OIL AND GAS: REFINERIES
Capacity (in MMTPA) as on 01.11.2017

Opportunities

- India is already a refining hub with 23 refineries
- Expansions planned for tapping foreign investment in export-oriented infrastructure, including product pipelines and export terminals

100% FDI
in exploration and production;
49% FDI in refining under automatic route

2nd largest
refiner in Asia. From a total capacity of 62 MMTPA in 1998, the Indian refining sector has increased nearly fourfold to reach a capacity of 249 MMTPA with 23 refineries. The total refined crude output was 257 MMTPA (2018-2019)

3rd largest
crude oil consumer in Asia. From a total capacity of 62 MMTPA in 1998, the Indian refining sector has increased nearly fourfold to reach a capacity of 249 MMTPA with 23 refineries. The total refined crude output was 257 MMTPA (2018-2019)

230 Bn
barrels of O+OEG conventional hydrocarbons are spread over 3 Mn sq km area, across 26 sedimentary basins

INR 7.01 Bn
total inbound FDI (2000-19); FDI increased by 22% from April 2014 – March 2019

CURRENT SCENARIO

SECTOR OVERVIEW

Indian Oil Corporation
Chennai Petroleum Corporation Limited (CPCL)
Bharat Petroleum
Hindustan Petroleum Corporation Limited (HP)
Reliance Industries Limited
Bharat Oman Refineries Limited
Oil and Natural Gas Corporation (ONGC)
ONGC Mangalore Petrochemicals Limited (OMPL)
Numaligarh Refinery Limited (NRL)
ESSAR Oil Limited (EOL)
HMEL
Oil and Natural Gas Corporation (ONGC)
ONGC Mangalore Petrochemicals Limited (OMPL)
Numaligarh Refinery Limited (NRL)
ESSAR Oil Limited (EOL)
SECTOR OVERVIEW

FUTURE POTENTIAL

- By 2022, GoI plans to reduce crude imports by 10%.
- USD 300 Bn investments in the sector by 2030.
- Demand for oil is expected to grow at a CAGR of 4% till FY 2030.
- Uniform pipeline network coverage by 2022.
- Of India’s existing sedimentary basins, 73% of the reserves fall under the ‘yet to be discovered’ category.
- Regasification capacity is expected to reach 56 MMTPA and investment worth USD 25 Bn is expected in the gas infrastructure by 2025.
- Fastest growing energy consumer in the world, 5.2% CAGR till 2030.
- Refinery capacity expected to reach 439 MT by 2030, through several brownfield and greenfield expansion projects.
- By 2023, investment of USD 58 Bn is expected in the E&P sector.
- By 2020, GoI aims to connect 10 Mn households with piped natural gas.
- GOI invites partners (using PPP model) for investments in Strategic Petroleum Reserves (SPR).

OIL & GAS INFRASTRUCTURE

CITY GAS DISTRIBUTION (CGD):

01 To boost the CGD sector, 9th CGD Bidding Round was launched in April 2018 for 86 Geographical Areas (GAs) - covering 174 districts in 22 States/Union Territories of the country.

02 The 10th CGD Bidding Round was launched in November 2018 for 50 GAs and 124 districts. With the conclusion of the 10th bidding round, coverage of CGD networks will extend to about 70% of the country’s population - spreading across 50% of India’s area. The PNG connections are estimated to be 40.23 mn and the CGD pipeline length, 175,000 km. The growth of CGD coverage has the potential to attract total investment of more than USD 17 Bn in the gas value chain.

GAS PIPELINES

- Currently, India has a natural gas pipeline network of 16,770 km, with a capacity of 451 mmscmd.
- By the end of the 13th Five Year Plan (FY22), the natural gas pipeline network is expected to cover 28,442 km with a design capacity of 875 mmscmd - forming a nation-wide gas grid and providing uniform pipeline network coverage.
- State governments have made relevant modifications in building by-laws to provide gas pipeline infrastructure in commercial and residential buildings at architectural design stage.

<table>
<thead>
<tr>
<th></th>
<th>Length (km)</th>
<th>Capacity (mmscmd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current network</td>
<td>16,770</td>
<td>369</td>
</tr>
<tr>
<td>Expected addition by end of 13th Five Year Plan</td>
<td>11,377</td>
<td>473.5</td>
</tr>
<tr>
<td>Incremental Capacity Additions till FY 2022</td>
<td>1,285</td>
<td>33</td>
</tr>
<tr>
<td>Total network by the end of FY 2022</td>
<td>29,442</td>
<td>875</td>
</tr>
</tbody>
</table>
GoI has commissioned the Strategic Petroleum Reserves (SPR) to maintain the nation’s energy as well as economic security.

Under phase 1, the government has already built 3 reserves at Visakhapatnam, Mangalore and Padur in Kerala – with a combined capacity of 5.33 MMT.

With the Ministry of Petroleum and Natural Gas (MoPNG), GoI is soliciting commercial partnerships for the Phase II SPR programme for 2 locations – Chandikhol in Odisha and Padur in Karnataka – with a total capacity of 6.5 MT.

The import of LNG is being carried out at 6 existing LNG terminals, which have regasification capacity of about 38.8 MMTPA (~140 mmscmd). LNG supply is forging ahead on both coasts, with 8 new R-LNG terminals (4 on the west coast and 4 on east coast) coming up. Together with the six existing terminals, overall capacity will reach 74 MMTPA.
GOVERNMENT SUPPORT & INITIATIVES

A. Discovered Small Field Policy (DSF)

Introduced for fast track monetisation of un-monetised small fields / discoveries of National Oil Companies

- In August 2018, GoI approved the DSF Policy Bid Round-II. Through this, 59 discovered small fields / un-monetised discoveries estimated to have 194.65 MMT (O+OEG) in place, were offered for bidding

B. Hydrocarbon Exploration Licensing Policy (HELP)

HELP (March 2016) provides a uniform licensing system to cover hydrocarbons such as oil, gas, coal bed methane etc. under a single licensing framework

- Under HELP, contracts are awarded based on ‘biddable revenue sharing’
- Contractors will have full marketing and pricing freedom for crude oil and natural gas to be sold at arm’s length basis, through a transparent and competitive bidding process
- For production enhancement, bringing new technology and capital, NOCs will be allowed to induct private sector partners
- For category I basins, the weightage in revenue-share has been reduced from 50% to 30%
- For Category II and III basins, revenue-sharing has been done away with and allotment of basins is based solely on the exploration work programme

C. Open Acreage License Policy (OALP)

OALP allows a bidder to apply to the Government, seeking exploration of any block not already covered by exploration. There is freedom to transfer/exit blocks.

- **OALP Bid Rounds:**

<table>
<thead>
<tr>
<th>S.No</th>
<th>OALP Bid Round</th>
<th>Launch Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I</td>
<td>19th January 2018</td>
<td>55 blocks with an area of 59,282 sq.km was awarded on 1st October 2018</td>
</tr>
<tr>
<td>2</td>
<td>II</td>
<td>7th January 2019</td>
<td>32 blocks with an area of 58,998 sq.km awarded on 16th May 2019. Out of these, 5 were coal-bed methane (CBM) blocks</td>
</tr>
<tr>
<td>3</td>
<td>III</td>
<td>10th February 2019</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>IV</td>
<td>27th August 2019</td>
<td>7 blocks with an area of 18,510 sq.km are under offer. Bidding is open till 31st October 2019. 5th EoI submission window is open till 30th November</td>
</tr>
</tbody>
</table>

D. Incentivising Production from Ageing Fields

- The upstream regulator Directorate General of Hydrocarbons (DGH) has proposed a draft ‘Policy Framework to Promote and Incentivise Enhanced Recovery Methods’ to boost oil and gas output from existing fields using Enhanced Recovery (ER) techniques
- The proposed incentive includes a 50% waiver of oil cess on gross oil production for EOR (and other unconventional oil production projects)
- Notice Inviting Offer (NIO) issued by National Oil companies for bidding out 66 fields in June 2019 to infuse capital and technology. Bids can be submitted online up to 20th December 2019
GOVERNMENT SUPPORT & INITIATIVES

E. PAHAL - Direct benefit transfer in LPG (DBTL) subsidy

• Largest subsidy transfer scheme across the globe.
  More than 230 Mn of LPG consumers joined the initiative as of December 2018; cash given – USD 1.8 Bn

F. Ujjwala Yojna

• A social movement to improve women’s health by giving them freedom from sooty kitchens and hazards of collecting firewood. 80 Mn LPG connections have been provided to rural households in 3 years

G. National Data Repository (NDR)

An integrated repository of Exploration and Production (E&P) data of Indian sedimentary basins. Its main objective is to provide reliable exploration and production data for India with provisions for seamless access and online data management.

• As on 31st October 2018, surface coverage of 28,485 LKM, out of 48,243 LKM, has been achieved under 2D Seismic data acquisition under the National Seismic Programme

H. Refinery Expansion

• By 2030, India’s annual refining capacity will rise 77% to 439 MT-equivalent to approximately 8.8 MBPD
• India has the capacity to annually turn 249.3 MT of crude oil into fuel. This is expected to rise to 414.35 MT by 2025, and to 438.65 MT by 2030

I. Coal Bed Methane Policy

• Coalbed Methane (CBM), an unconventional source of natural gas, is now considered an alternative source for augmenting India’s energy resources
• India has the 5th largest proven coal reserves in the world, and thus holds significant prospects for exploration and exploitation of CBM
• The prognosticated CBM resources in the country are about 92 TCF (2600 BCM) in 12 states of India
• In order to harness CBM’s potential, Government of India formulated the CBM policy in 1997. Under this, CBM (being Natural Gas) is explored and exploited under the provisions of Oil Fields (Regulation & Development) Act 1948 (ORD Act 1948) and Petroleum & Natural Gas Rules 1959 (P&NG Rules 1959)– administered by the Ministry of Petroleum & Natural Gas (MOP&NG)

J. Floating Regasification Storage Units

• The Union Ministry of Shipping has issued guidelines for the setting up of floating storage regasification units (FSRUs) for handling liquefied natural gas (LNG) cargo at major port trusts
OPPORTUNITIES IN OIL & GAS

1 Oil Field Services and Equipment (OFSE):
- Over the next 10 years, investments worth USD 102 Bn are expected in upstream equipment and services.
- Due to policy reforms, additional investment opportunities of USD 40 Bn in field developments have been unlocked.
- Drilling and drilling-related services are likely to account for 35-40% of the total spend followed by oilfield equipment with 18-20% and completion and stimulation equipment and services with 18-20%.

2 Digital transformation in oil & gas:
- Digital Innovation and Transformation can help drive excellence and maximize value in the oil & gas sector by increasing oil production and recovery, reducing operational costs and minimizing risk.

3 Fuel Retailing:
- Government is encouraging global players to participate in India's retail growth story.
- There are currently 64,500 fuel retail outlets; dealership of 78,000 new fuel retail outlets is expected to be allocated by the end of 2019.
- There is an ease in entry policy and complete deregulation of petrol and diesel with the new marketing guidelines provided by the Ministry of Petroleum & Natural Gas (MoP&NG).
Refining and Petrochemicals:
- Major refinery upgradation projects to BS IV fuels has been initiated.
- By 2030, India’s annual refining capacity will rise 77% to 439 MT – equivalent to about 8.8 MBPD.
- India has already commissioned fully infrastructured Petroleum, Chemicals and Petrochemical Investment Regions (PCPIR) located on both the east and the west-coast of the sub-continent, with an approximate investment of USD 25.7 Bn. The expected investment is USD 107 Bn.

Biofuels:
- A national policy on biofuels is already in place to boost the biofuel programme of India.
- Allowed production of Ethanol from sugar and sugar syrup.
- Ethanol blending in petrol – target of 10% by 2021-2022 and 20% by 2030.
- 12 Biofuel refineries are planned to be opened with an investment of USD 1.5 Bn.

Current Opportunities:
- Partnerships for Phase II SPR projects in Chandikhol, Odisha and Padur, Karnataka of 6.5 MT capacity.
- OALP Bid Round IV – 7 blocks with 18,510 sq.km area. Bidding is open till 31st October 2019. 5th EoI submission open till 30th November 2019.
- Notice Inviting Offer (NIO) issued by National Oil companies for bidding out 66 fields in June 2019 to infuse capital and technology. Bids can be submitted online up to 20th December 2019.
- The IMO 2020 regulations predicts the use of LNG as a bunker fuel, because according to the new regulations, fuel oil would need to have less than 0.5% sulphur.
- McKinsey estimates that with the use of digital technologies in the oil and gas sector, capital expenditure will get cut up to 20%, total cash flows will improve by USD 11 per barrel, and this will add USD 300 Bn a year by 2025.

All information in this brochure was last updated on Feb 25th, 2020.
HOW WE HELP INVESTORS

- RESEARCH CONTENT PROVIDED
- POLICY ADVISORY/REPRESENTATION
- STAKEHOLDER MEETING
- SITE VISITS
- LOCATION ANALYSIS
- ISSUE RESOLUTION
- REGULATORY CLEARANCE FACILITATION

To find out more
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