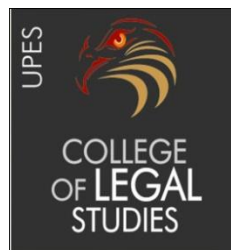


**LEGAL FRAMEWORK OF THE OIL AND GAS SECTOR IN INDIA
(ISSUES AND CHALLENGES)**

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Submitted under the guidance of Mr. Rajkumar

*This dissertation is submitted in partial fulfillment of the degree of B.A., LL.B. (Hons.) with
Specialization in Energy Laws*



**College of Legal Studies
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CERTIFICATE

This is to certify that the research work entitled “**Legal framework of the oil and gas sector in India (issues and challenges)**” is the work done by Ragini Mehta under my guidance and supervision for the partial fulfillment of the requirement of B.A., LL.B. (Hons.) degree at College of Legal Studies, University of Petroleum and Energy Studies, Dehradun.

Signature & Name of Supervisor

Designation

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DECLARATION

I declare that the dissertation entitled “**Legal framework of the oil and gas sector in India (issues and challenges)**” is the outcome of my own work conducted under the supervision of Prof. Rajkumar, at College of Legal Studies, University of Petroleum and Energy Studies, Dehradun.

I declare that the dissertation comprises only of my original work and due acknowledgement has been made in the text to all other material used.

Signature & Name of Student

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ABBREVIATION

AOC – Assam Oil Company

BP – British Petroleum

BOC – Burma Oil Company

CBD – Coal Bed Methane

DGH – Directorate General Hydrocarbons

DOC – Declaration of Commerciality

E&P – Exploration and Production

EEZ – Exclusive Economic Zone

EIA – Environment Impact Assessment

FDI – Foreign Direct Investment

FDP – Field Development Plan

GOI – Government of India

HPCL – Hindustan Petroleum Corporation Limited

LNG – Liquefied Natural Gas

MOPNG – Ministry Of Petroleum and Natural Gas

MOEF – Ministry of Environment and Forest

MOU – Memorandum of Understanding

MRTP – Monopolies and Restricted Trade Practices Act, 1957

MWP – Minimum Work Programme

NELP – New Exploration Licensing Policy

NOC – National Oil Companies

O&NG – Oil and Natural Gas

OALP – Open Acreage Licensing Policy

OIL – Oil India Limited

OIDB – Oil Industry Development Board

OISD – Oil Industry Safety Directorate

ONGC – Oil And Natural Gas Company

PEL – Petroleum Exploration License

PETROFED – Petroleum Federation Of India

PPP – Public Private Partnership

PNG – Petroleum And Natural Gas

PNGRB – Petroleum And Natural Gas Regulatory Board

PSC – Production Sharing Contract

PSU – Public Sector Undertaking

R&D – Research and Development

SOE – State Owned Enterprises

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¹ AIR 1983 Guj 1

² AIR 2001 Guj 5

³ (1990) Supp. 1 SCC 397

⁴ AIR 2002 SC 45

⁵ 2004 (6) ALD 99 SC

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RAGINI MEHTA

1 INTRODUCTION

The Indian oil and gas sector is one of the core industries in India and has very significant forward linkages with the entire economy. India has been growing at a decent rate annually and is committed to accelerate the growth momentum in the years to come. This would translate into India's energy needs growing many times in the years to come. Hence, there is an emphasized need for wider and more intensive exploration for new finds, more efficient and effective recovery, a more rational and optimally balanced global price regime - as against the rather wide upward fluctuations of recent times, and a spirit of equitable common benefit in global energy cooperation⁶.

The Indian oil and gas segment is of vital significance and assumes an overwhelmingly crucial part in affecting choices in all different circles of the economy. The yearly development has been praiseworthy and will quicken in future hence reassuring all round development and improvement. This has required the requirement for a more extensive increased quest for new fields, developing better systems for extraction, refining and conveyance, the constitution of a national cost component - remembering the disturbing cost vacillation in the later past and advancing a soul of impartial worldwide collaboration.

The petroleum and characteristic gas division which incorporates transportation, refining and showcasing of petroleum items constitutes more than 15 percent of the nation's total national output (GDP). The petroleum division is of foremost significance for the development of Indian economy. Around 10 years back, the petroleum division was totally controlled by the national oil organizations. Shortly, there are numerous players both in the upstream and downstream divisions. With the huge revelations of oil and gas in different destinations lately, India is taking a gander at tremendous interests in the segment. Development proceeds at pace, and the Indian oil part looks lively with circumstances.

However, the Government's growing concern over the widening gap between the demand for hydrocarbons and the domestic production have led to the announcement of several policy

⁶ Oil and Natural Gas- An Overview, <http://www.indiainbusiness.nic.in/industry-infrastructure/industrial-sectors/oil-gas.htm>

measures in recent times. To cope up with the high demand, the Indian government has adopted policies such as allowing 100 per cent foreign direct investment (FDI) in many segments of the oil and gas sector such as refineries, pipelines, petroleum products, natural gas and infrastructure related to the marketing of petroleum products.² In 2011, the oil and gas sector experienced one of the biggest FDI deals in the country, with British Petroleum (BP) entering a US\$ 7.2 billion deal with Reliance Industries for the exploration of offshore oil and gas. Subsequently, BP formed a joint venture with Reliance for the marketing of gas and took a 30 per cent stake in 23 oil and gas blocks.⁷ Owing to many large scale investments, the oil and gas sector in India attracted FDI worth US\$ 3,152 million over 2000–11⁸. Some other policy initiatives to promote investments included the New Exploration Licensing Policy (NELP), to aid both public and private sector companies in bidding for exploration rights. Over 246 blocks were given out over eight bidding rounds through this initiative during the last decade alone, resulting in the discovery of 68 oil and gas fields. The NELP allows 100 per cent FDI in small to medium sized oil fields. However, the NELP may soon be replaced by the Open Acreage Licensing Policy (OALP), which invites bids all year round unlike NELP that invites bids yearly.⁹

India's hydrocarbon potential is spread across 26 sedimentary basins spanning an estimated 3.14 million square kilometers (sq. km), of which 1.35 million sq. km are in deep water while 1.79 million sq. km area are on land and in shallow offshore areas. At present, only 22% of the total area is moderately to well explored, while the balance 78% is either in early stages of exploration and/or is yet to be explored, which by itself is an indicator of the untapped potential of the domestic upstream sector¹⁰.

Given the significant capital intensity, high business risks and the strategic nature of E&P activity, the upstream sector in India was traditionally dominated by the public sector, with ONGC and OIL acting as the vehicles for Government investment in it. However considering the large E&P potential remaining untapped, the need for inducting global technical expertise, and the country's growing need for energy security, the Government decided to liberalize the sector and opened it for private participation in 1991-92, awarding around 35 blocks to private players on a nomination and/or bidding basis. India's E&P activities received a major thrust when the

⁷ India Brand Equity Foundation; Oil and Gas; <http://www.ibef.org/>.

⁸ *Id.*

⁹ *Supra* note 1.

¹⁰ Ministry of Petroleum and Natural Gas; Petroleum Statistics 2012.

Government of India (GoI) came out with the New Exploration Licensing Policy (NELP) in 1997-98, with the objective of institutionalizing the bidding process for oil and gas blocks and providing a level playing field for all companies in the E&P segment. Under NELP, acreages are offered to the participating companies through the process of open competitive bidding. In the seven completed rounds of bidding (NELP I to NELP VII), 256 blocks have been allocated entailing a total investment commitment of US\$10 billion. Till now, 68 oil and gas discoveries have been made in these NELP blocks, leading to a hydrocarbon accretion of over 600 million metric tonnes of oil equivalent. Bidding for NELP VIII has recently been concluded with the award of 36 blocks out of the 70 on offer.

1.1 HISTORICAL BACKGROUND OF OIL EXPLORATION IN INDIA

The search for oil in India began way back in the year 1825 by the Burmah Oil Company in Assam. In 1866 Mr. Goodenough of the Mckillop Steward Company drilled the first exploratory well near Jaypore in upper Assam and oil was struck. However, this discovery could not be commercially exploited. Later on in 1899, the Assam Railway and Trading Company (ARTC) work in the same area, struck oil at Digboi marking the beginning of the commercial production of oil in India. ARTC in 1889 promoted the Assam Oil Company (AOC) for looking after its petroleum interest. During the British period, Burma being part of India (up to 1937) was the principle source of supply. The oil supplies from Burma stopped in 1942.¹¹ After independence the international oil companies operating in India were the Assam Oil Company, the Burmah Shell and Standard Vacuum and Caltex. Until about 1956, exploration efforts were confined to the Assam Arakan region in India. In 1955, a Directorate of Oil and Gas was established. Immediately thereafter in 1956, a full-fledged Oil & Natural Gas Commission (ONGC), in the form of a statutory corporation was set up to boost exploratory efforts for hydrocarbon exploration in the country followed by the setting up of Oil India Limited, another upstream public sector company in 1958. ONGC made the first discovery of oil and gas in the Cambay onshore basin in the State of Gujarat. In 1960 ONGC discovered a giant field called 'Ankleshwar Field' in the state of Gujarat. Till the 1960s the oil production in the country was confined to the two States of Assam and Gujarat. Offshore exploration was initiated in 1964 in the West Coast

¹¹ NASEEM MOHAMMAD; Energy Law in India (Kluwer Law International); p 127 (2001).

and a giant offshore oil field was discovered at Bombay High in 1974. This was the turning point in the history of the upstream oil sector in India and the production of oil rose sharply during the 1980s. In 1959, the Indian Oil Corporation, a public sector company was formed for taking up activities in refining, marketing and distribution. In 1974, the international oil companies operating in India were nationalized and their business was transferred to the Hindustan Petroleum Corporation Limited (HPCL) and subsequently to the Bharat Petroleum Corporation Limited, which was established in 1977.

Since demand has not only outstripped the production but also increased steadily, the percentage of self-reliance is decreasing. For example in 1989–1990, the indigenous production was 63 per cent of the total demand and the very next year in 1990–1991 the percentage of self-reliance plummeted to 56 per cent and during 2001–2002, it was 30 per cent. It is so because no major discovery has been made after Bombay High. With growing demand and declining domestic availability of crude oil and petroleum products, the import bill of the country is adversely affected which at present is about 24–30 per cent of the export earnings of the country, amounting to Rs. 31,000 Crore. Over the last 15 years, the demand for petroleum products has risen at an annual compound rate of 6.1 percent. It makes petrol an important factor, playing a major role in the economic development of the country and affects the economy in a big way.

The resource base of hydrocarbon in India is about 28 billion tonnes of oil and oil equivalent gas. As on 1 April 2004, out of this only 7.89 billion tonnes of initial in place geological reserve has been established which leaves a substantial resource base unexplored. The ultimate established reserves are in the order of 2.94 billion tones. The National Oil Companies (NOCs) viz. ONGC Ltd. and OIL, the major players till 1980 and after liberalization private companies like Reliance, Essar, HOEC, CAIRN Energy, have made continuous and persistent efforts for the discovery of oil and gas in order to meet the ever-rising demand of petroleum and petroleum products in the country.

In 2002, the petroleum industry had a work force of 133,610 personnel involved in exploration and production, refining, marketing and pipelines. Out of this, 37.07 per cent were in exploration and production, 18.95 in refining, 31.33 in marketing, 3.06 per cent in pipeline and only a small number of 2,797 professionals, i.e. 2.09 per cent were involved in research and development¹². Recently, a number of exploration blocks, small and medium discovered fields have been

¹² Ministry of Petroleum and Natural Gas; Petroleum Statistics 2004.

awarded to private parties and are under operation. The companies either hired the local people or have brought some expatriates. This is an addition to the existing work force in petrol sector. To give boost to exploration activities and to bring risk capital, the petroleum and natural gas sector was opened up for private participation by national and international companies at the beginning of the Eighth Plan. As of now, exploration, production, refining and marketing is open for private participation. The Restructuring Group for the Oil Sector (R-Group) has estimated an investment of about USD 100 billion in the petroleum and natural gas sector up to the year 2010 for ensuring the security of oil and gas supplies to various sectors of the economy. The Petroleum and Natural Gas Ministry in order to attract larger private participation have announced major incentives through the launch of a new exploration licensing policy (NELP) in the upstream sector. This policy provides for a level playing field and has brought even the national oil companies at par with any other private company whether Indian or foreign. It is expected to boost investment in the exploration for increasing the level of hydrocarbon reserve accretion and help in enhancing the domestic oil and gas production. Till March 2004 the private sector made an investment of USD 3.22 billion in the upstream sector.

1.2 CLASSIFICATION OF THE INDUSTRY

Petroleum exploration and production activities which are also referred to as upstream operations, can be broadly classified into three categories:

(i) Exploration operations

The first and foremost step in the process of extraction of petroleum is exploration i.e. the search for oil and gas deposits below the surface of the earth. Such deposits could be onshore or offshore. Exploration consists of various sub-phases.

Phases in petroleum exploration-

- Initial surveys - areas which are thought to contain hydrocarbons are subjected to aerial, topographical, geological, geochemical and other surveys, in order to detect features of sub-surface geology.
- Seismic survey – after narrowing out the potential areas, detailed seismic surveys are conducted to identify rock formations with high probability of being oil and gas reserves. The above is dependent on the time the sound waves take to travel through

rocks of varying density and also using the process of depth conversion in order to create a profile of the substructure. Seismic survey includes the following:-

- i. Acquisition of seismic data
- ii. Processing of the said data
- iii. Interpretation of the data by geologists

There are different types of seismic surveys:-

- i. Two dimensional (2D)
 - ii. Three dimensional (3D)
 - iii. Standard/high resolution
 - iv. 4D/4C
- Exploratory well – when a prospect is identified and evaluated and also passes the oil companies selection criteria then an exploratory well is drilled to determine the existence or non existence of oil or gas. The well could either be a dry well or a discovered well.
 - Appraisal well – once discovery is made and the well is considered to be of commercial importance then the drilling of appraisal wells commences. This is done to determine the contours of the reservoir along with characteristics and to come up with a fairly accurate estimate of recoverable oil or gas reserve.
 - Commercial discovery – if oil and gas is considered to be discovered which is commercially viable then a commercial discovery is declared as per the contract.

(ii) Development operations

The next step in extraction is development of the potential field where commercial discovery has been made. For beneficial, efficient and timely extraction of oil and gas, a field development plan is put in place, keeping in mind health and safety and environment.

Development includes the following:-

- i. For producing oil and gas, production wells are drilled.

- ii. For injecting gas or water to sustain or accelerate the production, injection wells are drilled.
- iii. Installing platforms for offshore production of oil and gas
- iv. Installing pumps, separators, tanks, artificial lifting facilities which are needed to produce, process, store and transport oil and gas.

(iii) Production operations

Production operations include operations which take place after commencement of production from a developed well. This includes:-

- i. Workovers
- ii. Operation and maintenance of facilities
- iii. Improved oil recovery
- iv. Plugging and abandonment of wells
- v. Site restoration

The downstream incorporates oil refineries, petrochemical plants, petroleum item circulation, retail outlets and regular gas appropriation organizations. The downstream business touches shoppers through a great many items, for example, petrol, diesel, plane fuel, warming oil, black-top, ointments, manufactured elastic, plastics, composts, liquid catalyst, pesticides, regular gas and propane.

The total refinery crude throughput during 2009-10 at 160.03 million metric tonnes is 0.46% lower than 160.77 million metric tonnes crude processed in 2008-09 and the prorated capacity utilization in 2009-10 was 89.92% as compared to 107.43% in 2008-09.

India, which is already surplus in refining capacity, aims to emerge as a refining hub. Its favorable location, close to the oil-producing regions of the Middle East renders it an advantage in this quest and the ability of the latest refineries to process heavy, low-grade crude, will further help in this regard.

India today boasts of surplus refining capacity, with further large expansions planned. The major expansions are for the Vadinar refinery of Essar, the Indian Oil Corporation (IOC) refinery at

Paradeep and the planned refineries at Bina in Madhya Pradesh by BPCL and Bhatinda in Punjab by HPCL-Mittal Energy.¹³

The Government of India has been providing tax incentives and fiscal incentives to new refineries. The new RPL refinery, for example, benefited from its Special Economic Zone (SEZ) status. However, current tax holidays would not be available to non-public sector to refiners that commence activities after April 1, 2009.

1.3 JURISDICTION OVER OIL AND NATURAL GAS RESOURCES

Under the Schedule VII of Constitution of India, the central government is vested with power to make laws concerning the Indian Petroleum Sector. The State government has got no jurisdiction to enact laws relating to crude oil and natural gas. The oldest legislation relating to petroleum sector is The Petroleum Act, 1934 which deals with the import, transport, storage, testing etc. of petroleum (Downstream Sector). The Oilfield (Regulation & Development) Act, 1948 was the first Act which dealt with upstream sector i.e. exploration & production. The Petroleum & Natural Gas Rules, 1959 are framed by the Central Government under the Oilfield (Regulation & Development) Act, 1948.

According to Article 297¹⁴ of the Constitution of India, petroleum in its natural state found in the territorial waters and continental shelf of India, is vested in the Union of India. The constitution of India vests no rights with the state government to enact laws for the subject of petroleum and natural gas. But the question relating to the ownership of the natural resources and whether the state legislature has the competence to enact laws regarding the subject of Natural Gas under

¹³ The Oil and Gas Sector Overview in India 2009

http://www.kpmg.de/docs/The_Oil_and_Gas_Sector__Overview_in_India_2009.pdf

¹⁴ Article 297 of the Constitution of India.

Things of Value within territorial waters or continental shelf and resources of the exclusive economic zone to vest in the Union-

(1) All lands, minerals and other things of value underlying the ocean within the territorial waters, or the continental shelf, or the exclusive economic zone, of India shall vest in the Union and be held for the purposes of the Union

(2) All other resources of the exclusive economic zone of India shall also vest in the Union and be held for the purposes of the Union

(3) The limits of the territorial waters, the continental shelf, the exclusive economic zone, and other maritime zones, of India shall be such as may be specified, from time to time, by or under any law made by Parliament

Entry 25 of List II came up before the Supreme Court in Gujarat Gas Act case.¹⁵ The brief facts of the case are:

The State Legislature of Gujarat passed an Act “Gujarat Gas (Regulation of Transmission, Supply and Distribution) Act 2001” referred to as “the Act” hereinafter, under entry 25 of List II.¹⁶ The Parliament has passed various enactments under Entry No. 53 of List I¹⁷ dealing with the matters of petroleum and petroleum products.

Articles 248 of the Constitution lays down the principle that the Parliament alone has exclusive powers to make laws with respect to any of the matters enumerated in List I of the 7th Schedule. As regards entries in List II, the legislature of the State has exclusive power to make laws subject, of course, to Clause (i) and (ii) of Article 246.¹⁸

The object of the Act was to regulate transmission, supply and distribution of gas in the interests of general public and to promote gas industry in the state and to establish Gujarat Gas Regulatory Authority.

1.3.1 THE TERRITORIAL WATERS, CONTINENTAL SHELF, EXCLUSIVE ECONOMIC ZONE AND OTHER MARITIME ZONES ACT OF 1976¹⁹

The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act of 1976, *inter alia*, contains provisions for the issuance of a letter of authority or a license by the Central Government for the exploration and exploitation of petrol in the territorial waters,

¹⁵ Association of Natural Gas & others v. UOI & others, 2004 (6) ALD 99 (SC).

¹⁶ Entry No. 25 of List II of the Constitution of India- Gas & Gas Works.

¹⁷ Entry No. 53 of List I of the Constitution of India- Regulation and Development of oilfields and mineral oil resources; petroleum and petroleum products; other liquids and substances declared by Parliament by law to be dangerously inflammable.

¹⁸ Article 246 of the Constitution of India.

Subject matter of laws made by Parliament and by the Legislatures of States

(1) Notwithstanding anything in clauses (2) and (3), Parliament has exclusive power to make laws with respect to any of the matters enumerated in List I in the Seventh Schedule (in this Constitution referred to as the Union List)

(2) Notwithstanding anything in clause (3), Parliament, and, subject to clause (1), the Legislature of any State also, have power to make laws with respect to any of the matters enumerated in List III in the Seventh Schedule (in this Constitution referred to as the Concurrent List)

(4) Parliament has power to make laws with respect to any matter for any part of the territory of India not included (in a State) notwithstanding that such matter is a matter enumerated in the State List

¹⁹ The Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976.

continental shelf and exclusive economic zone²⁰. This Act divides the waters surrounding India into territorial waters, the continental shelf and the exclusive economic zone. These zones are, respectively, twelve nautical miles from the appropriate baseline²¹, the seabed and subsoil of the submarine areas that extend beyond the limit of the territorial waters to the outer edge of the continental margin or 200 miles from that baseline, whichever is farther²² and the areas beyond the territorial waters to 200 miles from the baseline referred to above²³. In the continental shelf no person can explore or exploit its resources or carry out any search or excavation or conduct any research or drill or construct, maintain or operate any artificial island, off shore terminal, installation or other structure or device for any purpose whatever except under and in accordance with the terms of a license or a letter of authority granted by the Central Government²⁴. A similar provision applies in relation to the exclusive economic zone.²⁵

1.4 THE GUJARAT GAS ACT CASE

When the State of Gujarat passed the Gujarat Act, the question arose whether the State government can pass an enactment in respect of gas, including natural gas in all its forms by virtue of the legislative competence based on Entry 25 of List II of the 7th Schedule. The Union of India enacted various legislations, namely, The Oil Fields (Regulation & Development) Act, 1948; Oil Industry (Development) Act, 1974; The Petroleum and Minerals Pipelines (Acquisitions of right of User in Land) Act, 1962; the Oil Industry (Development) Act, 1974. All these legislations have been passed by the Union of India on the basis of the legislative competence under Entry 53 of List I of the 7th Schedule. Oil and Natural Gas Commission increased the price of Natural Gas supplied by them. The Association of Natural Gas Consuming Industries of Gujarat and others filed Civil Writ Petition before the High Court of Gujarat wherein they challenged the legislative competence of the Union to make laws on “gas and gas works”. Therefore, the question arose whether “Natural Gas” is a Union subject or State subject and whether the State of Gujarat and the other states have the legislative competence to make laws on the subject of “Natural Gas”.

²⁰ *Supra* note 25 at Section 6(4)

²¹ *Supra* note 25 at Section 3(2)

²² *Supra* note 25 at Section 6(1)

²³ *Supra* note 25 at Section 7(1)

²⁴ *Supra* note 25 at Section 6(4)

²⁵ *Supra* note 25 at Section 7(5)

It is in this background, the following questions were referred to the Supreme Court under Clause 1 of Article 143 of the Constitution on India:

- (i) Whether natural gas is a union subject covered by Entry 53 List I.
- (ii) Whether states have legislative competence to make laws on the subject of natural gas including LNG.
- (iii) Whether the state of Gujarat had legislative competence to enact Gujarat Gas Act 2001.

1.4.1 ARGUMENTS PUT FORTH BY THE UNION OF INDIA

- (i) The first contention put forth by the centre was that Union Government had passed various legislations in respect of “Petroleum and Petroleum Products” and “Mineral Resources”, namely, The Oil Fields (Regulation & Development) Act, 1948; Oil Industry (Development) Act, 1974; The Petroleum and Minerals Pipelines (Acquisitions of right of User in Land) Act, 1962; the Oil Industry (Development) Act, 1974; and Petroleum and Natural Gas Rules, 1959, Industries (Development and Regulation) Act, 1951, as the Parliament alone is competent to do so under Entry 53, List I of the 7th Schedule.
- (ii) The Union of India then contended that the various definitions in different enactments which indicate that there is uniform and consistent legislative practice and it is evident that the terms “Petroleum and Minerals” and “Petroleum and petroleum products” include “natural gas” and it is Union subject covered by Entry 53 of List I.
- (iii) The term “natural gas” in whatever physical form, including Liquefied Natural Gas (LNG) is a Union subject covered under Entry 53 of List I and Entry 25 under List II of the 7th Schedule deals with “gas and gas works” and it relates to manufacture of synthetic gas. Entry 25 under List II enables the State Government to regulate and control the manufacture and distribution of synthetic/manufactured gases by the local industry and mineral oil resources or petroleum products would not fall under Entry 25 of List II.

1.4.2 ARGUMENTS PUT FORTH BY THE STATE

- (i) It was contended by the State of Gujarat that the expression “gas” used in Entry 25 of List II would include all types of gases and, therefore, any legislation related to “gas and gas works” is perfectly within the legislation competence of the State.
- (ii) It was also argued that whenever there is a conflict between two entries, the Court should reconcile the entries and attempt should be made to harmonize the apparently conflicting entries and the state should not be denuded of its powers to legislate on the subject.
- (iii) It was strongly urged that the State has exclusive powers to make laws dealing with “natural gas” in whatever physical form, and that it also would include LNG. The State laid emphasis on various publications and research papers on the subject to show as to what is “natural gas” and its derivative forms.
- (iv) It was further contended that “gas” as defined in the Gujarat Gas Act means matter in gaseous state which predominantly consists of methane and it will not come within the ambit of “petroleum and petroleum products”. It was argued that “gas” could be extracted from the bowl of the earth without there being any petrol or petroleum products and according to learned counsel, it would fall within the domain of State legislation under Entry 25 of List II.
- (v) It was argued by the States that entries in the legislative lists are to be given widest amplitude and it is constitutionally impermissible to add words of qualification to Entry 25 List II. It was argued that in commercial, scientific and industrial parlance, “Gas” (including Natural Gas and LNG) is quite distinct from “Petroleum and Petroleum Products.”
- (vi) It was also argued that “natural gas” is classified in several broad categories such as (1) wet gas which contains condensable hydrocarbons such as propane, butane and pentane; (2) lean gas denotes an absence of condensable hydrocarbons; (3) dry gas whose water content has been reduced by dehydration process; (4) sour gas contains hydrogen sulphide and the sulphur compounds and (5) sweet gas denotes an absence of hydrogen sulphide and other sulphur compounds. It was submitted that these natural gases are not associated with any petroleum products. Thus the State had got legislative competence to pass the legislation in respect of natural gas, as it is not a petroleum product.

1.4.3 DECISION OF THE SUPREME COURT

It was seen by the Supreme Court that the contention in the moment case could just be determined by inspecting the inquiry whether the articulation "petroleum" and "petroleum items" or "mineral oil assets" specified in Entry 53 of List I of the VIIth Schedule would take in its compass the common gas or its subordinate structures. In this way, it vigorously depended on Encyclopedia like Kirk-Othomer Encyclopedia of Chemical Technology, "The New Book of Popular Science", Dictionary and Thesaurus like Webster's new twentieth Century word reference, Ballantine's Law Dictionary. The Supreme Court additionally depended on the meanings of the statements "petroleum", "petroleum items", "mineral oil" gave in the distinctive Indian and also outside enactments.

In the wake of considering and counseling the aforementioned sources the Hon'ble Supreme Court held that Natural Gas including LNG is a Union subject secured by Entry 53 of List I and the Union has select authoritative ability to establish laws on characteristic gas. The states have no administrative skill to make laws on the subject of characteristic gas and LNG under Entry 25 of List II of the seventh Schedule to the Constitution. The Gujarat Gas (Regulation of Transmission, Supply & Distribution) Act, 2001, so far as the procurements contained in that identifying with the regular gas or LNG is concerned, is with no administrative ability and the Act is to that degree ultra vires to the Constitution.

2 LEGAL FRAMEWORK

2.1 POLICIES

2.1.1 PROPOSED SHALE GAS EXPLORATION POLICY IN INDIA

There is an apparent interest in domestic exploration of shale gas, given the gigantic success in the US²⁶. The Ministry of Petroleum and Natural Gas (MoPNG) has acknowledged six basins as potentially shale gas bearing. These are Cambay, Assam-Arakan, Gondwana, Krishna-Godavari, Kaveri, and the Indo-Gangetic plain.

- (i) The identified blocks will be advertised for international competitive bidding. Participation of the state will not be mandatory.

²⁶ R. K. BATRA; Shale Gas in India; <http://www.teriin.org/>

- (ii) All areas, which are already allotted and where operations have entered the development/production phase shall be excluded from the area to be offered for shale gas exploration.
- (iii) If an offer for shale gas overlaps or falls within an existing oil and gas/CBM block, right of first refusal will be offered to the existing contractor to match the offer of the selected bidder.
- (iv) Fiscal regime proposed for exploration to be based on royalty and production linked payments, similar to the regime adopted for CBM operations. ad valorem royalty at the prevailing rate for natural gas would be applicable and accrue to the state governments. Production-linked payment on ad valorem basis will be made to the central government on different production slabs, which will be biddable items. Cost recovery will not be admissible.
- (v) The contract duration will be of 32 years and will be divided into two phases. Phase I will be for a period of 7 years and will be for exploration, appraisal, evaluation of the prospect, and feasibility. Phase II will be the development and production phase for the remaining duration of 25 years.
- (vi) There will be freedom to market shale gas within India on an arm's length basis within the framework of the government policies in marketing and pricing of the gas.

The draft policy has identified some of the water issues in the exploitation of shale gas and these are-

- (i) Optimal exploitation of shale gas/oil requires horizontal and Multilateral wells and Multistage hydraulic fracturing treatments of stimulate oil and gas production from shale.
- (ii) This may require large volume of water ~3-4 million gallons per well (11,000 to 15,000 cubic metres of water required for drilling/hydro fracturing depending upon the well type and Shale characteristics).
- (iii) The water after hydraulic fracturing is flowed back to the surface and may have high content of Total Dissolved Solids (TDS) and other contaminants (typically contains proppant (sand), chemical residue occur in many geologic formation, mainly in shale). Therefore, the treatment of this water before discharge to surface/subsurface water needs to be in line with the Central/State Ground Water authority regulations.

(iv) Possibility of contamination of aquifer (both surface and subsurface) from hydro-fracturing and fracturing fluid disposal and the need for safeguarding the aquifer. Multiple casing programme (at least 2 casings) will be a mandatory requirement across all sub-surface fresh water aquifers²⁷.

2.1.2 HYDROCARBON VISION

The Hydrocarbons Vision 2025 lays down the framework which would guide the policies relating to the hydrocarbons sector for the next 25 years. Issues such as E&P, refining, marketing, external policy, oil security, tariff and pricing, and restructuring and disinvestment are addressed by the Group, to ensure that an optimal mix of energy resources are made available to the consumer at the right price²⁸. The Hydrocarbons Vision 2025, no doubt, spells out the government's strategy and operational style with regard to this vital industry²⁹.

A ministerial group, set up by the Prime Minister, to give focus on a long-term energy security for India has developed the following vision, for the next 25 years:

- To assure energy security by achieving self-reliance through, increased indigenous production and investment in equity oil abroad.
- To enhance the quality of life, by progressively improving product standards to ensure a cleaner and greener India.
- To develop hydrocarbon sector as a globally competitive industry, which can be benchmarked against the best in the world, through technology up gradation and capacity building in all facets of the industry.
- To have a free market and promote healthy competition among players and customer service.

²⁷ Ministry of Petroleum and Natural Gas, January 2014

²⁸ Ministry of Petroleum and Natural Gas; India's Hydrocarbon Vision- 2025; <http://www.petroleum.nic.in/>

²⁹ Hydrocarbon Vision 2025, <http://www.petroleum.nic.in/vision.doc>

- To ensure oil security for the country, keeping in view strategic and defence considerations³⁰.

The hydrocarbon vision has been converted into prioritised action agenda for medium and long term implementation in the medium and long term. In brief the main thrust of the activities would be:

- Focus on oil security, through intensification of exploration efforts and achievement of 100 per cent coverage of unexplored basins in a time bound manner to enhance the domestic availability of oil and gas
- Secure acreages in identified countries having high attractiveness for ensuring, the sustainable long-term supplies.
- Pursue projects to meet the deficit in demand and supply of natural gas and facilitate availability of LNG.
- Maintain adequate levels of self sufficiency in refining (90 per cent of consumption of middle distillates).
- Establish adequate strategic storage of crude and petroleum products in different locations. Create additional infrastructure for distribution and marketing, of oil and gas.
- Open up the hydrocarbon market, so that there is a free and fair competition between public sector enterprises, private companies and other international players.
- Create a policy framework for cleaner and greener fuels.
- Have a rational tariff and pricing policy, which will ensure the consumer getting the petroleum products at the most reasonable prices and requisite quality, eliminating adulteration.

³⁰ Ministry of Petroleum and Natural Gas; India's Hydrocarbon Vision- 2025; <http://www.petroleum.nic.in/>

- Announce a long-term fiscal policy, to attract required investments in hydrocarbon sector.
- Restructure the oil sector PSUs, with the objective of enhancing shareholder value and disinvest in a phased manner, in all oil sector PSUs.
- To develop regulatory and legislative framework, for providing oil/gas security for the country³¹.

2.1.3 NEW EXPLORATION LICENSING POLICY

Directorate general hydrocarbons (DGH) as the nodal agency along with the Union government in 1997- 1998 formulated new exploration licensing policy (NELP) in order to create a level playing field for both the public and private sector companies interested in exploration and production of hydrocarbons. DGH is responsible for the implementation of NELP. It is vital to note here that NELP is neither a law nor it has been passed by any law making authority. In the past however transactions related to gas pricing and acquisition of shares in oil and natural gas companies have been challenged before the court of law under public interest litigation challenging the decision of the executive. Though NELP is also open to be challenged but so far it has not been and in fact it has been recognized by the courts as a policy with the effect of harnessing the oil and natural gas sectors' potential.

NELP facilitates E&P activities by promoting international investments and by providing a platform for international competitive bidding. Since the introduction of NELP there has been acceleration in the E&P activities, which is very important at a stage where India has become the fourth largest importer of crude oil. National oil companies (NOC), private companies along with foreign companies are now on equal footing and competent to secure equal term and conditions for the purpose of petroleum exploration license through competitive bidding³².

To further advance and accelerate the exploration and production activities, up to 100% FDI is permitted in upstream activities through NELP. More than 276 blocks have been allotted so far

³¹ BHUPENDER KUMAR SINGH; India's Energy Security: The Changing Dynamics (Pentagon Energy Press); p 29 (2010)

³² Ministry of Petroleum and Natural Gas, <http://www.pib.nic.in/archieve/eec/2010/PetrobackEEC2010.pdf>

under nine bidding rounds. The union government will soon introduce NELP round X under which around 86 blocks will be up for bidding. Under NELP various benefits have been offered to the investors. One of the benefits being the seven years tax holiday and biddable cost recovery up to 100%. Now however some alterations have been made such as the tax holiday will be available with regard to blocks that have been awarded post 31st March, 2011.

Salient features of NELP:

- (i) There will be no more mandatory state participation through NOCs.
- (ii) ONGC and OIL will also compete on equal footing with the private and foreign companies for obtaining PEL.
- (iii) The contractors will have freedom with regard to marketing of crude and oil in the domestic market.
- (iv) Fixed royalty rate at 12.5% and 10% for onshore and offshore respectively. Half of this royalty shall be credited to the hydrocarbon development fund.
- (v) To promote exploration and production activities in the offshore area, half royalty rate will be charged for the first 7 years for deepwater blocks.
- (vi) Cess has been abolished under NELP.
- (vii) Goods that are imported for E&P activities are exempted from payment of import duty.
- (viii) Under NELP there is no discovery and production bonuses.
- (ix) Fiscal stability is extended to the contractor during the entire E&P process
- (x) Petroleum Tax guide has been put into place for guidance of the investors.

With the introduction of NELP the scenario of the oil and gas industry has changed. Before the introduction of NELP the licenses were issued and regulated under the Oilfield regulation and development Act, 1948 and the petroleum and natural gas rules, 1958 and ONGC and Oil were the two prominent players in upstream sector and IOCL in the downstream sector.

“The discoveries made under the NELP have resulted in-place hydrocarbon reserve accretion of a staggering 642 million tonnes of oil and oil equivalent gas, a total of 87 oil and gas discoveries have been made in 26 blocks under NELP during this period”³³.

2.1.4 FDI IN OIL AND GAS SECTOR

The oil and gas sector is not open to 100% foreign direct investment through automatic route which has increased foreign participation and in turn help bridge the demand and supply gap. As far as the refining sector is concerned FDI up to 100% is allowed in case of private companies and 49% in case of public sector undertakings.

The Indian government has liberalized its policy due to which the domestic and foreign companies have so far invested Rs.99714 in 2004-2005 to 2009-2010³⁴.

Various initiatives have been taken by the government of India in order to attract foreign investment in the oil and gas sector. Some of the key initiatives are listed below:

- Investment by both domestic private as well as foreign entities in the oil and gas sector of India is permitted under NELP.
- Refinery industry has been de-licensed
- FDI up to 100% is permitted in small and medium sized blocks through competitive bidding.
- 100% FDI is permitted in the refining sector by private companies and the sector is open public private partnerships for investment.
- In case of natural gas pipelines, 100% FDI is permitted.
- FDI is permitted to 100% in case of petroleum products and pipeline sector through automatic route.
- For facilitating market study and for investment purposes FDI up to 100% is permitted.

³³ Murli Deora, NELP IX, <http://www.indianelpix.com/>

³⁴ FDI, MOPNG, Oct, 2010 <http://www.pib.nic.in/archieve/eec/2010/PetrobackEEC2010.pdf>

- For infrastructure FDI up to 100% is permitted for marketing and marketing of petroleum products.

2.2 LEGISLATIONS

2.2.1 OILFIELDS (REGULATION AND DEVELOPMENT) ACT, 1948

The Indian Government is empowered to legislate with regard to regulation and development of oil fields and mineral oil resources along with petroleum and petroleum products.

The Act³⁵ constitutes the basic framework for licensing and leasing of petroleum and gas blocks by the Union Government. The Oilfields Act empowers the Union Government with broad authority to make rules and regulations providing for the basic guideline of oilfields and for the advance of mineral oil resources. Along with the Petroleum Rules, the said Act governs the grant of PEL and mining lease. In particular, Petroleum Rules may also regulate matters such as where and by whom applications for mining leases may be made and the terms upon which such licenses are granted and the maximum area and time frame for leases. While the said Act prescribes that royalties in respect of petroleum and natural gas are to be paid by the holder of a mining lease, it also provides that Union Government may excuse petroleum or natural gas produced from offshore areas from any royalty. This exemption allows for the Union Government to promote exploration in these less reachable areas.

The consequence of the said Act was discussed in the case of *Babubhai Jasbhai Patel And Ors. V. Union of India*³⁶ where two members of the Gujarat Legislative Assembly challenged the royalty to be paid to the State Government in pursuance to a notification issued under the said Act. The Gujarat High Court dismissed the dispute on the ground that only the Supreme Court could look into disputes that arose between the Union Government and the State Government under Article 131 of the Constitution. The Gujarat High Court also examined the rationale of the said Act and explained the subject matter of the said Act as relating to, regulation of matters set forth in Entry 53. This would mean that, even though oilfields are physically situated within a State in India, it is only the Union Government that can pass laws in respect of the same. Further

³⁵ Oilfields (Regulation And Development) Act, 1948

³⁶ AIR 1983 Guj 1

any dispute that a State decides to raise in respect of an oilfield, it must do so with the Union Government only in the Supreme Court.

In *Satish Maganlal Vora v. Union of India*³⁷, the Gujarat High Court had occasion to examine regulatory framework in relation to petroleum and petroleum products and in this background, the Gujarat High Court noted that the said Act empowers Union Government to impose laws for conservation and development of mineral oils. Further, Oilfields Act fundamentally regulates production aspect of petroleum.

Main provisions of the Act³⁸:

- (i) Defines mineral oils as including natural gas and petroleum.³⁹
- (ii) Defines mining lease to exhaustively cover all forms of exploring and exploiting mineral oils.⁴⁰
- (iii) Oilfield means any area where any operation for the purpose of obtaining natural gas and petroleum, crude oil, refined oil, partially refined oil and any of the products of petroleum in a liquid or solid state is being carried on.
- (iv) The expression lessor and lessee to respectively include a licensor and licensee.⁴¹
- (v) Mining Lease should be granted in accord with the rules made under this Act⁴².
- (vi) Mining Lease granted in contravention to Section 4 (1) shall be void and have no effect.
- (vii) Authorises the Central Government to make rules with respect to regulating grant of mining leases.⁴³
- (viii) The Act empowers the Central Government to make rules for the development of mineral oil.⁴⁴
- (ix) Rules to be made with regard to:-
 - Fees to be paid
 - Area & period of lease

³⁷ AIR 2001 Guj 5

³⁸ The Oilfield (Regulation and Development) Act, 1948.

³⁹ *Supra* note 32 at Section 3(c)

⁴⁰ *Supra* note 32 at Section 3(d)

⁴¹ *Supra* note 32 at Section 3(a)

⁴² *Supra* note 32 at Section 4(1)

⁴³ *Supra* note 32 at Section 5

⁴⁴ *Supra* note 32 at Section 6

- Rent payable
- (x) Rules has to be made with regard to development of mineral oil:-
 - Regulate use of tools
 - Regulate drilling, re-drilling and abandoning etc...
 - Preservation of samples
 - Collection of royalty, tax etc...
- (xi) Royalty:
 - Royalty to be paid as per the rate given in the schedule.⁴⁵
 - The central government shall not fix the rate of royalty in any case to exceed twenty percent of the sale price of the mineral oil.⁴⁶
 - The rate of royalty should not be enhanced more than once during any period of three years.⁴⁷
- (xii) Contravention of any of the rule made under this Act shall be punishable with imprisonment which may extend up to six months or which fine of thousand rupees or both.⁴⁸
- (xiii) The central government may vest an officer with the power to inspect any mine and order the production of any document maintained in this regard or examine any person having the control of or connected with any mine.⁴⁹
- (xiv) Such officer shall be deemed to be a public servant within the meaning of section 21 of Indian Penal Code.
- (xv) The Central Government may in the public interest, grant permission under terms and conditions different from those rules made under Section 5 and 6 of the Act⁵⁰.

2.2.2 PETROLEUM AND NATURAL GAS RULES, 1959

Government of India came out with the rules in exercise of the powers conferred upon it by Section 5 and 6 of Oilfields regulation and development Act, 1948. Rules⁵¹ provide for the

⁴⁵ *Supra* note 32 at Section 6A

⁴⁶ *Supra* note 32 at Section 6A(4)(a)

⁴⁷ *Supra* note 32 at Section 6A(4)(b)

⁴⁸ *Supra* note 32 at Section 9(1)

⁴⁹ *Supra* note 32 at Section 11(1)

⁵⁰ The Oilfield (Regulation and Development) Act, 1948

framework to regulate the grant of exploration licenses and mining leases and for conservation and development of oil fields.

Some of the salient features of the Petroleum Rules are:-

- (i) Prohibition on prospecting and mining except under a license or lease granted under the rules.⁵²
- (ii) Only the Central Government has the power to grant licenses or leases in respect of any land vested with it or minerals underlying the ocean within the territorial waters or the continental shelf.⁵³
- (iii) State Government has power to grant license or lease over land vested with it.⁵⁴
- (iv) Person obtaining exploration license obtains the exclusive right to a lease for production of oil and gas over any part of area covered in the license. Petroleum Act and Petroleum Rules are often invoked together for the purpose of regulating the sale and distribution of petroleum and petroleum products. As explained in *Municipal Corporation of Greater Bombay v. Bharat Petroleum Corporation Limited & Ors.*, the scope of Petroleum Act was to consolidate and amend the law relating to import, transport, storage, production, refining and blending of petroleum, although the transportation and storage of petroleum and petroleum products relates to laws of the municipality where the petroleum is situated, in favor of uniform standards, the power to legislate in respect of petroleum and petroleum products was vested in the Union Government. In exercise of the rule making powers under the Petroleum Act, Union Government framed the Petroleum Rules and along with the Petroleum Act, both were designed to regulate transport, distribution and storage of petroleum and petroleum products. Fascinatingly, the powers of the Union Government and State Government with respect to regulating petroleum and petroleum products was tested in *Municipal Corporation* and the Bombay High Court ruled that the power of Union Government to legislate on this subject would supersede the power of State Government. In the case cited above, the terms of grant of license and cancellation of license in the event of non-compliance of conditions of license was also examined.

⁵¹ Petroleum and Natural Gas Rules, 1959

⁵² *Supra* note 45 at Rule 4(1)

⁵³ *Supra* note 45 at Rule 5(i)

⁵⁴ *Supra* note 45 at Rule 5(ii)

- (v) It is pertinent to that the Union Government has the power to regulate petroleum products as well as hazardous material and also since petroleum products are covered by Essential Commodities Act, 1955⁵⁵.
- (vi) Another important point to be noted is that rules and regulations are subordinate to the parent statute and hence, a rule or a regulation cannot implement a standard more than what the statute mandates. This principle assumes importance in the context of interpretation and enforcement of provisions of statutes, rules and regulations.
- (vii) Person obtaining exploration license obtains the exclusive right to carry out geological surveys, geophysical surveys, information drilling and test drilling operations for petroleum in the area covered as per the license.⁵⁶
- (viii) The lessee have the exclusive right to conduct mining operations for petroleum and natural gas in the contracted area and to construct buildings, dams, tanks, pumping stations, electric power lines for full enjoyment of the lease.⁵⁷
- (ix) The license is valid for four years and may be extended for further periods of one year each till the expiry of the exploration period or periods provided under the agreement or otherwise specified by the central government.⁵⁸
- (x) The area covered by a lease is ordinarily 250 sqkm and the period of lease is 20 years.⁵⁹
- (xi) Royalty:
 - Where the lease has been granted by the central government pay to that Government
 - Where a lease has been granted by the state Government, pay to that Government.⁶⁰
- (xii) In case of national emergency in respect of petroleum the central government shall at all times have the right of preemption over petroleum or petroleum products or natural gas produced under a lease provided that the fair market price is paid to the lessee.⁶¹
- (xiii) Up on written application from the licensee or lessee operation of the work can be stopped for six months. While doing so the government can impose conditions to protect

⁵⁵ Oil and Natural Gas- An Overview, <http://www.indiainbusiness.nic.in/industry-infrastructure/industrial-sectors/oil-gas.htm>

⁵⁶ *Supra* note 45 at Rule 7(i)

⁵⁷ *Supra* note 45 at Rule 7(ii)

⁵⁸ *Supra* note 45 at Rule 10

⁵⁹ *Supra* note 45 at Rule 12

⁶⁰ Since production sharing contract is overriding contract royalty is collected only on the basis of Production sharing contract.

⁶¹ *Supra* note 45 at Rule 18

the boreholes, equipment etc. And the licensee or lessee is obligatory to comply with those conditions.

(xiv) Cancellation of License or Lease:⁶²

-Contravene the terms and conditions

-Fails to use the area for the purpose for which it has been granted

-Area used for a purpose other than that for which it has been granted

(xv) Arbitration:

-Provides for arbitration of disputes which may arise between the Government and the licensee or lessee.⁶³

-Dispute will be solved through arbitration and conciliation act 1996.

(xvi) Penalties: If the licensee or lessee fails without sufficient cause to furnish the information asked he shall be punishable with imprisonment for a term which may extent to six months or with fine which may extent to Rs one thousand or with both.⁶⁴

2.2.3 PETROLEUM ACT, 1934

The petroleum Act regulates transportation, storage, refining, import and blending of petroleum in India. It came into force in 1934 making it the first and the oldest legislation in place to regulated the oil and gas sector. Before this legislation came into force, the oil and gas sector was regulated by the law of each individual state, thus this Act was responsible for bringing uniformity in the oil and gas sector as now there was a central legislation in place to regulate the sector.

With reference to the Satish Manganlal case the effect of the petroleum at can be looked into. The union government is empowered to regulate the petroleum and this power has been given with reference to section 5 and 2 of the petroleum act. The facts of the case are, the appellant claimed to have invented a product which according to him was not petrol but it was stated by the central government that it contained the properties of petrol thus was liable to be regulated by the central government by virtue of section 2(a) and sector 5. It was thus stated that any product with characteristics similar to that to petrol, would be regulated by the central government.

⁶² *Supra* note 45 at Rule 21

⁶³ *Supra* note 45 at Rule 33

⁶⁴ *Supra* note 45 at Rule 32A

With reference to the above case law one can observe the predominant effect of the petroleum act and also if we compare the Petroleum Act with the Oilfields Act, it can be said that the former the midstream oriented and the latter regulates upstream activities.

2.2.4 PETROLEUM AND NATURAL GAS REGULATORY BOARD ACT, 2006

The Petroleum and Natural Gas Regulatory Board Act, 2006 was notified on April 3, 2006. The PNG Act provides for the setting up of the Regulatory Board to regulate refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas excluding production of crude oil and natural gas so as to protect the interest of consumers and entities engaged in specific activities relating to petroleum, petroleum products and natural gas and to ensure uninterrupted and adequate supply of these products in all parts of the country and also to promote competitive markets.

The Act provides for a legal framework for downstream gas sector regulation and development of natural gas pipelines and city or local gas distribution networks. The Regulatory Board has certain functions under the Act with regard to Section 11 in respect of various players in the oil and gas market. The Regulatory Board is also entrusted with the powers under Section 12 which provide for adjudication of disputes between entities engaged in activities set out in the said Act and to conduct inquiry into the activities of such entities.

The powers of the Regulatory Board were challenged in a case⁶⁵ where the Regulatory Board sought to authorize entities for laying, building and operating local gas distribution networks. The Delhi High Court ruled that Section 16 of the PNG Act had not been notified by the Central Government and thus, the Regulatory Board, could not exercise powers set out in Section 16. The court noted that the intention of the legislation was to establish a multi-member regulatory board to regulate the refining, processing, storage, transportation, distribution, marketing and sale of petroleum and petroleum products. The objectives behind these functions were to protect the interests of the consumers and entities engaged in activities relating to these products and to ensure proper supply throughout the country and to ensure competition. With regard to the functioning of the Chairman, the court noted that the Act envisaged collective decision making process. While India's vast body of law on administrative policy and executive decision making

⁶⁵ Indraprastha gas Ltd. v. Union of India

process recognize the principle of delegation of responsibilities, in the present case, the Chairman had sub-delegated his powers and this was held to be impermissible. The court noted that the Chairman, being a sub-delegate under the PNG Act would have to act in strict compliance with the PNG Act and its regulations. Although this is a recurrence of the settled position of law in India, it clarifies the scope of the powers of the Chairman and the Regulatory Board under the PNG Act. This ruling of the Delhi High Court was challenged by the Regulatory Board in the Supreme Court and while the appeal was pending, the Central Government notified Section 16 thus, empowering the Regulatory Board to take actions in terms of section 16. The power of the Regulatory Board to fix tariff in the gas market was challenged before the Delhi High Court. The Delhi High Court ruled that based on the provisions of the said Act, the Regulatory Board lacked the power to fix the price of gas to be sold in the market. This decision has been challenged in the Supreme Court. Section 16 of the act, which gives it PNGRB power to grant licenses was notified by the government in July 2010. In its application, PNGRB has submitted that since the government has notified section 16 of the PNGRB Act, 2006, the regulator is now legally authorized to grant license.

2.2.5 THE PETROLEUM AND MINERALS PIPELINES (ACQUISITION OF RIGHT OF USER IN LAND) ACT 1962

This Act⁶⁶ provides for the acquisition of right of user in land for laying of pipelines for transport of petroleum which includes natural gas and refinery gas & other minerals and matters connected therewith.

The act provides only for acquisition of the rights of the user of the land and not for the acquisition of the land itself.

Main provisions:

- (i) “competent authority” means any person or authority authorized by the Central Government, by notification in the Official gazette to perform the functions of the competent authority under this Act.⁶⁷

⁶⁶ The petroleum and minerals pipelines (Acquisition of right of user in land) Act 1962

⁶⁷ *Supra* note 59 at Section 2(a)

- (ii) "petroleum" has the same meaning as in the Petroleum Act, 1934 (30 of 1934), and includes natural gas and refinery gas.⁶⁸
- (iii) Wherever it appears to the central government that it is necessary in public interest that for the transport of petroleum from one locality to another locality pipelines by that government or state government or corporation it may by a notification in the official gazette declare its intention to acquire the right the user therein⁶⁹. Every notification under sub-section (1) shall give a brief description of the land. The competent authority shall cause the substance of the notification to be published at such places and in such manner as may be prescribed⁷⁰.
- (iv) The act empowers any person authorized by the central government or state government or corporation which proposes to lay such pipelines to enter and survey such lands, to dig or bore in to subsoil, to set out the intended line of work and to survey such lands.⁷¹
- (v) If any person has any objection for acquisition of such rights of usage, they are entitled to mark objection to the competent authority in writing stating the grounds within 21 days of the notification. The competent authority who shall hold an enquiry and who may by an order allow or disallow their objection.⁷²
- (vi) Wherein no objection has been made under section 5 or the competent authority has disallowed the objections, the competent authority shall forward to the government the report along with the relevant records for the government to decide as to whether the right of user of the land is to be acquired and up on receipt of the report the central government if satisfied that such land is required, make a declaration and the right of user in the land shall from then on vest in the central government free from all encumbrances.⁷³

⁶⁸ *Supra* note 59 at Section 2(c)

⁶⁹ *Supra* note 59 at Section 3(1)

⁷⁰ *Supra* note 59 at Section 3(2)

⁷¹ *Supra* note 59 at Section 4

⁷² *Supra* note 59 at Section 5

⁷³ *Supra* note 59 at Section 6(1)

- (vii) The central government there up on vest the right on the state government or corporation proposing to lay the pipelines and thereupon the right of such user in the land shall, subject to the terms and conditions so imposed, vest in that State Government or corporation, as the case may be, free from all encumbrances.⁷⁴
- (viii) The owner of the land with respect to which declaration has been made shall be entitled to use the land for the purpose for which the land was put to use.⁷⁵
- Provided the owner after declaration cannot,
 - Construct any building or structure
 - Construct or excavate any tank, well, reservoir or dam
 - Plant any tree on that land
 - Any other act which would likely to cause damage to the pipeline.⁷⁶
- (ix) It is lawful for any person authorized by the central government or state government or corporation to enter up on the land to lay pipe line or any other act necessary for laying of pipelines provided no pipeline shall be laid under,
- Any land used for residential purpose
 - Any land where any permanent structure stands
 - Any land which is appurtenant to a dwelling house.
- (x) Any person interested in the land where the pipeline is proposed to be or being laid or has been laid has sustained damage or loss or injury, the central government or state government or corporation as the case may be shall be liable to pay compensation to such person for such damage loss or injury. The amount shall be determined by the competent authority.⁷⁷ If the amount of compensation determined by the competent authority is not acceptable by the parties they can make an application to the district judge of whose jurisdiction the land is situated.⁷⁸

⁷⁴ *Supra* note 59 at Section 6(4)

⁷⁵ *Supra* note 59 at Section 9 (1)

⁷⁶ *Supra* note 59 at Section 9(2)

⁷⁷ *Supra* note 59 at Section 10(1)

⁷⁸ *Supra* note 59 at Section 10 (2)

- (xi) No suit or legal proceedings shall lie against any person for anything done in good faith under this act.⁷⁹ No suit or legal proceedings shall lie against central government or state government or competent authority or corporation for any loss or damage or injury caused by anything done in good faith under this act or any rule or notification or issued there under.⁸⁰
- (xii) Whoever obstructs any person in doing any of the acts authorized under section 4 or 7 or 8 and whoever willfully does any act prohibited under section 9 shall be punishable with imprisonment which may extend to six months or fine or with both.⁸¹
- (xiii) Whoever damages any pipeline shall be punishable with rigorous imprisonment for a term which shall not be less than one year, but which may extend to three years and shall also be liable to fine.⁸²

2.2.6 ENVIRONMENTAL LAW

Under the PSC, central government and the contractor recognize that petroleum operations cause some serious impact on the environment and have to conduct petroleum operations with due regard to concerns with respect to protection of the environment and conservation of natural resources and in particular:

- i. Put in place modern oilfield and petroleum industry practices and standards including advanced techniques, practices and methods of operation for the prevention of environmental damage in conducting its petroleum operations;
- ii. take necessary and adequate steps to:
 - a) prevent environmental damage and where some adverse impact on the environment is inevitable, to reduce such damage and the substantial effects thereof on property and people
 - b) ensure sufficient compensation for injury to persons or damage to property caused by the effect of petroleum operations; and

⁷⁹ *Supra* note 59 at Section 13(1)

⁸⁰ *Supra* note 59 at Section 13(2)

⁸¹ *Supra* note 59 at Section 15 (1)

⁸² *Supra* note 59 at Section 15 (2)

- iii. Conform with the requirements of applicable laws and the rational requirements of the central government from time to time.
- iv. In case of failure to comply with the above steps, the contractor shall remedy the failure. Before commencing E&P, it is mandatory to conduct an Environmental Impact Assessment (“EIA”) which shall be in accordance with the Environmental Impact Assessment Notification, 1994. Consequently, a proposal has to be submitted to the Ministry of Environment and Forests (“MoEF”), central government demarcating the details relating to the drilling activity and EIA report along with public hearing report.

The first of the aforementioned studies has to be carried out in two parts. The preliminary part which has to be concluded before commencement of any field work relating to a seismographic or other survey, and a final part relating to drilling in the exploration period. The part of the study relating to drilling operations in the exploration period has to be approved by central government before the commencement of drilling operations and such approval is not generally unreasonably withheld. The second part of the study shall be completed before commencement of development operations and shall be submitted by the contractor as part of the development plan, with specific approval of central government being obtained before commencement of development operations, and such approval is not generally unreasonably withheld. The MoEF subsequently approves the project if they are satisfied that all requirements are met.

2.2.7 COMPETITION LAW

The regulatory board has been empowered under Section 11 to protect the interest of consumers by encouraging fair trade and competition in the oil and gas sector. The competition commissions has dealt with cases pertaining to unfair trade practices.⁸³ The Competition Act makes express and clear provisions for making the law applicable to enterprises owned by the state, unlike the MRTP Act.

In *Reliance Industries Ltd, v Indian Oil Corporation Limited & Ors.* The issue pertaining to the jurisdiction of Competition Commissions was to be examined. In this particular case Reliance has filed a suit against IOCL, BPCL, HPL for formation of cartels and indulging in unfair trade practices. As we all are aware that the NOCs have a edge over private companies since their

⁸³ Competition Commission constituted under the Competition Act, 2002.

share in the upstream and downstream sector is far more than that of the private companies. The NOCs contended that the competition commission lacked jurisdiction to decide the matter and that the Regulatory Board is only empowered to decide the matter and so went before the Delhi High Court. The High Court set aside this contention and further adjudicated upon the matter. Although the Regulatory Board decided the matter in favour of the NOCs stating that no unfair trade practices were indulged into by the NOCs.

The competition commission is a pivotal body in adjudicating upon disputed pertaining to anti competitive practices and thus its jurisdiction cannot be undermined. Thus the NOCs and the other private companies or any entity willing to invest in India must bow down to the competition commission of India and not indulge in unfair trade practices.

2.3 REGULATORY BODIES

2.3.1 MINISTRY

The Ministry of Petroleum and Natural Gas looks after the overall development of the petroleum industry in India. A Cabinet Minister and a Minister of State head it. A Secretary heads the bureaucracy. The Ministry derives its authority from Item Nos. 53 and 55, list I, of the Seventh schedule of Article 246 of the Constitution of India which reads as follows:

‘Regulation and development of oil fields and mineral oil resources; petroleum and petroleum products; other liquid and substance declared by Parliament by law to be dangerously inflammable.’

Entry 55 authorizes the Central Government to look after ‘Regulation of labor and safety in mines’.

The Ministry of Petroleum and Natural Gas⁸⁴ comprises of the following wings:

1. Administration;
2. Exploration;
3. Refinery;
4. Marketing;
5. Finance;
6. Natural Gas.

⁸⁴ Ministry of Petroleum and Natural Gas; www.petroleum.nic.in.

2.3.2 OTHER BODIES

In addition to the upstream and downstream public sector companies, there are certain other bodies created for the regulation and development of the petroleum sector which operate under or function in close co-ordination with the Ministry. A brief description of these bodies is given below:

DIRECTORATE GENERAL OF HYDROCARBONS (DGH)

This body⁸⁵ has been constituted in 1993 to promote the development of petroleum resources with a balanced regard for the environment, safety, and technological and economic aspects of the petroleum activity. The bidding rounds under NELP are being carried out and looked after by the DGH. It also maintains a National Data Base, deals with upstream oil activities and conducts safety audits. It is actively engaged in coordinating the administration of production sharing contracts which have been executed for small and medium sized fields and exploration blocks.

OIL INDUSTRY DEVELOPMENT BOARD (OIDB)

The OIDB constituted in January 1975 under the Oil Industry (Development) Act of 1974, renders financial and other assistance through loans and grants for promotion and development of the oil industry⁸⁶.

PETROLEUM PLANNING AND ANALYSIS CELL (OIL CO-ORDINATION COMMITTEE (OCC)/PETROFED

The OCC was set up on 14 July 1975, to coordinate various activities of the oil industry like making demand forecasts, refining, storage facilities, the import of crude oil and the fixations of prices. OCC has been replaced by the Petroleum Planning and Analysis Cell (PPAC) to look after some of its functions while others will be taken over by Petroleum Regulatory Board as per provisions of the Petroleum Regulatory Board Bill 2002.

⁸⁵ Directorate General Of Hydrocarbons; www.dghindia.org.

⁸⁶ Oil Industry Development Board; www.oidb.gov.in.

PETROFED was registered as a society and came in to existence created on 7 August 2002 to fill the void. It represents the views of the petroleum industry to the Government, evolves policy and its implementation, promotes co-ordination among industry, regulator and the Government⁸⁷.

CENTRE FOR HIGH TECHNOLOGY (CHT)

This centre set up in May 1987 goes about as a specific agency for surveying the future necessities of the business to gain, create and receive advances in the field of the refinery procedure and petroleum items including lubricants⁸⁸.

OIL INDUSTRY SAFETY DIRECTORATE (OISD)

Established in 1986, OISD formulates and co-ordinates implementation of safety measures in the oil industry assists the Safety Council and lays down procedures and guidelines in the matter of design, operation and maintenance of petroleum installations and also for the creation of new assets.

PETROLEUM CONSERVATION RESEARCH ASSOCIATION (PCRA)

Set up in 1978, the main function of the PCRA is to initiate co-ordinate and promote petroleum conservation and restrain wasteful practices. It sponsors research and development projects for developing energy efficient equipment, processes, appliances. The members of the PCRA are drawn from public sector undertakings.

PETROLEUM INDIA INTERNATIONAL (PII)

Petroleum India International was established in 1986 with the object to pool and mobilize the skills and capabilities of public sector oil companies for providing training and consultancy services to oil companies abroad.

⁸⁷ Petroleum Federation of India; www.petrofed.org.

⁸⁸ Centre for High Technology; www.cht.in

3 ISSUES AND CHALLENGES

The issues and concerns in the energy sector are multi-dimensional, often international and dynamic. This is due to the fundamental role of energy in any individual's day-to-day life as well as its importance as a key input to the production process that transforms input to goods and services. The sector also has a multi-dimensional strategic importance in terms of geo-political implications, environment impact and macro economics. Now this mutual dependence creates extremely complex issues. The global energy sector is facing various issues and challenges of which the dominant issue is security of supply. Security of supply has dominated most of the recent debates and discussions. The energy rich countries are concentrating on the future prospects which the energy sector has to offer while the others are concentrating and struggling to get access to reliable, continuous, uninterrupted, affordable energy services. Access to energy has been identified as a major challenge for achieving sustainable development worldwide.⁸⁹ But at the same time the extraordinary demand growth, rise of new sources of energy, environmental concerns, unsustainable practices, governance issues, wasteful consumption patterns also play a major role.

The intricacies of the oil and gas sector will shape the future of this sector and consequently the sector will pave the way for more organized and efficient set of activities. Concurrently, in a dynamic world where intense political, social, economic, technical and even ideological changes shape our present and future lives and living conditions, changes in the energy scenario, are quite natural and unavoidable.

In the past, two grand transitions have shaped the developments of the global energy system by bringing profound changes in energy demand and supply, in the functioning of the energy industry as well as in the organisation and conduct of economic activities. Despite the uncertainty about the timing and nature of the next energy transition, such a change will also bring profound changes to the energy sector and to the economic activities globally. But the cost and pain associated with adjustment and adaptation required for such changes and the fear of being caught unprepared make investigations into this subject interesting.

⁸⁹ Bhattacharyya SC (2007b) Policy responses for the future of energy: global overview and perspectives. In: Boscheck R (ed) Energy futures. Palgrave Macmillan, Hampshire, UK

Similarly, not so long ago we tended to think that the markets are the solutions for all evils in the sector and market-oriented policies were promoted. The energy industry has changed significantly and the way business is carried out has changed—in some cases beyond recognition. Still it is dawning on us that perhaps markets are not catering to all our needs the way we would have thought them to. Security of supply concerns mentioned earlier, investments in socially desired areas, protection of the environment and the climate and the like cannot all perhaps be left alone to the market.

3.1 IMPORT DEPENDENCE

Every year India spends a huge amount on its imports. 25% of India's total import bill comprises of the petroleum and petroleum products. The dependence on the import will only increase in the near future and there are various reasons for this dependence:

- In the international market, India is the price taker and thus any increase in the international market will directly affect the price in India.
- The continuous rise in demand for petroleum and petroleum products in India is unavoidable.
- The Indian currency is weak in the international market. Its depreciation will further increase the import bill.

The Indian government is very much aware of the risks connected with developing import reliance. The NELP added to better investigate its hydrocarbon possibilities, yet it didn't prompt an important increment of residential creation. India needs the interest of E&P organizations with cutting edge specialized mastery and ability, especially for seaward E&P and change of Enhanced Oil Recovery (EOR) in existing fields. Equity oil acquisition could fence the business dangers to a certain degree, however its impact would be minor, issued its current offer of 10% of household creation, only 2% of India's aggregate interest. Therefore, India is progressively concentrating on moderating its developing oil utilization through interest-side administration, for example, vehicle fuel proficiency and biofuels.

The current pricing framework sets issues to all stakeholders in the segment. For the administration, regardless of the fact that aggregate tax revenue earned on petroleum items exceeds the pay for OMCs, keeping up the current framework is exorbitant. The multifaceted

nature of the framework involves impressive managerial expenses and assets for checking the size of under-recoveries, exchanging trusts among PSUs and organizing the issuance of oil bonds by the Finance Ministry. Purchasers as of now pay a moderately high cost for at any rate gas, particularly given India's low per capita wage level, because of substantial levy. Furthermore, the current endowment framework neglects to viably achieve those who are in need, while untargeted endowments advantage for the most part center and upper wage classes.

Furthermore, the system results in unchecked adulteration of fuel, which creates artificially greater demand for subsidised fuels. The current pricing structure does not send the right signal to incentivise consumers for efficient use of fuels. Oil PSUs, both in the upstream and retail sectors are also not as good as. Upstream players such as ONGC, OIL and GAIL have been asked by the government to bear the financial burden of OMCs. To do so, upstream PSUs sell their crude and products at discount to OMCs, equivalent to INR 158 billion (USD 3.5 billion) to IOCL and INR 69 billion (USD 1.5 billion) to BPCL in FY 2010/11 (IOCL, 2012b; BPCL, 2011). For OMCs, financial compensation from the government has become indispensable to keep its balance sheet afloat. For instance, IOCL's profit (before tax) of INR 90 billion in FY 2010/11 would actually become a deficit of INR 135 billion, if the government revenue grant of INR 226 billion for under-recoveries is deducted from the income (IOCL, 2012b).

This financial sacrifice of oil PSUs to support the government subsidy regime is made at the expense of minority shareholders, since all these companies are traded on a stock exchange. Furthermore, the delayed compensation from government harms the cash flow of OMCs and undermines its investment capability and management autonomy.

Ultimately, the current system provides no incentive for private companies to re-enter the retail market in India. Two-thirds of India's retail stations were closed in 2008 as private companies were not compensated for selling their products below cost, unlike their government-owned competitors. WEO 2011 estimated that India would need a total investment of USD 203 billion for its oil industry from 2011 to 2035. Private investment will be critical to materialise this projection. It can only come when the full implementation of price deregulation in the downstream sector is completed.

India's oil demand is growing fast, bolstered by its economic growth:

- It is about time that India enhances its energy security by way of optimal utilization of its energy resources and by investing in assets overseas.
- The changing pricing mechanism has resulted in increased financial burdens on the investing entities.

3.2 DECLINING DOMESTIC PRODUCTION

In addition to a considerable reduction of output from the KG –D6 basin, the problem of overall reserves in KG-D6 basin is now being posed. The majority owner of D6 is RIL which has announced in May 2012 that it had cut the proven gas reserve estimates to 3.67 from the earlier 7 percent. The minority partner Niko stated that the field contains almost 80% less reserves than estimated (Zeenews, 2012). Niko reduced its estimates for proved and probable reserves from 9.65 to 1.93 tcf, confirming an earlier reduction of proved reserves of KG -D6 to 1.4 tcf in BP's 2011 annual report. The second reduction of KG basin reserve estimates took place in 2006; ONGC claimed to have found between 20 and 22 tcf in KG -DWN-98/2 and shortly thereafter GSPC claimed similar reserve levels in its KG-OSN -2001/3 field. One year later DGH revised the estimates downward to 2.09 tcf for ONGC and 1.8 tcf for GSPC (ET, 2007).

This revisions not only questions how reserves are certified, but they also question the real prospective of domestic gas production. The doubtful medium-term future of Indian domestic gas production has cascading effects on the overall role of gas in the country's energy sector. The first impacts have already been felt in the power sector where the PLF of gas -fired plants averaged only 54% in March 2012 due to unavailability of gas (CEA, 2012h), India is, therefore, contemplating the import of more LNG, but this again raises the question of affordability.

3.3 AFFORDABILITY

The two biggest gas purchasers, power and fertilizers, are exceptionally price delicate as they work in hard directed yield markets and fuel is not a go through expense. In this way, it is far-fetched that they can substitute domestically produced gas with LNG in light of the generously higher expenses, in any event in the short term. Be that as it may, for other potential customers – industry, hostage power generation, refining and petro-chemicals – moderateness is viewed as

high, although no option cost benchmark has yet been built. One conceivable benchmark could be alternative fuel costs in view of calorific quality, as unmet gas demand is presently substituted with liquid fuels.

3.4 GAS UTILISATION POLICY

the gas utilisation policy which has been introduced by the central government does not promote the right which has been given to producers under NELP to sell gas on commercial basis. the gas is instead allocated by the government and the obvious priority is given to the power and fertilizer sector. for the effective functioning of this policy it is important to discover the demand the latent demand of gas which is not feasible to do. the policy also limits the investment in upstream sector because the high exploration cost cannot be recovered due to the price sensitivity of the priority sectors.

3.5 INFRASTRUCTURE

When we take about the oil and gas sector infrastructure in India, well India is far behind in this context and this is one of the major issues which is hampering the growth of this sector. Firstly the demand is more and there is no adequate supply but where is availability of resources then the means of supply are lacking. India does not have in place an integrated national gas grid. This leads to lack of connectivity which further hinders the growth of this sector. If there is proper infrastructure in place then it would provide higher efficiency and wider coverage of area which would further city gas distribution and CNG.

Specific consideration ought to be paid to last -mile connectivity the same number of potential and solvent gas purchasers are not able to get to the gas because of absence of regional infrastructure. Be that as it may, the unlucky deficiency of clear and viable third -parth access conditions both to appropriation and transmission network needs to be determined earnestly to empower highly required speculation.

Gas can possibly assume a critical part in taking care of India's energy demand, however essential essentials need to be placed set up to satisfy this potential:

- gas pricing must be made appealing to guarantee convenient and sufficient interest in local investigation and generation, and LNG re-gasification offices; and
- need ought to be given to a completely -incorporated national gas framework that guarantees viable third -party access.

3.6 RESOURCE MANAGEMENT ISSUES

Revenue from the energy resources often constitutes the main source of income of many resource-rich developing countries. Although natural resources could drive economic growth of a country, a negative correlation between economic growth and resource abundance is often found, which is variously termed in the literature as ‘paradox of plenty’ or ‘resource curse’. Sudden change of an economy upon discovery and production of these resources coupled with absence of diversified economic structure, poor institutional endowment and arrangements, and poor management of new-found riches often hinders economic development. Consequently, resource management issues assume great importance for the resource rich developing countries.

As the price of traded energy resources is quite volatile, resource exporting countries receive boon gains when prices increase and financial distress during low prices. The size of the windfall is often large compared to the national output, but lack of adequate production linkages (i.e. the forward and backward linkages in the production system) in a high rent economy and higher propensity of importing goods for consumption (i.e. adverse consumption linkages) could act as hindrance to growth and development. Use of windfall through direct consumption by expansion of public services or transfer of revenues could create distortion. Moreover, expanded service becomes a pain at the time of economic downturns. Any investment in infrastructure in anticipation of demand to spur growth can be a deficiency-correcting measure and not a solution for long-term growth. In addition, reliance on a few decision-makers for use of windfall tends to promote large-scale, prestigious projects, making the country dependent on a few key investments instead of a diversified portfolio of investments, and thereby making the country vulnerable⁹⁰.

⁹⁰ Bhattacharyya SC (2007a) Energy sector management issues: an overview. Int J Energy Sector

Rent-seeking, corruption and personal enrichment instead of general development of the country also accompany such developments.

This brings to the major development strategy issue: what should be the desired development policy for a resource-rich country? If the absorptive capacity of the local economy is poor and the development of the resource does not encourage economic growth, why should the country develop such resources when leaving it in the ground for future use remains a viable alternative? Or will it require scaling down the projects and develop in phases for ease of revenue management? Will such projects be able to exploit scale economies and will such a policy be acceptable politically, socially and economically? Would such slow down of resource developments produce institutional arrangements to attenuate negative impacts of resource developments? Will private owners accept such investment logic or will this disadvantage some countries compared to others? If slowing down of resource development is considered as the desired policy, would the resource supply be enough to meet the demand? Will the consequent price pro-mote substitution of other energy forms and threat long-term valuation of their-ground resources? If the long-term prospect is affected, will then producers rush to develop the projects? All these then lead to a vicious circle of issues.

3.7 TAX ISSUES

With globalization, we have been witnessing the execution of mega engineering, procurement and construction (EPC) projects in India. Typically EPC contracts involve multiple activities within and outside India relating to offshore services (basic design and engineering, provision of technology, training, etc.), offshore supply of equipment and onshore supply and services that would include equipment installation, testing and commissioning.

A recurrent tax issue in such projects relates to the taxability of offshore supplies. Large EPC contracts typically involve complex structures, multiple sub-contracts, linkage between the offshore supply and onshore service components and single point performance guarantees, raising questions as to the place where the offshore sale could be said to have been completed and the situs of taxation. Indian tax authorities are constantly seeking to tax some portion of the offshore supply profits, under composite and split contracts, on various grounds. Even a minor profit attribution on the offshore supply component could translate into a huge tax liability in

India. Various commercial aspects such as form of the contract (composite or split), obligations and responsibilities of the parties, performance guarantees, signing of the contract, role of the Indian project office, insurance beneficiaries, terms of payment, etc. have been considered by Courts while laying down principles for determining taxability.

In the case of a supply of equipment, Courts have held that if the entire operations (design, engineering, manufacture etc.) relating to offshore supply of equipment take place outside India, the transfer of title in goods takes place outside India, the payments are received outside India and if the transaction is on a principal-to-principal basis then the income from offshore supply cannot be said to arise in India. The place where the transfer of title in goods would take place depends upon the intention of the parties as mutually agreed.

In the case of a composite or turnkey contract that involves both offshore supply and onshore services, Courts have held that the offshore supply will not be taxable in India if the obligations under the contract and the consideration for offshore supply, offshore services, onshore supply and services are distinct and separate and if the title in the equipment is transferred outside India and payments are also received outside India. Thus, if the contract provides that the property in goods shall pass at the time of loading of goods at the port of shipment, the sale would be completed outside India, even if the contractor was to additionally perform onshore services like customs clearance, port handling, or retain care, custody and control of the equipment and have overall responsibility, till final acceptance and equipment testing in India.

A single point performance guarantee, or a covenant to the effect that a default under the offshore supply component would automatically be deemed as a default or breach of the onshore component, would also not affect the passing of the property outside India. A right to examine and repudiate equipment does not, by itself, indicate that property has not passed, if separate remedies by way of repairs, replacement or payment of damages are available for such breach.

However the position could be different if the buyer reserves the right to reject the equipment on acceptance test failure in India. Provisions relating to part payment of the offshore supply price, after receipt at the Indian site, do not affect the passing of the property in goods. Likewise,

signing of the contract in India is of no consequence where the offshore supply activities are carried out outside India and the Indian project office for onshore activities is not involved, or, has no role to play, in the offshore supply.

In some recent cases, profit from offshore supply was held to be taxable in India. In these cases, there was a finding that the onshore entity was a façade created for taxation purposes and was not actually engaged in executing onshore contracts; that it was formed prior to the award of the contract and had a vital role to play in the execution of the entire project; that even after the goods were supplied from outside India, certain parts which were to be fused with the machinery supplied were manufactured in India and it was the responsibility of the contractor to supply the total equipment; that a single contract initially awarded had been subsequently split into separate contracts and there was an allegation that the price under the onshore contract was 'loaded on' to the contract price for the offshore contract.

3.8 UNCONVENTIONAL RESOURCES

These resources were not commercially viable until recently. Only due to technology advancement, 'unconventionals' became so popular nowadays resolving partially the issue of global demand.

Lacking a clear definition, unconventional oils are typically identified by their characteristics. The heavier the oil is—for example, oil sand (bitumen) and oil shale (kerogen)—the more carbon laden, higher in sulfur, and filled with toxic impurities. Unconventional oils are typically much heavier and sourer than even the lowest-quality conventional oil. An array of unconventional solid, liquid, and gaseous hydrocarbons can be processed into petroleum products. But these extra-heavy, impure oils require very large energy inputs to upgrade and preprocess into synthetic crude oil that is then processed by a refinery (known as feedstock). Some new oils are effectively solid and must be removed through mining or heated in place (in situ) until they flow. These new oils tend to be less valuable than conventional crude, which is readily transformed into the most marketable petroleum products by today's standards. Oil sands are a combination of quartz sand, clay, water, trace minerals, and a small (10–18 percent) share of bitumen, and their sulfur content can be in excess of 7 percent. Bitumen is

made up of organic components ranging from methane—the simplest organic molecule—to large polymeric molecules having molecular weights in excess of 15,000. This extremely complex hydrocarbon mixture can be synthetically processed into oil⁹¹.

However, it cannot be transported to market by pipeline without adding diluting agents—such as gas-processing condensates including the diluent pentanes plus—to meet pipe -line density and viscosity limitations⁹². A large portion of Alberta’s bitumen pro -duction is currently upgraded to synthetic crude oil and other products before shipment to refineries⁹³.

Oil shale is “immature oil” that has not been in the ground long enough to form oil. It is mostly composed of clay, silt, and salts, with a small (12 percent) share of insoluble organic matter (kerogen) and even smaller (3 percent) share of soluble bitumen. The organic kerogen, once extracted and separated from the oil shale, can be processed into oil and gas. Like oil sands, oil shale has similarly high sulfur content—up to 7 percent.

The U.S. Department of Energy divides unconventional oil into four types: heavy oil, extra heavy oil, bitumen, and oil shale. Some analysts also include gas-to-liquids (GTL) processes for converting natural gas to oil and coal-to-liquids (CTL) processes for converting coal to oil in the unconventional oil category. These unconventional oil-processing techniques broaden the feedstock of unconventional oils to include unconventional natural gas, such as tight gas, shale gas, coal-bed methane, and methane hydrates.

GTL processing entails converting natural gas and other simple gaseous hydrocarbons into more complex petroleum products. Methane rich gases are converted into liquid synthetic fuels through direct conversion or through synthetic gas as an intermediate using the Fischer Tropsch or Mobil processes.

⁹¹ O. P. Strausz, “The Chemistry of the Alberta Oil Sand Bitumen,” Hydrocarbon Research Center, Department of Chemistry, University of Alberta, Edmonton, http://web.anl.gov/PCS/acsfuel/preprint%20archive/Files/22_3_MONTREAL_06-77_0171.pdf.

⁹² Mark T. Attwood, “Integration of Large Scale Retorting Operations with Laboratory Testing and Analysis,” 26th Oil Shale Symposium, 2006, http://ceri-mines.org/documents/A14d_MarkAtwoodJB.pdf

⁹³ John R. Dynl, “Israel and Jordan Oil Shale Deposits, United States Geological Survey Scientific Investigations Report 2005-5294, geology.com, 2005, <http://geol-ogy.com/usgs/oil-shale/israel-jordan-oil-shale.shtml>.

CTL processing entails liquefaction of solid coal. This can be done directly by dissolving coal in a solvent at high temperature and pressure and then refining these liquids to yield high-grade fuel characteristics. Indirect liquefaction gasifies the coal into a mixture of hydrogen and carbon monoxide (syn-gas), condensing this over a catalyst and using the GTL processes to produce liquid petroleum products.

Changing carbon footprints- Oil quality is changing worldwide with respect to its weight and impurities. So as the world increasingly turns toward unconventional oil supplies, it must consider the larger carbon footprints of these oils throughout the fuel cycle. Life-cycle greenhouse gas emissions increase the heavier the oil and the lower its API gravity—heavier oils emit more carbon than their lighter counterparts.

Chemically, they are bound up with more carbon and yield greater volumes of bottom-of-the-barrel residual products, such as petroleum coke and heavy fuel oil. One-half of each barrel of bitumen, for example, consists of residual products, and an estimated 60,000 metric tons of petroleum coke is removed during the upgrading process for every barrel of bitumen extracted⁹⁴.

The complex methods used to extract and process these heavier oils before they are able to be refined into petroleum products require greater energy inputs and more energy-intensive additives, such as hydrogen. Their use means a reduced product yield, degraded product quality, and more oil input for comparable amounts of petroleum products. Uncertainties abound about which processes for upgrading these extra-heavy oils to suitable feedstock are the least damaging, especially in terms of overall carbon footprints.⁹⁵ Mining bitumen, for example, has a distinct set of impacts while in situ removal has another. In Canada at present, in situ oil sands production is in a period of significant growth, as more than 80 percent of Canada's oil sands are

⁹⁴James G. Speight, "Upgrading and Refining of Natural Bitumen and Heavy Oil," in *Coal, Oil Shale, Natural Bitumen, Heavy Oil and Peat – Vol. II*, 2009, www.eolss.net/Sample-Chapters/C08/E3-04-05-06.pdf; and Marsulex, "Sulphur & Petroleum Coke Markets: More important than you might think," presented at Coking Community Seminar 2010, Calgary, September 13–16, 2010

⁹⁵ In situ oil sands production is in a period of significant growth, as more than 80 percent of Canada's oil sands are too deep to be mined and must be extracted with in situ methods.

too deep to be mined and must be extracted with in situ methods. That type of production is associated with peatland destruction, an area of growing environmental concern⁹⁶.

Furthermore, refineries will need to take a close look at their bottom lines when updating their existing processes to meet the needs of new oils. Refineries produce a variety of products from a barrel of oil, but the product slate has begun to change because the makeup of a barrel of crude is changing⁹⁷.

While refineries can be optimized to a certain extent to maximize the amount and types of products they put out, refinery specs are influenced by various factors. Shifts in the carbon-equivalent emission intensities of new oils will require improved monitoring, reporting, and verifying as century-old oil-refining processes adapt to new oil makeups⁹⁸.

The petroleum industry has been remarkably adept at inventing processes and products from lower-quality feedstock—to the point where the public is not even aware that oil itself has been changing. For example, burgeoning foreign markets, with fewer environmental protections, have begun to absorb low-priced, high-carbon exports of petroleum coke from oil-sand-mining production in Canada. Petroleum coke, or pet coke, is similar to coal but sells at a lower price than thermal coal because this solid residue consists of 90–95 per cent carbon. One step above industrial waste, when burned, petroleum coke emits high levels of greenhouse gases that are comparable to coal emissions but with more accompanying ash and toxic metals, primarily of heavier products that are not in high demand domestically—diesel, residual fuel oil, asphalt, and petroleum coke⁹⁹.

The unconventional resources are shale gas, oil sands and coal bed methane (CBM). Although it is a convenient solution for our energy needs, the technology it involves, i.e. hydraulic fracturing, raises debates among communities and professionals about harm it makes to nature

⁹⁶ Rebecca C. Rooney, Suzanne E. Bayley, and David W. Schindler, “Oil sands mining and reclamation cause massive loss of peatland and stored carbon,” PNAS, November 3, 2011.

⁹⁷ Energy Information Administration, Petroleum and Other Liquids, March 2012, www.eia.gov/dnav/pet/pet_pnp_pct_dc_nus_pct_a.htm.

⁹⁸ Simon Dyer and Marc Huot, “What is the Highest Environmental Impact Oil?” Pembina Institute, May 27, 2010, www.pembina.org/pub/2017

⁹⁹ American Petroleum Institute, Message Points, February 2012, www.api.org/policy-and-issues/policy-items/keystone-xl/~~/media/Files/Policy/Keystone%20XL%20 Pipeline/Exports-talking-points-2-23-12.ashx

conservation and water resources. This in turn might impede its development through government unfavourable legislation.

3.9 CONVENTIONAL RESERVES IN CHALLENGING AREAS

This represents mostly unstable political regime, what in turn leads to lack of security for investments. There are countries with unstable political situation or areas with new discoveries in unfamiliar environments where environmental legislation is represented by soft law.

I would not call this a stable partnership. One of the main goals of this partnership from the IOC viewpoint is access to acreage, which is another big challenge. National Oil Companies (NOC) are the gatekeepers of their national reserves, while International Oil Companies (IOC) are the gatekeepers of their advanced technology. The growth of NOCs not only in their states but also outside their home markets, will lead to increase in power and possibility to acquire the necessary technological knowledge, what have to be very alarming for IOCs future concerns.

3.10 INVESTING IN INNOVATION AND R&D

Every company understands nowadays, that R&D and Innovation is a key to growth and prosperity. This position creates severe competition between market-players with sufficient resources for R&D.

3.11 CORPORATE SOCIAL RESPONSIBILITY

This challenge includes relations with various stakeholder groups, health and safety concerns, i.e. human rights, employee rights, stakeholder rights, environmental protection, community relations, transparency and corruption issues. CSR requires oil companies to success in each criteria in order to build a reputation as a reliable potential partner for public-private strategic partnerships: cross-sector and government.

The above challenges represent only tiny part of concerns of this extremely complex industry. However, it provides brief overview of trends the interested party, whether it is oil company or investment institution, needs to take into consideration while building its strategy.

3.12 OIL PRICING

Crude oil prices play a very significant role on the economy of any country. India's growth story hovers around the import of oil as India imports 70% of its crude requirements. This in turn, results in spending huge amounts of foreign exchange. The increasing quantum of imports of petroleum products has a significant impact on the Indian economy, especially when crude oil prices are shooting up globally¹⁰⁰. Crude oil not only serves as a source of energy but also as a major raw material to various industries. With no major discoveries in the recent years, the increasing costs of production have pushed up crude oil prices globally. Also, the high volatility in the prices of oil breaching the \$100/barrel mark and rising to a high of \$147/barrel could be attributed to the fact that in the recent years, many index funds have taken positions in commodities considering oil to be an asset stock in their portfolios.¹⁰¹ It has been usually observed that in India, the pricing scheme is designed in such a way that it offers a system to moderate the soaring international oil prices and thereby study the impact on growth, inflation, etc. In spite of the global economy being affected due to the European debt crisis, crude oil prices are soaring against a backdrop of increasing tensions around the situation in Iran. The price of Brent crude has gone beyond \$120 per barrel. This spike in crude oil price significantly increases the energy costs of every country and becomes a major concern in the fragile global economy. The impact of rising oil prices on the economy differs from country to country depending upon individual energy supply and demand structures. Countries that could be adversely affected by the increase in crude oil price are usually characterized by high net imports of oil per GDP. Traditionally, the non-oil producing developing countries fall under this category. Against this background, developed countries are more economical in their usage of oil and therefore, see an easing of this adverse effect of rise in crude oil prices. This phenomena has led to many European developed countries enjoying a significant inflow of oil money. Today, we may find a negative impact of rise in crude oil prices. A steep fall in the current accounts leads to further worsening of the treasury budgets, which, in turn, will further worsen the balance between savings and investments. Also, reducing tax revenues and other extraneous factors will further deteriorate the treasury budgets.¹⁰² Due to the economic crisis in Europe, where the

¹⁰⁰ Burbridge, J and A Harrison (1984) 'Testing for the effects of oil price rises using vector autoregressions', *International Economic Review*, 25, pp 459-84

¹⁰¹ Bhattacharya, Kaushik and Bhattacharya, Indranil (2001) 'Impact of Increase in Oil Prices on Inflation and Output in India', *Economic and Political Weekly*, Vol.36, No.51, pp 4735-4741.

¹⁰² Rangarajan, C., R. Sah and K.S. Reddy (1981) 'Impact of Hike in Prices of Coal and Petroleum Products on the Other Sectors of the Economy: An Application of Input-Output Technique', *Artha Vignana*, 23, pp 176-81

treasury budgets have shaken, there is a monumental imbalance between savings and investments. These imbalances continue worsening because of rising crude oil prices, which threaten to push the economy into much deeper crisis. When a country has a fixed nominal exchange rate and there is also an output gap, increases in oil prices leads to an increase in the general price levels. According to a RBI report (2005), for every unit dollar increase in crude oil price, WPI inflation rises by 30 basis points.¹⁰³ In February 1999, from an all time low of 11 U.S Dollars per barrel, it increased to a peak of 35 dollars in the first week of September 2000. Due to this, all oil importing countries faced the threat of oil shock; India, being a major oil importer, was particularly affected. Historically, there have been four oil shocks in the past thirty years. In spite of this, low inflationary pressure has been assisting the developed countries in mitigating the risk associated with oil shocks. Contrary to this, developing countries are affected more because of the absence of advanced technology to conserve oil. Literature reveals that most researchers agree with the fact that inflation has a recessionary effect on oil prices. According to Bruno (1982), oil price shocks lead to an increase in wages and prices, and decrease in real output. The same conclusion was substantiated by Hamilton (1983) using the Vector Auto regression (VAR) technique. Burbidge and Harrison (1984) found that the impact was different across different countries in spite of the fact that all were developed countries. Hooker (1996) on the other hand, found that the causal relationship between oil prices and macro-economic variables weakened post 1973 and were not able to capture the dynamics of business. Christini (1998) observed a very strong correlation between macroeconomic factors and oil prices. In India, increase in petroleum prices often results in debates among the public. This indirectly results in delay in any kind of adjustment in prices and in the long run, creates a bigger shock. It also impacts the prices of all those commodities which use these products as inputs and can lead to a subsequent spike in the wage prices which is evident from the 1970 oil shock. Most of the earlier studies in the Indian context are based on estimating the cost push effect of a hike using input output analysis. Rangarajan and Sastry used input-output analysis to estimate the cost push effect of a hike. This method is not useful in estimating the shock over a long period of time given its static nature. Strategically, oil plays a very significant role in the economy of any country. Keeping this in view, an attempt has been made in this paper to explore the relationship

¹⁰³ Bhattacharya, Kaushik and Bhattacharya , Indranil (2001) 'Impact of Increase in Oil Prices on Inflation and Output in India', Economic and Political Weekly, Vol.36, No.51, pp 4735-4741.

between volatility in oil prices and its impact on the Indian economy. This topic is pertinent to the current situation when India imports almost 90% of its oil requirements. The objective of this paper is to determine the relationship between increase in oil price and the change in GDP, IIP and WPI.¹⁰⁴

Effects of price rise-

1. Higher oil prices results in a fall in oil demand, as the consumers with limited budget try to reach an alternative equilibrium position (as discussed above).
2. The cost of production of goods and services rises, which puts pressure on profits of the firms. The effect depends on the energy intensity of production: normally developed countries with lower energy intensity are expected to face lower pressure than the developing countries.
3. Higher costs of goods and services put pressure on general price levels, fuelling inflation.
4. Higher costs and inflation, and lower profit margins would put pressures on demand, wages and employment, affecting the economic activities.
5. Effects on economic activities influence financial markets, interest rates and exchange rates.
6. Finally, depending on the expected duration of price increases, consumer and producer behaviours would change. Producers may invest in new capacities and developments while consumers may tend to economise¹⁰⁵.

Different economic sectors are expected to be affected differently as a result of oil price shocks. Energy-intensive production is expected to be worst hit as the cost of production would rise significantly.¹⁰⁶ Consumer goods industry, where the goods tend to be non-essential (i.e. demand

¹⁰⁴ Sastry, D V S (1982) 'Impact of the Rise in the Prices of the Petroleum Products on the General Price Level-1970-1971 to 1980-81', Reserve Bank of India Occasional Paper, 3 , pp 68-93

¹⁰⁵ World Bank (2005) Middle East and North Africa: 2005 economic developments and prospects—oil booms and revenue management. World Bank, Washington, DC

¹⁰⁶ Saif I (2009) The Oil boom in GCC countries, 2002–2008: old challenges, changing dynamics. Carnegie Endowment for International Peace, Washington, DC

is elastic) also face a falling demand. In contrast, industries providing essential goods are not expected to suffer great loss in demand.

Energy price volatility has remained an important issue in the energy policy debate and returns to the agenda as oil prices soar. As these episodes involve revenue transfers from importing countries to exporters, the overall global economic effects tend to be complex. This chapter has attempted to analyse various elements of economic impacts of oil price shocks and showed that simple economic tools could be used to gain important insights.¹⁰⁷ It has presented how the effects of oil price shock are transmitted through the economy, how the effects vary between exporting countries and oil importing countries and possible mitigation options.¹⁰⁸ The net energy importers have gained significant knowledge in this regard from the past experiences and have worked on their fossil fuel dependence. Many of them are in a better position now to deal with such issues. Similarly, the transitory phase of oil booms followed by prolonged periods of relatively low (or moderate) fuel prices cause revenue management issues for resource exporting countries. But they have also learnt from the past experiences and are dealing with such situations more prudently.¹⁰⁹

3.13 FOURTH LARGEST CONSUMER OF OIL AND PETROLEUM IN THE WORLD

A trend almost certain to accelerate as the country faces growing urbanization and an expanding middle class, India has a high dependence on imports for its petroleum needs and is the world's fourth largest importer of crude oil. Most imports come from the Middle East, but growing investments in South America, the Caspian Sea, and elsewhere look to diversify and potentially increase oil to India.

The oil industry has slowly but steadily opened up since major reforms were enacted in 1991. Subsequent reforms are ongoing. Two state-owned companies, Oil India Limited (OIL) and Oil and Natural Gas Corporation (ONGC), have long dominated the production and refining in the sector. However, reforms in the last decade have increased competition and exhibit potential signs of growing foreign investment in a sector long dominated by domestic players.

¹⁰⁷ GTZ (2009) International fuel prices, 2009 edn. GTZ, Germany. See <http://www.gtz.de/de/dokumente/gtz2009-en-ifp-full-version.pdf>

¹⁰⁸ Corden WM (1984) Booming sector and the Dutch disease economics: survey and consolidation. Oxf Econ Pap 36(3):359–380

¹⁰⁹ Bacon R, Kojima M (2008) Oil price risks: Measuring the vulnerability of oil importers. Viewpoint 320, World Bank, Washington, DC

Relies on imports to meet growing demand for gas - Perhaps more so than other areas in the energy sector, attempts to meet demand with gas have been greatly influenced by geopolitical issues. Various plans for pipelines with Myanmar, Iran and Pakistan, and Turkmenistan and Afghanistan have fallen apart over border disputes and other issues. Domestic natural gas production has fallen in recent years, with further drop-offs expected in 2014-15. Given the growing demand and reliance on natural gas for power, issues with obtaining natural gas from other countries, and its own falling production, satisfying natural gas needs is one of India's the most urgent challenges.

Electricity shortages hurt industrial output- India meets its electricity demands with 65 percent use of non-renewables, 19 percent of that demand is met with hydropower, 12 percent from renewables, and 2 percent from nuclear power.

Demand is far outpacing supply in meeting the rapidly growing electricity needs of the country. Electricity shortages have resulted in loss of profits for many companies, loss in productivity as plants and businesses have been forced to shut down for a few days a month or slow down manufacturing, and added operational costs as some businesses have been forced to pay for power back up units. While growing demand is part of the problem, poor infrastructure equally contributes to electricity shortfalls that have hindered recovery in India's industrial sector and hurt its overall economic growth.

3.14 ENERGY POVERTY AND INEQUALITY SPREADS

Access to energy is a tremendous problem in India and major inequalities of access plague the subcontinent. According to one census, 77 million households in India still use kerosene for lighting. The problem is even more acute in rural India where up to 44 percent of households lack access to electricity.

While India has undertaken various programs and initiatives to address energy poverty, they have been faced with logistical problems and inadequate implementation locally. In the case of rural villages, access issues and geographical hindrances make addressing the issue extremely costly and difficult.

India faces exploding demand and insufficient supply. As the country's population and needs continue to grow rapidly, it will also need major reforms in infrastructure and efficiency.

While many analysts point to developing solar and nuclear capabilities as essential, India will need greater capacity and efficiency in all sectors to meet India's energy needs. How and if India chooses to confront this pressing problem will have ramifications for the country and the world. Starting a dialogue and drawing greater attention are a good start.

3.15 ABSENCE OF AN INDEPENDENT REGULATOR IN THE UPSTREAM SEGMENT

While the downstream and midstream segments are regulated by the Petroleum and Natural Gas Regulatory Board, the upstream segment is directly regulated by the Ministry of Petroleum and Natural Gas with the technical support of the Directorate General of Hydrocarbons, under the administrative control of the MOPNG. Neither the MOPNG nor the DGH is an independent regulator.

To avoid conflict of interest situations and promote healthy competition with private sector companies in the oil and gas sectors, it has been argued that regulatory functions should not be discharged by the Government when it exercises substantial ownership control over PSUs and NOCs that dominate the upstream landscape. In addition, the Expert Committee on Integrated Energy Policy had in their 2006 report recommended that the regulatory functions of the State should be separated from the Ministries that control the PSUs dominating the upstream segment.

The role of the DGH as an independent regulator is also questionable in view of the "revolving door" practice that allowed upstream PSU/NOC executives to work at the DGH on deputation/tenure basis and go back to the NOCs once their assignments are completed¹¹⁰. This practice has been frowned upon by the Chawla committee¹¹¹ who stated that "such a revolving door policy is not congruent with neutral regulation", and called for a more explicit separation between the roles of the policymaker (the MOPNG) and the regulator (DGH). The Expert Committee on Integrated Energy Policy (2006) had also noted that the present upstream regulation provided by the DGH was "neither independent nor comprehensive in a technical

¹¹⁰ The DGH is manned by staff drawn on deputation/tenure basis mainly from upstream PSUs like ONGC, OIL, IOC and BPCL. For example, a former DGH head, V.K. Sibal was on deputation from Government owned Oil India Ltd. ("OIL") to the DGH. His successor, S.K. Srivastava, was OIL's operations director before he took charge at the DGH in November 2009.

¹¹¹ The Chawla committee, which was set up to suggest changes in the system for allocating natural resources advised the Government to turn the DGH into an "independent technical office" attached to the MOPNG and to establish an upstream regulator to focus on regulatory functions. It also said the reconstituted DGH as well as the regulator must not have staff on deputation from regulated companies.

sense”. It is, in fact, argued that the DGH is not even a regulator but predominantly an advisory agent of the MOPNG in view of its functions and responsibilities.

The issue whether or not the DGH is independent is contentious and calls made by several committees over the years for an independent regulator for the upstream segment have gone unheeded by the Government. In a 2011 report, the Government had firmly rejected the suggestion to transfer the DGH’s regulatory powers to an independent body. Recently, there have been reports that a committee of secretaries has, in principle, agreed to reconstitute the DGH as an independent technical office of the MOPNG. The talking points largely remain the same as the recommendations of the Chawla committee.

There is a glaring need for an independent regulator in the upstream segment which is characterized by dominant PSUs and NOCs, with natural monopolistic tendencies. Independent regulation is essential for a transparent and competitive market that offers a level playing field to all entrants, as India looks at more private sector participation in the oil and gas industry. The liberalization and deregulation process is not complete when Government owned companies still dominate the landscape. As stated in the Integrated Energy Policy report, “the regulatory responsibility/functions of the State must be separated from the Ministries that control the PSUs that dominate the energy sector, and are the principal owners of over 75% of India’s energy assets and related infrastructure”.

3.16 LACK OF A LEVEL PLAYING FIELD

It is also argued that the Government’s policies in the oil and gas sectors continue to favour NOCs and other oil PSUs, thereby leading to an effective denial of market access.

For example, despite the dismantling of the administered price mechanism (“APM”) for determining and controlling prices in the hydrocarbon sector, the Government still controls prices of domestic LPG, public distribution system (“PDS”) kerosene, and high speed diesel (“HSD”). This is done with the objective of protecting consumers from international price volatility and providing energy access for citizens, particularly the economically weaker section of society. With increasing international crude oil prices and the Government controlling domestic prices of these economically sensitive petroleum products, oil marketing PSUs have had to sell their products well below cost price. The consequent losses are termed “under-

recoveries”, which are calculated as the difference between the cost price and the regulated price at which petroleum products are finally sold to the retailers (after accounting for subsidy, if any, paid by the Government). Under-recoveries are offset by way of additional cash assistance allocated from the fiscal budget from the Government (over and above fiscal subsidy, if any), and financial assistance by way of discounts from upstream NOCs¹¹². There is on-going significant debate on how under-recoveries are calculated and how trade parity prices are actually notional in nature – this is outside the scope of the present discussions and will be addressed in the future.

Oil marketing PSUs are currently (effective February 16, 2013) incurring daily under-recovery of Rs. 4.54 billion (approximately US\$ 84 million) on the sale of diesel, PDS kerosene and domestic LPG¹¹³. The bailout package by the Government every year – going out of taxes paid by the public – have actually been saving oil companies from posting losses in all these years.

Private oil marketing companies, however, do not have the luxury of being compensated for under-recoveries. Consequently, this has affected the entry/growth plans of private oil marketing companies as competing with oil marketing PSUs is not viable under the circumstances¹¹⁴. Clearly, this has a direct impact on the incidence of investment by private oil marketing companies, and throughout the entire oil value chain, and ultimately on greater market competition. The Competition Commission of India (“CCI”) has stated that it is taking the route of advocacy with the Government with respect to the practice of under recoveries by oil marketing PSUs¹¹⁵.

3.17 EFFECTS ON ENVIRONMENT

Environmental problems due to upstream exploration is countless. Each activity of petroleum operation has its own impact on the environment. Environmental problems starts straight away with exploration activities such as seismic survey etc. In the upstream operations environmental problems tend to increase and build up along with the project’s progress. Apart from

¹¹² The provision of cash assistance began after 2008-2009. Prior to that, the Government partially compensated oil marketing PSUs’ under-recoveries by issuing oil bonds.

¹¹³ Petroleum Planning & Analysis Cell – http://ppac.org.in/WRITEREADDATA/PS_oil_prices.pdf

¹¹⁴ September 13, 2012, Business Standard: Private fuel retailers shut outlets, allege non-level playing field.

¹¹⁵ February 25, 2013, Business Standard: Oils Firms to Get CCI Notice on Cartelisation.

environmental effects the oil and gas exploration and production also create socio economic issues like social, culture, human rights etc. For example indigenous people have their own culture and way of living. Contractor is to ensure that petroleum operations are being conducted in environmentally acceptable and safe manner. India does not have a separate petroleum legislations that deals with the environmental aspects.

Under Production sharing contract the contractor has got obligations to perform regarding environmental damages due to petroleum operations¹¹⁶.The Government and the Contactor recognize that the petroleum operations will cause some impact on the environment in the contract. Employ modern oil field and industry practices .Take steps to

(i) Prevent environmental damage, If unavoidable minimize such damage and effect on property and people

(ii) ensure adequate compensation for injury to person or damage to property due to petroleum operations.

Comply with the relevant laws and reasonable requirement of the government from time to time. If the government believes that the petroleum operation may endanger person or property or cause pollution or environment to an unacceptable level the government may require the contractor to take remedial if necessary discontinue petroleum operations unless remedial measures are taken or repair the damage caused. The contractor is required to carry out two environmental impact studies in the contract area:

(i)The first study can be carried out in two parts namely, a preliminary part to be concluded before commencement of any field work, and a final part relating to drilling in the exploration period which shall be approved by the Government before the commencement of such drilling operations.

(ii)The second study should be completed before the commencement of development operations and the execution of a development plan.

¹¹⁶ Article- 14 MPSC

Study is conducted to determine the situation relating to the environment, human beings and local communities and flora and fauna in the contract area as well in the adjoining areas and to establish the relevant impact on them. The studies shall also to contain proposed environmental guidelines (Environment damage plan) to be followed to minimize environmental damage. The study should contain proposed environmental guidelines to be followed in order to minimize environmental damage.

Contingency plan for oil spills, fires and other emergencies is to be prepared before commencement of drilling operations and to be submitted to the government for review. In the event of oil spill or any emergency due to petroleum operations affecting the environment government should be notified and contingency plan to be implemented. If the contractor fails to comply with the terms of article 14 .7 of PSC, within a period specified by the government the government may take any action to ensure compliance with such terms and to recover from the contractor all cost incurred in connection with such action.

If forest land is involved the contractor shall have to obtain approval from central government through state government concerned under the forest conservation act 1980 and rules made there under.

On expiry or termination of the contract, the contractor is to remove all equipment and installations in a manner agreed with the Government pursuant to an abandonment plan and to perform all necessary site restoration activities. Here comes site restoration fund scheme. The study report should be submitted to Ministry of environment & forest for getting environmental clearance and also to the DGH for approval. The costs incurred by the contractor for protection of the environment are recoverable costs under the PSC.

Besides the above mentioned provisions and contingency plan. The damage to the environment is on a continuous rise and needs to be mitigated. The framework in place is not enough to deal with the extensive and continuous impacts of upstream activities on the environment. One can look into the recent disaster of the BP oil spills to gain fathom of the adverse impacts of oil and gas activities.

This chapter has presented the multi-dimensional interactions of the energy sector and analysed the multitude of sector management issues. Despite uncertainty about the timing and nature of the next transition, managing the transition and preparing strategies for such a change remains important challenges. Such issues cover a wide range from possibilities, including whether to act now or not, act in a specific area or not, whether the chosen action would be successful or not, and whether left out options would turn out to be viable or not.¹¹⁷ While oil depletion has generated a passionate debate about the future energy transition, the lessons learnt from energy transitions suggest that an alternative will emerge before physical depletion of oil.¹¹⁸

A viable substitute to oil in the transport sector will have a serious effect on the economies of oil rich countries, which could unleash a price war to regain market share. Both the price-war strategy and the development of a substitute for oil in transport would bring dramatic changes to the energy scene in the future. At the same time, experience suggests that the experts' consensus view never worked in the energy sector. Nuclear was the consensus fuel of the future in the aftermath of oil shocks in the 1970s but gas turned out to be a more important energy carrier in reality¹¹⁹. Renewable energies did not succeed in penetrating the energy scene while traditional energies did not retreat either. There is no reason to believe that this time around the experts won't be wrong.

The sense of energy scarcity has brought the resource-rich countries to lime-light. The windfall gains from the resource development have also brought the revenue management issues to foster economic growth. Being poorly endowed with institutional capacities and economic diversities, they face the challenge of properly utilising their revenues avoiding negative impacts. If the resource development hinders economic development, the challenge is to mitigate the undesirable effect through acceptable solutions. The search for such solutions has not ended yet but if this slows down the resource development, new challenges arise for the producing and consuming countries. Producers may face resource obsolescence while the consumers face the prospect of high prices¹²⁰. Managing the impact of energy price volatility and ensuring adequate

¹¹⁷ Deffeyes KS (2001) Hubbert's peak: the impending world oil shortage. Princeton University Press, Princeton, NJ

¹¹⁸ Martin-Amoroux JM (2005) Coal Phoenix-like. Oil, Gas Energy Law Intell, 3(3). Internet journal Nakicenovic N, Grubler A, McDonald A (1998) Global energy needs: past and present, in global energy perspectives. Cambridge University Press, London

¹¹⁹ EIA (1996) The changing structure of the electric power industry: an update. Energy Information Administration, Washington, DC

¹²⁰ IMF (2000) The impact of higher oil prices on the global economy. International Monetary Fund,

supply at reasonable prices becomes the priority for the consumers. Similarly, the energy access problem begs new initiatives and thinking. Alternative strategies based on overall economic development, selective intervention, free trade practices and access to low cost capital and efficient technologies could work better¹²¹. At the same time, with symptoms of unsustainable energy practices abound and a history of sustained market failures influencing the sector policies, the energy sector requires a paradigm shift to return to a sustainable path. This implies that the sector has to organize differently and to change practices and policies at various levels. Finding those solutions to manage the sector in a sustainable manner remains the most important management challenge.

4 CONTRACTUAL ISSUES

4.1 PRODUCTION SHARING CONTRACT

PSC is a detailed document which governs the entire business structure for the contractor and protects the interest of Government, the owner of natural resources. Key aspects of the exploration and production (E&P) business such as the contractor's role and responsibilities, procedural aspects, cost and revenue sharing, routine regulatory filings to be made by contractor, etc., are defined under the PSC.

A Production Sharing Contract (PSC) is a contractual regime entered into by the Government and the Contractor for the purpose of E&P of hydrocarbon resources, namely, crude oil and natural gas. The Petroleum and Natural Gas Rules, 1959 provide for an agreement between the Government and the licensee or lessee, to lay down the terms and conditions with respect to the licence or lease. These terms and conditions are stipulated as articles of the PSC¹²².

PSCs are now the dominant mode of hydrocarbon administration in the country. These contracts are basically regulatory contracts by virtue of derivation from article 297 of the Constitution of India. Article 297 provides that petroleum in its natural state in the territorial waters and the continental shelf of India is vested in the Union of India. The Oil Fields (Regulation and

Washington, DC. See <http://www.imf.org/external/pubs/ft/oil/2000>

¹²¹ Wagbara O (2007) How would the gas exporting countries forum influence gas trade? Energy Policy 35(2):1224–1237

¹²² Jennings, Anthony, Oil and Gas Exploration Contracts, Sweet & Maxwell (2nd end., 2008)

Development) Act, 1948 and the Petroleum and Natural Gas Rules, 1959 made thereunder make provisions for the regulation of petroleum operations.

The fiscal regime in existing PSCs for conventional oil and gas is based on the Contractor doing petroleum operations at his risk and cost, and, sharing of profit petroleum with the Government after cost recovery, the calculation of which is based on a Pre-Tax Investment Multiple (PTIM). For the purpose of implementation of contractual provisions in the PSC regime, a management structure exists in the form of a Management Committee (MC). A similar management structure, called a Steering Committee, is envisaged for blocks offered under the Coal-Bed Methane (CBM) Policy. Under such a contract, the risk of exploration is borne entirely by the Contractor, and only in case of a commercial discovery, the Contractor is allowed to set off the cost incurred on exploration, and subsequently on development and production, against revenues earned in the operation. Balance revenues are shared between the Contractor and the Government in the proportion agreed to in the PSC. Royalty and income tax are separately payable.

India adopted the PSC model in order to invite both foreign and Indian companies and to attract investment and latest technology in the upstream hydrocarbons sector. The PSC model was considered to be more progressive than the nomination regime as MCs constituted under it offered a suitable forum for regular interaction between the Government and Contractors. Contractors were given representation on MCs, with each company constituting the Contractor being represented through a member on the MC. In addition, there are two Government nominees on the MC. Thus, the PSC model was made operational through a system of joint management. Commonwealth Secretariat, UK was engaged as the consultant to draft the Indian PSC in the light of international developments. The model PSC developed was used in nine rounds of NELP with several modifications made from time to time. Government's share of profit petroleum forms part of Government receipts and is credited under a separate accounting head operated for profit petroleum. However, cost recovery made by the contractor is deemed to be expenditure incurred on exploration. As per canons of financial propriety, all expenses from Government accounts should be made with the utmost care and while observing financial prudence. In case of expenses under the PSC, the Contractor is allowed complete recovery of cost petroleum, which reduces the share of Government in profit petroleum. Thus, there is a need

for careful monitoring of expenses incurred¹²³. It has been argued that PSCs signed in the early years were more loosely drafted and favoured private sector contractors, leading to several disputes between the Government and contractors. PSCs executed in later years, primarily after 2005, were redrafted by the Government to clear loopholes. However, these were seen as 'highly regulated' by private and independent players, and impacted the response to the NELP-8 auctions held in 2009.

4.1.1 COMMITTEE ON THE PSC MECHANISM IN PETROLEUM INDUSTRY

The Government of India constituted this committee under the chairpersonship of Dr C. Rangarajan, Chairman, Economic Advisory Council to the Prime Minister, to look into the PSC mechanism in petroleum industry, so as to enhance production of oil and gas and the Government's share, while minimising procedures for monitoring the expenditure of producers.

The terms of reference of the committee were as follows:

- (i) Review of the existing PSCs, including in respect of the current profit-sharing mechanism with the Pre-Tax Investment Multiple (PTIM) as the base parameter.
- (ii) Exploring various contract models with a view to minimise the monitoring of expenditure of the contractor without compromising, firstly, on the hydrocarbons output across time and, secondly, on the Government's take.
- (iii) A suitable mechanism for managing the contract implementation of PSCs, which is being handled at present by the representation of Regulator/Government nominee appointed to the Managing Committee.
- (iv) Suitable governmental mechanisms to monitor and to audit Government of India's share of profit petroleum.
- (v) Structure and elements of the guidelines for determining the basis or formula for the price of domestically produced gas, and for monitoring actual price fixation;
- (vi) Any other issues relating to PSCs.

In making its recommendations, the main objectives that the committee kept in view were the following:

¹²³ Kamal Hossain, Law and Policy in Petroleum Developments, Changing Relations between Transnationals and Governments (London: Frances Pinter Publishers Ltd, 1979)

- (i) Addressing the energy security demands of the country by enhancing domestic production, with the aim of ensuring affordable supply (in a cost-effective sense) of hydrocarbons;
- (ii) Developing local expertise and supporting the NOCs in their mission of building national capacity in exploration and production;
- (iii) Encouraging exploration in frontier basins and areas;
- (iv) Allowing development of marginal/small fields which are part of producing basins;
- (v) Providing an environment conducive for investments in the E&P sector by providing incentives to investors, including from the private sector, and a reasonable return on investment;
- (vi) Reducing monitoring procedures: monitoring could be limited to technical and fiscal aspects, which would reduce approval delays.

4.1.2 MANAGEMENT AND ADMINISTRATION RELATED ISSUES

- Completion of the well under drilling- At the end of final phase of exploration after completion of 7/8 years period, if drilling of a well under the Minimum Work Programme (MWP) is in progress, there is no provision in the PSC/policy for extension of the exploration period for completion of the on-going drilling and testing of the well. In absence of any such provision in the PSC allowing the completion of drilling of the well, the Contractor may have to abandon the drilling and pay the cost of unfinished Work Programme as per Article 5.7 of the PSC, which will be detrimental to the overall exploration objective.
- Extension of time period for submission of Declaration of Commerciality (DoC) in respect of Hydrocarbon Discovery - The PSC provides for stipulated time period for submission of Declaration of Commerciality (DOC), report for hydrocarbon discovery after implementation of Appraisal Work Programme. The time period for submission of DOC is mentioned vide Articles 10 & 21. Due to various reasons, proposals are received from Contractors for extension of DOC submission period. In absence of any provision in the PSC for extension of such time period on account of late submission, the DOC is not accepted, resulting in non-commercialization of the hydrocarbon discovery. This is also the case with submission of Development Plans.

- Waiver of reprocessing of 2D seismic data as per MWP, in the absence of availability of sufficient 2D legacy data - Reprocessing of seismic data is one of the biddable parameters and the quantum committed by the bidder while bidding becomes the committed MWP under the PSC. The Contractor bids the quantum, based on data availability mentioned in the bid documents. DGH collects seismic data from the previous Operator and provides the same to the contractor to enable him take up reprocessing. In some cases, part of the data provided to the Contractor is not available, and the Contractor only reprocesses the part of the data which is retrievable/available.
- Change in status of the company as a result of merger or amalgamation - Whenever there is change in status of company, due to a change of name or amalgamation due to court orders etc., there is no provision in the PSC to regularize such change, with immediate effect. Government procedures for approval take time. Documents submitted, relating to statutory levies and other contractual obligations like Bank Guarantee (BG), are not valid till amendments are made to the PSC after Government approval.
- Entry into subsequent exploration phases, after paying cost of unfinished work programme of the previous phase - If the committed minimum work programme of an exploration phase is not completed, the Contractor has to pay the cost of the unfinished work programme to the Government, as per Article 5.7 of the PSC. However, the PSC is silent about whether or not after paying the cost of the unfinished work, the Contractor can enter the next phase.
- Condoning delay in the submission of Bank Guarantee, requests for extension (Article 3.5), submission of Appraisal Work Programme and budget, Declaration of Commerciality (DoC), Field Development Plan (FDP) etc. - It is observed that, at times, an Operator submits the Bank Guarantee, request for extension (Article 3.5), Appraisal Work Programme and budget, Declaration of Commerciality (DOC), Field Development Plan (FDP) etc. after the expiry of timelines stipulated in the PSC. There is no provision in the PSC for condoning such delay, even if the delay is of a very short duration.
- Drilling of Appraisal Wells after submission of Declaration of Commerciality (DoC) – (i) DOC is submitted by the Contractor after carrying out the Appraisal Work Programme, which includes the drilling of Appraisal Wells. In some of the discoveries, it is observed that the Contractor carries out drilling of additional Appraisal Wells even after

submission of the DOC report. (ii) Drilling of additional Appraisal Wells is not allowed as the Contractor has already carried out drilling of Appraisal Wells as per the reviewed appraisal programme and has already submitted the DOC report based on the said work.

- Probing additional reservoirs during the appraisal programme - (i) During implementation of the Appraisal Programme, the Contractor should be allowed to probe the potential of additional reservoirs, if any, through additional exploration activities for proper assessment of commercial viability within the Discovery Area. (ii) DGH has suggested that during implementation of the Appraisal Programme, the Contractor should be allowed to probe the potential of additional reservoirs, if any, through additional exploration activities for proper assessment of commercial viability within the Discovery Area. The Contractor may be permitted to probe additional reservoirs while carrying out appraisal programme, subject to ring-fencing the cost of exploration till commerciality is proved to DGH's satisfaction.

4.1.3 ISSUES IN THE CONTRACTUAL PROVISIONS

- Cost Petroleum: Concerns regarding inflating of costs, gold-plating and cost inefficiency; possibility of misuse of any discretion – (i) Profit is shared between the Government and the Contractor as per the provisions of Article 16. Expenditure incurred in petroleum operations is treated as allowable Contract Cost under Article 15. Audited accounts are approved by the Management Committee under Article 6. Audit is done by auditors appointed by the Management Committee, followed by Government audit. (ii) DGH is required to maintain a database for each item of cost of the activities carried out by the Contractor during petroleum operations in the block. This database may be generated activity-wise for each block/basin in order to benchmark. Cost recovery needs to be examined on the basis of benchmarked cost.
- Limits on Exploration Cost under Article 15.13 - The PSC envisages allowing recovery of actual expenditure without any limit in respect of petroleum operations. Limiting cost in respect of the Minimum Work Programme will only add to administrative procedure, without value addition, since the Contractor may be able to secure Government approval by demonstrating the underlying cash flow. The purpose of this provision is to prevent bidders from underestimating the cost of the Minimum Work Programme in order to reduce their net worth requirement for bidding for the award of PSC under NELP.

- Government Take as a basis for evaluation of development plan and annual work programme budget - (i) Prior to development operations, the Management Committee approves a long term development plan based on a detailed proposal from the Contractor for the construction, establishment and operation of all facilities and services for and incidental to the recovery, storage and transportation of petroleum from the proposed Development Area to the Delivery Point, together with all data and supporting information (Article 10.7). (ii) On an annual basis, as soon as possible after the Effective Date, and thereafter within ninety (90) days before commencement of each succeeding year, the Contractor shall submit to the Management Committee the Work Programmes and the budgets relating to petroleum operations to be carried out during the relevant year (Article 5.9). Work Programme and budgets, and any modifications or revisions thereto, relating to exploration operations shall be submitted to the Management Committee for review and advice. Work Programmes and budgets related to development and production operations, and any modifications or revisions thereto, shall be submitted to the Management Committee for approval.
- Cost of unfinished work programme (i) As per the PSC, if the Contractor fails to complete the committed Work Programme during the exploration phase, he is required to pay compensation to the Government equivalent to the cost of the committed Work Programme. (ii) The cost of work programme not done is notional, and its estimation is subjective. Investigating agencies have questioned the computations and the issue remains inconclusive.
- Compliance with the PSC procedure by the Operator for procurement of goods & services (i) Appendix-F of the Accounting Procedure provides for procedures to be adopted by the Operator for the acquisition of goods and services for carrying out petroleum operations in a block. For the purpose of value of the materials charged to the accounts under the Contract, these costs for procuring goods and services shall not exceed those currently prevailing in normal arm's length transactions in the open market. (ii) The PSC does not envisage any role for the Management Committee (MC) in procurement to be carried out by the Contractor. As per the provisions of the PSC, it is the Contractor who has to adhere to the procurement procedure laid down in the PSC.

Hence, checking or certifying transactions made by the Contractor towards procurement of goods and services is not possible on the part of DGH.

4.1.4 POLICY RELATED ISSUES

- Reduction of MWP in cases of blocks overlapping with SEZs, reserve forests, naval exercise areas, DRDO danger zones, National Parks, urban areas, firing ranges of Police, Armed Forces, etc. Exploration blocks are offered for bidding after securing clearance from various agencies. Subsequently, after the grant of Petroleum Exploration Licence (PEL), some of the agencies like Ministry of Defence, Ministry of Environment and Forests, state governments, etc. later deny permissions to carry out the work in these areas. There is no provision in the PSC for reduction in the MWP if a part of or the whole block is not available for operations.
- Longer Exploration Period in the North East and Other Troubled Areas – (i) Operators face several problems in the blocks of the North Eastern states due to natural calamities like floods and landslides, other problems like insurgency, or any local issues. Further, lack of required infrastructure like roads and bridges, non-availability of resources/services for E&P industry in the near vicinity also adds to the problems in carrying out the exploration work programme. These hurdles makes the exploration period of 7 to 8 years insufficient, and requests are often received from operators for extension in the duration of the exploration phase. (ii) Problems like natural calamities, such as floods and landslides, are covered under the force majeure provisions of the PSC. However, problems arising due to lack of infrastructure, such as roads and bridges, and non-availability of resources/services in the E&P sector cannot be addressed by the existing mechanism.
- Drilling of Exploratory Wells / Appraisal Wells in the Mining Lease Area after Expiry of the Exploration Period- (i) Subsequent to approval of the Field Development Plan (FDP) Mining Lease (ML) is granted for commercial production of oil & gas from the ML area, as approved in the FDP. Contractors sometimes come with proposals to drill more exploratory wells in the designated ML area, with the objective of targeting new horizons. (ii) The issue of drilling exploratory wells in the ML area after once the exploration period is already over is not clearly resolved in the PSC. (iii) Article 11.3 of PSC (Mining Lease): “Where a Development Plan has been approved pursuant to Article

10 and the Contractor has complied with the terms and conditions of the License and this Contract and is not in breach of any of the terms thereof, or the provisions of any law and subject to normal Government clearances/ approvals being obtained by the contractor as applicable before grant/ issues of the Mining Lease, the Government shall grant to the Contractor a Lease over the Development Area as agreed, subject to Article 11.4 to enable the Contractor to carry out Petroleum Operations in the Development Area in accordance with the Development Plan.” This clause therefore, appears to bar the contractor from drilling exploratory wells in ML areas as these did not form part of the Field Development Plan.

- Time for appraisal of discovery for on-land frontier blocks - For deep-water blocks, time for appraisal of discovery is 30 months whereas for on-land frontier blocks it is 18 months only. The duration shall be extended to 30 months if requested by the contractor and recommended by the Directorate General of Hydrocarbons with the approval of its Director General for consideration of the Ministry.

4.1.5 EXPLORATION PERIOD

- In the existing NELP PSC, the exploration period is restricted to seven/ eight years. Moreover, there is a timeline for commencing development of a gas discovery within ten years from the date of the first discovery well. Further, the issue of exploration in the Block/Field, beyond the exploration period stipulated in the PSC, is not clearly spelt out. For reasons of cost-recovery, it is perceived that Contractors may try to load the cost of further exploration on existing discoveries in the Block/Field thereby affecting the profit petroleum take of the Government.
- Exploration period may be enhanced to ten years (with an initial period of six years, and a subsequent period of four years) in case of frontier, deep water blocks and ultra-deep water blocks. Moreover, due to the proposed basic shift in the fiscal model, any restriction on further exploration can be removed. Contractors may be allowed to carry out further exploration throughout the mining lease (ML) period in the area available to them under the ML. This will have a major impact on furthering hydrocarbon exploration.

4.1.6 DEVELOPMENT OF DISCOVERIES IN DEEP WATER AND FRONTIER AREAS

- Development of these discoveries takes considerable time due to lack of infrastructure and cost-effective production technology. At times, a single discovery may not be technoeconomically viable on stand-alone basis but may become economically viable on a cluster basis. At times, proper technology may not be available at commercial rate to develop a discovery in frontier areas like ultra-deep waters. In case the time taken for preparation and approval of the Field Development Plan (FDP) is long, little time is left for the Contractor to initiate development activities, particularly in case of offshore gas discoveries, within the timelines currently stipulated.
- There may be contractual provisions for joint development of commercial discoveries made by the Contractor in adjoining blocks. In such cases, timeline for submission of a comprehensive development plan for more than one such discovery may be suitable to accommodate multiple discoveries with different dates. A suitable option may be the grant of Suspension of Operations to the Contractor on lines similar to what are applicable in the Gulf of Mexico.

4.1.7 FORCE MAJEURE

- At present, force majeure notice has to be served by the Contractor within seven days of occurrence of the event.
- Force majeure notice period may be enhanced to thirty business days. Article 3.5 may be made more specific with regard to turning down of an Operator's request for invocation of force majeure.

4.1.8 APPRAISAL PROGRAMME AND ITS PERIOD

- At present, the Contractor is not allowed to carry out any exploration during the appraisal period, even if additional exploration objectives are met at different stratigraphic levels in the appraisal area. The Contractor is not allowed to integrate appraisal of contiguous discoveries made in similar geological set-up.
- During implementation of the appraisal programme, the Contractor may be allowed to probe the potential of additional reservoirs, if any, through additional exploration activities for proper assessment of commercial viability within the Discovery Area. This

would save time and money for probing hydrocarbon potential of such prospects by means of additional wells, at a later date.

4.1.9 FLEXIBILITY IN CARRYING OUT MINIMUM WORK PROGRAMME (MWP) ACTIVITIES

- In many cases, logistic, environmental, or other constraints make it difficult for the Contractor to achieve the committed MWP. This may warrant change in planning of exploration inputs.

There are instances when in a given acreage, hydrocarbon occurrence is observed at shallower levels than envisaged earlier (with the deeper sequence turning out to be non-prospective) and there is a commitment for a specified number of deep wells. This requires the Contractor to pay Liquidated Damages (LD) for the remaining MWP wells, fixed on a per well cost basis for on-land (1 million US \$), shallow waters (3 million US \$) and deep waters (6 million US \$).

- The PSC may be made more flexible with regard to swapping MWP. Post award, if logistics and/or other constraints make a particular committed survey difficult, Government may consider carrying out an alternate survey, so long as state-of-the-art technology is utilised and the Contractor is spending equivalent or more money.

Provision may be introduced in the contract for permitting revision of target depth of wells, restructuring the MWP, and avoiding drilling of barren meterage.

4.1.10 ILLOGICAL BIDDING IN 'S' TYPE BLOCKS

- These blocks often witness bids with commitment of physical work programme defying technical logic. This is particularly so in case of a number of exploratory wells, as the Liquidated Damages (LD) for unfinished well in on-land block is only US \$ 1 million per well.
- A clause for a minimum level of fulfilment of the work programme may be built in for qualifying for the requirement to pay LD before the contractor is allowed to quit the contract. This may be about 50% of the committed programme.

4.1.11 DIFFICULTIES IN IMPLEMENTATION OF THE PSC

DGH has stated that while carrying out the functions of monitoring, several difficulties have been faced in PSCs as the PSC is silent on some issues or there is ambiguity in interpreting some of the provisions. The monitoring of each PSC involves coordinating various Technical,

Contractual and Financial matters. With limited manpower, managing various PSCs is becoming very difficult. Additionally, ambiguity in interpretation of some of the PSC provisions is adding to existing work load and inevitably leads to arbitration and court cases.

The issues with the existing contract management, as observed by DGH, basically fall into three categories: (i) Policy related issues (ii) Management/administrative issues (iii) Contractual issues

5 OPPORTUNITIES

5.1 FOREIGN INVESTMENT OPPORTUNITIES AND MARKET STATUS

The current competitive environment and foreign investment opportunities within the O&NG market are key Indian economic and energy security concerns. In 1991, the Union Govt. instituted various policies to facilitate the influx of foreign capital and encourage entrepreneurs to invest in India.¹²⁴ These policies included the deregulation and de-licensing of various petroleum products, simplification of the procedure to obtain industrial licenses, freedom to form joint venture companies, and allowance of 100% FDI in multiple segments of the oil and gas sector.¹²⁵ According to the Ministry of Commerce and Industry's 2013 consolidated FDI policy, 100% FDI is allowed under the automatic route for E&P, infrastructure related to marketing of O&NG, marketing of natural gas and petroleum products, petroleum product pipelines, natural gas pipelines, liquefied natural gas regasification infrastructure, market study and formulation and petroleum refining in the private sector (all subject to the existing sector policy and regulatory framework)¹²⁶. To allow 100 % FDI under an "automatic route" means that foreign companies are not required to obtain prior approval for investment from either the Union Govt. or the Reserve Bank of India ("RBI") (however, certain documents must still be filed with the RBI). For proposals on FDI that do not qualify under the automatic route, the Foreign Investment Promotion Board ("FIPB"), a government body offers a single window clearance¹²⁷. Under this

¹²⁴ Ministry of Petroleum and Natural Gas, Introduction, <http://petroleum.nic.in/appintr.htm> (accessed on July 15, 2014)

¹²⁵ India Brand Equity Foundation, Oil and Gas Industry in India (June 2013), <http://www.ibef.org/industry/oil-gas-india.aspx> (accessed on July 15, 2014).

¹²⁶ Ministry of Commerce and Industry, Consolidated FDI Policy (Effective 05 Apr 2013), available at http://www.dipp.nic.in/English/Policies/FDI_Circular_01_2013.pdf (accessed on July 15, 2014)

¹²⁷ Register in India, Automatic route of RBI, <http://www.registerinindia.com/automatic-route-of-RBI.html> (accessed on July 15, 2014).

policy, “government approval”¹²⁸ route, up to 49% FDI is permitted in petroleum refining by PSUs without any disinvestment or dilution of domestic equity in the existing PSUs¹²⁹. From 2000-11, India’s O&NG sector attracted FDI worth US\$ 3,152 million.”¹³⁰ The O&NG industry is currently dominated by the Union Govt. PSUs.¹³¹ In PSUs, 51% or more of the paid up share capital is owned by Union Govt. or the various state governments¹³². Leading PSUs in the Indian O&NG industry include ONGC (74% State owned), OIL (98.1% State owned), IOCL (89% State owned), Gas Authority of India (57% State owned),BPCL (66% State owned), and HPCL (51% State owned).¹³³ ONGC accounts for approximately 67% of oil and gas production, while IOC and its subsidiaries control the largest market share in petroleum products.¹³⁴

5.2 POLICY GUIDELINES FOR EXPLORATION AND EXPLOITATION OF SHALE GAS

Shale gas is natural gas produced from shale, a type of sedimentary rock. It is commonly said that the exploration and production of shale gas in the United States has been a game changer, making the country self-sufficient in natural gas over the last few years. This has created considerable excitement globally, particularly in Europe. Similarly, India has been looking at exploring shale gas domestically to fill in the supply–demand gap. In the United States, RIL has made big investments (US\$ 3.5 billion) in the Marcellus and Eagle Ford shales through joint ventures with Chevron, Carrizo, and Pioneer.¹³⁵ Recently, India has approved a policy that allows exploration and exploitation of unconventional shale gas and oil on licenses that have already been awarded for conventional efforts. The proposal by the Ministry of PNG was approved by the CCEA. The policy will allow companies to apply for shale gas and oil rights in their PEL and petroleum mining lease. Companies will be permitted three assessment phases, each with a maximum period of 3 years. Royalties and taxes would be the same as for

¹²⁸ Register in India, Approval Route of Government, <http://www.registerinindia.com/approval-route-of-government.html> (accessed on July 15, 2014).

¹²⁹ Ministry of Oil and Natural Gas, Information revised FDI Policy, available at <http://petroleum.nic.in/fdi.pdf>

¹³⁰ IBEF Oil & Gas, p.6 (citing Invest in India – Oil and Gas Sector).

¹³¹ India Brand Equity Foundation, Oil and Gas Industry in India (June 2013), <http://www.ibef.org/industry/oil-gas-india.aspx> (accessed on July 15, 2014).

¹³² Public Sector Undertakings in India, <http://www.india.gov.in/spotlight/public-sector-undertakings-india> (accessed on July 15, 2014).

¹³³ India Brand Equity Foundation, Oil and Gas Industry in India (June 2013), <http://www.ibef.org/industry/oil-gas-india.aspx> (accessed on July 15, 2014).

¹³⁴ Ibid

¹³⁵ . “Shale Gas in India: Look before you Leap”, The Energy and Resources Institute, available at http://www.teriin.org/policybrief/docs/Shale_gas.pdf (accessed on July 15, 2014).

conventional production in a particular area. In the first phase, the Union Govt. has restricted shale exploration to state-run ONGC and OIL in the blocks awarded to them on a nomination basis before the advent of NELP in 1997.

5.3 OPEN ACREAGE LICENSING POLICY

("OALP") has been long due. Since 2009, there have been speculations that open licensing for exploration and production rights will come into force replacing the existing NELP regime. As on date there have been nine NELP rounds since 1999. NELP is often criticized for its failure to attract widespread participation by large international oil and gas operators, in particular NELP VIII and IX. In response to the criticism, the Union Govt. has begun work on OALP. Accordingly, DGH has started work on a national data repository as a prerequisite of formulating the OALP. Here, companies would get the freedom to select any block on offer any time, compared to the existing NELP, where the government puts a particular area up for bidding. Canada and the UK are among the countries that offer acreage for E&P on an open basis.

5.4 BUILDING STRATEGIC PETROLEUM RESERVE THROUGH PUBLIC-PRIVATE PARTNERSHIP

The Government has decided to set up strategic crude oil storage reserves at various locations in the country, to provide an emergency response mechanism to mitigate any short-term supply disruptions. Additionally, the Government is also exploring the possibility of increasing the oil stockpile in the country through, various innovative schemes, such as, leasing of storage space to international oil trading companies and building of additional storage terminals through the concessions route.

5.5 ACQUISITION OF OVERSEAS OIL ASSETS

The Ministry of Petroleum and Natural Gas has conceived a more coordinated approach towards acquisition of overseas oil assets, through joint forays and bilateral engagements with other countries, in order to benefit from each other's strengths in areas of technology transfers, R&D, safety and training and also through multilateral engagements such as, the Asian Round Tables, International Energy Forum etc. Recently, India has signed a Memorandum of Understanding with China, for joint bidding of hydrocarbon blocks.

5.6 COMPETITION IN THE DOWNSTREAM (RETAIL AND INSTITUTIONAL) SEGMENT

As per the Petroleum Regulatory Board (PRB) Bill, all upcoming pipelines will have mandatory open access, which will drive competition in the retail and the institutional segment. In anticipation of competition, major oil firms are expanding their retail network and forming alliances with a host of product and services companies to offer non-fuel products and services. In the institutional segment, incumbents are focusing on profitable segments for subsidised products like LPG (commercial and non-domestic), as well as, on specialty products like Hexane.

5.7 DEVELOPMENT OF ALTERNATIVE FUELS

5.7.1 COAL BED METHANE (CBM)- Coal Bed Methane (CBM), an eco-friendly natural gas, is extracted from coal beds. CBM is often referred as an ‘unconventional’ form of natural gas since it is primarily stored through adsorption to the coal itself rather than in the pore space of the rock like most ‘conventional’ gases.

CBM exploration and exploitation is beneficial as it helps in reducing the green house effect and earning carbon credit in preventing the direct emission of methane gas from operating mines to the atmosphere. Moreover, extraction of CBM through degassing of the coal is a cost effective means of boosting coal production and maintaining safe methane level in operating mines.

India has third largest proven coal reserves with prognosticated CBM resource being estimated to be around 4.6 TCM. In view of the substantial reserves of coal & lignite, the Government approved a comprehensive CBM policy in July 1997 for exploration & production of this new source of energy. So far three CBM bidding rounds have been concluded while the fourth bidding round has been launched in April 2009 inviting offers for 10 CBM blocks.

After three rounds of CBM bidding, 26 blocks have been awarded with area opened up for CBM exploration amounting to 13,600 Sq Km. While CBM resources in awarded blocks amount to 1,374 BCM, their production potential is around 38 MMSCMD. Further, in order to promote CBM exploration activities, the Government has offered few attractive terms such as no participation interest of the government, no upfront payments, no signature bonus, exemption

from payment of customs duties on imports required for CBM operation, freedom to sell gas in the domestic market and seven years tax holiday.

5.7.2 GAS HYDRATES- Gas hydrates are ice-like compounds composed of water and natural gas that form when biogenic methane combines with water at low temperature and high pressure. National Gas Hydrates Programme was started in 1997 in order to evaluate gas hydrate potential in India. So far, K-G basin, Mahanadi basin, and Konkan & Kerala basins have been identified as potential areas for gas hydrate exploration.

5.7.3 UNDERGROUND COAL GASIFICATION (UCG)- Underground coal gasification (UCG) is an in-situ gasification process carried out in non-mined coal seams. The product gas can be used as fuel for power generation. In India ONGC and GAIL have been exploring the possibilities of exploiting the gas through UCG process. ONGC has planned to produce 2.7 MMSCMD of gas through UCG process and envisages producing 2.99 BCM of UCG gas during the Eleventh Plan.

5.7.4 COAL TO LIQUID -OIL has carried out pre-feasibility studies on Catalytic Two-Stage Liquefaction Technology and Direct Liquefaction Technologies in order to select the best suitable technology for the North East coal for liquification.

5.7.5 BIOFUELS- Biofuel is a solid, liquid or gaseous fuel obtained from lifeless or living biological material and is similar to fossil fuels. Currently, biofuels such as ethanol and bio-diesel are produced in India. Ethanol is currently produced by the fermentation of sugarcane molasses and can be blended with petrol. Similarly, bio-diesel, which can be manufactured by the transesterification of vegetable oil, can be blended with diesel.

In order to meet 20% of the country's diesel requirements by 2011-12, the Government of India had developed National Biodiesel Mission. Further, the Government has decided to use non-edible oil from *Jatropha Curcas* oilseeds as bio-diesel feedstock.

6 CONCLUSION

From a commercial and business perspective, India's O&NG sector is a promising one as there is huge untapped potential basin while many large blocks offshore are unexplored. NELP has changed the E&P scenario in India for the better. A comparison with the pre-NELP rounds in itself would sustain this statement. Moreover NELP regime heralded the entry of the big players of O&NG industry such as British Petroleum and RIL. Also with relaxation in FDI norms, allowing 100% FDI under the automatic route for E&P, infrastructure related to marketing of O&NG, marketing of natural gas and petroleum products, petroleum product pipelines, natural gas pipelines, liquefied natural gas regasification infrastructure, market study and formulation and petroleum refining in the private sector, is certainly a welcome step as it would encourage future investments in near future. Further, the new Shale gas policy initiative is commendable and hopefully private players will be allowed to participate in this segment as well, in future. Recently, in Budget 2014-2015, Union Govt. has proposed an additional 15,000 km of gas pipelines using appropriate PPP models in order to complete the gas grid and to help in reducing dependence on any one energy sources. Finally, the Report of the Rangarajan Committee which proposed scrapping the cost recovery model, and shifting to post-royalty-payment revenue sharing (without setting off any costs) is a good move. However, recently CECA deferred the gas price hike by three months, and has said that it would have further consultation with all stakeholders. Hopefully, the Union Govt. will take notice of the recommendations and bring suitable changes in the existing policy framework. It is important to note that even from pricing perspective, the Supreme Court has recognized that companies engaged in activities such as exploration, mining and harnessing resources, can reasonably expect fair compensation.¹³⁶ Additionally, the Supreme Court and even the Competition Commission have recognized importance of freedom of contract subject to certain reasonable caveats.¹³⁷ Such caveats are that pricing mechanisms would have to be within the limits of the statutory provisions and statutory contracts and any variation cannot be arbitrary.¹³⁸ The regulatory framework in respect of O&NG is relatively nascent and the length and breadth of the law has not been fully tested.

¹³⁶ Oil & Natural Gas Commission & Anr. v. The Association of Natural Gas Consuming Industries of Gujarat and Ors. (1990) Supp. 1 SCC 397

¹³⁷ Reliance Natural Resources, supra note 48

¹³⁸ Reliance Natural Resources, supra note 48

However, the Supreme Court has recognized that in policy matters which affect foreign investment, it is imperative that there be uniformity, consistency and predictability in application of laws.¹³⁹ Therefore, ventures in O&NG certainly promise to be lucrative and exciting.

The legal framework which is in place for the oil and gas sector has one major lacuna i.e. it is slow. Legal framework in place has not kept pace with the modernizing technology and development of new resources such as shale gas, coal bed methane, etc. There is no framework to regulate the unconventional source and nothing to prevent the damage to the environment. Thus for the efficient working of the oil and gas sector and to harness fully the potential of our existing resources we require a more diligent legal framework, which will timely incorporate the required changes.

¹³⁹ Vodafone International Holdings B.V. v. Union of India (2012) 6 SCC 613.

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