that natural gas in Russia is provided to the domestic consumers for less than fair remuneration.

2.3 As noted earlier, Gazprom being the monopoly producer and supplier of natural gas in Russia could charge higher prices from foreign companies operating in Russia, thereby maintaining a system of dual pricing even within the country.

2.4 Similarly, the natural gas sector in India also is not free from distortions and government control. India maintains a dual system of natural gas pricing and regulation - one for the natural gas produced by the Government owned/controlled enterprises and other for the private or JV enterprises. As far as the natural gas produced by the Government owned/controlled enterprises is concerned, there is s system of allocation and price control. A certain percentage of their produce is allocated for fertilizer and power sector and some other designated small consumers and are to be sold at prices fixed by the Government. In addition, the prices at which natural gas is to be provided to the consumers in the North East region is also fixed by the Government and is considerably lower than the prices at which it is sold to other consumers.

2.4 With regard to the natural gas produced by the private and JV enterprises, the prices are determined as per the formulae agreed in the Production Sharing Contracts entered into by the Government and the individual producer. The Study reveals that since, the formulae for determining the prices in the production sharing contracts may either reflect the various economic factors for arriving at a price or may just stipulate a ceiling price. Thus here again, there is a likelihood of prices being influenced by the Government and not being completely based on economic factors.

2.5 Thus in India, even though there is no evidence of dual pricing (India does not export natural gas), there is a possibility that natural gas is provided to the domestic consumers for less than adequate remuneration as evidenced from the lower prices at which natural gas is made available to certain consumers such as fertilizer and power sector. In addition, GAIL being the monopoly supplier (it controls almost the entire transportation network in India) may discriminate between different consumers (particularly foreign companies operating in India) and charge higher prices from them.[1]

2.6 As far as natural gas sector in USA is concerned, it is completely de-regulated and the prices are determined as per demand and supply situation.

[1] Inputs from interaction with the members from natural gas industry.

B. Crude Oil and Petrol:

2.7 Similar to the natural gas sector, the Study reveals that the subject countries either directly or indirectly influence the prices of crude oil and petrol.

2.8 In India the prices of crude oil are not fixed by the Government and are determined as per the Crude Oil Sales Agreement (COSA) between the producers and the refineries by benchmarking various indigenous crude oils to equivalent international crude oils. The prices of petrol are nevertheless fixed by the government (even though in law there is nothing that gives the Government the power to fix the prices). Since India does not export these commodities, the question of dual pricing does not arise. However, in case of petrol (the prices are fixed by the Government), the Study reveals that the prices do not truly reflect and are not even close to the market determined prices (evidenced from the huge losses made by the oil marketing companies). Such a price differential suggests that petrol may be provided to the domestic consumers for less than adequate remuneration.

2.9 As far as the crude oil and petrol prices in Russia is concerned, it is found that in principle the domestic sale price of both crude oil and petrol are determined through negotiations between the buyers and sellers. However since, the Russian government still remains the majority shareholder in some of the major vertically integrated oil producing and marketing companies, there is a good likelihood of the prices not being completely driven by market forces. In addition, the indirect support measures given by the Government can very well drive down the prices of these commodities and there is all the possibility of these commodities being provided to the domestic consumers for less than adequate remuneration. It is observed that the retail domestic prices of these commodities in Russia are considerably lower than the prices in non-OECD Europe (taking the prices in non-OECD Europe as the benchmark), thereby raising the presumption that they are being provided to the domestic consumers for less than fair remuneration.

2.10 The crude oil and petrol sector in Saudi Arabia is under complete control of the Government and their prices are fixed by the government. In addition, the industry is characterized by Government-owned and controlled producer-distributor (Saudi Aramco) and thereby increasing the chances of price discrimination between different consumers in the domestic market. In principle, the Saudi Arabian Government does not maintain a policy of price discrimination between different consumers in the domestic market, however in practice the access to crude oil/petrol at government regulated prices is linked to certain minimum investment requirements (there is discrimination among companies while entering the Saudi Arabian market itself, thereby negating the right to access crude oil/petrol at the government regulated reduced price)[2]. This shows the price discrimination between domestic and foreign companies in the domestic Saudi Arabian market.

C. Bauxite/Aluminium and Copper:

2.10 With regard to the two metals- bauxite/aluminum and copper, we find that prices in all the subject countries are market determined and are reflective of LME and

[2] Inputs from interaction with the members from the petroleum sector.

LME/COMEX prices respectively. Thus there is no evidence of dual pricing in these commodities.

D. Coal

2.11 In case of coal, in India there are practices of long-term contract which is not clearly based on market mechanism. Also prices are determined considering different usages of coal. However, recommendations are already on table to deregulate coal prices completely. Critics opine that success of such a pricing mechanism depends critically on the availability of multiple producers and/or sources of supply with no entry barriers and a level playing field for everyone. Still there are barriers and bottlenecks in large scale importing of coals. There are other options of fixing coal prices according to import parity. It is pointed out that there is no universally accepted international price of coal. However, some countries like Japan and China adopt a price index for their long term coal supply contracts which can be used in Indian context also. The final option is to take note of the quality of domestic coal and recognize its fit with the economically critical thermal power sector whose large coal needs are not only best met by domestic coal but also need long term transport and other infrastructure arrangements. The coal price system designed should also take note of the price regulation prevailing in the power sector.

E. Iron Ore

2.12 In case of iron-ore, government of India follows its mining policy. In case of exporting of iron ore large public sector is involved. Export licenses are given looking into first domestic demand mainly from the steel plants. More study is required regarding the actual availability of the ores. The recent demand from China has changed the market structure as export market has become lucrative and domestic steel producers need to match the export price.

F. Iron & Steel

2.13 In case of iron and steel, though it was under state control few years back, substantial steps have been taken to liberalize it. Favourable global market has also helped several Indian private companies to flourish. National Steel Policy (NSP) of 2005 aims at building a modern and efficient domestic steel industry of global standards with a capacity to cater to diversified product demand. To realize this goal in a largely market driven environment, the industry is now working to enhance efficiency and productivity of each and every component of operations including management. Overall, the net result of the changes in the prices of finished steel and its inputs has been quite positive for the financial health of the Indian steel industry. The restructuring efforts of the Government of India during 1998-2001 and the favourable current domestic and international markets * have gone a long way in restoring the health of the Indian steel industry.

G. DAP:

2.14 Administered prices are still there in fertilizer (DAP) industry. Central government declares uniform MRP for DAP (produced by any plant) for the whole country. As

concession scheme is associated with it, any producer or importer who wants to get the benefit of the scheme are required to sell the fertilizer at the MRP set by the Government. There is no price differential in domestically produced DAP, imported DAP. Prices are same for all consumers.

III. Conclusion:

3.1 In light of the above discussion, it is clear that the use of dual pricing as a policy measure to regulate prices of natural resources in India is non-existent. India in particular exercises some price controls in energy sector (natural gas and crude oil and petrol), which can be said to result in the provision of these commodities to the domestic industries for less than adequate remuneration. However since India is a net importer of these commodities and does not have significant presence in the export market, it may be in its interest to seek more rigorous disciplines under the Agreement on Subsidies and Countervailing Measures so as to gain access to cheaper imports of these commodities.

List of Abbreviations:

AB	Appellate Body
AGCL	Assam Gas Company Limited
AIFI	Association of Indian Forging Industries
APM	Administered Pricing Mechanism
APM	Administered Price Mechanism
APM	Administered Price Mechanism
ASCM	Agreements on Subsidies and Countervailing Measures
ATF	Aviation Turbine Fuel
B&W	Base Sediment and Water
BALCO	Bharat Aluminium Company Limited
bbl/d	Barrels Per Day
BCCL	Bharat Coking Coal Limited
BCCL	Bharat Coking Coal Limited
Bcf	Billion Cubic Feet
Bcm-	Billion Cubic Meters
BG	British Gas
BLD	Base Line Data
BLM	Bureau of Land Management
BPC	Bharat Petroleum Corporation
BPCL	Bharat Petroleum Corporation Limited
BRK	Brick Manufacturing
BTU	British Thermal Units
C.I.F	Cost Insurance Freight
CAGR	Compound Average Growth Rate
Chalco	China Aluminum Corporation
CIL	Coal India Ltd.
CIMM	Mining Metallurgic Research Center
CIS	Commonwealth of Independent States
CIS	Commonwealth of Independent States
CMPDI	Central Mine Planning & Design Institute Limited
CMPDIL	Central Mining Planning and Design Institute Limited
CNG	Compressed Natural Gas
COCHILCO	Chilean Copper Commission
CODELCO	*Corporation National del Cobre de Chile*
COMEX	Commodities Exchange
COSA	Crude Oil Sales Agreement
COSA	Crude Oil Sales Agreement
CPM	Cost Plus Method
CSA	Companhia Siderurgica do Atlantico
CSF	Copper Stabilization Fund
CST	Companhia Siderurgica de Tubarao
Cu.mtr	Cubic Meter
CUP	Comparable Uncontrolled Price method
CVD	Countervailing Duty

CVD	Special Countervailing Duty
DAP	Diammonium Phosphate
DEPB	Duty Entitlement Pass Book Scheme
DEPB	Duty Entitlement Pass Book Scheme
DGMS	Director General of Mines Safety
DMG	Directorates of Mining and Geology
DoE	Department of Energy
DRI	Direct Reduced Iron
DVC	Damodar Valley Corporation
DVPL	Dahej-Vijaipur pipeline
EC	Electrical Grade
EC	Expert Committee
EGEAF	Engineering Goods Export Assistance Fund
EIA	Energy Information Administration
EIA)	Environmental Impact Analysis
EMP	Environment Management Plan
ENAMI	National Mining Company
EU	European Union
FERC	Federal Energy Regulatory Commission
FIMI	Federation of Indian Mining Industry
FOB	Free on Board
FPC	Fuel policy Committee
FSA	Fuel Supply Agreement
FSTAs	Fuel Supply and Transport Agreement
GCV	Gross Calorific Value)
GDP	Growth Domestic Product
GGCL	Gujarat Gas Company Limited
GoI	Government of India
GPW	Gross Product Worth
GSI	Geological Survey of India
GSPC	Gujarat State Petroleum Corporation
GSPL	Gujarat State Petronet Ltd.
GSPL	Gujrat State Petronet Limited
HBJ	Hazira-Bijaipur-Jagdishpur
HCL	Hindustan Copper Limited
HPC	Hindustan Petroleum Corporation
HSFO	High Sulphur fuel Oil
I.T. Act	Income Tax Act
IBM	Indian Bureau of Mines
IBP	Indo-Burma Petroleum
ICMM	International Council for Mining and Metals
IGL	Indraprastha Gas Limited
IISCO	Indian Iron and Steel Company Limited
IISI	International Iron & Steel Institute
IMG	Inter Ministerial Group
INDAL	Indian Aluminium Company Limited

IOC	Indian Oil Corporation
IPCL	Indian Petrochemicals Company Limited
IPR	Industrial Policy Resolution, 1956
ISA	Indian Steel Alliance
JPMC	Jordanian Phosphate Mines Company
JV	Joint Venture
JVs	Joint ventures
JVSL	Jindal Vijaynagar steel Limited
Kcal	Kilo Calories
KIOCL	Kudremukh Iron Ore Company Limited
LAPL	Large Area Prospecting Licence
LCV	Low Calorific Value
LHD	Load Haul Dumpers
LHD	Load Haul Dumpers
LME	London Metal Exchange
LNG	Liquefied Natural Gas
LTAR	Less Than Adequate Remuneration
LTAs	Long Term Agreements
MALCO	Madras Aluminium Company Limited
MCDR	Mineral Concession and Development Rules
MCM	Million Cubic Metres
MCR	Mineral Concession Rules
MECL	Mineral Exploration corporation Limited
MGL	Mahanagar Gas Limited
MLs	Mining Lease
MMBTU	Million British Thermal Units
MMDR	Mines and Minerals (Development and Regulation) Act, 1957
MMSCMD	Million Standard Cubic Meter Per Day
MMTC	Mineral and Metals Trading Corporation
MMTC	Mineral and Metals Trading Corporation
MoC	Ministry of Commerce
MoEF	Ministry of Environment and Forests
MoPNG	Ministry of Petroleum and Natural Gas
MRP	Maximum Retail Price
Mt.	Metric Tonnes
NALCO	National Aluminum Company Limited
NCCD	National Calamity Contingent Duty
NCDC	National Coal Development Corporation
NDRC	National Development and Reform Commission
NDRC	National Development and Reform Commission
NELP	New Exploration and Licensing Policy
NGL	Natural Gas Liquid
NMDC	National Mineral Development Corporation
NMP	National Mineral Policy
NMP	National Mineral Policy

NoC	No objection Certificate
NPV	Net Present Value
NRCS	Natural Resources Conservation Service
OAO	Open Joint Stock Company
OCFL	Oswal Chemical & Fertilizers Ltd.
OECD	Organisation of Economic Co-operation and Development
OGJ	Oil and Gas Journal
OGL	Open General Licences
OGL	Open General Licence
OIL	Oil India Limited
OMC	Orissa Mining Corporation
OMC	Oil Marketing Companies
OMS	Output Per Manshift
OPC	Oil Prices Committee
P &K	Phosphatic and Potassic
PDS	Public Distribution System
PIK	Payment-in-Kind Program
PL	Prospecting Licence
POSCO	Pohang Steel Company
PRC	People's Republic of China
PSC	Production Sharing Contracts
PSU	Public Sector Undertaking
PSUs	Public Sector Units
Pvt. Cos	Private Companies
R&D	Research and Development
RBI	Reserve Bank of India
RIL-	Reliance Industries Ltd.
RINL	Rashtriya Ispat Nigam Limited
RLNG	Regasified Liquefied Natural Gas
RPS	Retention Price cum Subsidy Scheme
RusAl	*Russian Aluminium*
S & P Report	Standards and Poor Report
SAIL	Steel Authority of India Limited
SCCL	Singareni Collieries Company Ltd.
SCM	Standard Cubic meters
SDF	State Development Fund
SDF	Steel Development fund
SDL	Side Discharge Loaders
SDL	Side Discharge Loaders)
SFV	Straight Fixed Variable
SHFE	Shanghai Futures Exchange
SibAl	*Siberian Aluminium*
SIL	Sterlite Industries Limited
SLC	Standing Linkage Committee
SLC	Standing Linkage Committee

SME	Small and Medium Enterprises
SOASAC	Supervision and Administration Commission
SPCB	State Pollution Control Board
SSI	Small-Scale Industries
Tcf	Trillion Cubic Feet
TISCO	TATA Iron and Steel Company Limited
TMT	Trillion Metric Tonnes
TNEB	Tamil Nadu Electricity Board
TNEB	Tamil Nadu Electricity Board
TNMM	Transactional Net Margin Method
TPA	Tonnes Per Annum
Tpy	Tonnes Per Year
TWP	Temporary Work Permission
UHV	Useful Heat Value
UNCTAD	United Nations Conference on Trade and Development
UNFC	United Nations Framework Classification
UNFC	Nations Framework Classification
USA	United States of America
USGS	United States Geological Survey
VIC	Vertically Integrated Companies
VSA	Valued Stock Account
WCU	World Conservation Union
WTO,	World Trade Organisation

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