CREDENCE CAPITAL

(Investment Club of IIM Lucknow)

OIL & GAS SECTOR REPORT

INTRODUCTION

India is the third largest energy consumer in the world after China and USA. It is also the fastest growing energy consumer, consuming more than 800 million tonne of oil in 2019. With a share of ~6% of the world's primary energy consumption, India's energy requirements are fulfilled by Coal, Crude Oil, Natural Gas and Renewable Energy. Oil and gas sector within the energy mix play a predominant role as over 1/3rd of the energy requirement is met by hydrocarbons. Growing economy and population growth are the main drivers for oil & gas demand, increasing every year.

Amongst commodity imports, share of imports of Oil & Gas sector (Oil ~Rs 7 lakh crores, Petroleum products ~Rs 1.25 lakh crores and Liquified Natural Gas ('**LNG**') ~Rs 0.67 lakh crores) was 27.1% in 2019-20 of India's overall imports (~Rs 34 lakh crores). Continued imports of oil & gas to the Indian economy underscore the need for a robust strategy for assuring supply. Recognizing the imperative need for increasing production of oil & gas resources, Ministry of Petroleum & Natural Gas has taken up many initiatives and policy reforms to boost investment in the upstream sector activities to accelerate new hydrocarbon discoveries.

India has a robust refining sector with a refining capacity of ~ 250 MMTPA (Million Metric Tonne Per Annum) as on April 1, 2020. With increase in the domestic refining capacity, which has overtaken domestic consumption, India became a net exporter of petroleum products. While the domestic consumption has increased from 2018-19 to 2019-20, India is in a position to export surplus products after meeting domestic demand.

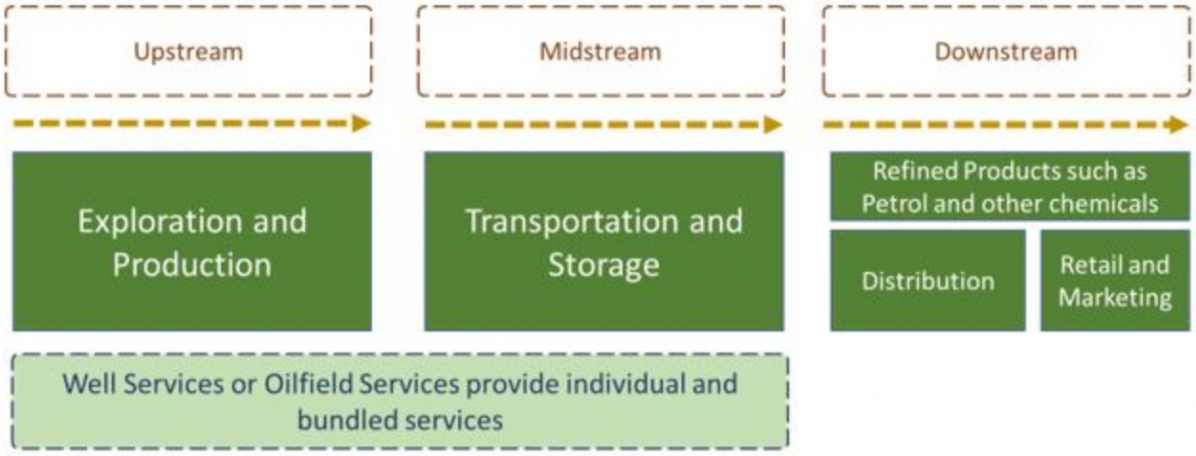
The COVID-19 pandemic has been a watershed moment for the Indian Oil & Gas industry, just like it has been for the global economy. Due to the steep decline in global energy requirements, there was a decline in the oil & gas prices which is now on the upswing with increasing demand coupled with production cuts planned by OPEC. Another important aspect affecting the Oil & Gas industry is the move to cleaner, green fuel as opposed to fossil fuels which may cause a paradigm shift in the global Oil & Gas industry in the years to come.

OVERVIEW OF THE OIL & GAS SECTOR

In order to understand the Oil & Gas sector, it is imperative to first understand the value chain of the industry right from extraction of hydrocarbons to selling refined products. There are three main facets of the value chain:

A. **Upstream**: Extraction and Production;
B. **Midstream**: Transportation and Storage; and
C. **Downstream**: Refining and Marketing

Below is a brief snapshot of the value chain, which has been described in further detail in the report:



Upstream

Companies in the upstream sector are involved in identifying and assessing the potential Oil & Gas producing blocks, drilling exploratory wells, devising Field Development Plans (FDPs) and developing infrastructure in economically viable oil fields to produce commercial quantities of hydrocarbon.

Midstream

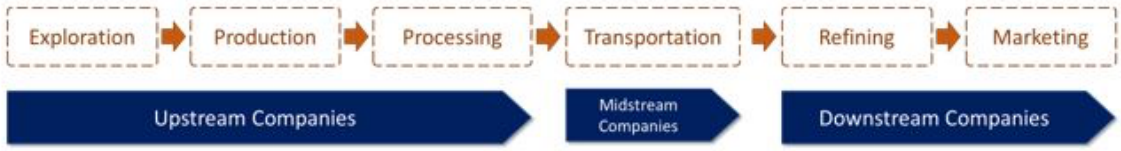
Companies in the midstream sector are involved in transportation of the hydrocarbons through pipelines, maritime, rail or road, depending on the nature of hydrocarbons being transported.

Downstream

Companies in the downstream sector are involved in refining the hydrocarbons into a varierty of derivative products which are then marketed and sold to different end consumers ranging from individuals to corporations.

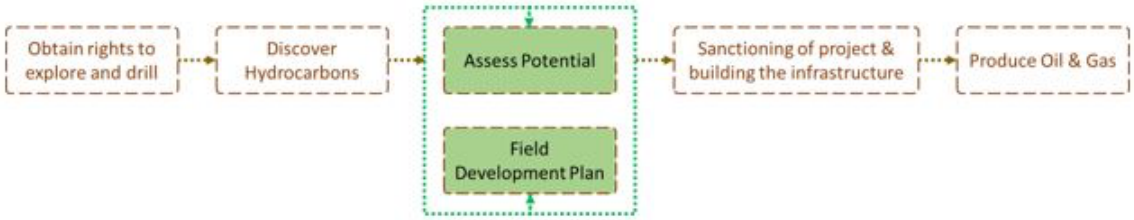
OIL SECTOR

Below is a detailed value chain of the Oil sector:



Upstream sector

As mentioned previously, companies in the upstream sector carry out the exploration and production of hydrocarbons, and in case of the oil sector, crude oil. This is a high risk, high reward sector as it is strictly regulated by governmental agencies and it involves huge upfront investment in identifying fields with adequate potential for extracting crude oil by using the most advanced technologies and concepts, which is also referred to as devising Field Development Plans ('FDP'). On the basis of the FDPs, wells are drilled to extract crude oil to the extent available, which is then transported to local or international downstream companies for refining and subsequent sale of derived products to ultimate consumers. A brief description of the activities undertaken by the upstream companies is as under:

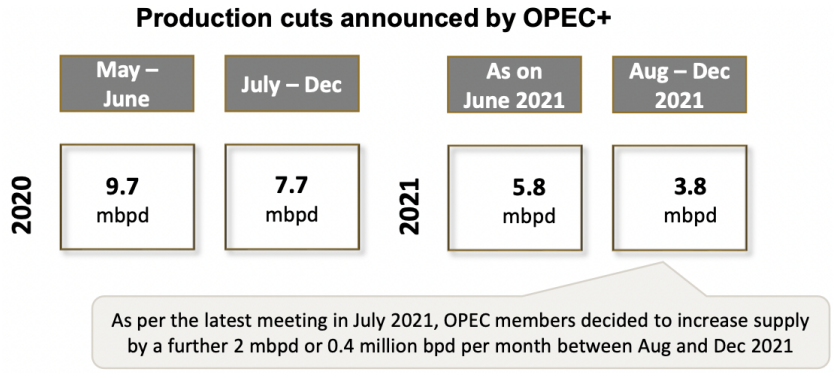


Companies in the upstream sector may themselves extract crude oil after devising the FDPs or outsource the contract to specialized 'Well Services Companies' as crude oil extraction requires highly specialized equipment and skill sets. The Well Services Companies may provide individual services like well construction, supply of various materials and chemicals and the like or provide bundled services which the upstream companies may require.

Global outlook

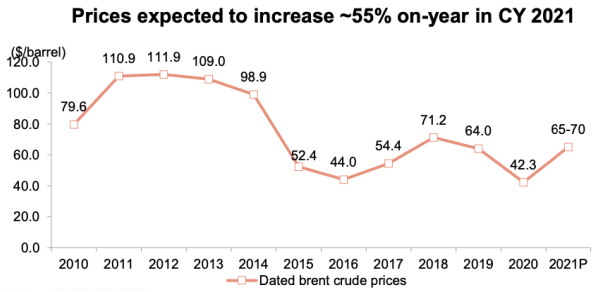
10 countries of the world contribute to ~70% of the global crude oil exports of which the contributors fall in four broad buckets – OPEC (~41%), USA & Canada (~14%), Russia (~12%) and Others (~3%). OPEC ie Organization of the Petroleum Exporting Countries comprises of 13 member countries with Iran, Iraq, Kuwait, Saudi Arabia and Venezuela being the Founder Members of the organization. OPEC, being a cartel, greatly influences the global prices of crude oil by either increasing or reducing

the production and supply of crude oil. USA too follows a similar methodology to regulate the supply of shale oil. On account of the substantial reduction in global oil demand in 2020 due to COVID-19 pandemic, OPEC announced substantial production cuts in order to prevent the slide in prices of crude oil, which cuts have been phased out gradually due to increased demand on account of the global vaccination efforts and lifting of lockdowns. Following is a summary of the production cuts announced by OPEC:



OPEC members have aimed to fully phase out production cuts by around September 2022.

As a substantial source of revenue for the OPEC members is from their crude oil exports, maintaining the price levels of the crude oil is of paramount importance for them. Accordingly, strategizing production cuts in tandem with the global demand becomes of paramount importance to maintain price stability. Despite opening up of economies post roll-out of COVID-19 vaccine, the expectation of demand recovery in 2021 is expected to be gradual. Following is a summary of the price expectation of crude oil for the OPEC countries:



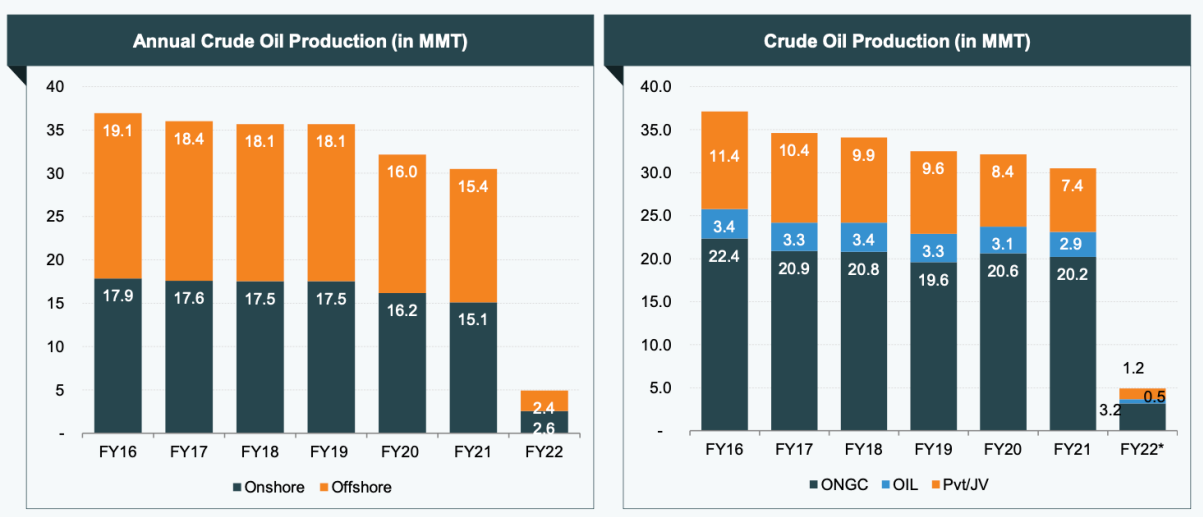
Countries	Crude oil price ($/bbl) expectations to support budget revenue
Saudi Arabia	65-70
Kuwait	58-63
Oman	80-90
Bahrain	85-95
UAE	60-65
Russia	50-55
Qatar	45-50

Indian outlook

The Indian Oil sector is well developed and matured as India has been producing oil for the past ~60 years. The oil and gas sector comes under the Ministry of Petroleum and Natural Gas (MoPNG). The Director General Hydrocarbons regulates the upstream sector.

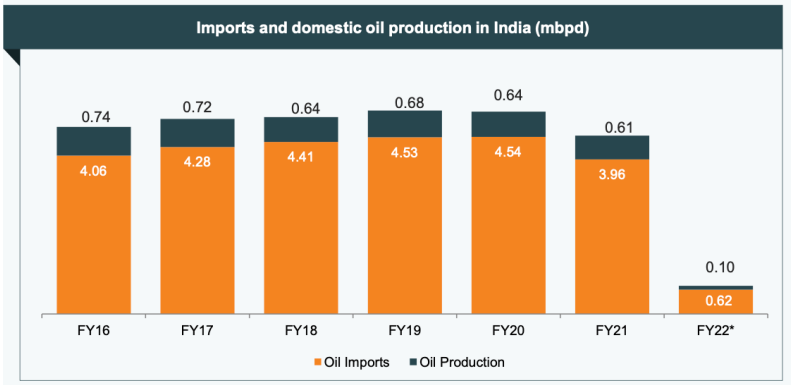
The upstream sector of oil in India is dominated by the state-owned companies Oil & Natural Gas Corporation Ltd ('**ONGC**') with a market share of ~70%, followed by Oil India Ltd ('**OIL**') with a market share of ~10% and fragmented private players having the balance ~20% market share.

Following is a summary of crude oil production by the domestic players geography-wise and company-wise:

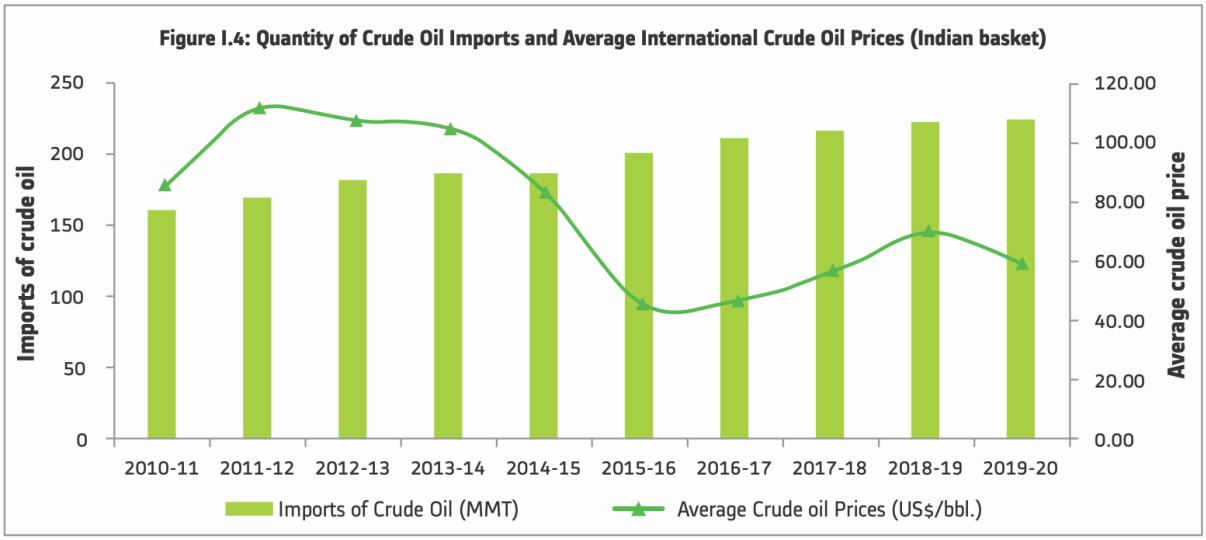


Almost 50% of India's crude oil production is from offshore fields; however, this share is diminishing in the past few years due to diminishing production from the ageing Mumbai High field. ONGC accounted for ~66% of the total crude oil production in India in FY21. India's domestic crude oil production has been declining since the last decade as most of India's crude oil production comes from ageing wells that have become less productive over time. Domestic exploration companies are attempting to extend the life of currently operational wells.

A lack of new oil discoveries coupled with a long lead time to begin production from discovered wells has led to a steady decline in India's crude oil production making India increasingly dependent on imports. Following is a summary of the proportion of oil imports and domestic oil production in India:



Following is a comparative look at the imports of crude oil and the average prices over the years:



Challenges of the upstream sector

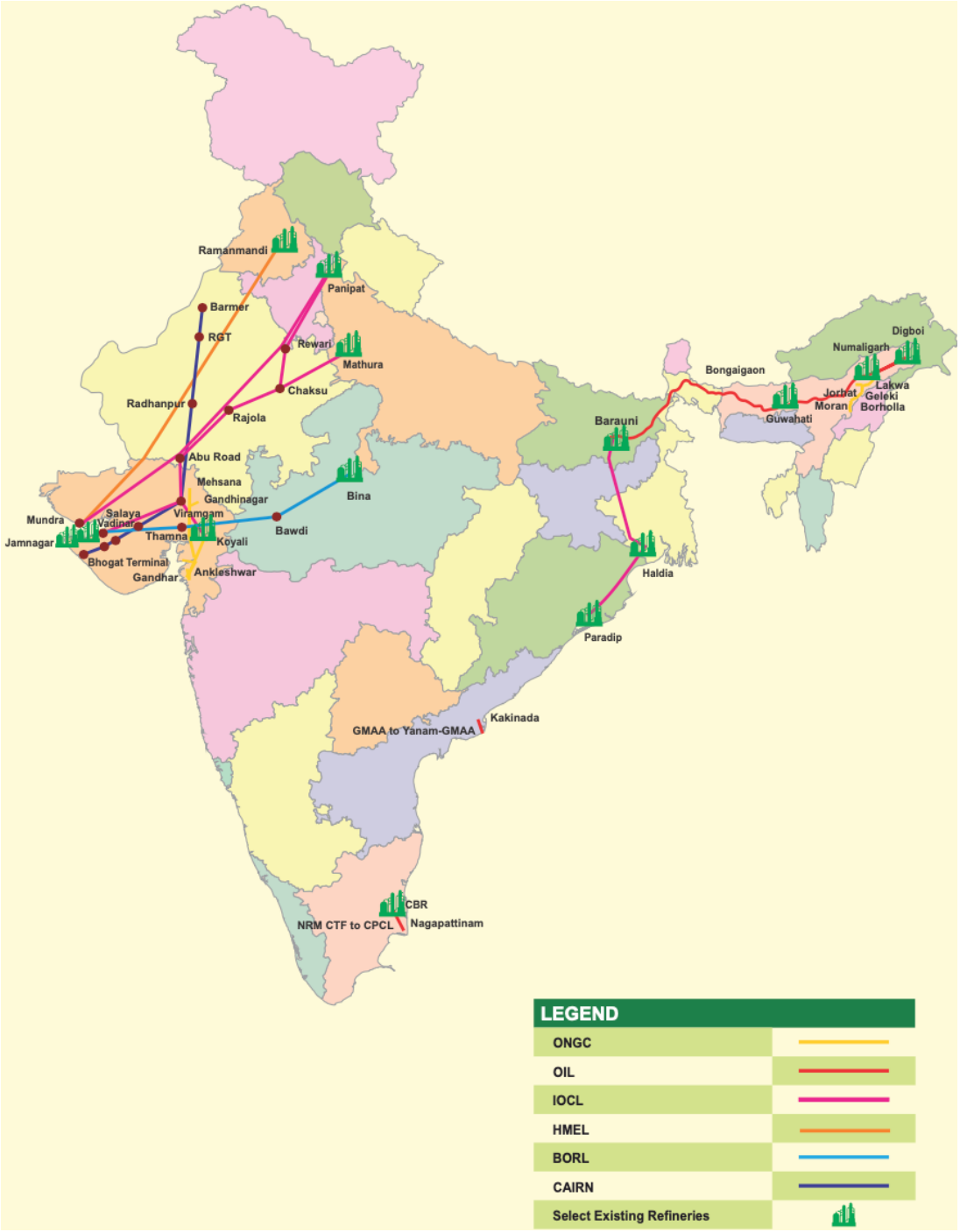
- High government regulation leading to barriers to entry in the sector
- Heavy upfront investment in identifying and acquiring new exploration fields, and subsequently devising FDPs
- Significant capital expenditure in setting up the oil wells and rigs, using the latest technologies and equipment
- Geopolitical happenings considering crude oil reserves are concentrated with a few countries but whose demand is global
- Rising fuel efficiency shall leading to reduction in fuel consumption, increasing penetration of electric vehicles, emergence of LNG as an alternate fuel and shifting focus to renewables shall lead to reduction in crude oil demand in the long term

Midstream sector

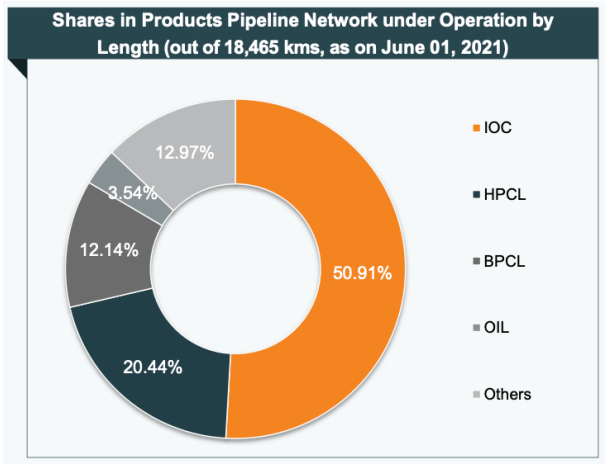
The midstream sector is concerned with the transportation and storage of crude oil produced by the upstream sector. Naturally, the performance of the midstream sector companies is dependent on the performance of the upstream sector companies. In order to generate synergies, a number of downstream companies also undertake midstream activities. In the global context, leading companies like BP Plc, Royal Dutch Shell Plc, Chevron Corporation undertake the midstream activities through their comprehensive network of pipelines.

In the Indian context, majority of the midstream sector companies are also state-owned like Indian Oil Corporation Ltd ('**IOCL**'), which is also the leading downstream sector company, followed by Hindustan Petroleum Corporation Ltd ('**HPCL**'), Bharat Petroleum Corporation Ltd ('**BPCL**') and OIL.

The crude oil pipelines connecting to the refineries in India is as below:



Following is a summary of the share in products pipeline network of the midstream sector companies:



Challenges of the midstream sector

The major challenge faced by the midstream sector companies is its heavy reliance on operations of the upstream sector companies, whose production levels are very volatile. With such a high dependency, it becomes very difficult for midstream companies to estimate the level of scaling up required in its infrastructure, which is quite expensive to set-up and operate. Even the day-to-day functioning of the pipelines and its maintenance involves huge monetary and non-monetary costs.

Downstream sector

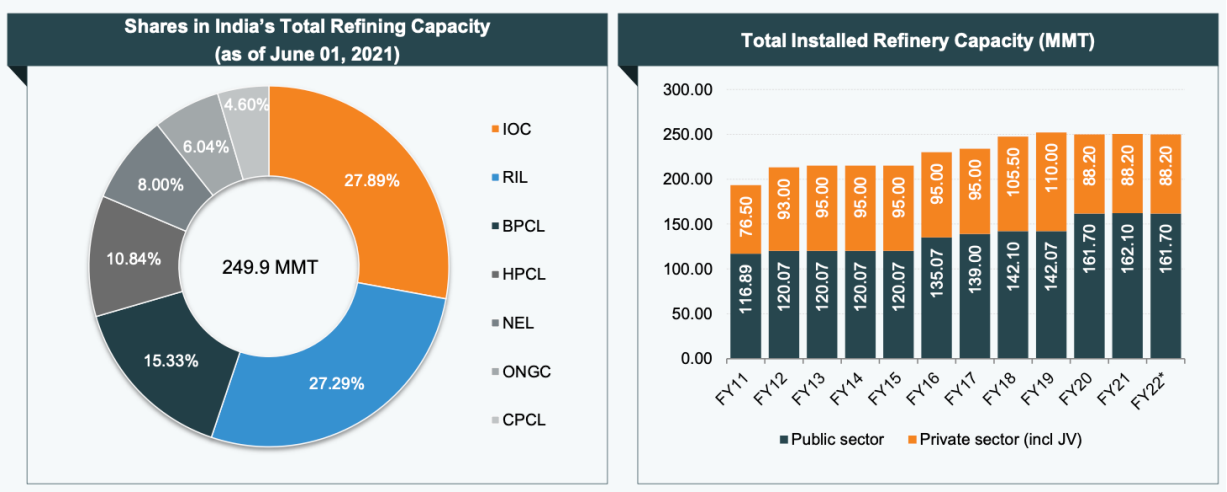
The companies in the downstream sector obtain crude oil from the upstream sector through the infrastructure provided by the midstream sector and refine them into various derivative products like petrol, diesel, Aviation Turbine Fuel ('**ATF**') and the like. The downstream companies are also generally involved in the marketing and sales of the derivate products through B2B or B2C channels. The downstream sector is regulated by the Petroleum and Natural Gas Regulatory Board (PNGRB).

India has 23 refineries – 18 in the public sector, 2 in the joint sector and 3 in the private sector as on April 1, 2020, which are summarized below:

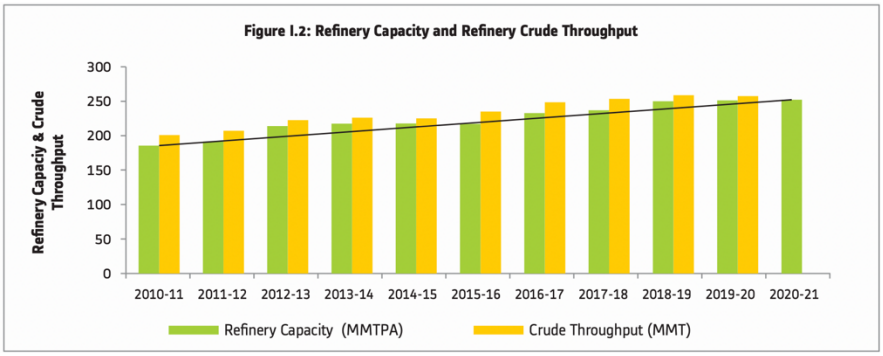
Sr No	Refinery/ Location	Company	Sector	State	Capacity (10^6 tons/y)
1	Jamnagar (for export market)	Reliance Industries Ltd ('**RIL**')	Private	Gujarat	35.2
2	Jamnagar (for domestic market)	RIL	Private	Gujarat	33

3	Nyara Energy	Nyara Energy Ltd	Private	Gujarat	20
4	Kochi	BPCL	Public	Kerala	15.5
5	Mangalore	ONGC	Public	Karnataka	15
6	Paradip	IOCL	Public	Odisha	15
7	Panipat	IOCL	Public	Haryana	15
8	Gujarat	IOCL	Public	Gujarat	13.7
9	Mumbai	BPCL	Public	Maharashtra	12
10	Guru Gobind Singh	HPCL, HPCL Mittal Energy Ltd	Joint	Punjab	11.3
11	Manali, Chennai	Chennai Petrol Corporation Ltd (‘**CPCL**’)	Public	Tamil Nadu	10.5
12	Vishakhapatnam	HPCL	Public	Andhra Pradesh	8.3
13	Mathura	IOCL	Public	Uttar Pradesh	8
14	Haldia	IOCL	Public	West Bengal	8
15	Bina	Bharat Oman Refinery Ltd	Joint	Madhya Pradesh	7.8
16	Mumbai	HPCL	Public	Maharashtra	7.5
17	Barauni	IOCL	Public	Bihar	6
18	Numaligarh	OIL Government of Assam	Public	Assam	3
19	Bongaigaon	IOCL	Public	Assam	2.35
20	Guwahati	IOCL	Public	Assam	1
21	Nagapattnam	CPCL	Public	Tamil Nadu	1
22	Digboi	IOCL	Public	Assam	0.65
23	Tatipaka	ONGC	Public	Andhra Pradesh	0.07

Following is a summary of India’s refining capacity:

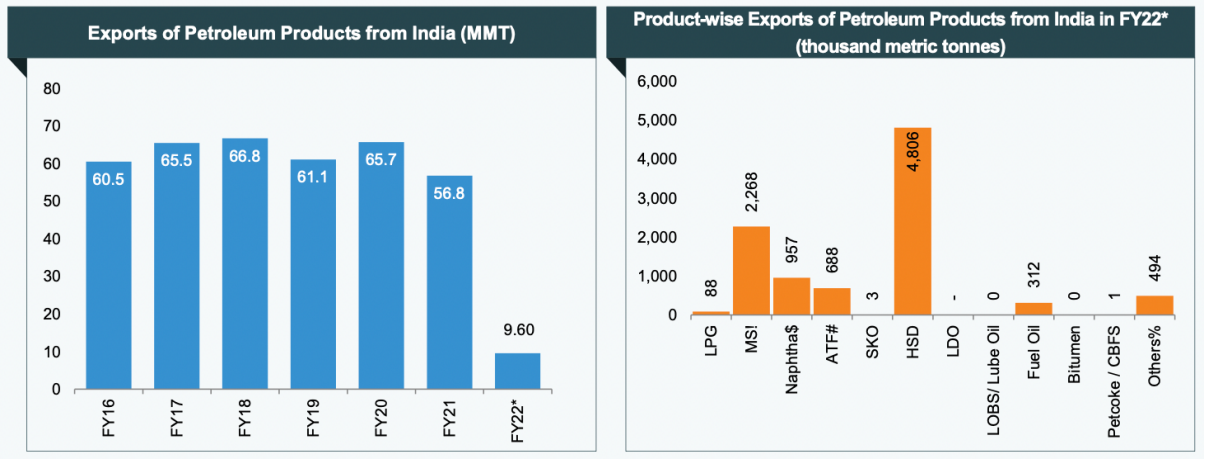


Indian refinery industry has done well in establishing itself as a major player globally. India is the 4th largest refiner globally and 2nd in Asia, after China. Refinery capacity utilization was ~102% for the year 2019-20. During 2019-20, most of the refineries have undertaken/ planned shutdowns for implementing of quality upgradation projects in line with the target of introduction of BS VI autofuels all over the country wef April 1, 2020. The trend in refinery capacity and throughput is depicted below:

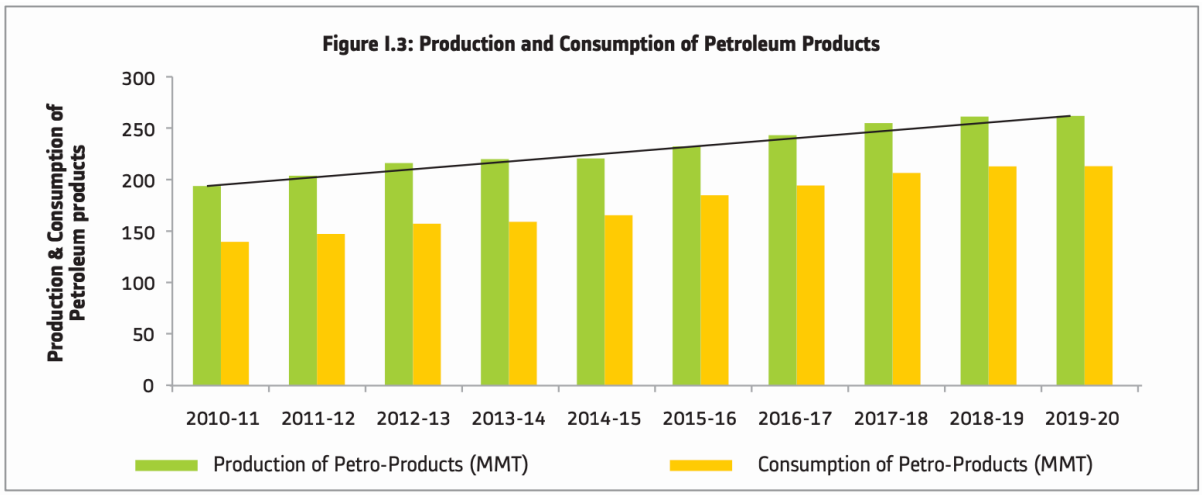


India is one of the major exporters of petroleum products and it has established itself as a major global player. India is emerging as a refinery hub and the total refinery capacity far exceeds the demand. Indian exports of petroleum products contributes a lion's share to India's GDP and balance of payments.

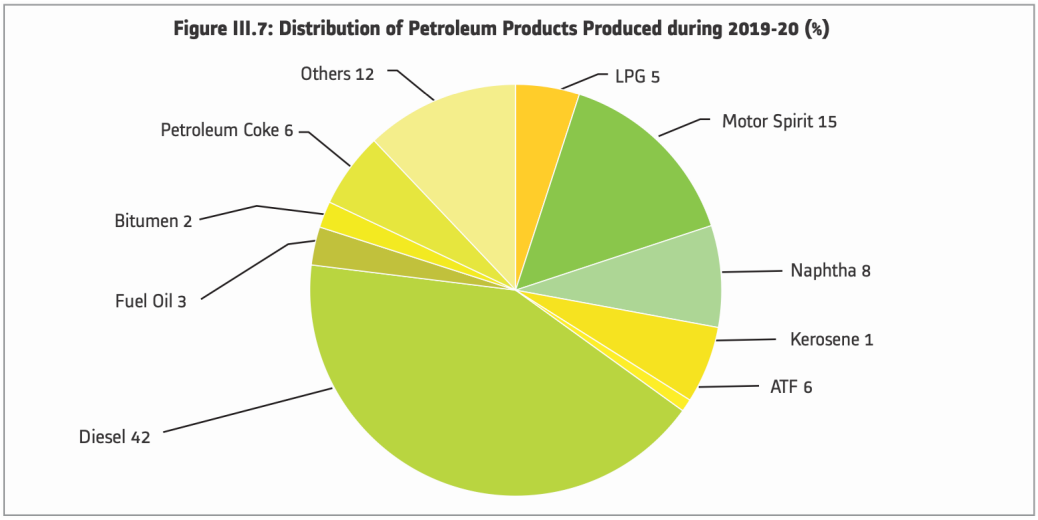
Following is a summary of the exports of petroleum products from India:



Following is a comparison of the domestic production and consumption of petroleum products in India:



Derivate product-wise distribution of the petroleum products is as follows:



Bifurcation of petroleum products by its general usage is as follows:

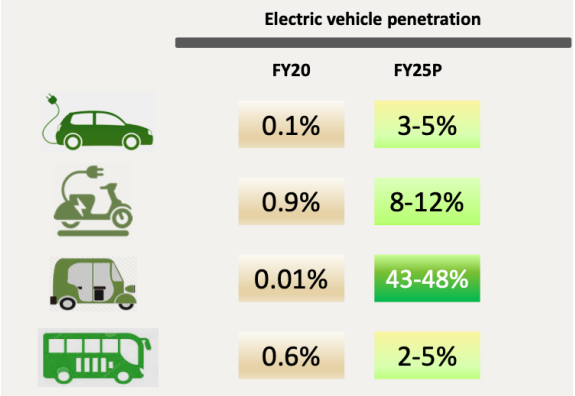
Sr No	Petroleum product	Usage
1	Diesel	Transportation
2	Petrol	
3	ATF	
4	LPG	Household
5	Kerosene	
6	Naphtha	Industrial

7	Petcoke	
8	Furnace Oil	
9	Bitumen	Others

Challenges of the downstream sector

As the downstream sector companies are mainly at the mercy of their upstream and midstream sector counterparts, its challenges are similar in as much as predicting the level of operations becomes very difficult due to the constant volatility. Also, downstream sector companies are the face before the ultimate customers who are the worst affected due to the volatility in prices of petroleum products.

From a specific product perspective, shift towards petrol passenger cars and shift of LCVs to CNG may restrict long-term growth of diesel, though diesel may witness a recovery in 2022 supported by higher sales of commercial vehicles. Even railway electrification shall result in a reduced offtake of diesel by the railways in the long-run. Even petrol growth may recover in the short-run but may moderate in the long-run due to tough competition from CNG which is more cost competitive. Most importantly, increasing penetration of electric vehicles shall reduce demand of petrol and diesel considerably. Two and three wheelers will have a sizeable Electric Vehicles ('**EV**') penetration on account of declining battery prices, availability of charging infrastructure, favourable cost of ownership and government's focus on electric mobility adoption. Following is the projection of EV penetration by FY 2025:



Kerosene consumption has been declining over the years and is expected to decline further on account of substitution by LPG.

Major players in the Oil sector

Following are the important metrics of the major players in the oil sector in India[1]:

(Rs in crs)

#	Company	U/M/D	Market Cap	ROCE	P/E	P/BV	Div %	Promoter %
1	RIL	D	Rs 16,23,936	8.19	34.10	2.34	0.29	50.59
2	ONGC	U, M, D	Rs 1,50,963	9.95	7.06	0.68	3.00	60.41
3	IOCL	M, D	Rs 1,05,345	14.85	4.13	0.94	10.73	51.50
4	BPCL	M, D	Rs 1,04,579	18.55	9.02	1.95	9.13	52.98
5	HPCL	M, D	Rs 37,946	19.41	3.64	1.00	8.51	54.90
6	OIL	U, M, D	Rs 19,568	12.95	4.81	0.83	2.77	56.66

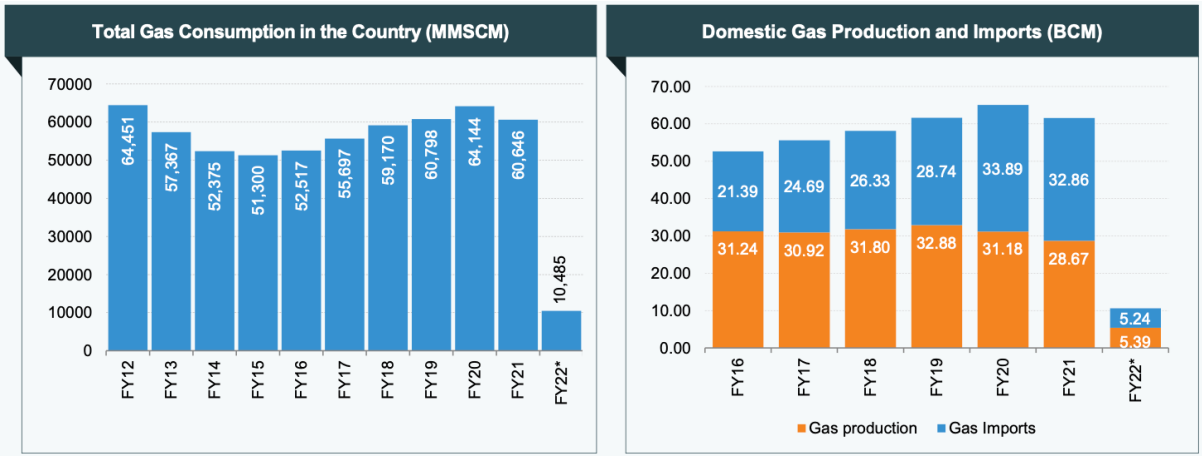
[1] As on September 7, 2021

NATURAL GAS SECTOR

Below is a detailed value chain of the Natural Gas sector:

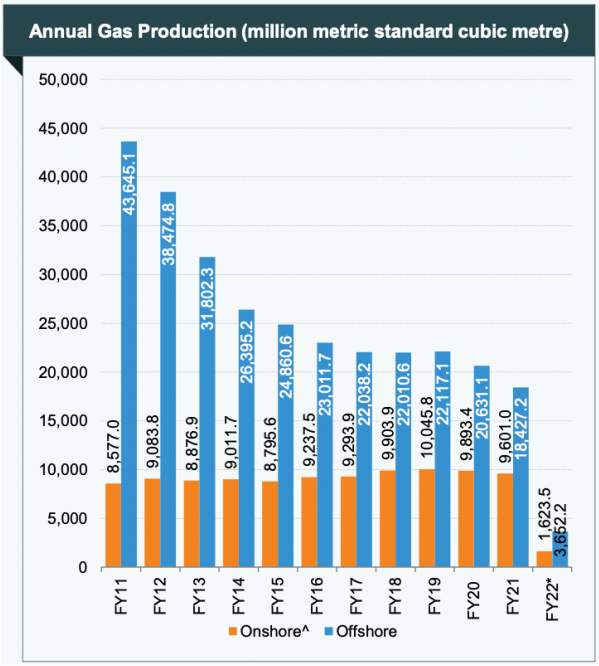
The value chain of the natural gas sector is quite similar to the oil sector. Also, a number of players in the natural gas sector are the same as that of the oil sector. Accordingly, the operations and functioning are quite similar, along with the challenges. However, natural gas being a cleaner fuel compared to oil is beginning to have a comparatively higher acceptance.

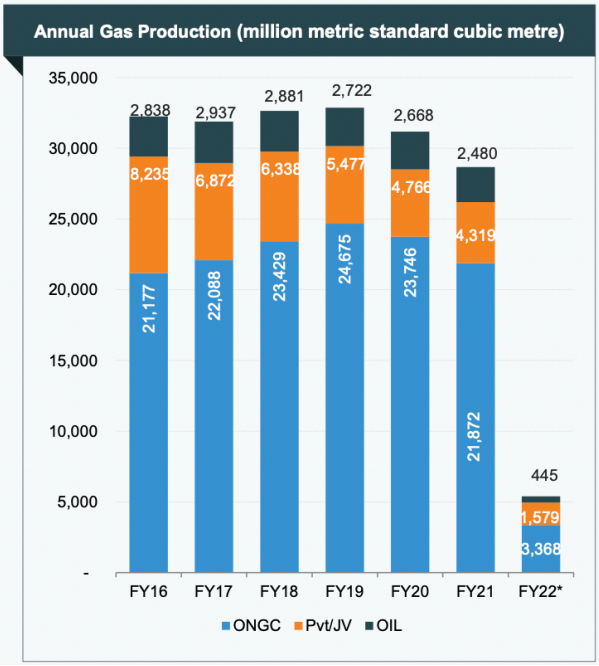
The natural gas production and consumption is both on the rise, with a slight reduction in FY21 on account of the COVID-19 pandemic. Following is a brief summary of the demand and supply (domestic and imports):



Upstream

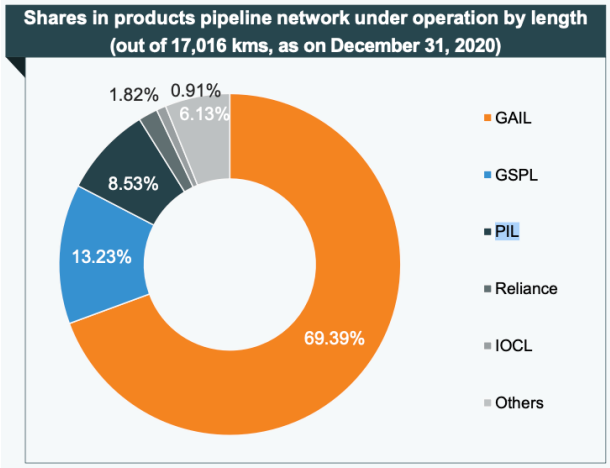
The major players in the upstream sector for natural gas are the same as the oil sector namely ONGC and OIL. Following is a summary of the annual gas production, bifurcated into onshore and offshore as well as by producer companies:





Midstream

The major midstream sector players in natural gas area are also state-owned companies namely Gas Authority of India Ltd ('GAIL') with a share of ~70%, followed by Gujarat State Petronet Ltd. Due to the affordability and clean nature of natural gas, the government through PNGRB is aggressively attracting investments for building gas infrastructure by simplifying the country's gas pipeline tariff structure to make fuel more affordable for distant users. Following is a snapshot of the pipeline network of various midstream sector players.



Downstream

There is an aggressive push by the government to have more and more CNG outlets. A number of CNG outlets operate side by side with the petrol and diesel outlets, but a number of standalone CNG outlets are also coming up. Following is the number of CNG stations state-wise in India:

State	CNG Stations as of November 30, 2020
Andhra Pradesh	72
Assam	1
Bihar	9
Chandigarh, Haryana, Punjab & Himachal Pradesh*	15
Dadara & Nagar Haveli	7
Daman and Diu	4
Daman and Diu & Gujarat	9
Goa	4
Gujarat	709
Haryana	137
Haryana & Himachal Pradesh*	2
Haryana & Punjab*	4
Himachal Pradesh	1
Jharkhand	13
Karnataka	37
Kerala	12
Madhya Pradesh	70

State	CNG Stations as of November 30, 2020
Madhya Pradesh & Rajasthan*	2
Madhya Pradesh & Uttar Pradesh*	2
Maharashtra	397
Maharashtra & Gujarat	12
National Capital Territory of Delhi (UT)	421
Odisha	19
Puducherry & Tamil Nadu*	1
Punjab	69
Rajasthan	39
Tamil Nadu	2
Telangana	73
Tripura	11
Uttar Pradesh	340
Uttar Pradesh & Rajasthan*	25
Uttar Pradesh & Uttarakhand*	1
Uttarakhand	10
West Bengal	13
Total	**2,543**

Major players in the Natural Gas sector

Following are the important metrics of the major players in the natural gas sector in India[2]:

(Rs in crs)

#	Company	U/M/D	Market Cap	ROCE	P/E	P/BV	Div %	Promoter %
1	RIL	D	Rs 16,23,936	8.19	34.10	2.34	0.29	50.59
2	ONGC	U, M, D	Rs 1,50,963	9.95	7.06	0.68	3.00	60.41
3	Adani	M, D	Rs 1,47,572	31.23	256.71	75.2	0.02	74.80
4	IOCL	M, D	Rs 1,05,345	14.85	4.13	0.94	10.73	51.50
5	GAIL	M	Rs 63,987	13.48	8.40	1.20	3.47	51.83
6	Petronet	M	Rs 34,695	28.62	11.61	2.94	1.51	50.00
7	GSPL	M	Rs 19,649	37.58	10.37	3.08	0.57	37.63
8	OIL	U, M, D	Rs 19,568	12.95	4.81	0.83	2.77	56.66

[2] As on September 7, 2021

GOVERNMENT POLICIES AND INITIATIVES

National Monetization Pipeline ('NMP')

Natural gas

Under the NMP unveiled by the Finance Minister on August 23, 2021, natural gas pipelines of 8,154 km having indicative monetization value of ~Rs 25k crore and having a 4% share in overall NMP in value terms is proposed to be monetized. As part of the government's environment agenda, the share of natural gas in India's primary energy requirement is proposed to be increased from 6% currently to 15% by 2030.

The state owned midstream sector company GAIL has been operating about ~49-52% capacity utilization in recent years, which is sub-optimal. Accordingly, it is proposed to monetize ~8,154 km of GAIL's pipeline network for ~Rs 3 cr per km (calculated using the enterprise value method), of which 7,928 km are from existing operational pipeline assets and the rest from pipelines that are expected to become operational during NMP period. During FY22, two pipelines with a total length of 2,229 km have been identified for monetization. The monetization is proposed to be undertaken by the Carry-Operate-Transfer ('**COT**') structure or by creation of a pipeline InvIT. The InvIT based structure has a precedent in India Infrastructure Fund wherein an InvIT sponsored by Brookfield Asset Management took over 100% ownership of 1,375 km long Kakinada to Bharuch natural gas pipeline from a private sponsor for a period of 20 years against an upfront consideration. The indicative expected monetization under the NMP for natural gas pipelines is as under:

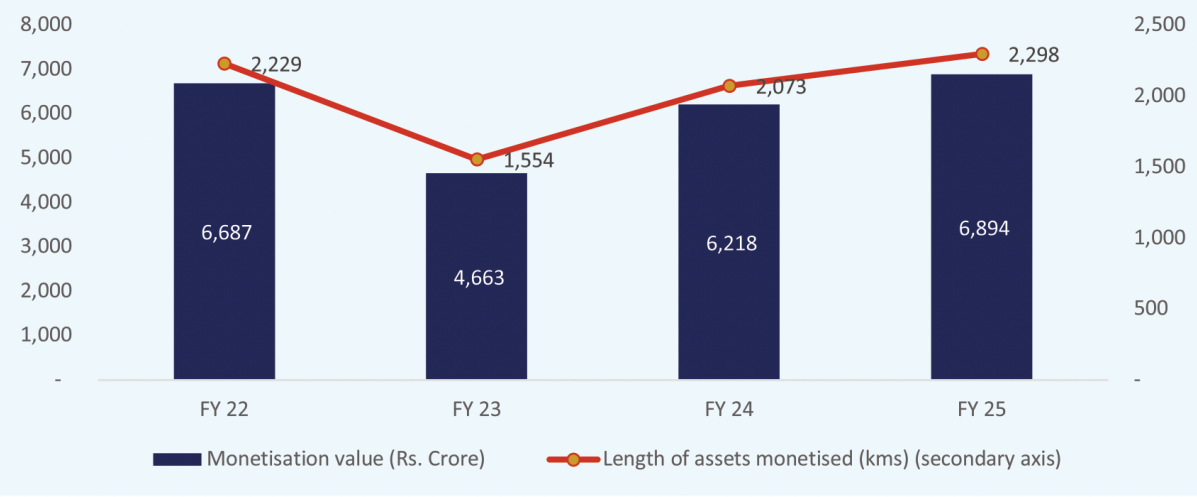


Figure 16: Pipeline phasing – Natural gas pipelines (Rs crore)

In fact, the government will kickstart the NMP process by monetizing the natural gas pipelines of GAIL.

Petroleum, petroleum product pipelines and other assets

The government proposed to monetize the following petroleum product and LPG pipelines:

S.No.	Asset type	FY22	FY23	FY24	FY25	Total
1	Petroleum product pipelines (km)	755	629	906	906	**3,196**
2	LPG pipelines (km)	-	141	296	296	**733**
3	Hydrogen generation plants (nos.)	1	1	-	-	**2**

Pipelines of aggregate length 3,930 km are proposed to be monetized for a value of ~Rs 23k crores having ~4% share in overall NMP in value terms is proposed to be monetized. These pipelines are owned by IOCL, HPCL and GAIL.

The indicative expected monetization under the NMP for petroleum product and LPG pipelines is as under:

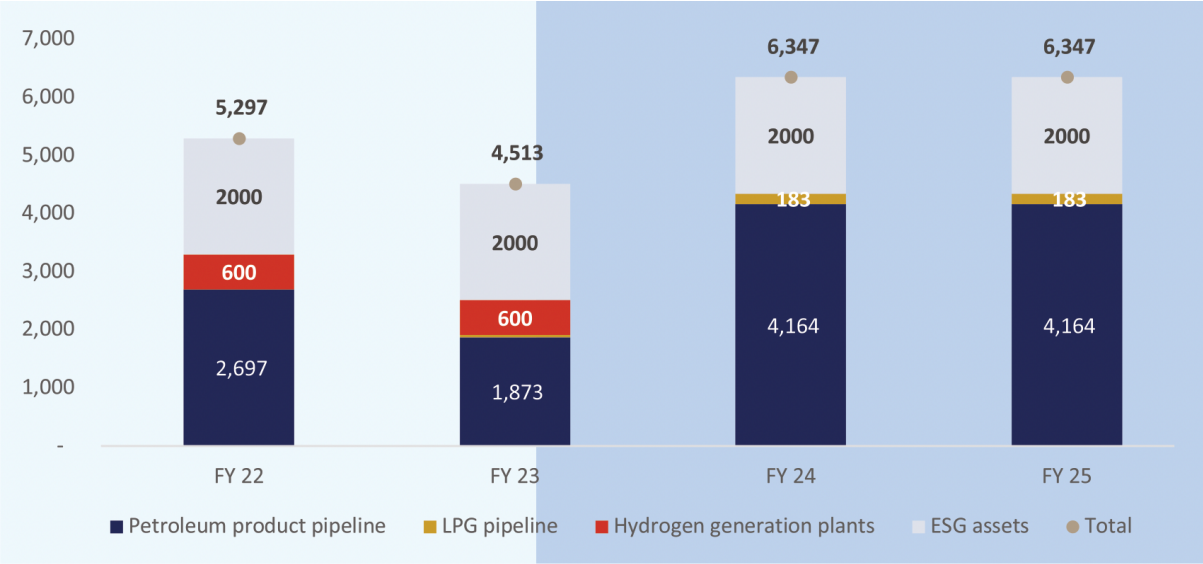
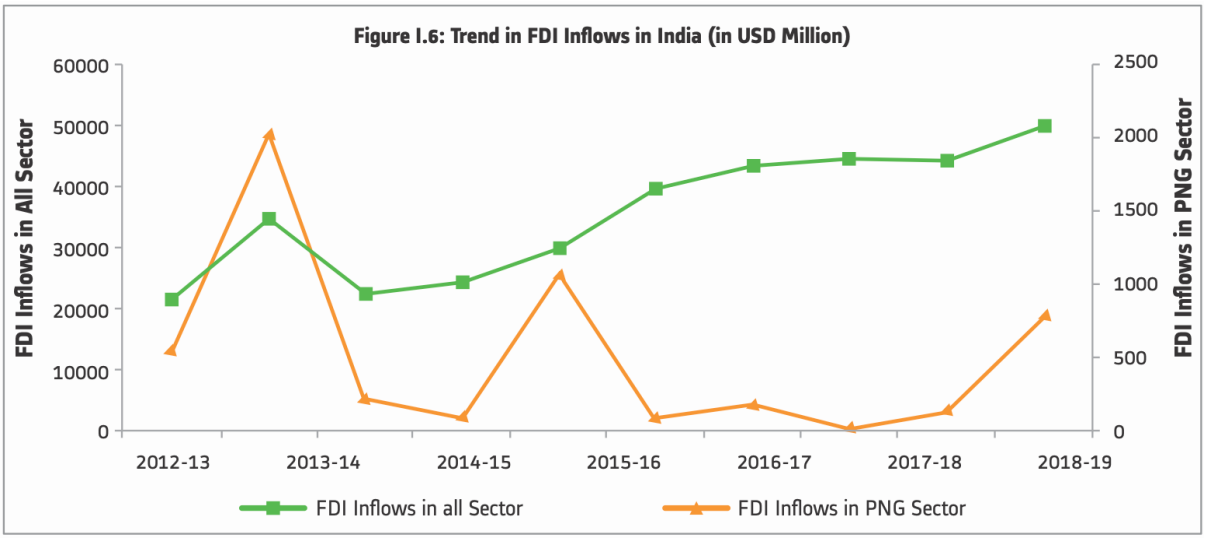


Figure 17: Pipeline phasing – Petroleum product / LPG pipeline & other assets (Rs crore)

Foreign Direct Investment ('FDI')

The Government of India permits Foreign Direct Investment (FDI) across the hydrocarbon value chain covering the upstream, midstream and downstream sectors. The present FDI policy allows 100% FDI

in petroleum and natural gas sector under the automatic route for exploration and production, refining by private companies (49% for PSUs without any disinvestment or dilution of domestic equity in existing PSUs), marketing of petroleum products, pipelines, storage and LNG regasification infrastructure and all related services, subject to existing sectoral policy and regulatory framework in the oil and gas sector. Inflow of FDI in petroleum and natural gas has varied considerably over the years, which could partly be due to the requirement of a large investment commitment. Following chart summarizes the trend of FDI in the Oil & Gas sector:



BPCL privatization

The government, which holds a 52.98% stake in BPCL, is in the process of divesting its holdings, for its plan to raise a record Rs 1.75 trillion from disinvestment proceeds in FY 2022. The government has given access of BCPL's data to prospective bidders in April 2021 and so far, mining to oil conglomerate Vedanta and PE firms Apollo Global and I Sqaured Capital's arm Think Gas are in the race to buy the government's stake in BPCL.

Proposed unified pipeline tariff

PNGRB had proposed implementation of the unified tariff for natural gas grid in September 2020. Under this regime, the tariff calculation will be based on the weighted average of the zonal tariffs for the pipeline network. This will likely reduce the landed cost of gas to the consumer located far from the source of gas. As per this structure, buyers will be charged a fixed tariff for the transport of gas within 300 kms of a source and a fixed tariff for the transport of gas beyond 300 kms on a single pipeline network. This is likely to result in buyers from nearby gas sourcing hubs to bear a higher cost while those further away to benefit. This plan is expected to encourage new pipeline development.

NOTABLE TRENDS

Expansion

- In June 2021, the government announced that it will auction unmonetised large oil and gas fields of state-owned ONGC and OIL to boost hydrocarbon production.
- Key Indian oil retailers such as BPCL and HPCL have announced plans to increase the capacity of their outlets in rural areas in 2021.
- In February 2021, ONGC announced that by May 2021, it would increase natural gas output from a KG basin block to 2.5-3 million standard cubic meters per day.
- As per the Union Budget 2019-20, under scheme 'Kayakave Kailasa', the Ministry of Petroleum & Natural Gas enabled SC/ST entrepreneurs in providing bulk LPG Transportation. State run energy firms BPCL, HPCL and IOCL have plans to spend $ 20 billion on refinery expansions to add units by 2022.
- India targets US$ 100 billion worth investment in gas infrastructure by 2022 and to add another 228 cities to the gas distribution (CGD) network. This would include setting up RLNG terminals, pipeline projects, completion of the gas grid and setting up of CGD network in more cities.

Diversification

- Oil companies are focusing on vertical integration for next stage of growth. For instance, oil producer OIL is planning to build and operate refineries, while IOCL is planning to enter oil and gas exploration.

Investments to enhance production

- The Indian oil and natural gas sector is likely to witness an investment of US$ 206 billion in the next eight to ten years.
- IOCL is planning to invest Rs. 1.43 lakh crore (US$ 22.19 billion) to double its oil refining capacity to 150 million tonnes by 2030.
- ONGC plans to invest more than US$ 500 million in Mumbai High.

Pilot project Initiated for Shale Gas Production in India

- ONGC has started Shale Gas exploration by spudding the first Shale Gas well RNSG-1 in Burdwan district of West Bengal.

- In 2018, Great Eastern Energy Corp (GEECL) announced to invest $ 2 billion over the next ten years in West Bengal to explore shale gas reserves.

- As of March 2017, 22 assessment wells (5 exclusive shale gas in Cambay basin and 17 dual objective wells) in 19 Petroleum Mining Lease (PML) blocks have been drilled and required data are being generated/evaluated for shale gas/oil assessment.

Move to non-conventional energy resources

- The Government is planning to set up around 5,000 compressed biogas (CBG) plants by 2023.

- JBM signed an MoU with the Ministry of Petroleum and Natural Gas (MoPNG), Govt. of India, for the development of Compressed Biogas (CBG) Projects.

- In December 2020, the Minister for Petroleum & Natural Gas and Steel Mr. Dharmendra Pradhan laid the foundation stone for the Leafiniti Bioenergy's CBG plant in the Bagalkot district of Karnataka. This plant will utilise 200 TPD (tonnes per day) of press mud and will be commissioned at an estimated cost of Rs. 42 crore (US$ 5.6 million).

More focus upon small companies

- Private sector units like Adani, Sun Petrochemicals and few new entrants have bagged 1/3rd of small oil and gas fields.

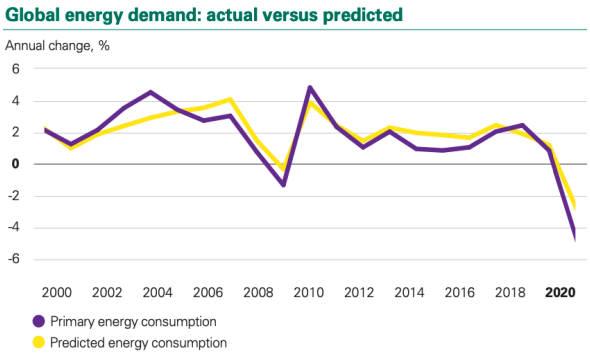
ONGC Videsh

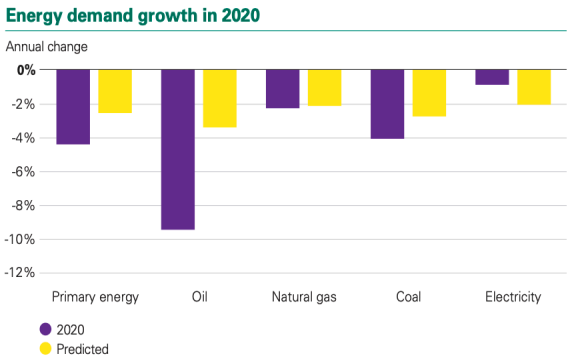
- In June 2021, ONGC Videsh is in the process to raise $ 525 million in overseas foreign money loans from a mixture of home and overseas lenders to repay bonds maturing in the subsequent months.

- ONGC Videsh, the abroad arm of the state-run explorer ONGC, is in discussion with half a dozen international and domestic banks for the loan and intends to close the deal this month and draw down next month.

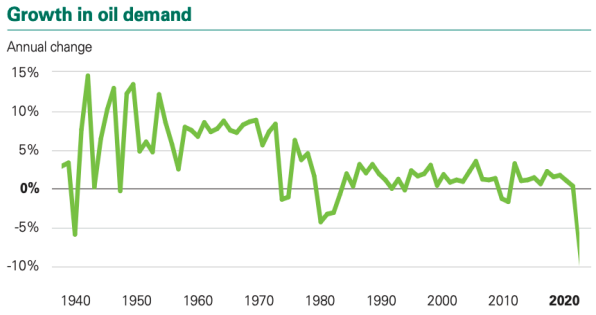
IMPACT OF COVID-19 ON OIL & GAS SECTOR

The COVID-19 pandemic has disrupted the entire global economy and has considerably impacted the global oil and gas industry. The world energy demand is estimated to have fallen by 4.5% and global carbon emissions from energy use by 6.3%; such large falls were last seen during World War II. US, India and Russia contributed the largest declines in energy consumption.



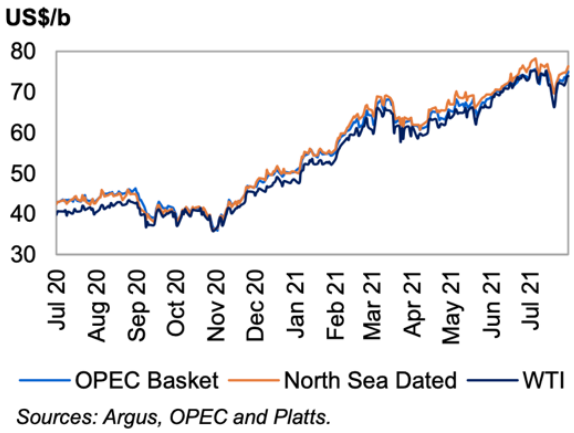


Oil demand is estimated to have fallen by 9.3% (9.1 mbpd) in 2020. Oil demand fell most in the US (-2.3 mbpd), the EU (-1.5 mbpd) and India (-0.48 mbpd) whereas China was the only country where consumption increased (0.22 mbpd).



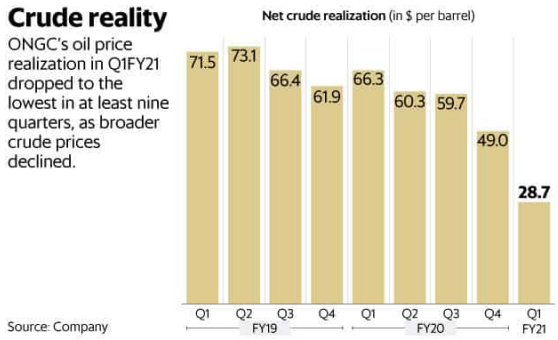
	2019	2020E	2021P
World oil supply (mbpd)	94.96	88.39	91-93
On-year change (mbpd)	0.11	(6.57)	3-4

Crude prices have been volatile over the past 1.5 years due to increase in output by OPEC+ coupled with falling global demand due to lockdown measures to contain COVID-19. At one point in time, the price of US benchmark crude WTI became negative in April 2020 due to onerous storage costs. The crude prices have since stabilized due to increase in demand and certain output cuts by OPEC+ as well as America.



Sources: Argus, OPEC and Platts.

Low crude prices are a grave cause of concern for domestic upstream companies like ONGC which have a comparatively higher BEP. In Q1 of FY 2020, crude price realisations fell by almost 57% on a YoY basis to $28.72 per barrel for ONGC which is a huge hit on its bottom line considering the break-even point for ONGC is ~$40 per barrel.



Similarly, ONGC suffered a considerable hit on its profits from its LNG sales where the domestic prices were set at $2.4 per mmBtu for April-September 2020, which was further reduced to $1.79 mmBtu for October-March 2021 when at the same time the cost of production for ONGC was higher at $3.5 mmBtu.

The domestic demand and consumption of petroleum products suffered greatly but is now seeing a gradual recovery; following is a summary of the consumption of petroleum products in FY 2020-21:

Petroleum products	FY20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
Transportation fuel													
Petrol	6%	-60%	-35%	-14%	-10%	-8%	3%	4%	5%	9%	6%	-2%	27%
Diesel	-1%	-56%	-29%	-15%	-19%	-21%	-6%	7%	-7%	-3%	-2%	-8%	28%
ATF	-4%	-91%	-84%	-66%	-65%	-62%	-52%	-48%	-47%	-41%	-40%	-37%	-2%
Household fuel													
LPG	6%	11%	12%	15%	2%	-5%	5%	3%	4%	7%	2%	7%	-2%
SKO	-31%	-49%	-32%	-38%	-19%	-43%	-6%	-18%	-18%	-11%	-11%	-26%	2%
Industrial fuel													
Naphtha	4%	-17%	25%	25%	-13%	-24%	3%	15%	7%	-3%	-8%	-4%	-2%
Petcoke	1%	-66%	17%	-4%	9%	-22%	-23%	-16%	-16%	-20%	-17%	-10%	-3%
FO	-7%	-41%	-9%	10%	-11%	7%	-7%	13%	12%	-11%	11%	5%	10%
Others													
Bitumen	-5%	-73%	-19%	37%	-4%	39%	38%	49%	18%	21%	14%	10%	72%
Total													
Overall consumption	0%	-49%	-20%	-9%	-12%	-16%	-4%	3%	-3%	-1%	-3%	-5%	17%

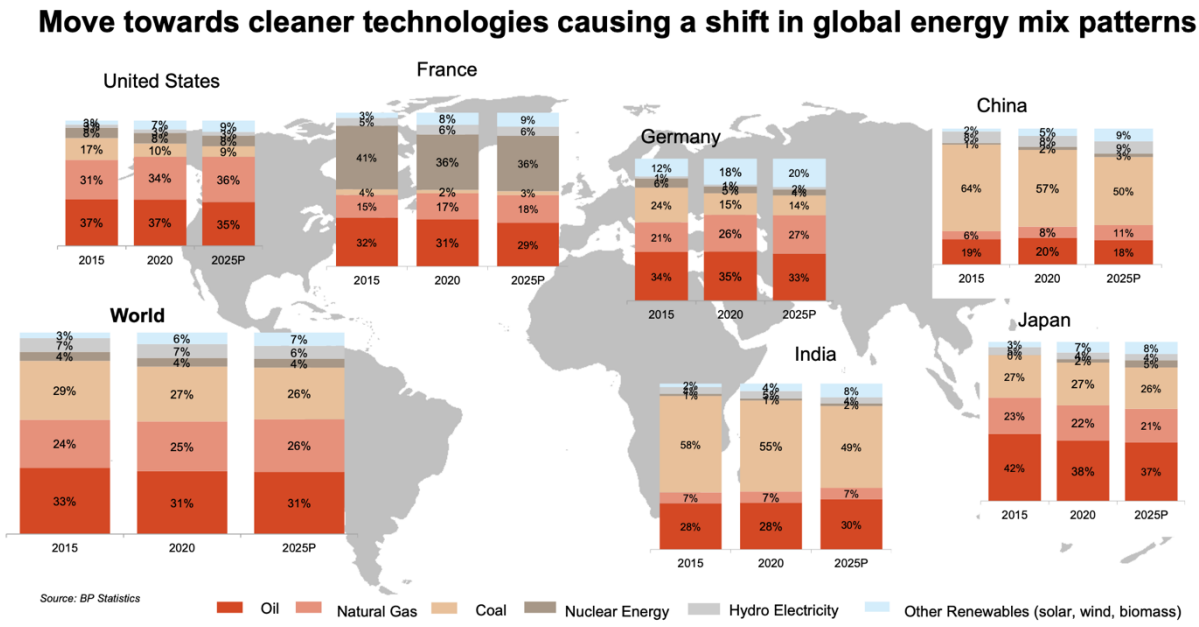
IMPACT OF CLIMATE CHANGE AND THE MOVE TO GREEN ENERGY

COVID-19 resulted in a material drop in global energy demand; however, this is not the biggest threat facing the oil and gas industry. One of the most important systemic risk to the global economy is climate change. Over the past few years, pressure has been building to shift the energy system away from the one dominated by hydrocarbons to the one in which low-carbon sources play the lead role. Due to the increasing emphasis on Environment, Social and Governance ('**ESG**') investing, investors' interest in sustainable, resilient assets, including renewables has sharpened. Investors are increasingly seeking out positions that reduce their exposure to climate change. Accordingly to analysis conducted by the Wall Street Journal, in the first three quarters of 2020 alone, oil and gas companies in North America and Europe wrote down asset values of $145 bn, roughly equivalent to 10% of their market value.

A number of oil and gas companies have already set net-zero-emission targets, despite the current economic challenges and are sustaining efforts to decarbonize their operations and their value chains – for example, ExxonMobil has announced its carbon emission in December 2020: reducing the intensity of operated upstream greenhouse gas emissions by 15-20% over the next 5 years relative to 2016 levels while continuing to invest in lower-emission technologies and support sound policies that put a price on carbon.

Strengthening the sector's traditional business model and making it financially resilient is increasingly becoming a function of climate resilience. Therefore, the oil and gas companies will need to build a portfolio that is resilient to higher carbon prices, which offers the best combination of lower break-even carbon prices and lowers emissions intensity. Apart from strengthening the existing business model, the oil and gas companies may need to re-evaluate their strategic responses to energy transition which may go well beyond decarbonizing their own operations to reduce their emissions considerably. The global large oil and gas companies may need to either become integrated energy players like BP who shall look to retain their profitable core while also capturing some of the opportunities in low-carbon markets, including renewables, bioenergy, hydrogen and the like or become low-carbon pure plays like some Danish/ Finnish companies like Neste which shall bet heavily on building future-proof, low-carbon businesses while divesting themselves of legacy, high carbon portfolios.

Following is a summary of the projections of global energy mix patterns on account of a move towards cleaner technologies:



While in India, oil consumption is projected to increase by 2025; however, globally, there is an expectation of decline of oil consumption which is substituted by increase in use of natural gas and renewable power.

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