EASE OF BUSINESS IN HYDROCARBON INDUSTRY BY IMPLEMENTING OALP THROUGH HELP IN INDIA

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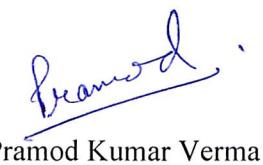

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DECLARATION BY THE GUIDE

This is to certify that the Mr. Pramod Kumar Verma, a student of **MBA- Oil & Gas Management**, SAP ID 500065314 of UPES has successfully completed this dissertation report on **"Ease of business in Hydrocarbon industry by implementing OALP through HELP"** under my supervision.

Further, I certify that the work is based on the investigation made, data collected and analyzed by him and it has not been submitted in any other University or Institution for award of any degree. In my opinion, it is fully adequate, in scope and utility, as a dissertation towards partial fulfillment for the award of degree of MBA.

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TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 Overview

FORMATION OF DIRECTORATE GENERAL OF HYDROCARBONS (DGH)

The liberalized economic policy adopted by the Government of India (GoI) in July 1991 sought to deregulate and de-license the core sectors (including the petroleum sector) with partial disinvestments of government equity in Public Sector Undertakings along with other measures. The upstream petroleum sector was largely a monopoly of public sector companies till then and the sector was being increasingly opened to new operating companies in the private and joint sectors. Thus, a need was felt to establish an agency that could effectively supervise the activities of all these companies in the national interest.

The same was elucidated by the committee headed by late Dr. A. B. Dasgupta, which recommended for creation of an autonomous conservation board to oversee and review oilfield development programs for sound reservoir engineering practices in line with national interests. Subsequently, a committee was constituted in 1992 under the chairmanship of late Shri P. K. Kaul, former Cabinet Secretary, to examine the need for restructuring ONGC's organizational structure. This committee also recommended for establishment of an independent regulatory body called the Directorate General of Hydrocarbons (DGH) for discharging the regulatory functions of leasing and licensing, safety and environment and development, conservation and reservoir management of Hydrocarbon resources in India

Accordingly, Directorate General of Hydrocarbons was set up through GoI resolution No. O-20013/2/92/ONG-III dated 08.04.1993 under the administrative control of the Ministry of Petroleum and Natural Gas.

DGH – Objective:

To promote sound management of the oil and natural gas resources having a balanced regard for environment, safety, technological and economic aspects of the petroleum activity.

India is one of the fastest growing major economies in the world and the third largest consumer of petroleum products after US and China. India is heavily dependent on import of crude oil to meet

its energy needs. Net imports of crude oil have increased from 111.50 metric tons during 2006-07 to 202.85 metric tons during 2015-16. In the above backdrop, the Government of India ("**GOI**") has set a target to reduce dependence on crude oil imports by 10% by 2022. In this regard, GOI's priorities are energy access, energy efficiency, energy sustainability and energy security. Towards achieving this, the GOI has been taking several initiatives for increasing exploration and production ("**E&P**") of domestic hydrocarbon resources. The launch of new hydrocarbon exploration licensing policy for award of hydrocarbon acreages in the upstream sector of India on 30 March, 2016 ("**HELP**") is one of such initiatives.

Two key pillars of HELP are Open Acreage Licensing Policy ("**OALP**") and National Data Repository ("**NDR**"). The modalities for operationalization of OALP have been notified on 30 June, 2017. Under the OALP, bidders will: (i) have access to geoscientific data through NDR to assess the prospect of any area; (ii) have the opportunity to carve out exploration blocks of their choice from the Indian sedimentary basin; and (iii) be able to bid for the blocks twice in a calendar year.

GOI has received expression of interest ("**EOI**") for 57 blocks, which are carved out by the bidders under OALP in the first window from 1 July 2017 to 15 November 2017. Out of these blocks, notice-inviting offer ("**NIO**") for international competitive bidding of 55 blocks was released on 19 January 2018. This is the largest offering of hydrocarbon acreages by GOI in the past 8 years.

Salient features of HELP

HELP introduces a simplified, transparent and investor friendly regime for attracting investments in the Indian oil and gas sector from domestic and foreign investors and replaces the previous New Exploration Licensing Policy ("**NELP**"). The salient features of HELP are:

- **Uniform license:** The bidder is now allowed E&P of all conventional as well as non-conventional hydrocarbons resources covered under both the Oilfields Regulation and Development Act, 1948 and Petroleum & Natural Gas Rules, 1959 in an awarded block under one license. This will reduce the unnecessary delays and costs borne by bidders under NELP in liaising with several government authorities for separate licenses. For example,

while exploring for one type of hydrocarbon, if a different one was found, it required separate licensing under NELP.

- **OALP**: Under the NELP, the bidders could choose only from among the blocks offered by GOI and accordingly had to wait for GOI to undertake bidding for blocks which were of interest to the bidders. Further, the bidders were hesitant to bid due to non-availability of geological data for blocks offered by GOI. However, under OALP, the NDR has been set up at the Directorate General of Hydrocarbons ("**DGH**") to make the entire upstream oil and gas information and data available to the bidders. A bidder (an Indian or a foreign company either singly or in association with other companies) can after studying the data through NDR propose an EOI, throughout the calendar year in two windows without waiting for announcement of bids, for any block that: (i) falls within the Indian sedimentary basins; (ii) is free of petroleum exploration licenses or petroleum mining licenses; and (iii) is not indicated as "No-Go" under the NDR. Under the EOI, the bidders can choose one of the following contracts:

    1. **Petroleum operations contract** ("**POC**") permitting exploration, development and production operations in any of the onshore, shallow-water, frontier, deep-water and ultra-deepwater blocks for all types of hydrocarbons for a period of 6 years with a provision of extensions as per OALP. Terms of POC will be as per the revenue sharing contract approved by GOI. A model revenue sharing contract is made available online by GOI;

    or

    2. **Reconnaissance contract** ("**RC**") permitting only exploration operations in any of the blocks for all hydrocarbons for a period of 2 years with a provision for an extension of 1 year. The bidder will be entitled to license the exploration data during the contract period, provided prior permission of DGH is required if license is given to companies of neighboring countries or to such companies as notified by DGH. Upon completion of 80% of the work programme commitments, the bidder is entitled to migrate to POC for that block.

For the purpose of these contracts, DGH has classified the areas into different zones based on the quantum of geological and geophysical data available.

Area having sufficient data is denoted as Zone 1
Area having moderate data is denoted as Zone 2
Area having no data is denoted as Zone 3

EOI will be accepted based on type of contract applicable for that zone. RC is not applicable for Zone 1.
DGH will evaluate the EOI on a first-come first-serve basis, at its discretion accept or alter the carved area for which EOI has been submitted and call for competitive bids by releasing a NIO. Any bidder who has submitted EOI will be obliged to participate in the bid, provided the deviation in the area finalized by DGH and put to bid is not more than 50% of the area applied by the bidder. As part of its bid, the bidder needs to submit the required technical, financial information and its work programme. The bidder scoring the highest marks as per the evaluation matrix provided under OALP will be awarded the contract.

- **Revenue sharing model in place of a profit sharing after cost recovery model under NELP:** Under HELP, contracts are based on biddable revenue sharing model as against the production sharing after cost recovery model under NELP. The GOI will now not be concerned with any cost incurred by the bidders in E&P of oil and gas. Bidders are required to quote in their bids revenue to be shared with the GOI at lower revenue point and higher revenue point. This has the maximum weightage for evaluating the bid and the bidder quoting the highest net present value of revenue share offered to the GOI (by applying 10% discount rate) will get the maximum marks. Government share of revenue (net of royalty and taxes on sales) is payable by the bidder commencing from the date of production. Under NELP, the extent of cost recoverable by the bidder from the revenue generated and the division of revenue between the GOI and bidder as per their production sharing contracts had become one of the most contentious issue.

- **Freedom in pricing and sale of crude oil and natural gas in domestic market**: The bidders will now have the freedom to sell crude oil or condensates exclusively in the domestic market through a transparent bidding process on arm's length basis. Further, the bidders can either sell the gas produced domestically or export it on arm's length basis. Under NELP, the price of gas was fixed administratively by the GOI and has led to a large number of disputes, arbitrations and court cases between the GOI and bidders. The bidders have been requesting a higher price for gas, without which they stand to incur commercial losses.

- **Concessional royalty regime:** The deep water and ultra deep water areas shall not have any royalty payable to the Government for the first 7 years, and thereafter a concessional royalty of 5% (in deep water areas) and 2% (in ultra deep water areas) is payable. Further, in shallow water areas, the royalty rate is reduced from 10% to 7.5%.

Analysis

- **Failure to attract investors:** The new policy has failed to attract interest from major players in the sector. From among major participants in the sector, only Reliance Industries has submitted an EOI. Pertinently, no foreign company has submitted an EOI. One of the reasons for this lukewarm response is perhaps the new revenue sharing model. NELP provided for production sharing after cost recovery model. Accordingly, sharing of production was only post recovery of cost of investment, and to that extend provided protection to the bidders in terms of recovery of investment. Unlike the production-sharing contracts under NELP, the new revenue sharing model under HELP provides that government's share of revenue is payable by the bidder commencing from the date of production.
- **Onerous obligations**: The OALP provides for discretionary powers to the DGH to accept the area for which EOI has been submitted or alter/modify the area after due evaluation. However, basis for exercise of such discretion is not provided under the OALP. Accordingly, in spite of such alteration/modification, EOI applicants will be obliged to participate (submit a bid acceptable to DGH) in the subsequent bidding. The obligation to participate will not be waived unless the deviation in the area finalized by DGH to be put up for bidding is more than 50% of the area for which EOI is submitted. Participation bond[3] submitted along with the EOI will be forfeited if the EOI submitting party doesn't participate in the bidding process.
- **No compensation for discovery under RC**: OALP awards an EOI applicant incentive of five marks at the bidding stage. An RC contractor is also allowed this benefit when such contractor submits an intent to migrate to a POC contract. Such intention to migrate is deemed to be an EOI. Apart from the benefit of 5 marks at the bidding stage, there is no other mechanism to compensate such RC Contractor. The RC contractor is not provided any monetary benefit under the OALP. Since the investment for exploration is significant, it can be argued that, to make it more

attractive, GOI could have provided adequate compensation for the exploration activities during the RC.

- **Minimum pricing for calculation of GOI's revenue**: Although HELP provides that the contractor will be free to sell the crude oil exclusively in domestic market through a transparent bidding process on arm's length basis, for calculation of GOI's revenue, GOI has prescribed a floor for the price.

In case of crude oil and condensate, HELP provides that, for calculating GOI's revenue, the minimum price will be the price of *Indian Basket of Crude Oil*, or if the price arrived through bidding is more than the price of *Indian Basket of Crude Oil* then GOI's share will be calculated based on the actual price realized.

Similarly, for natural gas, HELP provides that the contractor will have freedom for pricing and marketing of gas produced on arm's length basis. However, for calculation of GOI's revenue, minimum price will be a price calculated as per Domestic Natural Gas Pricing Guidelines. If the price discovered through arm's length basis is more than the calculation based on Domestic Natural Gas Pricing Guidelines issued by the GOI from time to time, then GOI's revenue will be calculated based on actual price realized.

India is one of the fastest growing major economies in the world and the third largest consumer of petroleum products after US and China. India is heavily dependent on import of crude oil to meet its energy needs. Net imports of crude oil have increased from 111.50 metric tons during 2006-07 to 202.85 metric tons during 2015-16. In the above backdrop, the Government of India ("**GOI**") has set a target to reduce dependence on crude oil imports by 10% by 2022. In this regard, GOI's priorities are energy access, energy efficiency, energy sustainability and energy security. Towards achieving this, the GOI has been taking several initiatives for increasing exploration and production ("**E&P**") of domestic hydrocarbon resources. The launch of new hydrocarbon exploration licensing policy for award of hydrocarbon acreages in the upstream sector of India on 30 March, 2016 ("**HELP**") is one of such initiatives.

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1.2 Background Of The Study

Exploration

Hydrocarbon Exploration & Licensing Policy (HELP)

In the line with the vision of reducing hydrocarbon import dependency by 10% by 2022, Hydrocarbon Exploration and Licensing Policy (HELP) was launched with the clear objective of boosting the production of oil & gas in the Indian sedimentary basin. This policy is based on the new model of Revenue Sharing Contract (RSC) which has replaced the earlier model of Production Sharing Contract (PSC). Under HELP Open Acreage Licensing (OAL) mechanism has been launched which allows the investors to carve out blocks of their choice by assessing E&P data available at NDR & by submitting an Expression of Interest (EoI). EOI can be submitted throughout the year without waiting for a formal bid round from the government. These blocks would be subsequently offered through biannual formal bidding process. OAL would be manifested through National Data Repository, which will provide rapid jumpstart to E&P activities by providing seamless access to the country's entire G&G data for interpretation and analysis. Following are the salient features of HELP:

• Single license that will cover exploration and production of all types of hydrocarbon viz. conventional oil and gas, coal-bed methane, shale oil, gas hydrates, etc.

• Revenue Sharing Model: Simple, easy to monitor; only two monitoring parameters for the government revenue & production of the contractor, no cost recovery; no micro-management by

the Government; companies to carve out acreages of their choice and submit an expression of Interest basis which government would call for competitive bids

• Reduced and graded royalty rates. Further to encourage exploration in deep water and ultra-deep water areas, the royalty was exempted for first seven years (and subsequently royalty of 5% and 2% applicable in deep water and ultra-deep water areas)

• Other fiscal incentives viz. exemption of cess on crude oil and custom duty applicable on equipment/ services for exploration and production activities

• Full marketing and pricing freedom of gas produced on arm's length basis

• Extended period for exploration and production i.e. 8 years for onland/ shallow water and 10 years for deep water/ frontier areas

• Providing option of Reconnaissance Contract (RC) to interested E&P and Oil Field Services (OFS) companies. A Reconnaissance Contract allows interested companies to undertake exploration activities, seismic surveys and exploratory drilling to gather E&P data and exclusive rights to lease out the same for a period of 12 years with an option to migrate to development and production phase subject to competitive bidding

• Pre-determined Liquidated Damages (LDs) for any shortfall in committed work program

The major industry players in India's O&NG sector currently are:

i. Upstream Sector: Oil and Natural Gas Corporation (ONGC), Oil India Limited and Crain Energy. ONGC is the largest upstream company in E&P segment accounting for approximately 61.5 percent of India's total oil output. During the Financial year 2016, 1,118,000 meters of wells were explored and developed in India, and during the same period, 506 wells were drilled in India.

ii. Midstream Sector: Indian Oil Corporation, Gas Authority of India Limited, etc. Indian Oil Corporation operates a 11,214 km network of crude, gas and product pipelines, with a capacity of 1.6 million barrels per day (mbpd) of oil and 10

million metric standard cubic meters per day (mmscmd) of gas. This is around 30 per cent of the India's total pipeline network.

iii. Downstream Sector: Indian Oil Corporation, Bharat Petroleum Corporation Limited, Hindustan petroleum, etc. Indian Oil Corporation is the largest company, controlling 10 out of 22 Indian refineries, with a combined capacity of 1.31 mbpd.

Recent Initiatives by the Government of India

As per India Brand Equity Foundation (IBEF) report,15 the Government of India has taken some key initiatives to promote the oil and gas sector, which are as follows:

i. The Government of India has announced its plans to merge state oil companies to create integrated oil major. This oil major would then compete globally and utilize the synergy between various state entities for achieving efficiency and cost competitiveness in order to create more value for all shareholders.

ii. ii. The Government of India plans to build a nine million tonne (MT) refinery in Rajasthan and a 60 MT refinery in Maharashtra, auction oil and gas fields, increase use of liquefied natural gas (LNG). Further, the Government of India is in discussions with Saudi Arabian Oil Co (Saudi Aramco) regarding investments in India.

iii. iii. The Government of India plans to unveil a new policy for renewing and extending the lease of 28 oil and gas blocks in the country. This initiative is intended to attract more investments into these fields.

iv. In order to promote clean energy and generate employment, State-run oil firms are planning investments worth (US$ 111.30 million) in Uttar Pradesh to improve the liquefied petroleum gas (LPG) infrastructure.

v. The Government of India is planning to introduce a new policy to encourage the use of biofuels in transport fuel. For this policy, the Government of India is looking at an investment of Rs 1 lakh crore (US$ 15.64 billion) in the entire value chain

Foreign Investment

In O&NG industry, Foreign Direct Investment (FDI) is allowed through the automatic route. FDI is allowed:

- up to 100% in areas such as exploration of oil and natural gas fields, infrastructure & marketing related aspects of the industry, refining in the private sector, etc.; and
- Up to 49% in PSUs engaged in petroleum refining.

Uniform License

Unlike the multiple license model under NELP, HELP brings in a uniform licensing model, allowing drilling of all forms of hydrocarbons, including shale gas, coal bed methane, oil and gas, to be done under a single contract. Under the new regime, a common license for all hydrocarbons is awarded to firms offering maximum revenue to the Government of India would be given. It does away with complex investment multiples and provides for a lot more autonomy and flexibility to the operator.

Revenue Sharing Model

NELP mechanism of profit sharing was such where explorers first recovered their costs and then shared profits with the Government of India. HELP introduces revenue-sharing mechanism, which replaced the profit sharing model under NELP. Where the government would not micro-manage the costs incurred, and would instead concentrate on receiving a share of the gross revenue. Revenue sharing will not be subject to cost recovery, monitoring will be simple, and the government share will acquire immediately on production, unlike in cost-recovery, monitoring will be simple, and the government share will accrue immediately on production

Marketing and Pricing Freedom for Crude Oil and Natural Gas

The HELP policy provides for freedom in the marketing and pricing of crude oil and natural gas from these blocks, which are produced under the new contractual and fiscal regime. This is in

sharp contrast with the previous NELP policy. In addition, the HELP policy is aimed at incentivizing production.

First, it is intended that the marketing and pricing freedom will be provided for the purposes of gas drilled from difficult geologies, including deep-water, ultra-deep and high pressure and high temperature areas. Second, it is envisaged that for certain categories of blocks extension of up to 10 years would be allowed subject to increases in the profit share of the Government of India by 10%

Further, the Government of India has incentivized deep-sea drilling, through the mechanism of concessional royalty. Under the mechanism, no royalty is charged for the first seven years. After that, a 5% royalty for deep water areas and 2% royalty in ultra-deep waters is charged. Developers found it commercially unviable to extract gas from such sites. This is because of the risk and high cost of production associated with deep-sea drilling. It has been suggested that approximately 190 bcm or around 35 mmscmd of gas reserves (15-year production profile) can be better tapped from the change in policy

Open Acreage Policy

The Open Acreage Licensing Policy ("OALP") was introduced as part of the HELP. Blocks would be allocated under the policy wherein companies can submit bids for areas of their choice. Companies can choose blocks from the designated area round the year without waiting for roadshows and auctions like in NELP OALP is aimed at increasing the domestic production of petroleum and expediting the appraisal of Indian sedimentary basis by providing the investors with an access to geo-scientific data available in National Data Repository (NDR). OALP further provides the flexibility to carve out exploration acreages through an open acreage licensing process and increased operational autonomy through a new revenue sharing model. Under the OALP, an Expression of Interest (EOI) can be made round the year with bidding round every six months. The EOIs would form the basis of blocks being offered in the bidding rounds

Other Changes

Under HELP, lower royalty as compared to NELP has been provided to encourage exploration and production. A graded system has been introduced in which royalty decreases from shallow water

to deep water and ultra-deep water. Onland royalty has been kept intact so that revenues of states are not impaired

Hydrocarbon Exploration & Licensing Policy (HELP) Open Acreage Licensing Policy (OALP) Bid Round – 1

On January 18, 2018, under the Hydrocarbon Exploration and Licensing policy (HELP) and the Open Acreage Licensing Policy (OALP) Bid Round- 1 ("OALP-1"), the Ministry of Petroleum & Natural Gas, Government of India ("Ministry of PNG") published a Notice inviting offers (NIO) for Exploration and Development of Oil & Gas blocks in India.

Under the OALP programme, an Expression of Interest (EOI) was received between July 1, 2017 and November 15, 2017. Based on the EOI, 55 blocks, which include, 46 on-land blocks, 8 shallow water blocks and 1 deep water block, are on offer through the International competitive bidding process

Greater HELP for E&P firms

The Hydrocarbon Exploration Licensing Policy (HELP) provides marketing and pricing freedom

India has benefited from the unprecedented fall in global crude oil prices. For this, a small group of entrepreneurs, geologists and engineers can be thanked. They concluded that shale rocks could contain commercial amounts of hydrocarbons. They spent money, experimented and eventually found novel ways to fracture and break up shale rocks and extract hydrocarbons. The then high prices provided the economic incentive to do whatever it took to find and produce more hydrocarbons. Now the development of shale resources has increased the global supply, resulting in consumer benefit through lower prices.

Despite this impact of shale, there had been no real policy for accessing shale resources in India. Now, while shale oil and gas has not been directly referred to in the Hydrocarbon Exploration Licensing Policy (HELP), but a single license for hydrocarbons from all types of sources in the same geography implies that shale resources can now be assessed. The development of a countrywide natural gas pipeline and addressing issues like water availability and environmental norms for fracking will facilitate exploration and development of unconventional resources.

Blocks will now be awarded through the Open Acreage Licensing Policy (OALP). Earlier, the government identified the blocks on offer. Exploration & production (E&P) companies waited for bid rounds and evaluated blocks in a reactive way. The last bid round was held in 2011. This limited growth options for companies in India by accessing new exploration acreage.

Exploration experts in E&P companies can now identify prospective basins and areas proactively. As an example, in the US, the potential of shale resources was identified by exploration companies and not by the government. The time-frame for the government to take a decision on bidding after submission of a proposal and the periodicity of bid rounds are yet to be spelt out. Hopefully, bid rounds would be frequent.

The successful implementation of the OALP requires a robust National Data Repository (NDR). Maximal data should be populated on the NDR. Data can be attractively priced, so that more and more E&P players and individuals analyze data for new exploration ideas.

The future contracts will be revenue-share contracts, instead of production-sharing contracts. Both these regimes are prevalent globally.

From an economic standpoint, a production-sharing contract is a superior model. However, the last few years have seen a huge amount of scrutiny on the costs of the E&P operators and control over investment decisions. Oversight exercised by the government has been seen to be excessive by E&P companies. For example, the government did not allow drilling of exploration wells in producing blocks for years, as dry wells would reduce government revenues. On the other hand, E&P operators felt that with better understanding of the reservoir and the geology, it is prudent to drill exploratory wells. The impact of the government decision was to reduce exploration activity. Experimentation by drilling relatively unproductive wells helped companies in the US develop economic ways of fracking shale rocks. Such experimentation may not have been allowed in India.

The revenue-share arrangements should reduce the regulatory burden on the government and provide greater freedom to E&P companies in making investment decisions. However, the devil is in the detail. The fine print of revenue-sharing contracts and their implementation will test the effectiveness of this change. The existing blocks would continue to be production-sharing contracts. The resolution of past issues in production-sharing contract blocks can improve the ease of doing business for incumbent players.

HELP provides marketing and pricing freedom. This is a good incentive for explorers for finding hydrocarbons in India. In the past, the government had prescribed a formula for pricing

domestically produced natural gas. The policy change has now specified a price cap (based on landed costs of alternate fuels) for new gas developments in existing deep-water and ultra-deep-water blocks. The intent is to provide an economic incentive for development of these fields. The cost of extracting natural gas varies by block, well and time. Not all exploration investments lead to discoveries. Therefore, regulating prices based on cost and a rate of return on investment can be time-consuming and inefficient. Setting a regulated price for all domestic production can result in some higher cost discoveries becoming unviable and not being developed.

In the long run, the government should consider a transition towards creating a single gas market in India with price discovery through a transparent market-based mechanism.

The government has also announced the much-awaited extension policy for production-sharing contracts for small, medium-sized and discovered fields awarded in the 1990s. The extensions can be sought for a period of up to 10 years for both oil and gas production. However, extensions would be at enhanced fiscal terms.

Some of these fields are on a decline, with falling production and increasing costs. There is a tradeoff between the economic life of fields and generating higher government revenues. In addition, enhanced fiscal terms imply that costs will increase and fields will start becoming unviable sooner rather than later. The success of this policy will depend on whether these blocks are relinquished or existing contractors seek extensions and invest money for enhanced oil recovery.

HELP is the most significant policy change for the upstream sector since 1998, and signals the government's desire to promote the sector and ease doing business in India. Its success will be driven by the attractiveness of Indian basins and how well these policies are implemented. Resolving legacy issues will also encourage existing and new entrants in the sector to participate in helping achieve the government's vision of enhanced domestic hydrocarbon production in India.

Govt increases oil, gas bidding round to three times a year

Delays in bidding rounds notwithstanding, the government has increased the expression of interest (EoI) submission cycle for oil and gas acreage to three times a year from two times earlier, the Directorate General of Hydrocarbons (DGH) said.

India had in July 2017, allowed companies to carve out blocks of their choice with a view to bring about 2.8 million sq km of unexplored area in the country under exploration.

Under this policy, called open acreage licensing policy or OALP, companies are allowed to put in an EoI for prospecting of oil and gas in any area that is presently not under any production or exploration license.

The EoIs can be put in at any time of the year and were accumulated twice annually. But now, this cycle has been increased to three.

"In view of recent policy reforms and changes aligned to promote 'Ease of Doing Business', the EoI submission cycle is increased from two, to three times in a year," the DGH said in a notification.

Previously, the two window of accumulating EoIs ended on May 15 and November 15 every year. EoIs accumulated till May 15 were supposed to be put on auction by June 30 and those in the second window by December 3.

According to the revised EoI submission cycle; the first window for submission will be from April 1 to July 31, second from August 1 to November 30, and the third from December 1 to March 31 every year, DGH said.

The overhauled oil and gas exploration licensing policy will be implemented from the 4th bid round.

Junking two-year-old revenue bidding model for award of acreage for exploration and production of oil and natural gas, the Union Cabinet had in February approved a policy for awarding blocks based primarily on exploration commitment such as drilling of wells. This was aimed at attracting the elusive private and foreign investment to raise domestic output.

The first OALP round was launched in 2017 and bids came in by May 2018. EoIs for second round closed on May 15, 2018 and the blocks were supposed to be put for auction by June but the round was delayed for reasons unknown.

OALP-II was clubbed with OALP-III and finally launched in January. EoI submission window for OALP-IV has closed but the government is yet to announce the bid auction

The government has, under the first three rounds of OALP, awarded 87 oil and gas fields to private and public entities

The fifth window of EoI submission has started on May 16, 2019 and will end on November 30, 2019, DGH said.

Prime Minister Narendra Modi has set a target of cutting oil import bill by 10 per cent to 67 per cent by 2022 and to half by 2030.

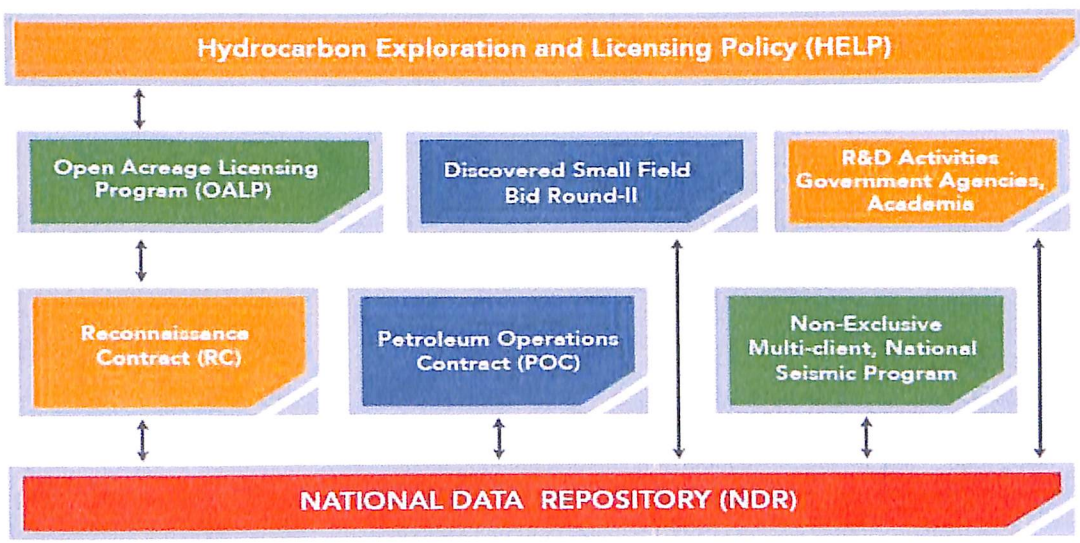
Import dependence has increased since 2015 when Modi had set the target. India currently imports 83 per cent of its oil needs.

The new policy replaced the old system of government carving out areas and bidding them out. It guarantees marketing and pricing freedom and moves away from production sharing model of previous rounds to a revenue-sharing model, where companies offering the maximum share of oil and gas to the government are awarded the block.

The government prior to this had been selecting and demarcating areas it feels can be offered for bidding in an exploration-licensing round.

Under this, 256 blocks had been offered for exploration and production since 2000. The last bid round happened in 2010. Of these, 254 blocks were awarded. But as many as 156 have already been relinquished due to poor prospect.

NDR: Backbone of E&P Activities in India



- To improve DGH ability to monitor and control E&P activities
- To support E&P activities in India under Hydrocarbon Exploration and Licensing Policy (HELP) for improved E&P environment in India

- To provide data for processing, interpretation and visualization
- To strengthen overall Geoscientific activities in India

NDR is the backbone of HELP. Open Acreage License Program (OALP) was launched along with NDR on 28.06.17 so that the contractors can analyze the data & bid for particular block in which they are interested. The data presented through NDR is obtained through advance technology simulations, which makes the data more reliable, & the operators can take advantage of these data to make a precise decision regarding bidding of a particular block.

Setting up of NDR is the key facilitator to provide a rapid jumpstart to E&P activities in India. The key beneficiaries of NDR- E&P operators, Govt. agencies, Universities, Research Institutes & Parties entitled by DGH.

Some of the key features of NDR are:

i. State of the art Primary Data Centre (PDC) equipped for data storage capacity of 156TB of hard disk to store processed data& 720TB robotic tape library
ii. Secondary Data Centre (SDC) facility with 60TB for Disaster Recovery and Business Continuity to be opened at Bhubaneswar
iii. Real time data replication between PDC & SDC
iv. Jully equipped Data Visualization Rooms set up for viewing G&G data
v. Skill Development Centre facility for specialized training
vi. Highly secured access with multiple biometric entry and exit points for separate teams
vii. Network access secured by two layers of firewall

Expected Positive Outcome

NDR enables the contractors to bid according to E&P data available and make sound decision regarding the investment. NDR Data policy is a precursor to award of blocks under Hydrocarbon Exploration and Licensing Policy. It will provide a unique platform to view, analyze, purchase data for all E&P companies, institutions, research agencies, etc

1.3 PURPOSE OF THE STUDY

Permitting exploration, development and production operations in any of the onshore, shallow-water, frontier, deep-water and ultra-deep-water blocks for all types of hydrocarbons for a period of 6 years with a provision of extensions as per OALP. Terms of POC will be as per the revenue sharing contract approved by GOI. A model revenue sharing contract is made available online by GOI.

Production Sharing Contract is a contractual agreement signed between the host state and the Operating Company, whereby the two parties share the petroleum produced. In the event of successful commercial discovery, the Contractor is entitled to recover the amount of petroleum necessary to reimburse it for the costs incurred in exploring, developing and producing the oil and gas. The remainder of production is shared between the Contractor and the State, according to predefined percentages. The government retains ownership of hydrocarbons, and is considerably involved in the functioning and operations of the field development and production.

Exploration & Production

A number of new initiatives have been taken in the last one year to promote Exploration and Production activities in the country. In a major policy drive to give a boost to petroleum and hydrocarbon sector, the Government has unveiled a series of policy reforms. Some of the notable Policy reforms are listed as under:

i. Hydrocarbon Exploration and Licensing Policy (HELP)/ Open Acreage Licensing Policy (OALP) – This is a paradigm shift from Production Sharing Contract (PSC) regime to Revenue Sharing Contract (RSC) regime based on the principle of ease of doing business. It provides for single License for exploration and production of conventional as well as non-conventional Hydrocarbon resources; Pricing and Marketing Freedom; reduced rate of royalty for offshore blocks, Open Acreage Licensing Policy that means option to select the exploration blocks without waiting for formal bid round. Expression of Interest can be submitted round the year and Bidding is carried out every 6 months.

Under OALP Bid Round I, 55 Blocks having area of 59,282 sq. Km have been awarded on 1st October, 2018. OALP Bid Round II with 14 blocks is in the offering.

ii. Policy Framework to Promote and Incentivize Enhanced Recovery Methods for Oil and Gas- The Government has approved the Policy framework to promote and encourage adoption of Enhanced Recovery (ER)/Improved Recovery (IR)/Unconventional Hydrocarbon (UHC) production Methods/techniques through fiscal incentives and an enabling ecosystem to improve productivity of existing fields and enhance overall production of domestic hydrocarbons. The Policy provides for systemic assessment of every field for its ER potential, appraisal of appropriate ER techniques and fiscal incentives to de-risk the cost involved in ER Projects and to make it economically viable.

iii. Discovered Small Field Policy (DSF) Policy, Round I & II - For early monetization of unmonetized discoveries of National Oil Companies (NoCs), Cabinet in September, 2015 approved 69 marginal fields for offer under Discovered Small Fields Policy. These contract areas are awarded under the new regime of Revenue Sharing Model. Award of contract is expected to provide faster development of fields and facilitate production of oil and gas.

The First bidding round under the Discovered Small Field Policy was launched on 25th May 2016, thereby offering 67 discovered small fields in 46 contract areas of ONGC and OIL for international bidding. Total 30 contracts for 43 discovered small fields were signed with 20 companies in March, 2017. It is expected that in-place locked hydrocarbons volume of 40 MMT oil and 22.0 BCM of gas will be monetized over a period of 15 years.

On 7th February, 2018, Cabinet has approved the Discovered Small Field Policy Bid Round-II, an extension of the Discovered Small Field Policy notified on 14.10.2015. Under DSF-II, 59 discovered small fields/unmonetized discoveries estimated to have 194.65 Million Metric Ton (MMT) Oil and Oil equivalent gas in place are offered for bidding.

The Second Bidding Round under DSF Policy offering 59 discoveries clubbed into 25 new Contract Areas was launched on 9th August, 2018.

iv. National Seismic Programme of Un-appraised areas – The Government has taken up programme of undertaking 2D seismic survey of entire un-apprised areas. National Seismic Programme was launched on 12th October, 2016. Under the programme, Government has approved the proposal for conducting 2D seismic survey for data Acquisition, Processing and Interpretation (API) of 48,243 Line Kilo Metres (LKM). The estimated cost of the project is Rs.2932.99 crore and the project is proposed to be completed by 2019-20.

As on 31st October, 2018, surface coverage of 28485 LKM, out of 48,243 LKM has been achieved under 2D Seismic data acquisition under National Seismic Programme.

v. Policy Framework for streamlining the working of the Production Sharing Contracts- Under this Policy, Government has allowed 2 years extension in exploration period and 1 year in Appraisal period for operational blocks in NER besides allowing marketing including pricing freedom for natural gas produced in future in NER; sharing of the statutory levies including royalty & cess in Pre-NELP Exploration Blocks and to be cost recoverable with prospective effect; extending tax benefits under Section 42 of Income Tax, 1961 to operational blocks under Pre-NELP discovered fields prospectively.

vi. Re-assessment of Hydrocarbon Resources – A Multi Organization Team (MOT) comprising of representatives of ONGC, OIL and DGH has carried out estimation of hydrocarbon resource potential in the country. The prognosticated conventional hydrocarbon resources in 26 sedimentary basins of the country are of the order of 41.87 billion tones (oil and oil equivalent of gas), which is about 49% increase as compared to earlier estimates of 28.08 billion tones.

vii. Policy Framework for Exploration & Exploitation of Unconventional Hydrocarbons under Existing Production Sharing Contracts (PSCs), Coal Bed Methane (CBM) Contracts & Nomination Fields- Government has approved the policy to encourage the existing Contractors in the licensed/leased area to unlock the potential of unconventional hydrocarbons in the existing acreages. Under this policy, an area of 72,027 sq. km. held under PSCs and 5269 sq. km area under CBM contracts has been opened up for simultaneous exploration and exploitation of conventional or unconventional hydrocarbons.

CHAPTER 2

LITERATURE REVIEW

Tanvi Madan (2010) has examined India's current need and the projected energy demand by the year 2030. She has discussed in her article 'India's international quest for oil and natural gas: fuelling foreign policy' that how India's activities abroad related to the search for oil and natural gas would affect India's foreign policy. In this article, she has concluded to follow multilateral framework i.e. to focus on few major suppliers for energy security instead of overly depending on any one country or regions.

Demand for larger qualities of energy to sustain India's economic growth of an average 8 % would be more than double by 2030. Between 2030 and 2050, China and India together would account for around 50 % of the increase in global energy demand. Domestic supply of oil and natural gas is projected to account for almost one - third of consumptions by 2030. India's dependence on oil imports is expected to increase to 90 % by 2030 and in case of natural gas; about 50 % would be met from abroad. Due to continuing geopolitical uncertainty in the Middle East region, the Indian government has been following a strategy of diversification pursuing a number of options related to various energy sources as both domestic and international front. In this connection, there are four types of following activities which impact on India's foreign policy: i) Investment by Indian private sector and state-owned oil and gas companies in oil and natural gas abroad ii) Proposed natural gas pipeline projects iii) Bilateral purchase deals for oil and natural gas and iv) the energy diplomacy policy designed to facilitate these efforts. To facilitate all above, Indian diplomats and energy ministers have undertaken 'energy diplomacy' to supplement and diversify supply and attract investment and technology. For this energy security unit has been created and an international cooperation division to devise an international strategy to organize India's participation in bilateral and multilateral forums

The objective of the article 'India's Energy Security : Challenges and Opportunities' is to focus on the arising need of energy security issue as oil reserves are limited, production is declining due to poor recovery factors and R/P ratios are also declining . The author of present article, Bhupendera Kumar Singh (2010) has explained that besides oil price variations, which cause

volatility in stock markets, and business aspects are to be faced by all energy importing countries. He has also analyzed that for enhancing energy security, energy market integration and diversity of supply are important aspects securing reliable and affordable energy require adequate investment.

Given the continuing uncertainties with regard to supplies, energy security has emerged as a matter of priority and concern for India. Diversification of the oil and gas supply base is key to India's energy front. India has achieved some success on this front. India has sourced supplies from countries in Africa (15.69 %), Latin America (6.8%), South East Asia (0.038%) and CIS region (0.013 %) while maintaining its traditional supply line from the West Asia region (72.08 %), in the year 2009. With the aim of energy security, India has been developing more broad-based bilateral relations with energy surplus countries. The way forward to achieve energy security would include investments, free trade, energy efficiency and conservation. Energy efficiency plan would save energy around 5% of energy consumption by the year 2015.

The focus of the research article 'The Changing Dynamics: Gulf Energy Security (India and Gulf countries)' is on increasing insecurity and uncertainty of energy supplies from the Middle East countries, due to increase in their domestic energy consumption, decrease in oil reserves, political crisis on gulf energy projects. Bhupender Kumar Singh (2009) in this article has analyzed the 'peak oil' situation with decreasing oil reserves discovery rate of gulf countries and their impact on India and other Asian countries.

The author has explained that the energy security applies not only to oil importing countries but also to exporting countries of energy resources. Gulf countries have experienced many dynamic changes on the energy front. Firstly they are the main 18 suppliers of petroleum energy, many Gulf countries have witnessed increases in domestic energy consumption due to increase in per capita income (as a result of high prices), compelling them to diversify their energy sources. Secondly, many reports indicate a declination in oil reserves. Gulf countries are going to face the 'Peak oil' situation combined with decreasing oil reserve discovery rates. Thirdly, the market for energy exports is gradually shifting from the traditional destinations of the US and Europe to Asia, which has new emerged as a major market for energy exports. Fourthly, the global financial meltdown has drastically affected Gulf energy projects and stalled many energy projects.

Gulf countries might have sufficient oil, but unprecedented demand for electricity is staining and posing near-term challenges to growth. New oil field discoveries have been declining steadily for 40 years despite extensive exploration using the most advanced technology.

The global financial meltdown of the year 2008 has stalled many energy projects. The author has stated that it has become imperative for India to find out alternative source of supply of energy. It is surely possible for India to strive for good ties with the US, Non-OPEC (Russia) and Israel (without identifying too closely with their agenda in the gulf) and maintain close ties with the Arabs and Iranians.

An objective of the research article 'Gulf-Asia historical relations: An overview' has been stated by A.K.Pasha (2005) that India have been striving for good ties with the U.S and Israel and also maintain close ties with the Arabs and Iranians. For this, India has been following diplomacy with different countries. Indian diplomacy must rise to the level as it is presented with both challenges and opportunities in the energy rich but unstable Gulf. As India's energy needs are growing and everything possible must be done to secure close ties with oil producers in the Gulf and other energy rich countries. This has become vital for India's growth and prosperity. According to the author, India's policy in the Gulf should be free of US influence. After 9/11, it has become obvious that some countries, especially, Saudi Arabia, are looking to the East and finding an attractive partner as India. It has become essential to protect India's interests and prevent the spread of violence and terrorism from this volatile region.

The GCC monarchies are willing to share power with their own people and reduce their dependence on the US. Instability, religious extremism and terrorism in the Gulf and West Asia have the potential to spill over into South Asia, since the security and stability of both regions are mutually interlinked through a number of factors

Yergin Daniely (2006) has stated that Energy security has become a question of national strategy, in his article 'Ensuring Energy Security'. The author has stated "Safety and certainty in oil" lie in 'variety and variety alone'. The renewed focus on energy security is driven in part by an exceedingly tight oil market and by high oil prices. It is further fueled by the threat of terrorism, instability in some exporting nations, a nationalist backlash, and fear of a scramble for supplies,

geopolitical rivalries and countries fundamental need for energy to power their economic growth. The author has focused on the key to energy security i.e. diversification. For Russia, the aim is to reassert state control over strategic resources and gain primacy over the main pipelines and market channels through which it ships its hydrocarbons to international markets. For India and China, energy security lied on their ability to rapidly adjust to their new dependence on global markets, which represents a major shift-away from their former commitments to self-sufficiency.

A new energy security framework/model was created in response to the 1973 Arab oil embargo. To maintain energy security countries have to abide by several principles as below: i) Diversification of supply multiplying one's supply sources reduces the impact of a disruption in supply from one source by providing alternatives, serving the interests of both consumers and producers, for whom stable markets are a prime concern. ii) A second principle is resilience, a "security margin" in the energy supply system that provides a buffer against shocks and facilities recovery after disruptions iii) recognizing the reality of integration. There is only one oil market, a complex and worldwide system that moves and consumes about 86mn barrels of oil every day, iv) Fourth principle is the importance of information on an international level; the IEA has led the way in improving the flow of information about world markets and energy prospect

The challenge of energy security would be growing more urgent in the years ahead because the scale of global trade in energy would grow substantially as world markets become more integrated. Inevitably, there would be shocks to energy markets in future mainly because of disruptions in the Middle East and Africa or Latin America. So diversification would remain a fundamental starting principle of energy security for both oil and gas besides developing a new generation of nuclear power and 'clean coal technologies' and encouraging renewable energy sources. In a world of increasing interdependence, energy security would depend much on how countries manage their relations with one another, whether bilaterally or within multilateral framework

The objective of the article 'Asian Energy security: The role of China and India' is to present the argument that energy security threat does not necessarily come from resource depletion alone but inefficient and demand-driven production, are also responsible for supply shortages. Jiejum Ni and Fengying Chen (2008) have stated that energy security has made the global security indispensable as the interests of the energy-producing and energy consuming countries are now closely inter

locked. Economics globalization, coupled with geopolitical instability and international terrorism has made it impossible for any single country to secure its energy supply entirely on its own. The article focuses on the need to expand energy security. The real risks are not 'below ground' (a lack of resources) but 'above ground' (political instability). India and China could find out the ways to corporate on energy rather than taking adversarial position. Both together could help to strengthen Asian unity, stability and prosperity and thus significantly can contribute to the world order. The article is based on IEA forecast which asserts that two-thirds of the rising energy demands between 2002 and 2030 would be from developing countries with their consumption ratio rising from 38 % to 48 % and that for OECD members dropping from 52 % to 43 %. Non-members suppliers like Russia and countries in central Asia, Africa and Latin America are challenging OPEC dominance.

The author has focused to have diversity and cooperation as the main principles to maintain energy security in the Asian region. All Asian members have common interests in price stability, ensuring energy supply, protecting environment, 21 conservation and energy security. The authors have emphasized the necessity to set up a regional energy organization like the IEA and Asian Financial Cooperation to allow all key players to work together to deal with challenges of energy security

For the world energy system, the last decade has been an extraordinary shift in expectations when prices for oil and most energy commodities rose sharply and become more volatile. Energy security became an important issue of concern. Producers and consumers were not sure of each other. It had become difficult for governments to manage the world energy system as the crisis was increasing. The issues of concern are:

- Shift in sources of consumption- Most of the future growth in demand would be from emerging market countries, notably China and India. An era of growing demand for oil and other fossil fuels in the industrialized countries is over. Environmental impact of energy use is also of growing concern especially emissions of carbon dioxide.
- OPEC, the big oil producer i.e. the cartel even has no power to guarantee demand for the products i.e. demand security. So, a 'Energy Stability Board' could be created to help government and existing international institutions to better manage energy problems of 21st century like the 'Financial Stability Board'. It could work with major energy

consumers like China and India to set investment standards that both align with their interests and are consistent with the market rules that govern trade in energy commodities.

The objective of the article 'India and its Energy Security Strategy' of 'Devika Sharma' (2010) is limited to a specific theme of India's energy security strategy to be followed at domestic level and at external level. The author has stated that energy diplomacy policy to be followed by India to achieve energy security. Energy security 23 is more than just about managing the demand-supply dynamic or energy trade between nations. In reality, countries attempt to address their energy needs in multiple ways at multiple levels. A decision to expand nuclear energy is not only about sourcing uranium and inking civil nuclear energy deals with leading nuclear energy countries but equally about putting in place a financial plan that apportions priority to nuclear energy infrastructure.

An objective of this research article is to state the rising importance of energy in the country, energy security as one of the prime goals of foreign policy and to focus on energy diplomacy. The last decade has witnessed several vision and strategy documents to the energy sector. The author has highlighted India's strategy on energy priorities in the energy sector as follows:

i. Recognition of India's growing demand for energy has brought about a multifaceted attention to energy that straddles reform in the regulatory sector.
ii. The integrated energy policy stated the internal 'energy poverty' dimension clearly: the broad vision behind the energy policy is to reliably meet the demand for energy services for all sectors at competitive prices. Lifeline energy needs of all households must be met through safe, clean and convenient forms of energy at the least cost in a technically efficient, economically viable and environmentally sustainable manner (Planning Commission 2006).
iii. A major component of India's energy security strategy is about seeking self-reliance and energy independence. The 'India Hydrocarbon Vision- 2025' document has focused mainly on assuring energy security by achieving self-reliance through increased indigenous production (and investment in equity oil abroad).
iv. Diversification of India's energy basket has been another major plank of the country's energy strategy.

v. As India becomes a bigger energy consumer, it needs to ensure that energy services are provided in an efficient, transparent and accountable manner.

vi. In the last one decade, energy has become a critical component of almost all bilateral and regional/ pluralateral (such as the BRICS, SAARC) high levels meetings that India has been part of priorities of India's external energy security strategy:

vii. India has been making concrete efforts to cast its net wide imports from not only Africa but also Latin America and Central Asia. The diversification of fuels has been responsible for India building new energy India has inked civil nuclear agreements with seven countries, namely, the US, France, Russia, Namibia, Mongolia and Kazakhstan and Australia.

viii. India is to move towards greater self-sufficiency expanding the role of solar energy i.e. renewable sources of energy.

ix. Apart from diversification of sources, India's external energy strategy has also included the identification of alternative routes, focusing on the possibility of not only pipelines but also swap arrangements that would help circumvent routes, which are unsafe

x. Identifying secure ways of bringing energy to India through maritime security of the Indian Ocean.

xi. The growing competition between India and China is to be managed in a balanced manner not only within South-Asia but also in Africa, West-Asia and Central Asia.

xii. Equity investment in overseas oil and gas fields have been crucial aspect of India's energy security strategy

xiii. India's growing role in energy arena in its growing participation in the various energy related institutional frameworks at different scales that is from regional to the Multilateral like IBSA/ BRICS/SCO. India has already been involved in the International Energy Forum (IEF) and expanding interaction with IEA and the Energy Charter Treaty.

Biju Thomas (2007) in his article 'Putin's India Policy: Mutual gains for future', the importance of India in Russia's foreign Policy is rather strategic than economic and increased after Putin became the president. Despite Putin's westward orientation much of the contradictions remain. Putin's policy is to retain India as a major strategic partner not only to balance China but also

because of India's unique geographical position in the Indian Ocean. It is gainful for India as its relations with the US remain unpredictable and Russian support is essential to take part in the political and economic developments in central Asia. Russia could also satisfy the arms and energy requirements of India. India and Russia are complementary to each other for defense and energy.

Mikhail Y. Pavlov (2006) has focused on economic and environmental conditions, which require seeking global, long-term energy security based on renewable, nonpolluting sources and technologies. He has emphasized in his article 'A new energy Paradigm for the third millennium' that the era of fossil fuels is gradually drawing to an end and a new energy paradigm for the third millennium would be required. The energy basket changes in time and its dynamics might not coincide with the dynamics of economic growth. Energy saving technologies can transform the whole basket. The new paradigm 'energy of the future' focuses on the effective utilization of the potential energy resources giving priority to energy to energy saving, innovative technologies and renewable energy sources as the basic for human development taking into account the interests of the present and the future generations.

The overall objective of the new paradigm 'Energy of the Future' is the transition from our imbalanced 'energy, ecology, economic' to a harmonious one. One of the priorities of the new energy paradigm is to support those technologies that are capable of raising the economy to a completely new stage of development based on the inexhaustible renewable energy sources while providing safety for the environment.

Markal based Pakistan's Energy System Model" 'Analysis of Energy security using Partial Equilibrium Model: A case of Pakistan' by Javed Anwar(2004): Restricting energy imports and total primary energy supply are the two direct policy options used for the improvement of energy security. Restricting energy imports directly reduce energy import dependency that leads to diversification of energy resources and ultimately enhances energy security. Total energy supply reduction affects the energy security through the diversification of efficient technology mix and energy resources supply mix. The paper has examined the effects of restricting energy import and primary energy supply on diversification of energy resources, technology mix in energy supply side and demand side, energy efficiency, energy conservation and energy security during the planning horizon 2005-2050. The analysis are based on a long term integrated energy system

model of Pakistan using the MARKAL framework to analyze the long term affects of different policy options during 2000- 2035. The study makes use of MARKAL based least cost energy system model for the analysis of energy security in case of Pakistan (Ioulou et al., 2004). The effects related to energy security are represented through a set of energy security indicators such as energy import dependency, diversification of energy resources through a set of energy security indicators such as energy import dependency, diversification of energy resources through DOPED and SWI and vulnerability.

CHAPTER 3

RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problems. It guides the researcher to do the research scientifically. It contains of different steps that are generally adopted by a researcher to study his research problem along with the logic behind them. Data become information only when a proper methodology is adopted. The research methodology includes the logic behind the methods we use in the content of our research study.

The Research design used in this study was descriptive research design. It includes surveys and fact-finding enquiries of different kinds. The main characteristic of this method is that the

The most of important part and main strength of project comes from the process of collecting; classification and analyzing work will depend upon the methodology. It is in a way proposed plan of the study.

Research Design:

A research design is the arrangement of condition for collection and analysis of data in a manner which may result in an economy in procedure. It stands for advance planning for collection of the relevant data and the techniques to be used in analysis, keeping in view the objective of the research availability of time.

There are three types of research designs. They are,

- Exploratory research design.
- Conclusive research design.
    1. Descriptive research design.
    2. Causal research design.
- Performance monitoring research.

Researcher has no control over the variables; he can report only what has happened or what is happening.

Sampling Techniques:

The simple random sampling technique was employed in the selection of the sample.

Data Collection Method:

The data collection method for the study the researcher should keep in the mind the two sources of data.

- Secondary data.

Study Conducted

The primary data was gathered through personal interaction. The information was gathered from the structured questionnaire

Secondary Data:

Secondary data has been collected from the Company Website, Internet etc.

CHAPTER 4

DATA ANALYSIS

Facts

- India's petroleum and natural gas minster, Dharmendra Pradhan, recently announced that the ministry will hold a new auction for oil and gas exploration blocks.
- This auction will be the first under a relatively new exploration and licensing policy passed in March 2016 known as the Hydrocarbon Exploration and Licensing Policy (HELP).
- HELP unifies the authority to grant licenses for exploration and production (E&P) of conventional and unconventional oil and gas resources, including oil, gas, coal bed methane, shale gas/oil, tight gas, and gas hydrates.
- HELP introduces an Open Acreage Licensing Policy (OALP) that will allow companies to approach the government at any time and seek permission to explore any block. It also gives companies access to the National Data Repository (NDR) maintained by the government, to consult these maps and data to help inform them about which areas to bid on. Previously, companies had to wait for formal bid rounds by the government, and E&P activity was restricted to only those blocks offered for bidding by the government.
- The previous licensing policy, New Exploration Licensing Policy (NELP), was criticized for its narrow scope (it required companies to obtain a separate license if they discovered unconventional oil or gas that was not covered under the initial permit) and for the production sharing and marketing relationship with the government, which was seen as burdensome.
- HELP changes India's E&P policy in the following ways:

Policy category	HELP	Pre-HELP
Types of hydrocarbon	Covers all conventional and unconventional oil and gas	NELP covered only conventional oil and gas; Coal Bed Methane Policy covered coal bed methane
License	A single license for exploration and extraction of all types of oil and gas	Separate license required for conventional oil and gas, coal bed methane, shale oil and gas, and gas hydrates
Revenue model	Revenue-sharing model under which revenue will be shared with the government in the ratio submitted by bidders	Production/profit-sharing model under which government received a share in the profits
Coverage	Open acreage policy under which exploration companies can apply to explore any block not under exploration	Exploration was restricted to blocks opened for bidding by the government
Oil and gas pricing	Companies have the freedom to sell their production domestically without government intervention	Crude oil price was based on import parity; gas price was fixed by the government
Royalty	Concessional royalty for deep water (5 percent) and ultra-deep water (2 percent) areas, which are difficult to explore, and reduction of royalty in shallow waters (from 10 percent to 7.5 percent)	12.5 percent for the onshore areas and 10 percent for offshore areas; 10 percent for coal bed methane

Opinion

At its very core, HELP marks the biggest transition from an era of government control to government support for upstream E&P in India. OALP removes restrictions on exploration by giving companies both the data and the discretion to explore areas of their choice. India's upstream oil and gas E&P policy has been subject to criticism, with protectionism and government red tape being blamed for lackluster development of oil and gas upstream. A policy that will encourage upstream investment and improve productivity could help incentivize more private and foreign entrants into the oil and gas sector.

Despite the positive moves to open up and liberalize exploration opportunities in India, it is likely

that the new policy will have a small impact on India's oil and gas supply and demand balance. India's modest oil and gas production currently stand at 876, 000 barrels per day of oil and 1,030 billion cubic feet of natural gas. India is dependent on imports to meet its hydrocarbon needs, with around 80 percent of its crude oil needs and close to 40 percent of its gas needs met through imports. The existing oil fields have matured, and production at these fields has either plateaued or begun to decline. The Indian government's aim is to reduce its import dependence by 10 percent. Domestic needs that can be met by any new production will only be a fraction of India's consumption needs, as India's resource base limits the potential for domestic production. Increasing domestic supply is but one part of a broader strategy to manage import dependence issues, which also includes the buildup of strategic petroleum reserves and investment in upstream assets overseas. The competition for capital in upstream oil and gas companies is fierce, with oil prices at lower levels and companies cutting back on spending. Whether the reforms combined with a recent and tenuous oil price recovery are enough to spur investments is yet to be determined. In line with the Government initiative of ease of doing business, the Union Cabinet chaired by Prime Minister Shri Narendra Modi has given its approval for delegating the powers to Minister of Petroleum and Natural Gas and Finance Minister to award the Blocks/Contract Areas to successful bidders under Hydrocarbon Exploration and Licensing Policy (HELP) after International Competitive Bidding (ICB) based on the recommendations of Empowered Committee of Secretaries (ECS). Under HELP, Blocks are to be awarded twice in a year. Therefore, this delegation of powers will expedite the decision making process on awarding blocks and give a boost to the initiative of ease of doing business

Under the NELP Policy, ECS considers the Bid Evaluation Criteria (BEC), conducts negotiations with the bidders wherever necessary and make recommendations to CCEA on award of blocks. The CCEA approves the award of blocks. The entire process, including Inter Ministerial Consultations (IMC) is quite lengthy and time consuming. In consonance with the Government initiative of 'Ease of Doing Business', it is desirable to shorten the duration of time taken for award of the Blocks / Contract Areas. Under the New Hydrocarbon Exploration and Licensing Policy' the competitive bidding will be continuous and blocks will be awarded twice a year.

Government of India launched a new policy regime for Exploration & Production (E&P) sector namely Hydrocarbon Exploration and Licensing Policy (HELP) in 2016 which is paradigm shift from earlier policy regime. The main features of new Policy regime are Revenue Sharing Contract, single License for exploration and production of conventional as well as unconventional Hydrocarbon resources, marketing & pricing freedom, etc. Open Acreage Licensing Policy (OALP) under HELP, is main innovative feature wherein investor can carve out Blocks of their own interest and submit an Expression of Interest (Eol) throughout the year. Based on the areas for which expression of interest has been expressed bidding will be conducted every 6 months.

Government received an overwhelming response in first Eol cycle of OALP which started on 1st July, 2017 and closed on 15th November, 2017. In the first Bid round, 55 blocks, having an area of 59282 sq.km spreading across 11 States have been offered for bidding. The bidding process is being handled through a secured and dedicated e-bidding portal.

Last couple of years has seen implementation of major policy reforms in upstream hydrocarbon segment in India and many others are under consideration. All such policies/guidelines being considered or implemented by the Government in the interest of the upstream Oil and Gas sector are listed below:

1. Discovered Small Field (Marginal) Field Policy: To reduce the import dependency of hydrocarbons, it is pertinent to effectively exploit the established reserves and increase the indigenous production. It was observed that many discoveries made in Nomination blocks are not monetized and are categorized as Marginal fields. Government of India in October 2015 announced Marginal Field Policy which was later rechristened to Discovered Small Field Policy. This policy will help to monetized more than 85 MMT (O+OEG) reserves. It will boost production and provide increased revenue to both government and contractor. Highlights of this policy are as follows:

- **Revenue Sharing contract :** A simple and easy to administer contractual model in line with Government's effort to promote 'Ease of doing business' requiring minimum regulatory burden for field monetization.

- **Single license for Conventional & Non-conventional hydrocarbon :** Single license for explore and extract all hydrocarbon resources, including CBM, Shale gas/oil, tight gas, gas hydrates and other resources to identified in future.
- **No restriction on exploration activity during contract period :** Contractor will be allowed to carry out exploration during entire contract duration .
- **Eligibility for Bidding :** Up to 100% participation by foreign companies, Joint ventures will be allowed. No mandatory state participation and no carried interest by ONGC and OIL are envisaged.
- **Crude Oil & Gas Pricing and Sale :** Contractor will be free to sell the crude oil and Natural Gas exclusively in domestic market through a transparent bidding process at arm's length.
- **Oil Cess & Royalty :** No Oil Cess will be applicable on crude oil production however, Royalty rates will be as under NELP regime.
- **Custom duty :** Customs duty exemptions for specified goods and services will be available for contract areas.

2. New domestic Natural Gas Pricing Guidelines: In order to strengthen the developing Gas market in the country, Government of India started pricing reforms for the natural gas sector by approving new gas pricing scheme in October 2014. This policy is based on the prevailing hub prices of United States, Mexico, Canada, Europen Union and Russia. The price has revision cycle of six months and will be applicable to all sectors uniformly. Continuing the further reforms in pricing on 21.03.2016 government approved marketing and pricing freedom for Gas discoveries in Deep-water and Ultra Deep-water areas which are yet to commence commercial production as on 01.01.2016 and all such future discoveries. This shall incentivize exploration and production in Deep/Ultra deep/High Pressure High Temperature (HPHT) areas and will unlock huge hydrocarbon potential. Further with a view to protect the interests of the consuming sector as well as paying heed to the requests from producing sector, a ceiling based on the landed cost of the alternate fuel has been imposed. The ceiling price in US $ per mmbtu (GCV) shall be calculated as lowest of the (i) Landed price of imported fuel oil (ii) Weighted average import landed price of substitute fuels and (iii) Landed price of imported LNG. The landed price-based ceiling will be calculated once in six months and applied prospectively for the next six months.

3. Hydrocarbon Exploration Licensing Policy (HELP) – On 10th March 2016, Government approved Hydrocarbon Exploration Licensing Policy (HELP) which is based on new contractual model i.e. Revenue Sharing. As the model is centered around a matrix of biddable revenue share vis-a vis level of production by the Contractor itself, it is expected to eliminate the areas of disputes related to cost recovery, Investment multiple calculation, cost of unfinished work program, rigidities of timelines, delays in implementation of FDP etc. The implementation of RSC model is envisaged to minimize regulatory burden for the sake of ease of doing business, and increase the ease of business in India for both National and International contractors. Major highlights of HELP is as follows:

- Open Acreage Policy-option to select the exploration blocks without waiting for formal bid round.
- Revenue Sharing Model-simple, easy to administer- no cost recovery – no micro-management by the Government – operational freedom to the operator
- Pricing and Marketing Freedom- a major incentive for investment
- Single License for exploration and production of conventional as well as non-conventional hydrocarbon resources
- Exploration allowed through-out the contract period .
- Increase in exploration phase- Exploration Phase for onshore areas have been increased from 7 years to 8 years and for offshore increased from 8 years to 10 years.
- Reduced Royalty rates for offshore blocks .

4. Policy for extension of Production Sharing Contracts (PSC): To enable Oil and Gas companies recover the balance reserves from fields after expiry of PSC, Government of India on 10th March 2016 approved policy for the grant of extension to the Production Sharing Contracts for small and medium size fields. This policy provides for a uniform, non-discretionary framework for extension of contract in respect of 28 Pre-NELP discovered fields. The extension has been granted for a period of 10 years both for Oil and Gas. During the extension period, it is proposed to increase the Government take by way of charging normal royalty and cess in place of

concessional royalty and cess charged during the original contract period. The profit petroleum during extension period will also be 10 percent higher than the normal percentage.

5. Policy for testing requirement: To resolve the dispute related to testing requirements and to monetize the stuck up discoveries, Government in Cabinet Committee on Economic Affairs (CCEA) meeting held n 29.04.2015 approved the policy on Testing Requirement for discoveries in NELP blocks. This decision of was implemented on 13.05.2015. The contractors are now allowed to carry out the pending drill stem test on the discoveries and submit the results in a specified time line. Testing is being carried out on all concerning/applicable discoveries which were stuck up earlier.

6. National Data Repository (NDR): To consolidate and store all the Geo- scientific data available in the country and to create a base for Open Acreage Licensing Policy, GoI has taken initiative to build National Data Repository (NDR) for Oil and Gas Industry in India. Site preparation work for NDR project at 5th and 6th floor of DGH office, Noida and Commissioning of Hardware and integration of Software at the site has been completed. Initial population of data is in progress and the priority data pertaining to reassessment of 26 sedimentary basins is being loaded. As on 31.03.2016, total 169144.77 LKM 2D Seismic data, 15716.28 SKM 3D Seismic data, 237 well and log data and 618 well reports is loaded in NDR.

7. Site Restoration Guidelines on petroleum operations: Government of India has constituted a committee for formulation of Site Restoration guidelines for petroleum operations. An internationally reputed consultant was hired. The consultant had submitted draft report, which was reviewed by the committee members. Recommendation of committee members is finalized, adopted and submitted to Ministry for notification.

8. Standing Committee on Petroleum Industry Practices: Government of India has constituted Standing Committee on Petroleum Industry Practices, to identify the areas requiring codification of "Good International Petroleum Industry Practices (GIPIP)" and to prepare national codes for petroleum operations. An internationally reputed consultant has been hired. The consultant had submitted the report in 2015. Subsequently to several deliberations with all stakeholders, the report

was suitably modified and standing Committee has approved, adopted the report and submitted to Ministry for notification.

9. Encouraging E&P activities in North East India: To encourage hydrocarbon exploration and production activities in the North East (NE) Region of India, Government of India carried out special study with consultant for framing Hydrocarbon Vision Document 2030 for NE India. The vision document was released at Guwahati on 09.02.2016. This vision document aims to prepare a roadmap for the next 15 years to increase the production of oil and gas in northeast India and outline the necessary investment in the hydrocarbon sector to increase exploration activities, expand the piped natural gas (PNG) network and ensure availability of petroleum products, including LPG, in the remotest corners of the region. The vision rests on the following five pillars viz.

People, Policy, Partnerships, Projects and Production. For implementation of the action plans emerged from this vision documents, an Executive Council is formed consisting of government officials and industry stakeholders.

10. Policy Framework for Relaxations, Extensions and clarifications at the Development and Production stage under PSC regime for early Monetization of hydrocarbon discoveries: To address various issues and concerns regarding PSCs, the policy framework for relaxation, extensions and clarifications at the development and Production Stage under the PSC Regime was notified in November 2014. As a result of implementation of these guidelines, more than 40 long pending PSC related issues have been resolved.

11. Exploration in Mining lease areas: Government of India has formulated a policy to allow exploration in Mining Lease Area with cost recovery subject to establishment of commerciality. Till 31.03.2016, 15 hydrocarbon discoveries (14 Oil & 1 Gas) have been notified in the Mining Lease (ML) areas after announcement of above policy. Document of Commerciality (DoC) for one discovery D-55, from the Block KG-DWN-98/3 is submitted.

12. Multi-client Geo-scientific surveys: Seven proposals have been received for generation of approx. 107386 LKM 2D Seismic data, under the policy for Geo-scientific data generation for

hydrocarbons in Indian sedimentary Basins, through Non-exclusive Multi-Client Geo-scientific surveys/ Activities. All the seven proposals have received clearances from Ministry of Defence (MOD) and Ministry of Home Affairs (MOHA). M/s Electromagnetic Geoservices ASA, Norway, started data acquisition in West Coast of India.

13. Re-assessment of prognosticated hydrocarbon resources of India: A Multi Organization Team (MOT) has been constituted to carry out re-assessment of hydrocarbon resources of India in all its 26 sedimentary basins. The project to be carried out by ONGC in association with OIL and DGH. Work has been initiated at seven work centers of ONGC for eight priority basins. Entire work for all 26 sedimentary basins is expected to be completed by November, 2017.

14. Appraisal of Un-appraised Sedimentary areas: Out of total sedimentary area of 3.142 Million Sq. Km, an area of 1.502 Million Sq. Km is yet to be appraised. Appraisal of sedimentary basin has been defined as the status of knowledge building efforts for evaluating hydrocarbon prospectively of the basin though Geological studies, Geophysical surveys and exploratory drilling. To appraise un-appraised areas, MoPNG has formulated a plan to conduct 2D seismic surveys in all sedimentary basins of India where no/scanty data is available. ONGC and OIL have been entrusted with the task of surveying these areas. OIL has been assigned to carry out 2D seismic API of 7408 LKM falling in North eastern part of India and ONGC has been assigned to carry out 2D seismic API of approx. 40835 LKM seismic data in onland part of 22 sedimentary basins of India. Currently the tendering work for carrying out seismic surveys is under progress.

15. Policy Guidelines of Exploration and Exploitation of Shale Gas and Oil: Shale Gas and Oil Policy was announced on 14th Oct 2013 and under this Policy the right to exploration and exploitation of Shale Gas & Oil has been granted to the National Oil Companies (NOCs) holding Petroleum Exploration License (PEL)/Petroleum Mining Lease (PML) granted under the nomination regime. NOCs has identified 55 blocks for Assessment Studies during the Phase-I of three years. Currently 18 wells have been drilled by ONGC and results are encouraging. Further NOCs will identify 80 blocks under Phase-II of three years and 55 blocks in Phase-III. Each Phase will culminate in a development and production phase depending on the results of the Assessment Phase.

Shri Dharmendra Pradhan calls for expanding the supply and availability of energy in a safe and environmentally responsible and sustainable manner; Seeks continuous cooperation and collaboration with other countries

Minister of State (I/C) for Petroleum and Natural gas, Shri Dharmendra Pradhan, launched the National Data Repository (NDR) and Open Acreage Licensing Policy (OALP) under the progressive, market driven Hydrocarbon Exploration and Licensing Policy (HELP) of Government of India in New Delhi today.

Speaking at the event, Shri Dharmendra Pradhan said that the launch is an important event in the history of India's Hydrocarbon Industry. Hon'ble Prime Minister gave the mandate for a modern, progressive, investor friendly world class policy for the next bidding round. He said that with the experience of several litigations and not very encouraging production output from NELP rounds, the Ministry decided not to go for incremental policy change but to have a completely new policy. Hydrocarbon Exploration and Licencing Policy (HELP) is an outcome of this.

Shri Pradhan said that the New India is agile; the New India is enterprising. It is keen to meet investors and eager to adopt new ideas. Our policies are industry friendly and transparent; we have created an enabling environment for industrial investments that has grown at an unparalleled speed in the last few years.

Citing that FDI in India was at the highest level in 2015-16 at a time when the global FDI had fallen, Shri Pradhan emphasized on Government's efforts to improve 'Ease of Doing Business'. He said that the recent introduction of the Goods and Services Tax, or the GST, from the 1st of July will be a path breaking step towards good time in Indian business and economic development. HELP, also, will make an equally significant impact, he added.

Exploration and production sector has remained a focus area for the Government, more so after Hon'ble PM set a target to reduce import dependence by 10% by 2022. Shri Pradhan said that out of 42 Cabinet decisions taken during the last 3 years in O&G sector, 22 are on E&P sector. They range from gas price reform; to 9-points PSC reform; to streamlining CBM sector; to extension of Pre-NELP blocks; to holding DSF rounds etc. These policy decisions have powered the Government to undertake about 10 significant reform measures, which will benefit industry participants in the E&P sector. These reforms range from National Seismic Program; to Discovered Small Field Policy; to reform initiatives for enhancing domestic production such as incentive for production from difficult areas; to HELP and so on, he added.

The Minister said that as much as 52% of India's sedimentary basins are still unapprised and the last seismic data acquisition of the unapprised sedimentary basins was undertaken by the Government nearly 25 years ago. Thus the National Seismic Program was started last year. At the same time, the Government has also taken up a reassessment of hydrocarbon data of existing sedimentary basins for fresh volume estimation. The Government also came out with policy on Discovered Small Fields, and the first bidding round under DSF has been a resounding success with 44 fields awarded.

The Minister said that the Government is also working proactively on a number of other fronts to make the upstream sector vibrant. On the regulation side, marketing and pricing freedom has been given to operators for blocks awarded under CBM, DSF, difficult areas and HELP policies. The Government is also working on creating necessary supporting infrastructure – work on the National Gas Grid, including Pradhan Mantri Urja Ganga, has been fast-tracked.

Shri Pradhan said that the Government is also coming up with new policies on EOR-IOR ; Production Enhancement Contract; Shale Oil & Gas Policy for NELP and Pre-NELP blocks, Next set of PSC Reforms, 2nd Bidding Round under DSF policy, and so on.

The Minister added that the Government remains committed for making sustained and significant efforts to liberalize the sector by simplifying processes, increasing market access and bringing developments in the technology domain with the aim to enhance the efficiency of our oil and gas industry. He said that greater choices for investments in the sector are being offered.

National Data Repository has come forth as an integrated data repository of E&P data of the Indian sedimentary basins, in line with the Digital India initiative of Hon'ble Prime Minister. We expect Open Acreage Licensing to accelerate exploration activities in the country since investors can express their interest in an area which they feel has prospective without waiting for formal bidding.

Union Petroleum and Natural Gas & Skill Development and Entrepreneurship Minister Shri Dharmendra Pradhan has called for expanding the supply and availability of energy in a safe and environmentally responsible and sustainable manner. In the Welcome session of the PETROTECH-2019, the 13th Edition of India's flagship hydrocarbon Conference, today at India Expo Mart, Greater Noida, he said that said that Energy is integral to support the fast growing Indian economy and we are working to deliver energy justice to the poorest of the poor by adopting

the four pillars visualized by Hon'ble Prime Minister Narendra Modi that is Energy access, Energy efficiency, Energy sustainability and Energy security as our guiding principles.

Welcoming the ministers from abroad and other delegates, Shri Pradhan said that in the next three days, the recent changes that have taken place in the Indian hydrocarbon sector and how these are impacted by the prevailing global oil and gas dynamics, will be presented. He said PETROTECH will also serveas a platform to discuss solutions to the challenges that we face not only in India, but also in our respective countries, in delivering affordable, efficient, clean and assured energy supplies to all our citizens. The theme of this conference is - *Shaping the New Energy World through Innovation and Collaboration'*.

Shri Pradhan said that today India is the fastest growing economy in the world. The robust growth of India has been achieved through a series of policy reforms focused on improving India's long-term economic and social prospects. With clear focus on investment friendly reforms initiatives and removal of policy bottlenecks, India has made remarkable jump in World Bank's ease of doing business ranking from 142 in 2014 to 77th position in 2018.

Talking about the dramatic shift in energy sources and consumption in the world, Shri Pradhan pointed out that prominent global trends shaping up in this regard-Big shift in energy consumption from Europe to Asia, United States becoming the world's largest oil and gas producer after the

shale revolution, Solar energy emerging as a competitive and most sustainable energy alternative, Share of Natural Gas in the global energy mix rising, Convergence of cheaper renewable energy technologies, digital applications and the rising role of electricity forming the basis for achieving many of the world's sustainable development goals, and Countries coming together to tackle climate change, including through global collaboration such as International Solar Alliance.

Shri Pradhan said that there is going to be a significant increase in the energy demand over the next 20 years and oil and gas are likely to remain prominent fuels in the global energy basket. However, given the increasing emission and CO_2 levels globally, it is also important that we take care of challenges arising out of global warming. This calls for expanding the supply and availability of energy in a safe and environmentally responsible and sustainable manner.

Shri Pradhan said Oil & Gas sector is a key contributor to India's economy and accounted for almost 55% of our energy mix in 2017. India is the third largest consumer of crude oil and petroleum products globally, accounting for 4.5 % of world oil consumption. He said that several measures have been taken to overhaul the hydrocarbon policy framework to ensure energy security for the country while pursuing the green path to progress. India's upstream sector is an important focus area in this respect. Several transformational policy reforms have been taken to revitalize the E&P ecosystem and establish a conducive business environment which would facilitate investments and boost domestic production. In this regard, he mentioned about the success of HELP, DSF policy, and OALP. He also talked about other policy reforms including marketing and pricing freedom for natural gas produced from deep and ultra-deep waters and High Pressure High Temperature areas, Coal Bed Methane, incentive for Enhanced Recovery for augmenting production of oil and gas from matured fields, exploration and exploitation of unconventional hydrocarbon from all fields. He said state-of-the-art National Data Repository has been set up to facilitate potential investors to take informed decisions based on the geo-scientific data of hydrocarbon resources in the country.

Talking about the international cooperation in the sector, Sh Pradhan said that today, Indian Oil and Gas companies are present in 28 countries with investments worth approximately 38 billion US dollars. During last 3 years, Indian companies have acquired strategic stakes in overseas assets in UAE, Oman, Israel and Russia. In downstream sector too, India has been able to attract global investments. Leading players like Saudi Aramco, ADNOC, Total and Shell are expanding their

footprints in India's energy space and looking to invest more in the Indian oil and gas market. Fuel retailing in India is also witnessing increased private sector participation.

The Minister said that in addition to the general development of the hydrocarbon industry, we have also focused on improving the ease of living of the common people by enhancing access to clean cooking fuel which we have called the Blue Flame Revolution. We introduced UJJWALA scheme, under which we targeted to provide LPG connections to 80 million households, out of which64million households have already been provided the LPG connections within a short span of three years.

Shri Pradhan said that we have been working to make India a gas based economy. We have over 16,000 km long gas pipeline network and additionally another 14,000 km gas pipelines are under different stage of construction. We have embarked upon the ambitious projects such as 3200 KM long Prandhan Mantri Urja Ganga Project and1600 KM long Indradhanush Gas Grid to connect eastern and north eastern parts of India with the National Gas Grid, The LNG infrastructure in the country is also being expanded rapidly. New LNG terminals are under construction on both the east and west coasts of the country. He said that clean-fuel based transportation has been given a major impetus. India is shifting directly from BS-IV to BS-VI standards for fuel from April 2020. The supply of BS VI quality fuel has already begun in national capital of Delhi from April 2018. Ethanol Blended Petrol Program is being implemented and National Biofuel Policy to promote alternate fuels has been introduced. The expansion of city gas distribution has been expedited in the country with 86 new geographical areas granted authorization in 2018 and bids for another 50 new areas are under evaluation for authorization. In next few years, we expect 70% of India's population and 53 % of the country's area shall get covered with city gas distribution networks. LNG is being promoted as a transport fuel for long haul trucking along expressways, industrial corridors and inside mining areas. Very soon, we will have LNG refueling along some of our national highways.

Calling for continuous cooperation and collaboration with other countries to help maintain a stable oil and gas market globally, Shri Pradhan said that India has had long standing trade relations with major oil and gas producers in the world. This relation, till recently, was only a buyer-seller relationship. Under the guidance of Prime Minister Modi, we have been able to convert our traditional buyer-seller engagements into strategic partnerships through bilateral investments.

The Union Minister of Petroleum and Natural Gas & Skill Development and Entrepreneurship Minister Shri Dharmendra Pradhan also inaugurated the Petrotech exhibition.

Sector going through policy transition

India's hydrocarbon space will test the patience and policy consistency of the government of the day in the coming years as the country's exploration policy enters a transition phase.

Life of the New Exploration Licensing Policy (NELP) regime may remain only for the next 10-15 years, as the country's entire oil and gas exploration as well as production business is shifting to Hydrocarbon Exploration Licensing Policy (HELP)-Open Acreage Licensing Programme (OALP).

In many countries, there are multiple models — revenue sharing, production sharing or customized — but these are places where the oil industry plays a dominant role.

In India there are mainly three different categories — nomination basis: areas given prior to auction rounds; pre-NELP and NELP: where areas were given through auctions based on production

sharing contracts; and HELP regime — a uniform licensing regime based on revenue sharing model and OALP.

"Yes, all three can co-exist, but the challenge will be in implementation. The government of the day will be under pressure to ensure that there is no interruption in this high risk business due to policy issues," an oil industry tracker said.

But, the moot point is whether HELP will turn the tides for India in meeting its energy demand. HELP is just taking baby steps and by the time it stabilizes it will take, conservatively speaking, a few years, said an analyst. Particularly when with growing consumption, India's demand is also going to put pressure on the import bill.

According to the Petroleum Planning & Analysis Cell estimates, the crude oil import bill is likely to increase by 27 per cent from $88 billion in 2017-18 to $112 billion in 2018-19 considering actual upto December 2018 and Indian basket (rate at which domestic refiners buy their requirement) crude oil price at $57.77 a barrel and exchange rate at ₹70.73 versus dollar for January 2019-March 2019.

No uniform model

The challenge is that India does not have a uniform licensing model for forming a base. Therefore, what will HELP mean economically, one will have to wait and watch, said an official in the know.

Since NELP was introduced in the late 1990s, 314 blocks have been offered under various auction rounds, of which 254 have been awarded. There are 60 NELP blocks that are operational today by players such as ONGC, Reliance Industries and Oil India. From 2017 all new contracts have been signed under the HELP regime. Although most of the producing blocks in the country, at present, are those that have been offered before NELP or after NELP. All these production sharing contracts have a life.

OALP is a continuous bidding process. In February, the government launched the third OALP bidding round offering 23 blocks. It has contracted for 55 blocks under OALP Bid Round-I. The second round was launched in January offering 14 blocks. The OALP adopts all features of HELP — reduced royalty rates, no oil cess, uniform licensing system, marketing and pricing freedom, revenue sharing model, exploration rights on all retained area for full contract life, among others.

Discovered small field

Parallely the government has been offering areas under Discovered Small Field policy. The second round of DSF is under way with the Empowered Committee of Secretaries (ECS) and Group of Ministers recently giving their nod for the award of 23 contract areas to highest ranked bidders.

"The government is taking measures, but it has to ensure that market flexibility is taken care of and continuity in policy implementation remains. Besides, time taken to bring blocks offered under OALP into production will be at least eight-ten years," said an industry player.

Policy for encouraging E&P activities in North East India (NE Hydrocarbon Vision 2030)

Government of India released the Hydrocarbon Vision Document 2030 for NE Region with the aim of preparing a roadmap for the next 15 years to increase the production of oil and gas in NE and outlining the necessary investment in the hydrocarbon sector to increase exploration activities, etc. The vision rests on 5 pillars: People, Policy, Partnerships, Projects and Production.

Objectives to be met:

• To develop North East (NE) Region as a dominant hydrocarbon hub at the forefront of India's energy economy

• To double the production of O+OEG by 2030

• To get access to clean fuel for 100% households at affordable price in the region (LPG/PNG)

• To develop natural gas grid, CGD networks and CNG Highways

Status of project:

1) Relaxation of timelines for challenging area blocks has been approved.

2) Flexibilities in carrying out outstanding MWP has been approved

3) HELP & OAL has been operational for North eastern oil & gas fields

Expected Positive Outcome

NDR launched on 28th June 2017 after which OALP was launched so that the contractors can bid according to the data available in NDR and can make a sound decision regarding the investment .

NDR Data policy is a pre-cursor to award of blocks under Hydrocarbon Exploration and Licensing Policy. It will provide a unique platform to view, analyze, purchase data for all E&P companies, institutions, research agencies, etc.

An Executive Council has been formed consisting of government officials and industry stakeholders for the implementation of the vision document to develop NE region as a hydrocarbon centre.

Policy for the Grant of Extension to the Production Sharing Contracts signed by Government of India awarding Pre-New Exploration Licensing Policy (Pre-NELP) Exploration Blocks.

Government of India has approved a policy for granting extension to the Production Sharing Contracts (PSCs) signed by Government of India awarding Pre-New Exploration Licensing Policy (Pre-NELP). Exploration Blocks, to have a transparent and defined framework for granting extension. Salient features of the policy are as below:

— Submission, Consideration and Approval of request for extension of Contract by contractor at least 2 years before expiry of contract

— Fiscal parameters for extension: During the extended period of contract, Government's share of profit petroleum will be 10% higher, however, the royalty and cess shall be payable at prevailing rates

— Duration of extension: 10 years both for oil and gas fields or economic life of the Field, whichever is earlier. Pre-requisites for Evaluation: Area should have valid mining lease, area to have fields under production, area of extension to be determined on basis of existing production/ injection wells or new development plan, exploration work program to be backed by BG with time schedule. Availability of balance recoverable reserves (third party audited), submission of RFDP, adequate technical expertise and no statutory dues and payment due to Government.

— Criteria for evaluation of request: Contractor should have completed at least 70% of development plan and should have complied with the provisions of creation of Site Restoration Fund (SRF) and Site Restoration Plan (SRP) as per PSC.

Expected Positive Outcome

This policy will help the operators of 10 Pre-NELP Exploration blocks in planning their investments and operations in these fields and will enable the contractors to extract not only the remaining reserves but also plan to extract additional reserves by implementing new technologies. This will help accelerate and supplement indigenous production of hydrocarbon from existing blocks and act as a progressive step towards achieving the target of 10 per cent reduction in import of crude oil by 2022.

Policy For Grant Of Extension To Production Sharing Contracts Signed By Government Awarding Small And Medium Sized Discovered Fields To Private Joint Ventures

To enable optimal recovery of oil and gas after expiry of PSC, policy for extending Production Sharing Contracts for 28 Pre-NELP discovered (small and medium size) fields has been approved. This Policy would provide for a uniform, non-discretionary framework for extension of contract for a period of 10 years both for Oil and Gas. The primary objective of this policy is to continue uninterrupted production from oil and gas reserves engaged under PSC model and to ensure a stable business environment to Contractors and E&P operators of the PSC regime.

Salient features of the policy are as below:

1. Submission, Consideration and Approval of request for extension of Contract by contractor at least 2 years before but not more than 6 years in advance of expiry.
2. Fiscal parameters for extension: During the extended period of contract, Government's share of profit petroleum will be 10% higher, however, the royalty and cess shall be payable at prevailing rates (of nomination regime).
3. Duration of extension: 10 years both for oil and gas fields or economic life of the field, whichever is earlier.
4. Pre-requisites for evaluation: Area should have valid mining lease, evaluation will be on basis of future development plan, firm exploration program supported by BG, availability of balance recoverable reserves (third party audited), submission of RFDP, adequate technical expertise and no statutory dues and payment due to Government.
5. Criteria for evaluation of request: Contractor should have completed at least 70% of development wells of plan or achieved 70% committed production and should have complied with

the provisions of creation of Site Restoration Fund (SRF) and Site Restoration Plan (SRP) as per PSC

Policy for testing requirement

Government has approved a one- time policy on testing requirements for discoveries made under New Exploration and Licensing Policy (NELP) Blocks. Under this policy, the contractors have been asked to carry out a pending Drill Stem Test (DST) on the discoveries and submit the results within in a specified time frame.

The policy aims to resolve the dispute related to testing requirements and to bring transparency and uniformity in decision making as against case by case approach in the past. The policy would provide a way forward for development of 12 discoveries with associated gas reserves of around 90 Billion Cubic Meter (BCM) which would be valued at over Rs. 1 lakh crore at the current gas price of US$ 4.66 / Million British Thermal Unit (mmbtu) on Gross Calorific Value (GCV).

Policy Framework For Relaxations, Extensions And Clarifications At The Development And Production Stage Under Psc Regime For Early Monetization Of Hydrocarbon Discoveries

This policy framework was developed to address various issues and concerns regarding PSCs. It discusses the relaxation, extensions and clarifications at the Development and Production Stage under the PSC Regime. Policy framework provides for following relaxations: — Extension of time period for submission of Declaration of Commerciality (DoC) and Field Development Plan (FDP)

— Drilling of Appraisal Well after submission of DoC and probing additional reservoir during appraisal program

— Reduction of Minimum Work Program in case of overlapping of blocks with SEZ, reserve forests, DRDO danger zones, national parks, urban areas, firing ranges, etc.

— Swapping of 2D seismic with 3D Seismic Work Program and vice- versa

— Entry into subsequent phase after payment of Cost of Unfinished Work Program of previous phases — Condoning the delays in submission of notice for entering subsequent phase and condoning delays in submission of Annual & Appraisal - Work Program and Budget

— Drilling of Appraisal wells after submission of DoC

— Probing additional reservoirs during appraisal programme

— Acceptance of discoveries for which notification has not been made as per PSC provision

Unconventional Hydrocarbons

Cabinet approves Exploration and Exploitation of Coal Bed Methane (CBM) from areas under Coal Mining Lease allotted to Coal India Limited (CIL) and its Subsidiaries

• The Cabinet Committee on Economic Affairs chaired by the Prime Minister has given its approval for issuing a notification amending clause 3(xiii) of the notification dated 03.11.2015 issued by the Ministry of Petroleum & Natural gas under Section 12 of the Oil Fields (Regulation and Development) Act, 1948 (ORD Act, 1948).

• Due to this amendment, relaxation is granted under the Petroleum & Natural Gas Rules 1959 (PNG Rules, 1959), to Coal India Limited (CIL) and its subsidiaries for not applying for grant of license/lease under the PNG Rules, 1959 for extraction of Coal Bed Methane (CBM) under their Coal Bearing Areas

Policy Framework for exploration and exploitation of Unconventional Hydrocarbons

Approval of Policy framework for exploration & exploitation of unconventional hydrocarbon is under the final stage. This policy framework will permit exploration and exploitation of unconventional hydrocarbons such as Shale oil/gas, Coal Bed Methane (CBM) etc.

It will be carried out under the existing Production Sharing Contracts (PSCs), CBM contracts and Nomination fields to encourage the existing Contractors in the licensed/ leased area to unlock the potential of unconventional hydrocarbons in the existing acreages.

Expected Positive Outcome

• This policy will enable the realization of prospective hydrocarbon reserves in the existing Contract Areas which otherwise would remain unexplored and unexploited.

• With this policy dispensation, new investment in Exploration and Production (E&P) activities and chances of finding new hydrocarbon discoveries and resultant increased domestic production thereof is expected.

• Exploration and exploitation of additional hydrocarbon resources is expected to spur new investment, impetus to economic activities, additional employment generation and thus benefitting various sections of society.

• This will lead to induction of new, innovative and cutting-edge technology and forging new technological collaboration to exploit unconventional hydrocarbons.

Policy Framework For Relaxation, Extension & Clarification In Existing CBM Contract Areas For Early Monetization Of CBM

Government of India has till date awarded 33 CBM blocks.

Owing to various impediments in current contractual provisions, the monetization of CBM hasn't been at par with conventional oil and gas

Since unconventional hydrocarbons like CBM have higher breakeven prices and to usher renewed exploration and production activities in CBM blocks, the policy exempts CBM from existing pricing and allocation policy and provides pricing and marketing freedom to CBM contractors and provision to sell CBM to affiliates. This is in tune with Government's policy of "Ease of Doing Business".

Further, Government has been empowered to discharge cases and condone delays on basis of technical merit and reasonable endeavor exercised by contractor

The new policy includes the following features:

• Pricing and marketing freedom to sell CBM in domestic market arm's length

• Provision to reduce CBM contract areas or relinquish contracts with proportionate reduction in work program for contractors with overlap issues in coal blocks, conventional oil and gas, PEL/PML areas etc. • Easy exit option for CBM blocks subject to certain conditions

• Entry into subsequent phase, after paying cost of unfinished MWP

• Provision for extension and excusable delay in Development phase on account of getting Government Approvals/ Permits etc

• Provision to sell CBM to affiliates of existing CBM contractors

• Relaxation of Notice Period for submissions as per CBM Contract

• Resolution of CBM contractual issues under ECS

Expected Positive Outcome of the Policy:

The policy is expected to boost CBM production to 6 MMSCMD by 2018- 19 and generate new avenues of employment and increased investment in CBM blocks. It is also envisaged that 14 CBM blocks which are under relinquishment will be provided an easy exit option under the policy.

CHAPTER 5

INTERPRETATION AND RESULT

Analysis

- **Failure to attract investors:** The new policy has failed to attract interest from major players in the sector. From among major participants in the sector, only Reliance Industries has submitted an EOI. Pertinently, no foreign company has submitted an EOI. One of the reasons for this lukewarm response is perhaps the new revenue sharing model. NELP provided for production sharing after cost recovery model. Accordingly, sharing of production was only post recovery of cost of investment, and to that extend provided protection to the bidders in terms of recovery of investment. Unlike the production-sharing contracts under NELP, the new revenue sharing model under HELP provides that government's share of revenue is payable by the bidder commencing from the date of production.
- **Onerous obligations**: The OALP provides for discretionary powers to the DGH to accept the area for which EOI has been submitted or alter/modify the area after due evaluation. However, basis for exercise of such discretion is not provided under the OALP. Accordingly, in spite of such alteration/modification, EOI applicants will be obliged to participate (submit a bid acceptable to DGH) in the subsequent bidding. The obligation to participate will not be waived unless the deviation in the area finalized by DGH to be put up for bidding is more than 50% of the area for which EOI is submitted. Participation bond[3] submitted along with the EOI will be forfeited if the EOI submitting party doesn't participate in the bidding process.
- **No compensation for discovery under RC**: OALP awards an EOI applicant incentive of five marks at the bidding stage. An RC contractor is also allowed this benefit when such contractor submits an intent to migrate to a POC contract. Such intention to migrate is deemed to be an EOI. Apart from the benefit of 5 marks at the bidding stage, there is no other mechanism to compensate such RC Contractor. The RC contractor is not provided any monetary benefit under the OALP. Since the investment for exploration is significant,

it can be argued that, to make it more attractive, GOI could have provided adequate compensation for the exploration activities during the RC.

- **Minimum pricing for calculation of GOI's revenue**: Although HELP provides that the contractor will be free to sell the crude oil exclusively in domestic market through a transparent bidding process on arm's length basis, for calculation of GOI's revenue, GOI has prescribed a floor for the price.

In case of crude oil and condensate, HELP provides that, for calculating GOI's revenue, the minimum price will be the price of *Indian Basket of Crude Oil*, or if the price arrived through bidding is more than the price of *Indian Basket of Crude Oil* then GOI's share will be calculated based on the actual price realized.

Similarly, for natural gas, HELP provides that the contractor will have freedom for pricing and marketing of gas produced on arm's length basis. However, for calculation of GOI's revenue, minimum price will be a price calculated as per Domestic Natural Gas Pricing Guidelines. If the price discovered through arm's length basis is more than the calculation based on Domestic Natural Gas Pricing Guidelines issued by the GOI from time to time, then GOI's revenue will be calculated based on actual price realized.

Initiations towards Oil and gas industry development:

The GoI has taken many initiatives for attracting investment to boost domestic output and strengthen the relative infrastructure. These efforts are likely to create several opportunities for oilfield services, EPC companies and capital goods companies. The Government has allowed 100% FDI in upstream and private sector refining projects. In addition, FDI limit for public sector refining projects has been raised to 49%. Additionally, the Indian Government has enacted various policies such as New Exploration Licensing Policy (NELP), coal bed methane (CBM), shale gas and Petroleum, Chemicals and Petrochemical Investment Regions (PCPIR) policy to encourage investments across the industry's value chain.

Responding emphatically to the Prime Minister Narendra Modi's 'Make in India' initiative, India's foremost energy major Oil and Natural Gas Corporation Limited (ONGC) and Pan IIT entered into a Memorandum of Collaboration (MoC) on January 19, 2015 at New Delhi to work towards a

collective R&D Programme for developing indigenous technologies to enhance exploration and exploitation of hydrocarbons and alternate sources of energy. To begin with, seven thematic research areas in the domain of geoscience, reservoir characterization, enhanced production of oil and gas, exploiting unconventional sources of hydrocarbons, software development, engineering solutions and alternate energy resources have been identified.

CONCLUSION

- NELP due to inherent complexity of profit sharing model failed to attract large E&P players like Exxon Mobil, Chevron Corp., British Petroleum, and Shell etc.
- The introduction of the concept of revenue sharing and freedom of marketing and pricing under HELP is in line with GOI's policy of – Minimum government, Maximum governance and Ease of doing business.
- HELP also intends to minimize GOI's discretion in decision making, reduce disputes, reduce administrative delays and thus stimulate growth in the oil and gas sector in India.
- Further, as NDR gets adequately updated, required technical information will be available at low cost, helping in promotion of healthy E&P activity

The focus of the 'ease of doing business policy' is mainly on cutting out the tedious documentation and unnecessary paper work and getting the work done in a shorter time span. It was imperative to take steps to address the concerns and delays, to enable the industry to grow. This was a much needed step to simplify compliance and to make India more investor friendly.

In line with the "Digital India" initiative, formation of NDR for India's hydrocarbon basins will provide an important data resource. India continues to use the data obtained from the resource assessment of Indian sedimentary basins carried out in 1990 by Indo-Soviet resource appraisal group and by ONGC in 1996. Re-assessment of hydrocarbon resources in sedimentary basins of India including deep-water areas was ordered to be carried out in January 2014, and the report is yet to be submitted.[5] Out of the 26 known sedimentary basins in the country, only seven are currently producing oil and gas, and about 75 per cent of India's sedimentary basins are yet to be adequately explored. Once NDR is adequately updated and required technical information is available at low cost, given the growing domestic energy demand, a healthy E&P activity can be expected. The introduction of the concept of revenue sharing and freedom of marketing and pricing under OALP is in line with GOI's policy of "Minimum government - Maximum governance" and "Ease of doing business". OALP also intends to minimize GOI's discretion in decision making,

reduce disputes, reduce administrative delays and thus stimulate growth in the oil and gas sector in India.

Given the early days of the policy, it is difficult to make a prediction regarding the future of HELP. Like for any new policy, it can be said that HELP may face its own set of issues. However, certain HELP provisions such as the OALP and NDR do seem to be steps in the right direction to stimulate hydrocarbons E&P activity in India.

1. Energy Statistics 2017 issued by Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India
2. Annual Report 2017-2018 issued by Ministry of Petroleum and Natural Gas, Government of India
3. Participation bond of value of USD 150,000 per sector for POC and USD 30,000 per sector for RC
4. Indian Crude Basket is weighted average of Dubai and Oman (sour) and the Brent Crude (sweet) crude oil prices as calculated by Petroleum Planning and Analysis Cell on a monthly basis.
5. India's Hydrocarbon Outlook, A Report on Exploration & Production Activities 2016-2017, Directorate General of Hydrocarbons, Ministry of Petroleum and Natural Gas

FUTURE RESEARCH

The Terms of Reference (ToRs) of the Committee are as follows:

1. Steps to be taken for enhancing oil and gas production from the unconventional as well as conventional energy sources.

2. Institutional mechanism for appraisal of Indian sedimentary basins to the extent of 75% by 2015 and 100% by 2025.

3. Utilization of Oil Industry Development Board (OIDB) cess and other innovative resource mobilization approaches for appraising unexplored/partly explored acreages.

4. Development and promotion of the indigenous service industry in the E&P sector.

5. Review of institutional mechanisms to acquire acreages abroad for exploration and production as well as pursuit of diplomatic and political initiatives for import of gas from neighboring and other countries with emphasis on transnational gas pipelines.

6. Steps to be taken for ensuring adequacy of finances for R&D required for building knowledge infrastructure in E&P activities.

7. Steps to be taken for development of gas transportation infrastructure for establishing a countrywide marketplace. 8. Roadmap for switching over to market determined gas pricing at the end of the 12th Plan

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