Ministry of Petroleum and Natural Gas
Government of India



# ANNUAL REPORT
# 2022-23



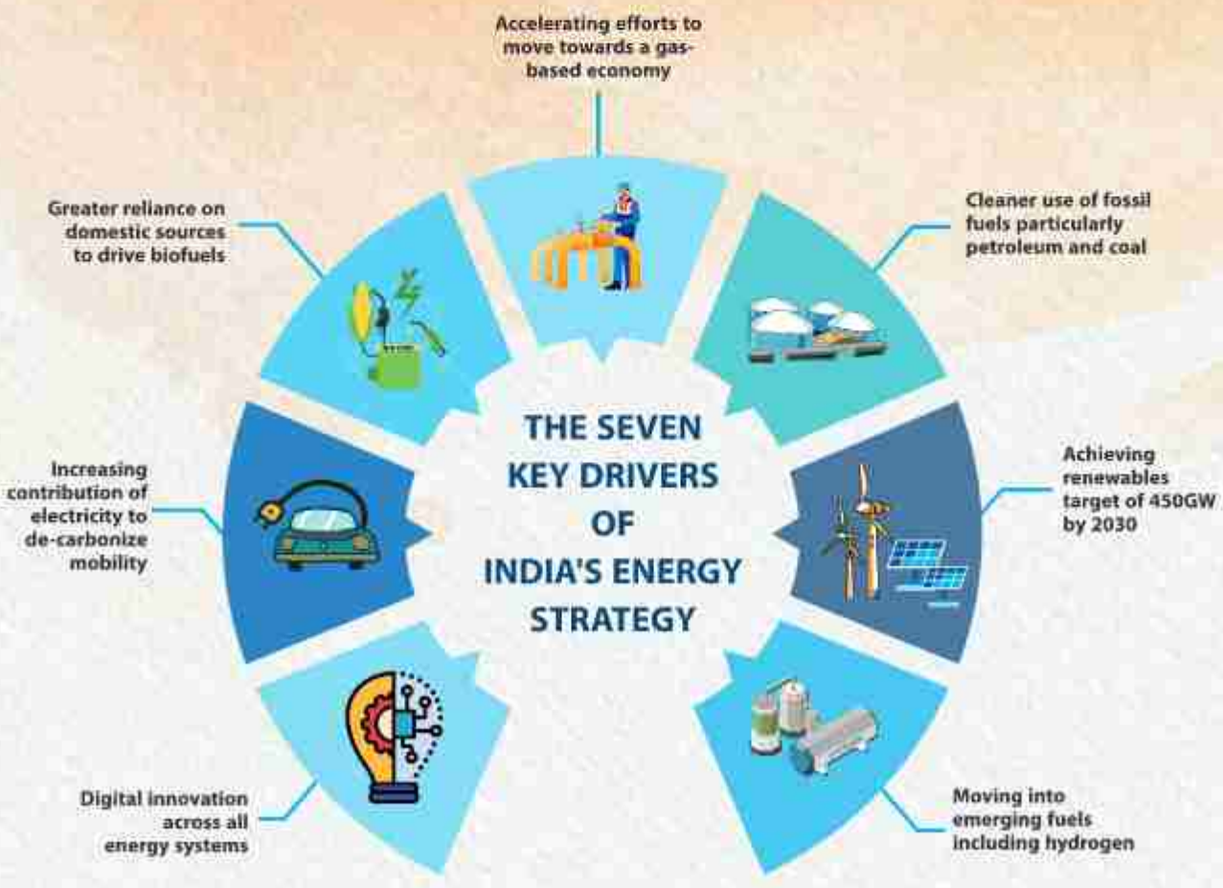

भारत 2023 INDIA

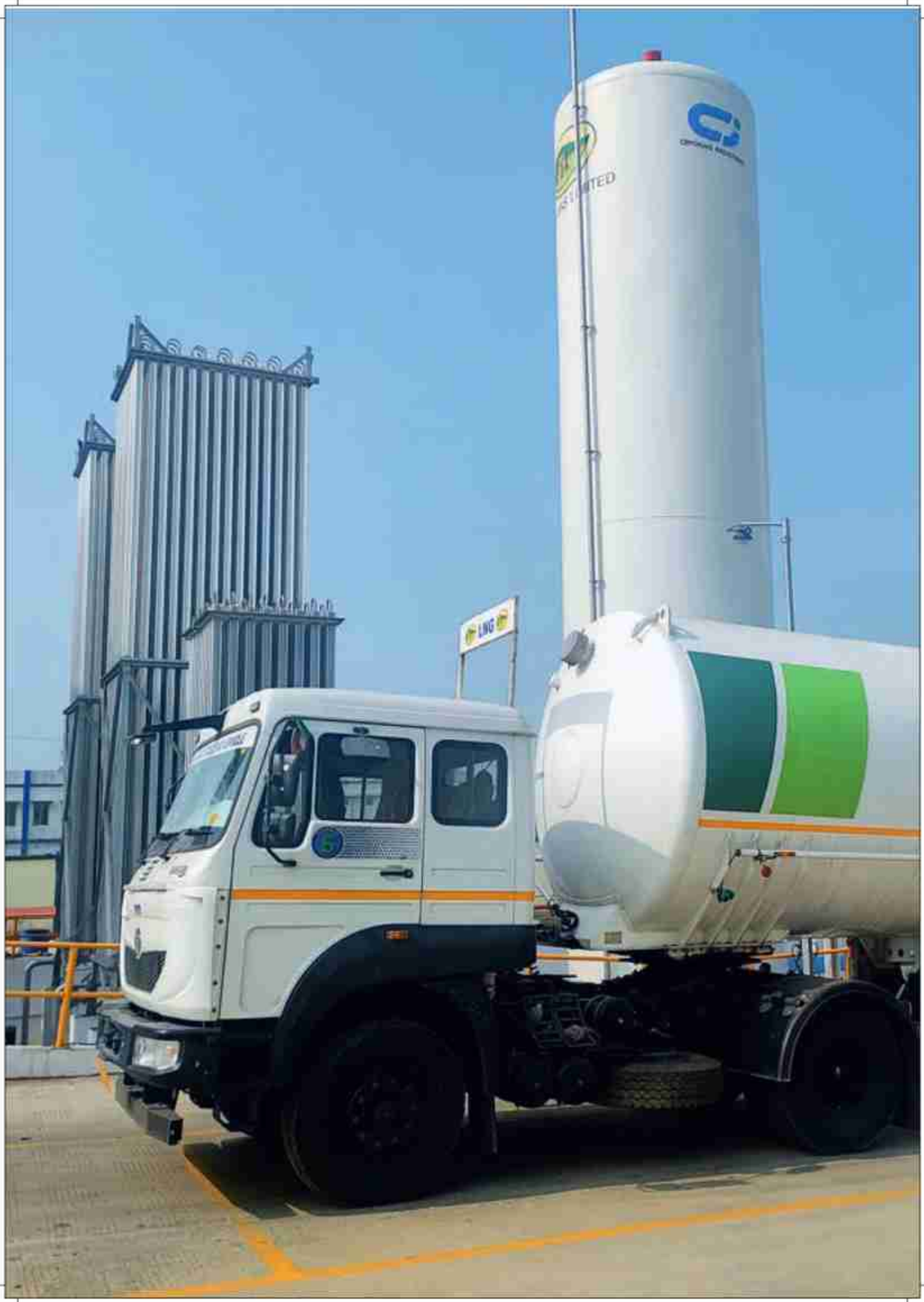
# वसुधैव कुटुम्बकम्

## ONE EARTH • ONE FAMILY • ONE FUTURE

India's G20 Presidency - "Vasudhaiva Kutumbakam" or "One Earth · One Family · One Future" - is drawn from the ancient Sanskrit text of the Maha Upanishad. Essentially, the theme affirms the value of all life – human, animal, plant, and microorganisms – and their interconnectedness on the planet Earth and in the wider universe.

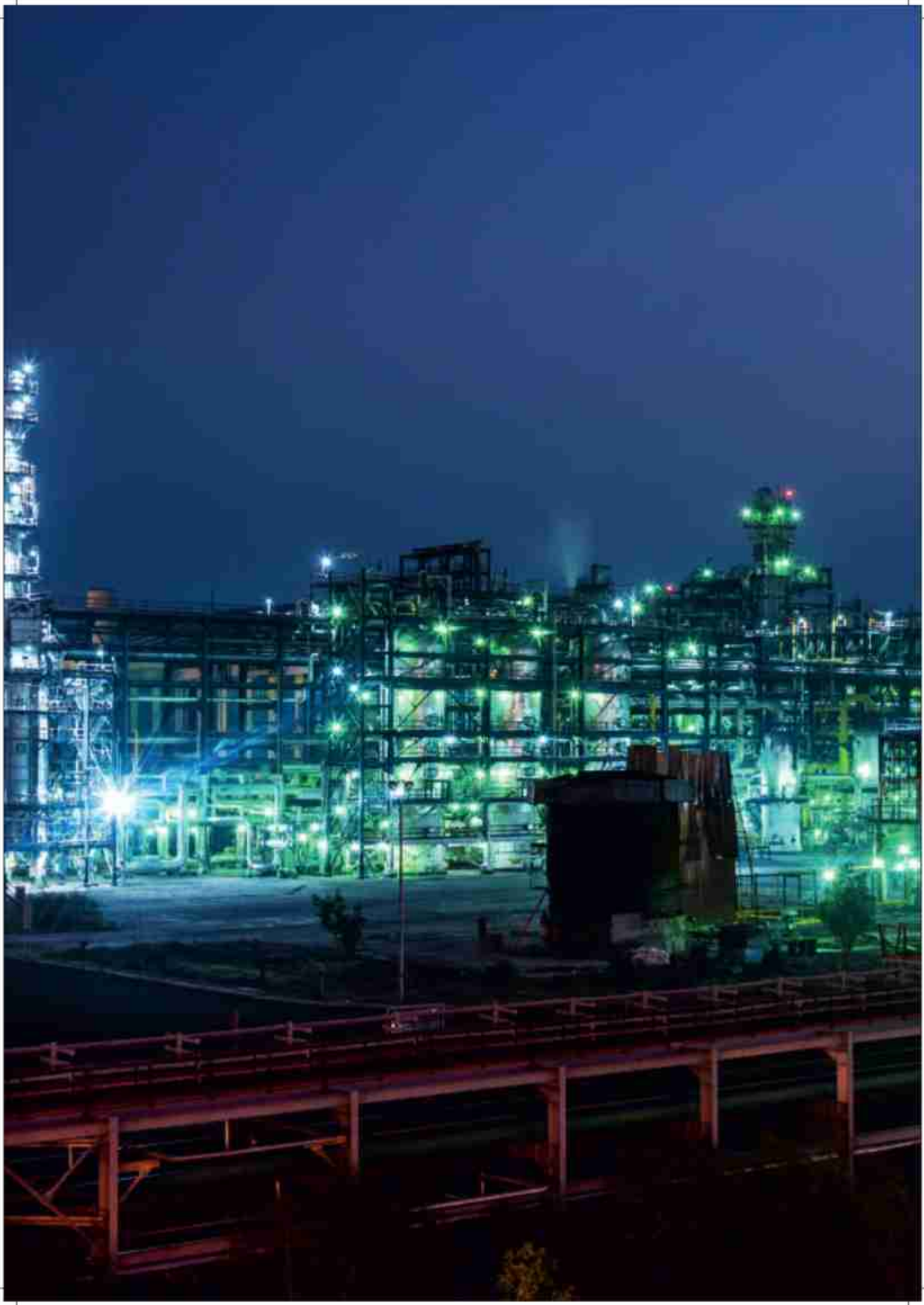


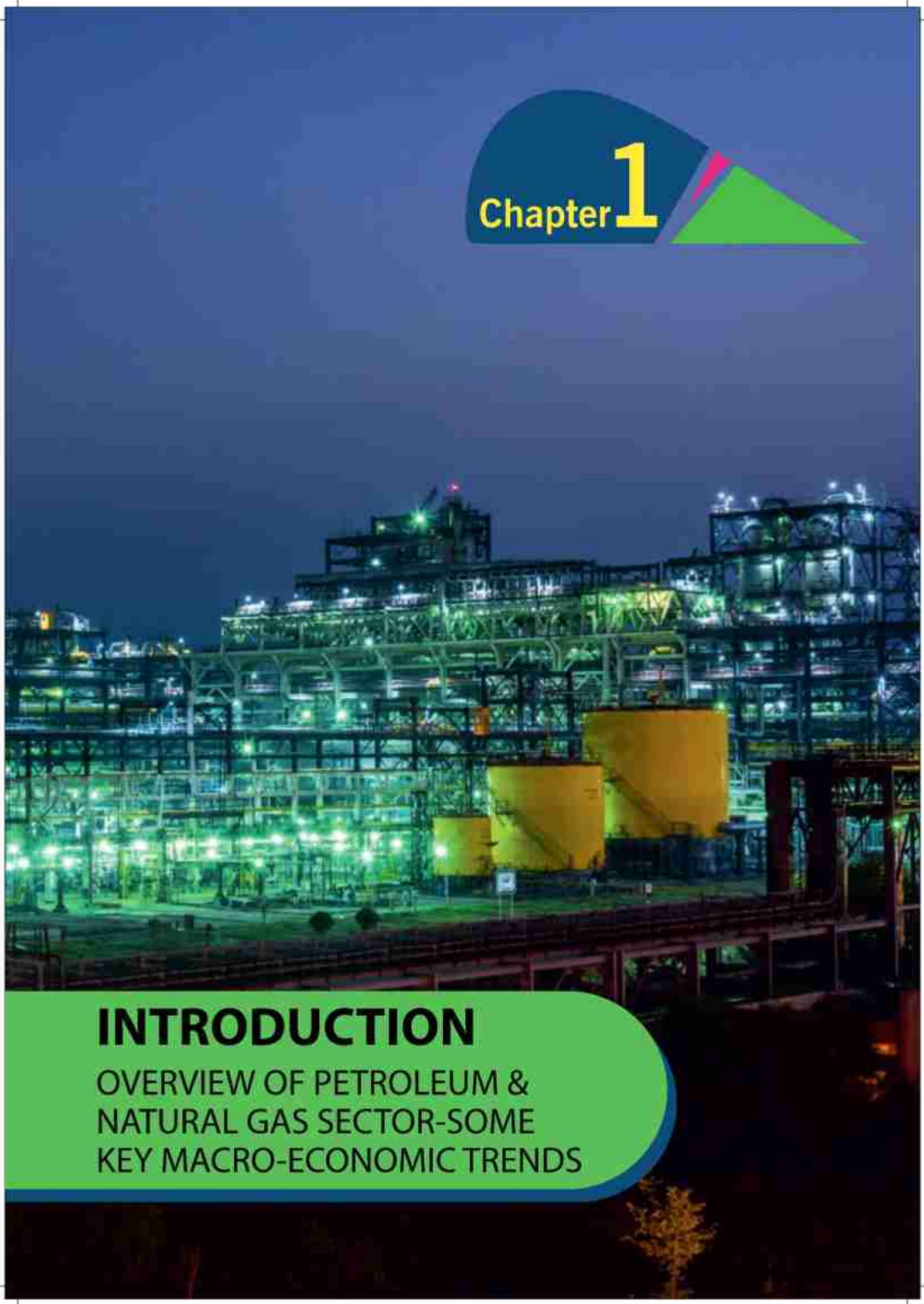

Accelerating efforts to move towards a gas-based economy
Cleaner use of fossil fuels particularly petroleum and coal
Achieving renewables target of 450GW by 2030
Moving into emerging fuels including hydrogen
Digital innovation across all energy systems
Increasing contribution of electricity to de-carbonize mobility
Greater reliance on domestic sources to drive biofuels
THE SEVEN KEY DRIVERS OF INDIA'S ENERGY STRATEGY


LNG

# CONTENTS


| | |
|---|---|
| Chapter 1: Introduction | 3 |
| Chapter 2: Exploration & Production | 29 |
| Chapter 3: Pipeline and Natural Gas | 55 |
| Chapter 4: Refinery | 61 |
| Chapter 5: Marketing and Distribution | 73 |
| Chapter 6: International Cooperation & Engagement | 79 |
| Chapter 7: Development of North-Eastern Region | 91 |
| Chapter 8: R&D and New Technology | 103 |
| Chapter 9: Bio-Fuels | 121 |
| Chapter 10: Conservation | 127 |
| Chapter 11: Pricing Policy on Sensitive Petroleum Products | 133 |
| Chapter 12: Welfare of Scheduled Castes, Scheduled Tribes, Other Backward Classes and Divyangjan | 137 |
| Chapter 13: Welfare, Development and Empowerment of Women | 141 |
| Chapter 14: Undertakings /Organizations | 145 |
| Chapter 15: Integrated Finance Division | 241 |
| Chapter 16: General | 249 |
| Chapter 17: Azadi Ka Amrit Mahotsav | 255 |
| Chapter 18: Appendix | 267 |
| Chapter 19: Social Media Outreach | 284 |





Chapter 1

# INTRODUCTION

## OVERVIEW OF PETROLEUM & NATURAL GAS SECTOR-SOME KEY MACRO-ECONOMIC TRENDS

# 1 Introduction

**1.1.** Shri Hardeep Singh Puri holds the charge of Cabinet Minister for Petroleum & Natural Gas with effect from 08th of July, 2021.

**1.2.** Shri Rameswar Teli holds the charge of Minister of State for Petroleum & Natural Gas with effect from 08th of July, 2021.

**1.3.** Shri Pankaj Jain, IAS(AM:1990), holds the charge of Secretary in the Ministry of Petroleum & Natural Gas with effect from 30th of December, 2021.

**1.4.** Shri Praveen Mal Khanooja, IA&AS:1994, assumed the charge of Additional Secretary in the Ministry of Petroleum and Natural Gas with effect from 12th of August, 2022.

**1.5.** Ms. Kamini Chauhan Ratan, IAS(UP:1997), assumed the charge of Additional Secretary & Financial Advisor in the Ministry of Petroleum & Natural Gas with effect from 22nd of November, 2022.

**1.6.** Shri Sunil Kumar, IRAS:1995, continues to hold the charge of Joint Secretary in the Ministry of Petroleum & Natural Gas with effect from 1st of May, 2019.

**1.7.** Dr. Navneet Mohan Kothari, IAS(MP: 2001), continues to hold the charge of Joint Secretary in the Ministry of Petroleum & Natural Gas with effect from 12th of March, 2020.

**1.8.** Ms. Esha Srivastava, IFS:2004, continues to hold the charge of Officer on Special Duty in the Ministry of Petroleum & Natural Gas with effect from 2nd of March, 2022.

**1.9.** Ms. Sujata Sharma, IAS(AP:2006), assumed the charge of Joint Secretary in the Ministry of Petroleum & Natural Gas with effect from 12th of December, 2022.

**1.10.** Shri Rohit Mathur, CSS, continues to hold the charge of Joint Secretary(in-situ) in the Ministry of Petroleum & Natural Gas with effect from 17th of January, 2020.

**1.11.** Ms. Perin Devi, CSS, continues to hold the charge of Joint Secretary(in-situ) in the Ministry of Petroleum & Natural Gas with effect from 31st of August, 2021.

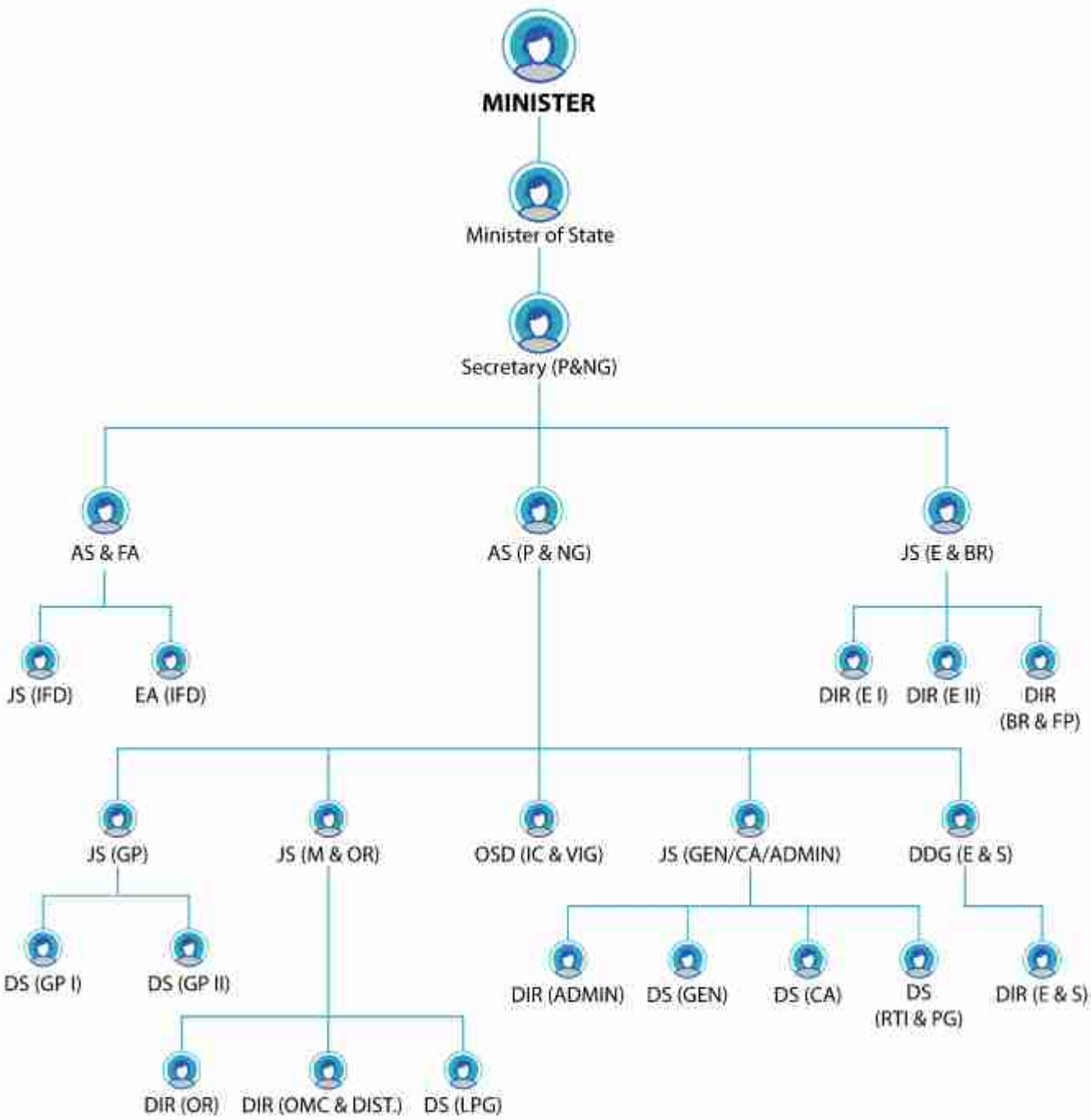
**1.12.** Shri Dheeraj Kumar Ojha, ISS:1999, continues to hold the charge of Deputy Director General in the Ministry of Petroleum & Natural Gas with effect from 10th of December, 2021.

**1.13.** Shri Rajinder Kumar, IES:2003, continues to hold the charge of Economic Adviser in the Ministry of Petroleum and Natural Gas with effect from 11th of March, 2022.



View of GAIL's Gas processing unit at Vijaipur, UP

# Organizational Chart of the Ministry of Petroleum & Natural Gas



# Performance of Petroleum & Natural Gas Sector- Some Key Macro-Economic Trends

## 1.1. Introduction

India's continued industrialisation and urbanisation will make huge demands of its energy sector and its policy makers. As per IEA's India Energy Outlook 2021, Energy use on a per capita basis is well under half the global average, and there are widespread differences in energy use and the quality of service across states and between rural and urban areas. An expanding economy, population, urbanisation and industrialisation mean that India sees the largest increase in energy demand of any country, across all scenarios to 2040.

As per IEA's India Energy Outlook 2021, India's oil demand rises by almost 4 million barrels per day (mb/d) to reach 8.7 mb/d in 2040, the largest increase of any country. In the Sustainable Development Scenario, by contrast, a much stronger push for electrification, efficiency and fuel switching limits growth in the oil demand to less than 1million barrels per day. Government has set a target to raise the share of natural gas in energy mix to 15% by 2030. At present (in 2021), share of natural gas in primary energy mix is 6.3%.

To meet the increased requirement of hydrocarbon fuel, major strategies adopted inter alia include: attracting investment in Exploration & Production to enhance domestic oil and gas production, shifting to gas based economy, technological upgradation to improve refinery processes, energy efficiency and productivity, accelerating bio-fuel economy, expanding overseas oil and gas portfolio, diversifying oil and gas supply sources, etc. Government has taken up development of National Gas Grid, City Gas Distribution Networks to cover major demand centres across the country to provide clean and green fuel.




HPCL's 1st Ethanol Loaded Rake in India

## 1.2. Production of Oil, Gas and Petroleum Products

The crude oil production during the year 2021-22 was 29.69 (MMT) against production of 30.49 MMT in 2020-21, showing a decline of 2.6%. In indigenous maximum production of crude oil from the western offshore of ONGC around 45.8% of total crude oil production during 2021-22. Out of total crude oil & condensate production of 29.69 MMT in 2021-22, 65.5% (19.45 MMT) was from ONGC (nomination fields), 10.1% (2.99 MMT) from OIL (nomination fields) and 24.4% (7.25 MMT) from PSC/RSC regime.

Natural Gas production during FY 2021-22 was 34.02 Billion Cubic Meters (BCM), which was 18.7% higher than the production of 28.67 BCM in 2020-21. Maximum production of natural gas from the western offshore of ONGC around 46.1% of the total natural gas production during 2021-22. Out of total natural gas production of 34.02 BCM in 2021-22, 60.6% (20.63 BCM) was from ONGC (nomination fields), 8.5% (2.89 BCM) from OIL (nomination fields) and 30.9% (10.50 BCM) from PSC/RSC/CBM regime.

During current FY 2022-23 (April-December, 2022), production of Crude oil and natural gas were 22.08 MMT and 25.87 BCM respectively.



View of ONGC's MHN platform

The production of petroleum products increased by 8.9% reaching to 254.31 MMT in FY 2021-22 vis-à-vis FY 2020-21 (233.51 MMT). During FY 2021-22, Diesel (HSD+LDO) accounted for the highest Production share (42.5%) followed by Petrol/Motor Spirit (15.8%), Naphtha (7.9%), Petroleum Coke (6.1%), LPG (4.8%), ATF (4%), Fuel Oil (3.3%), Bitumen (2.0%), Kerosene (0.8%) and Lubes & Greases (0.5%).

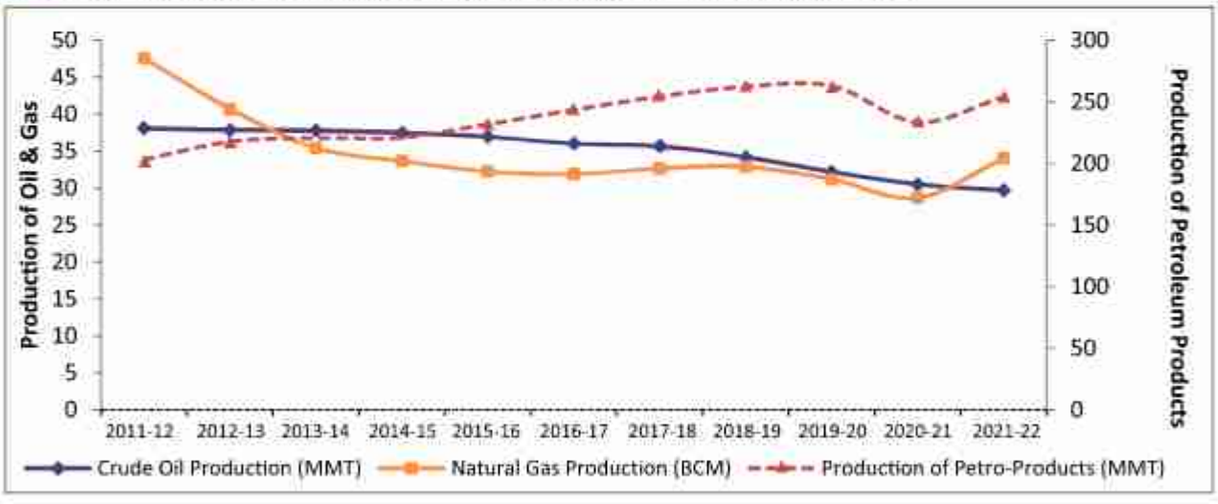
The trends in the production of crude oil, natural gas and petroleum products are given below:

**Table 1: Trends of Production in Crude Oil, Natural Gas and Petroleum Products**

| Year | Crude Oil Production (MMT) | % Growth in Crude Oil Production | Natural Gas Production (BCM) | % Growth in Natural Gas Production | Production of Petro-Products (MMT) | % Growth in Production of Petro-Products |
|---|---|---|---|---|---|---|
| 2011-12 | 38.09 | 1.08 | 47.56 | -8.92 | 203.20 | 4.30 |
| 2012-13 | 37.86 | -0.60 | 40.68 | -14.47 | 217.74 | 7.15 |
| 2013-14 | 37.79 | -0.19 | 35.41 | -12.96 | 220.76 | 1.39 |
| 2014-15 | 37.46 | -0.87 | 33.66 | -4.94 | 221.14 | 0.17 |
| 2015-16 | 36.94 | -1.39 | 32.25 | -4.18 | 231.92 | 4.88 |
| 2016-17 | 36.01 | -2.53 | 31.90 | -1.09 | 243.55 | 5.01 |
| 2017-18 | 35.68 | -0.90 | 32.65 | 2.36 | 254.40 | 4.46 |
| 2018-19 | 34.20 | -4.15 | 32.87 | 0.69 | 262.36 | 3.13 |
| 2019-20 | 32.17 | -5.95 | 31.18 | -5.14 | 262.94 | 0.22 |
| 2020-21 | 30.49 | -5.21 | 28.67 | -8.05 | 233.51 | -11.19 |
| **2021-22** | **29.69** | **-2.63** | **34.02** | **18.66** | **254.31** | **8.90** |
| 2021-22 (Apr-Dec) | 22.38 | - | 25.67 | - | 186.01 | - |
| 2022-23 (Apr-Dec) | 22.08 | -1.35 | 25.87 | 0.76 | 196.14 | 5.44 |

P: Provisional

**Graph 1: Trends of Production in Crude Oil, Natural Gas and Petroleum Products**




## 1.3. Refining Capacity & Refinery Crude Throughput

Indian refining industry has done well in establishing itself as a major player globally. India, which is the fourth largest refiner in the world and second largest refiner in Asia after China, has emerged as a refining hub with refining capacity exceeding demand. The country's refinery capacity has increased to 251.22 MPTA as on 01.04.2022. The refinery capacity utilisation was 97.0% during 2021-22. Crude Oil Processed during FY 2021-22 was 241.70 MMT against 221.77 MMT in FY 2020-21, marking an increase of about 8.99%. During current FY 2022-23 (April-December, 2022), crude oil processed was 188.57 MMT. The trend in Refining Capacity and Crude throughput is depicted below: **(details in Appendix-IV).**



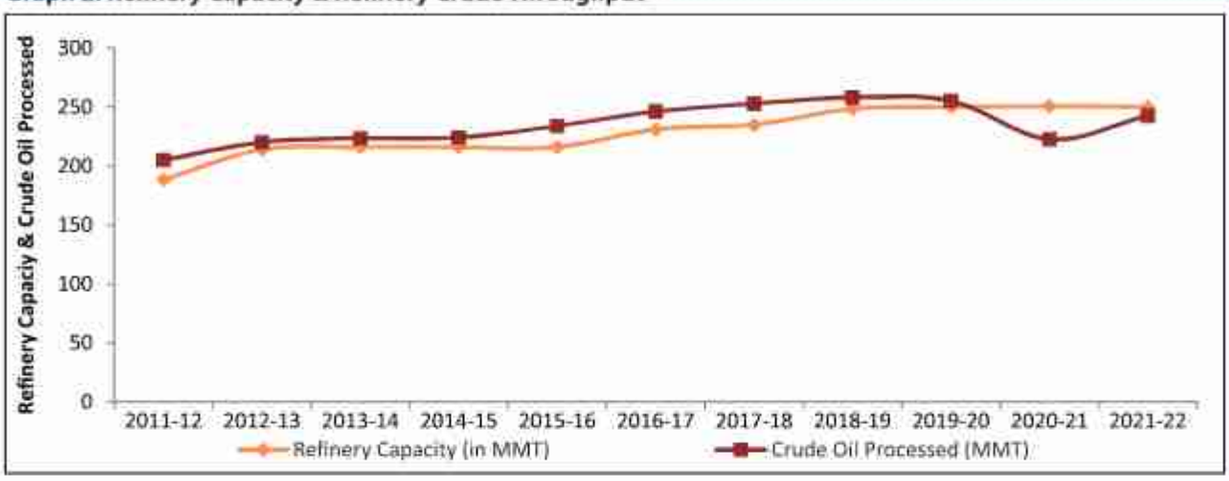
View of Ecopark at IOCL's Bongaigaon Refinery

**Table 2: Trends of Refinery Capacity & Refinery Crude Throughput (in terms of Crude Oil Processed)**

| Year | Refining Capacity (MMTPA)@ | % Growth in Refinery Capacity | Crude Oil Processed (MMT) | % Growth in Crude Oil Processed | Refining Capacity Utilization |
|---|---|---|---|---|---|
| 2011-12 | 187.39 | 2.18 | 204.12 | 3.62 | 108.93 |
| 2012-13 | 213.07 | 13.70 | 219.21 | 7.39 | 102.88 |
| 2013-14 | 215.07 | 0.94 | 222.50 | 1.50 | 103.46 |
| 2014-15 | 215.07 | 0.00 | 223.24 | 0.33 | 103.80 |
| 2015-16 | 215.07 | 0.00 | 232.86 | 4.31 | 108.28 |
| 2016-17 | 230.07 | 6.97 | 245.36 | 5.37 | 106.65 |
| 2017-18 | 233.97 | 1.70 | 251.93 | 2.68 | 107.68 |
| 2018-19 | 247.57 | 5.81 | 257.20 | 2.09 | 103.89 |
| 2019-20 | 249.37 | 0.73 | 254.39 | -1.10 | 102.01 |
| 2020-21 | 249.87 | 0.20 | 221.77 | -12.82 | 88.76 |
| **2021-22** | **249.22** | **-0.26** | **241.70** | **8.99** | **96.99** |
| 2021-22 (Apr-Dec) | 249.22 | - | 177.21 | - | 93.48 |
| 2022-23 (Apr-Dec) | 251.22 | 0.80 | 188.57 | 6.41 | 99.01 |

P: Provisional @: As on 1st April of initial year #: CPCL-CBR of MMT stopped since 1st April, 2019.

**Graph 2: Refinery Capacity & Refinery Crude Throughput**




## 1.4. Consumption of Petroleum Products & Natural Gas

Oil consumption and imports have grown rapidly on account of rising vehicle ownership and road transport use. The Pradhan Mantri Ujjawala Yojna (PMUY) scheme provides LPG connections to households living below the poverty line. Alongside the increasing use of LPG in rural areas, there has also been growth in the use of Piped Natural Gas (PNG) in urban areas. The market for natural gas is growing fast in India, but its role varies by sector, by scenario and over time. The 6.3% share of natural gas in India's current energy mix is among the lowest in the world. As per India Energy Outlook 2021 of IEA, Energy demand for road transport is projected to more than double over the next two decades. Transport has been the fastest-growing end-use sector in recent years, and India is set for a huge expansion of transportation infrastructure-from highways, railways and metro lines to airports and ports.

Total consumption of natural gas in 2021-22 stands at 63.91 BCM which is 5.1% higher than the consumption during the 2020-21 (60.82 BCM). Consumption of Natural gas for energy purpose as fuel stands at 64.1% against 35.9% for non-energy purpose as feedstock. During 2021-22, highest consumption of natural gas was in fertilizer industry at 29.4% followed by City & Local Natural Gas Distribution Network (including Road Transport) at 19.8%, power sector 16.5% and refinery 8.6%. During April-December, 2022, gas consumption was 45.66 BCM.



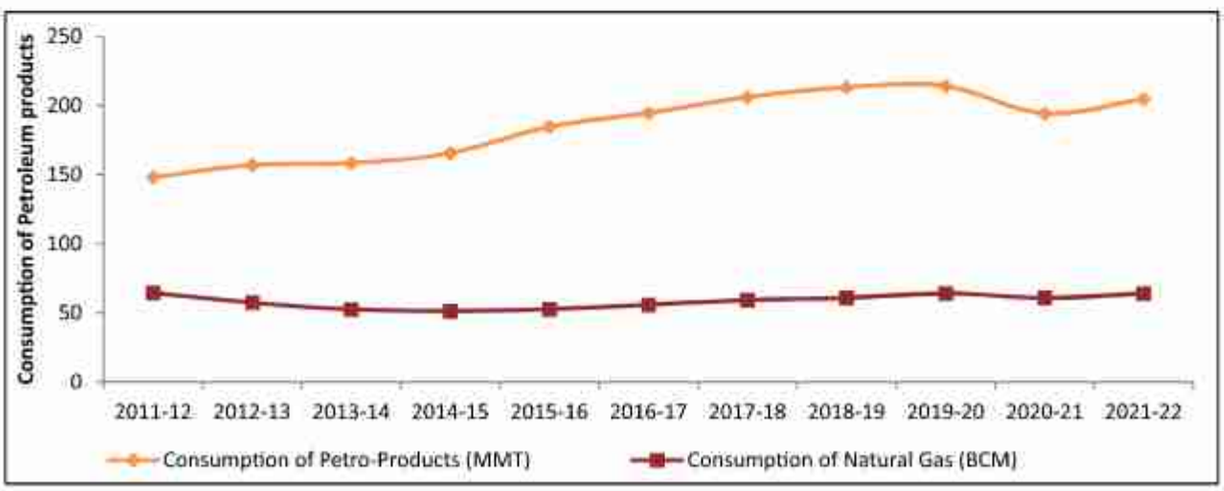
Total consumption of petroleum products in the country during FY 2021-22 was 204.72 MMT registering a growth rate of 5.4% vis-à-vis FY 2020-21 (194.295 MMT) due to incremental demand of petroleum products after the easing of COVID-19 curbs. During FY 2021-22, Diesel (HSD+LDO) accounted for the highest consumption share (38%) followed by Petrol/ Motor Spirit (15.1%), LPG (13.8%), Petroleum Coke (7.7%), Naphtha (7%), Bitumen (3.8%), Fuel Oil (3.1%), ATF (2.4%), Lubes & Greases (2.2%) and Kerosene (0.7%). During current year (April-December, 2022), consumption of petroleum products was 164.87 MMT respectively. The trend in consumption of natural gas and petroleum products is depicted below: **(details in Appendix VI).**

**Table 3: Trends in Consumption of Petroleum Products and Natural Gas**

| Year | Consumption of Petro-Products (MMT) | % Growth in Consumption of Petro-Products | Consumption of Natural Gas (BCM) | % Growth in Consumption of Petro-Products |
|---|---|---|---|---|
| 2011-12 | 148.13 | 5.03 | 64.45 | - |
| 2012-13 | 157.06 | 6.02 | 57.37 | -10.99 |
| 2013-14 | 158.41 | 0.86 | 52.37 | -8.70 |
| 2014-15 | 165.52 | 4.49 | 51.30 | -2.05 |
| 2015-16 | 184.67 | 11.57 | 52.52 | 2.37 |
| 2016-17 | 194.60 | 5.37 | 55.70 | 6.05 |
| 2017-18 | 206.17 | 5.95 | 59.17 | 6.24 |
| 2018-19 | 213.22 | 3.42 | 60.80 | 2.75 |
| 2019-20 | 214.13 | 0.43 | 64.14 | 5.51 |
| 2020-21 | 194.30 | -9.26 | 60.82 | -5.19 |
| **2021-22** | **204.72** | **5.37** | **63.91** | **5.08** |
| 2021-22 (Apr-Dec) | 149.16 | - | 49.07 | - |
| 2022-23 (Apr-Dec) | 164.87 | 10.53 | 45.66 | -6.95 |

P: Provisional

**Graph 3: Consumption of Petroleum Products and Natural Gas**



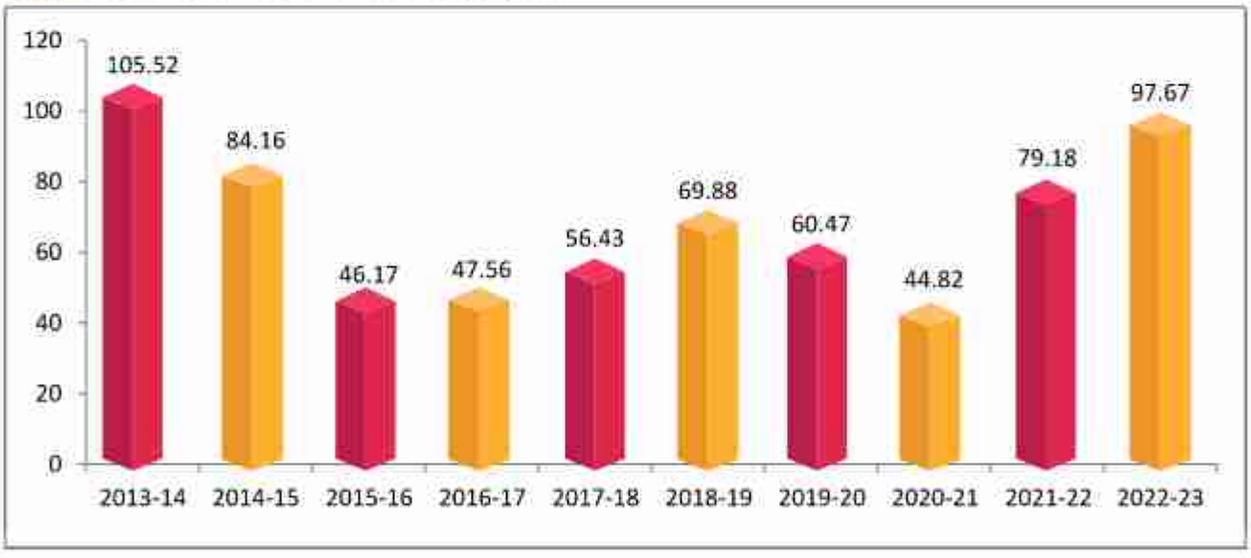
## 1.5. Pricing Policy on Sensitive Petroleum Products & Crude Oil

The pricing of petroleum products was brought under the Administered Price Mechanism (APM) effective July 1975 when the pricing of petroleum products was shifted from import parity principles to cost plus principles. Under APM (1975 to 2002) various oil pool accounts were maintained with the objective to i) ensure stability in selling price; ii) insulate consumers against international price fluctuations; and iii) subsidization of consumer price of certain products like kerosene for public distribution and domestic LPG by cross subsidization from other products like petrol, Aviation Turbine Fuel (ATF) etc. Effective 01.04.2002, the APM was dismantled and the Government decided to provide subsidy on sale of PDS kerosene and domestic LPG at specified flat rates. To administer these budgetary subsidies, the Government formulated a 'PDS Kerosene and Domestic LPG Subsidy Scheme, 2002'. Under this scheme, it was decided that these subsidies will be phased out in 3-5 years.

The sharp rise and volatility of prices of oil and petroleum products in the international markets since 2004 became a matter of global concern. The Indian basket of crude oil, which averaged about $23/bbl at the time of dismantling of APM in March 2002 and $36/bbl in May 2004, went up to an average of $85.09 per barrel during 2010-11. The average price of Indian basket of crude oil further increased to $111.89/bbl during 2011-12.

After continuously being above $100/bbl for over three years, Crude prices started falling sharply during the second half of the year 2014. As a result, the average price of Indian crude oil basket during 2015-16, 2016-17 and 2017-18 was recorded at $46.17/bbl, $47.56/bbl and $56.43/bbl respectively. The price increased to $69.88/bbl during 2018-19 and fell to $60.47/bbl in 2019-20 and fell further to $44.82/bbl during 2020-21 due to the impact of Covid-19. The prices recovered from the impact of Covid-19 and increased to $79.18/ bbl in 2021-22.

**Graph 4: Trend of Crude Oil: Indian Basket in $/bbl**




## 1.6. Import of Crude Oil and Natural Gas (LNG)

Import of crude oil during 2021-22 (P) was 212.4 MMT valued at ₹ 9,01,262 crore as against import of 196.461 MMT valued at ₹ 4,59,779 crore in 2020-21 which is higher by 8.1% in quantity terms and 96.02% in value terms vis-a-vis 2020-21. Imports of crude oil was 172.39 MMT valued at ₹ 9,93,713 crore during April-December 2022, which is higher by 10.16% & 61.87% in quantity and value terms respectively when compared to corresponding period of last year.



View of Petronet LNG Limited's Dahej LNG Terminal

Import of natural gas (LNG) during 2021-22 was 23.2 MMT valued at ₹ 1,00,011 crore as against import of 24.9 MMT valued at ₹ 58,129 crore in 2020-21 which is lower by 6.83% in quantity terms and higher by 72.05% in value terms vis-a-vis 2020-21. Imports of LNG was 15.39 MMT valued at ₹ 1,13,525 crore during April-December, 2022.

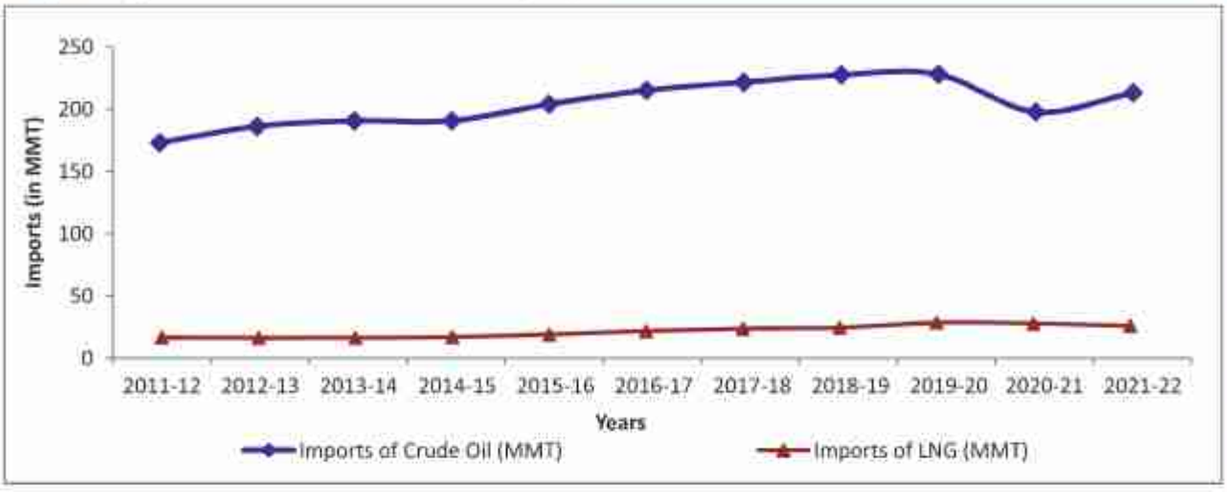
The trend in growth of crude oil import and crude oil international (Indian Basket) prices is shown in Table 4 & Graph 5.

**Table 4: Trends of Import of Crude Oil and Natural Gas (LNG)**

| Year | Import of Crude Oil (MMT) | % Growth in Import of Crude Oil | Import of Crude Oil (₹Crore) | % Growth in Value of Import of Crude Oil | Import of LNG (MMT) | % Growth in Import of LNG | Import of LNG (₹Crore) | % Growth in Value of Import of LNG |
|---|---|---|---|---|---|---|---|---|
| 2011-12 | 171.73 | 4.97 | 672220 | 47.65 | 13.58 | - | 31718 | - |
| 2012-13 | 184.80 | 7.61 | 784652 | 16.73 | 13.29 | -2.13 | 41902 | 32.11 |
| 2013-14 | 189.24 | 2.40 | 864875 | 10.22 | 13.43 | 1.06 | 53123 | 26.78 |
| 2014-15 | 189.43 | 0.10 | 687416 | -20.52 | 14.04 | 4.53 | 58359 | 9.85 |
| 2015-16 | 202.85 | 7.08 | 416579 | -39.40 | 16.14 | 14.95 | 45039 | -22.82 |
| 2016-17 | 213.93 | 5.46 | 470159 | 12.86 | 18.75 | 16.18 | 41084 | -8.78 |
| 2017-18 | 220.43 | 3.04 | 566450 | 20.48 | 20.71 | 10.42 | 52122 | 26.87 |
| 2018-19 | 226.50 | 2.75 | 783183 | 38.26 | 21.69 | 4.74 | 71867 | 37.88 |
| 2019-20 | 226.95 | 0.20 | 717001 | -8.45 | 25.57 | 17.91 | 67383 | -6.24 |
| 2020-21 | 196.46 | -13.44 | 459779 | -35.87 | 24.93 | -2.52 | 58129 | -13.73 |
| **2021-22** | **212.38** | **8.10** | **9,01,262** | **96.02** | **23.20** | **-6.68** | **1,00,011** | **72.05** |
| 2021-22 (Apr-Dec) | 156.51 | - | 613899 | - | 18.14 | - | 67566 | - |
| 2022-23 (Apr-Dec) | 172.39 | 10.15 | 993713 | 61.87 | 15.39 | -15.14 | 113525 | 68.02 |

P: Provisional

**Graph 5: Import of Crude Oil and Natural Gas (LNG)**




## 1.7. Import & Export of Petroleum Products

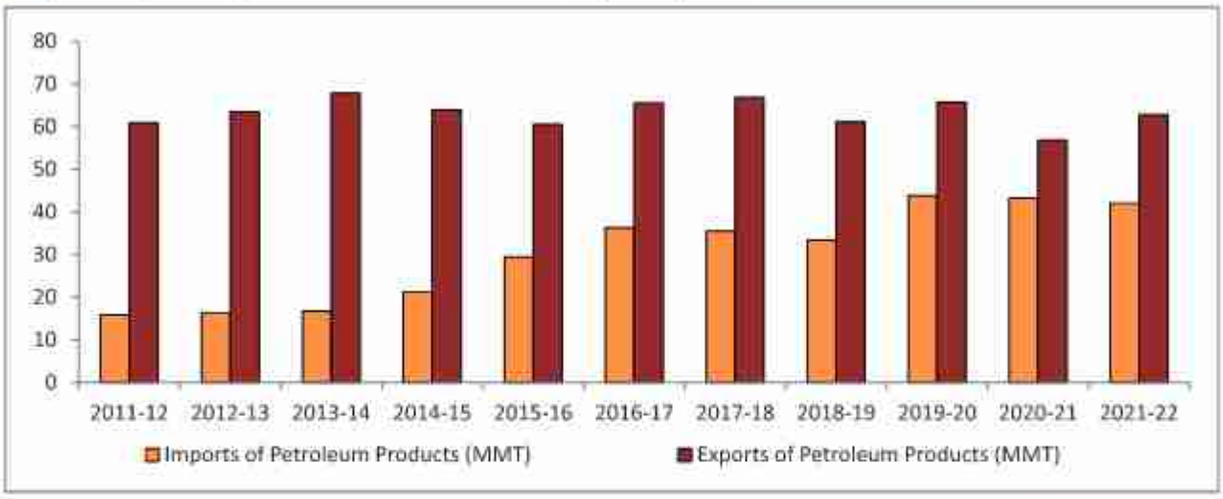
The import of petroleum products during 2021-22 (P) was 42.06 MMT valued at ₹ 1,88,636 crore against the import of 43.25 MMT valued at ₹ 1,09,430 crore in 2020-21 which is lower by 2.74% in quantity terms and higher by 72.38% in value terms vis-a-vis 2020-21. Further, while the exports of petroleum products during 2021-22 (P) was 62.75 MMT valued at ₹ 3,31,801 crore showing an increase of 10.54% in quantity terms and 111.11% in value terms against the export of 56.77 MMT valued at ₹ 1,57,168 crore during 2020-21. The quantity of petroleum products imported during April-December 2022 (P) was 32.87 MMT valued at ₹ 1,63,353 crore and 45.73 MMT of petroleum products, valued at ₹ 3,60,089 crore were exported. The trend of import and export of petroleum products in quantity-term and value term is depicted below: **(details in Appendix-VII).**

**Table 5: Import & Export of Petroleum Products & LNG:**

| Year | Import of Petroleum Products (MMT) | % Growth in Import of Petroleum Products | Import of Petroleum Products (₹Crore) | % Growth in Import of Petroleum Products | Export of Petroleum Products (MMT) | % Growth in Export of Petroleum Products | Export of Petroleum Products (₹Crore) | % Growth in Export of Petroleum Products |
|---|---|---|---|---|---|---|---|---|
| 2011-12 | 15.85 | -8.80 | 68091 | 21.59 | 60.84 | 2.98 | 284644 | 44.59 |
| 2012-13 | 16.35 | 3.18 | 68852 | 1.12 | 63.41 | 4.23 | 320090 | 12.45 |
| 2013-14 | 16.70 | 2.10 | 75896 | 10.23 | 67.86 | 7.03 | 368279 | 15.05 |
| 2014-15 | 21.30 | 27.57 | 74644 | -1.65 | 63.93 | -5.79 | 288580 | -21.64 |
| 2015-16 | 29.46 | 38.28 | 65361 | -12.44 | 60.54 | -5.31 | 176780 | -38.74 |
| 2016-17 | 36.29 | 23.19 | 71566 | 9.49 | 65.51 | 8.22 | 194893 | 10.25 |
| 2017-18 | 35.46 | -2.28 | 88374 | 23.49 | 66.83 | 2.01 | 225388 | 15.65 |
| 2018-19 | 33.35 | -5.96 | 113665 | 28.62 | 61.10 | -8.58 | 267697 | 18.77 |
| 2019-20 | 43.79 | 31.30 | 125742 | 10.62 | 65.69 | 7.51 | 254018 | -5.11 |
| 2020-21 | 43.25 | -1.23 | 109430 | -12.97 | 56.77 | -13.57 | 157168 | -38.13 |
| **2021-22** | **42.06** | **-2.75** | **188636** | **72.38** | **62.75** | **10.54** | **331801** | **111.11** |
| 2021-22 (Apr-Dec) | 30.85 | - | 134329 | - | 46.09 | - | 219304 | - |
| 2022-23 (Apr-Dec) | 32.87 | 6.55 | 163353 | 21.61 | 45.73 | -0.77 | 360089 | 64.20 |

*: Estimated P: Provisional

**Graph 6: Import & Export of Petroleum Products (in quantity-term)**




## 1.8. Equity Oil and Gas from Abroad

During FY 2021-22, India imported 86% (220 MMT) of crude oil and 48% (23.4 MMT) of Natural Gas to meet the demand.

The over-reliance on a single geographical region has the potential to adversely impact our energy security. Majority of India's hydrocarbon imports are sourced from the Middle East region wherein the Strait of Hormuz is both a choke point as well as a geo-political flashpoint.

In the recent past, we have seen supply disruptions and price volatility as a result of US sanctions on Iran and Venezuela, and the Russia-Ukraine war.

To insulate ourselves from vulnerabilities in supply of crude oil and natural gas, and to reduce dependency on OPEC, the Government emphasizes diversification of supply sources of oil & gas. Over the last few years, new suppliers of crude oil such as USA, Canada, Angola and Guyana have been added while crude oil imports from existing suppliers such as Russia have been increased. Similarly, LNG imports have also been diversified from Qatar to new sources namely Australia, USA and Russia.

In a major shift in its stance on acquisition of foreign assets, India is gradually moving from pure dividend-based investment model to entitlement on equity oil model. This will help us secure crucial oil for its growing energy needs.

Till 1st April 2022, Indian PSUs have invested approx. US$ 37.94 billion in various E&S overseas assets. During FY 2021-22, the share of equity oil and gas for Indian PSUs from these assets was approx. 21.7 MMTOE, which works out to 34.1% of the India's domestic production.

## 1.9. Reforms in Exploration and Licensing Policy

Government has taken various Policy initiatives with the objective to intensify exploration activities, attract foreign and domestic investment and enhance domestic production. The major policy initiatives taken by the Government to enhance domestic production of oil and gas and to reduce import dependency are as under:

**Long Term Initiatives:**

i. Policy for Relaxations, Extensions, and Clarifications under Production Sharing Contract (PSC) regime for early monetization of hydrocarbon discoveries, 2014.

ii. Discovered Small Field Policy, 2015.

iii. Hydrocarbon Exploration and Licensing Policy, 2016. Open Acreage Licensing Policy (OALP): Modalities for operationalization of Hydrocarbon Exploration & Licensing Policy(HELP), 2017.

iv. Policy for Extension of Production Sharing Contracts, 2016 and 2017.

v. Policy for early monetization of Coal Bed Methane, 2017.

vi. Setting up of National Data Repository, 2017.

vii. Appraisal of Unappraised areas in Sedimentary Basins, 2017 Re-assessment of Hydrocarbon Resources, 2017.

viii. Site Restoration and abandonment guidelines for Petroleum Operations, 2017.

ix. Framework to streamline the working of Production Sharing Contracts in Pre-NELP and NELP Blocks, 2018.

x. Amendment in the Definition of 'Petroleum' under clause (k) of Rule-3 of the Petroleum & Natural Gas Rules, 2018.

xi. Policy to Promote and Incentivize Enhanced Recovery Methods for Oil and Gas, 2018.

xii. Policy framework for exploration and exploitation of Unconventional Hydrocarbons under existing Production Sharing Contracts, Coal Bed Methane contracts, and Nomination fields, 2018.

xiii. Policy framework for Exploration and exploitation of Coal Bed Methane (CBM) from areas under Coal Mining Lease allotted to Coal India Limited (CIL) and its subsidiaries, 2018

xiv. Policy framework for Streamlining working of Production Sharing Contracts in respect of Pre-NELP and NELP Blocks, 2018.

xv. Reforms in Hydrocarbon Exploration and Licensing Policy for enhancing domestic exploration and production of oil and gas, 2019.

xvi. Dispute Resolution Committee, 2019.

xvii. Natural Gas Marketing Reforms, 2020.

xviii. Discovery of Market Price for Domestically Produced Natural Gas through e-bidding, 2020.

xix. Deregulation of sale of domestically produced crude oil, 2022.

xx. Discovery of Market Price and Sale and Resale of Gas produced from Discoveries in Deepwater, Ultra Deepwater and High Pressure-High Temperature areas with marketing and pricing freedom, 13th January, 2023.

xxi. Under Special Arrangements with Indian Navy, around 99% of No Go Area has been opened up for Exploration and Production activities.

**Short-Term Initiatives:**

i. Early Monetization of Existing Discoveries.

ii. Improving Recovery Factor through the implementation of IOR and EOR techniques.

iii. Revival of sick wells.

iv. Infill Drilling of wells.

v. Renewal of Facilities and other infrastructure.

vi. Monetization of small and marginal discoveries onshore through service contracts and outsourcing.

vii. Redevelopment of existing matured fields and development of new fields/marginal fields.

viii. Induction of suitable technologies in selective fields.

ix. Implementation of Production Enhancement Contracts.

## 1.10. Implementation of Policy Reforms in Exploration and Licensing Policy, Feb'2019

Government notified 'Reforms in Exploration and Licensing Policy for enhancing domestic exploration and production of oil and gas' on 28th February 2019 with the objective to intensify exploration activities, attract foreign and domestic investment and enhance domestic production. The major implementation of Policy reforms are as under:

i. Shifting of focus from 'Revenue' to 'Production' maximization-Implemented in OALP-IV bid round onward.

A. Categorization of Indian Sedimentary Basins based on prospectivity.

B. Boost to exploration activities by assigning greater weightage to exploration work programme.

a. Category-II & III Basins: No revenue share to Government. Area award considering 100% weightage on Work-Program basis.

b. Category-I Basins:

1. Work Programme-70% weightage
2. Revenue Share-30% weightage
3. Capping of Revenue share at HRP- 50%

c. Shorter exploration period for early development.

d. Fiscal concessions for early monetization and commercial production.

ii. Marketing and Pricing freedom for Natural Gas for the Field Development Plan (FDP) approved after 28.02.2019

iii. Bidding out of 66 small and marginal producing nomination fields operated by National Oil Companies (NOCs). ONGC invited bids for 64 fields under 17 onshore contract areas; 60 fields under 15 Contract Areas have been awarded to successful bidders. No bids received for 4 fields offered under 2 Contract Areas. OIL invited bids for 2 fields and award of 1 field is under progress.

iv. Increasing Exploration in Unexplored/ Unallocated Areas: Simplified and investor friendly Model Bid documents including increasing of bidding cycle frequency from twice to thrice in a year.

v. Constitution of Empowered Coordination Committee (ECC) for expediting approvals and clearances. The Committee was constituted in May'2019.

vi. Constitution of Dispute Resolution Committee for dispute resolution in order to resolve the disputes with Contractors under Contractual regime. The Committee was constituted in Dec'2019.

**Promoting Ease of Doing Business:**

i. Redefined Role of DGH: Delegation of additional powers and functions to strengthen DGH role for compliance/ regulatory, developmental and coordination role done on Oct'2019.

ii. Simplified contractual terms with emphasis on cutting down approvals of Government/ DGH/Management Committee and expeditious grant of approvals.

iii. Electronic Single Window Clearance System created at DGH for and processing of grant of approvals based on IT workflow for the following:

a. PEL / PML Application System

b. PSC Management System

c. ECMS Application

d. Vessel Clearance Management System (VCMS)

e. Expat Clearance System

f. Environmental Clearance

iv. Simplification of Processes and Procedures including Standard Operating Procedures (SoP) for submission of documents on Self-Certification basis for 37 PSC processes.

## 1.11. Hydrocarbon Exploration Licensing Policy (HELP)

Government notified Hydrocarbon Exploration and Licensing Policy (HELP) on 30th March, 2016 and formally put in operation w.e.f. 1st July, 2017 with notification of Open Acreage Licensing Policy (OALP). HELP is a paradigm shift from Production Sharing Contract (PSC) regime to Revenue Sharing Contract (RSC) regime which completely overhauls the regulatory regime for the future Exploration and Production (E&P) activities by reducing the regulatory burden based on the principle of 'Ease of doing business'. The Policy *inter-alia* enables E&P operators to explore and extract all hydrocarbon resources (conventional and unconventional) covered under the Oilfields Regulation and Development (ORD) Act, 1948 and Petroleum and Natural Gas (PNG) Rules, 1959 through a uniform license. The following steps have been taken under HELP/Open Acreage Licensing Policy (OALP) to award acreage area for exploration and development:

i. A total of **134 exploration blocks,** spread over 2,07,691 sq. km. area in all Basin categories have been awarded to successful bidders under **seven concluded OALP Bid Rounds.**

ii. Further, 10 open acreage blocks, comprising a total acreage area of 36,316 sq. km. are offered through International Competitive Bidding under OALP Bid Round-VIII, launched on 7th July, 2022. Bid closing date is 16.05.2023

iii. To further enhance acreage under exploration and development, Government on 10th Oct 2022, launched **Mega OALP Bid Round-IX** offering **26 open acreage blocks** covering an area of approximately 2.23 lakh sq. km. for Exploration and Development through International Competitive Bidding.

The offered blocks include 15 Ultra Deep-Water Blocks, 8 Shallow Water and 3 Onland Blocks.

iv. **Special CBM Bid Round 2021 under OALP (SCBM-2021):** The Government of India on 22nd September 2021 launched the Special CBM Bid Round-2021 under the Open Acreage Licensing Policy (OALP) offering 15 CBM Blocks covering 8,458 sq. km. with ~700 BCM prognosticated CBM resource. Based on International Competitive Bidding (ICB) and subsequent evaluation of bids received, 4 Blocks covering 3,862 sq. km. area and having around 120 BCM CBM Resources were awarded to three companies, including one NOC (ONGC) and 02 private companies (Vedanta and Invenire Petrodyne Energy) and Revenue Sharing Contract (RSC) signed with Government of India on 9th September 2022.

v. **Special CBM Bid Round 2022 under OALP (SCBM-2022):** Government on 10th October 2022 launched 2nd Round of Special CBM Bid Round, wherein 16 CBM blocks covering around 5,860 Sq Km area are offered through International Competitive Bidding (ICB) till 17th March 2023. All offered 16 Blocks are in Category-III basins. Bid submission will start on 1st May, 2023 and close on 31st May, 2023.

## 1.12. Discovered Small Field Policy (DSF)

The Marginal Field Policy (MFP) notified vide Gazette Resolution dated 14.10.2015 and later renamed as the Discovered Small Field (DSF) Policy vide notification dated 05.04.2018 is aimed at monetizing hydrocarbon resources locked-in for years in a time bound manner to boost domestic production of Oil and Gas. Under the three concluded DSF bid rounds, DSF Bid Round-I (2016) and DSF Bid Round-II (2018) and DSF Bid Round-III (2022), a total of 85 Revenue Sharing Contracts (RSC) comprising 175 discoveries/fields were awarded to successful bidders.

## 1.13. Natural Gas Marketing Reforms

i. Taking another significant step to move towards gas based economy, Government approved 'New Domestic Natural Gas Pricing Guidelines' in October, 2014, based on the prices prevailing in major international hubs like Henry Hub (USA), Alberta (Canada), NBP (UK), Russia etc. to strike a balance between the requirements of both producing and consuming sectors. The prices of natural gas are revised after every six months and notified by Petroleum Planning and Analysis Cell (PPAC) under MoPNG. This policy has helped standardize the domestic natural gas prices, determined on pre-defined parameters in a transparent way without Government intervention. These Guidelines are applicable to natural gas produced from Nomination Fields and NELP, Pre-NELP Blocks/Fields, where pricing is to be approved by Government as per Production Sharing Contract (PSC).

ii. Subsequently, from 2015 onwards, Government provided marketing and pricing freedom for gas under DSF, OALP, CBM regimes and for gas produced from North-Eastern Region (NER) and new gas discoveries after 28.02.2019 under all regimes.

iii. To incentivize gas production from difficult areas such as High Pressure- High Temperature (HP-HT) reservoirs and Deepwater and ultra-deepwater areas, Government, on 23rd March, 2016, granted marketing including pricing freedom on natural gas production with a price ceiling announced on half yearly basis by Petroleum Planning and Analysis Cell (PPAC).

iv. Further, vide Notification dated 15.10.2020, standard procedure formulated to discover market price of gas through a transparent and competitive process and allowing affiliates to participate in bidding. Taking another significant step to move towards gas based economy, 'Natural Gas Marketing Reforms' were announced vide Notification dated 15.10.2020, to prescribe standard procedure to discover market price of gas to be sold in the market by gas producers, through a transparent and competitive process; permit Affiliates to participate in bidding process for sale of gas and allow marketing freedom to certain Field Development Plans (FDPs) where Production Sharing Contracts already provide pricing

freedom. Subsequently, detailed guidelines for Discovery of Market Price for Domestically Produced Natural Gas through e-bidding were issued vide Notification dated 03.12.2020. Agencies, empanelled by DGH for carrying out e-bidding also been notified.

v. Furthermore, gas producers having pricing and marketing freedom have been permitted for selling small quantity of gas through gas exchanges authorized by PNGRB vide OM dated 19.08.2021.

vi. As a further momentum to gas reforms and saving the environment, Government issued detailed guidelines for monetization of Ad-hoc/Test Gas produced during the Testing of oil and gas wells vide OM dated 22.11.2021.

vii. To carry forward the reforms, the Ministry of Petroleum and Natural Gas, on 30th August 2022, has set up a **Committee under noted energy expert Kirit Parikh** to inter-alia **review the current gas pricing formula,** ensure fair price to the end consumer, and suggest market oriented, transparent and reliable pricing regimes for India's long term vision for ensuring a gas based economy. The Committee has submitted its report to GoI on 30.11.2022.

viii. Vide Notification dated 13th January, 2023, Government provided clarifications on discovery of market price and sale and resale of gas produced from discoveries in Deepwater, Ultra Deepwater and High Pressure/ High Temperature areas with marketing and pricing freedom.

## 1.14. Policy on Crude Oil Deregulations, June 29th, 2022

The Cabinet Committee on Economic Affairs approved the 'Deregulating Sale of Domestically Produced Crude Oil'. Through this policy decision, Government shall cease to allocate crude oil and condensate with effect from 01.10.2022, granting marketing freedom across all policy regimes. The condition in the Production Sharing Contracts (PSCs) to sell crude oil to the government, or its nominee, or government companies shall be waived off and all exploration and production operators will be free to sell crude oil from their fields in domestic market. However, as earlier, export of crude oil will not be permissible. The government revenues like Royalty, Cess, and Contractual Payments, etc. shall be calculated based on the sales price or the price of Indian Basket of Crude Oil, as calculated by Government nominated Agency, whichever is higher.

## 1.15. Reduced No-Go Areas

The Government has been successful in reducing 'No Go' areas by almost 99% in April 2022, hitherto not available for E&P activities. This made available around 1 million sq. km. area of India's EEZ for exploration.

## 1.16. Enhanced Prospectively Perception through Data Generation

i. **National Data Repository (NDR):** NDR was launched on 28th June, 2017 and set up at DGH to make the entire Exploration and Production (E&P) data available for commercial exploration, research and development and academic purposes. It acts as a repository of geo-scientific database of the country and plays a key role in facilitating prospective bidders to carve out their choice of blocks for bidding under OALP. In order to cope with the ever-increasing demands of E&P data, NDR is being upgraded to cloud-enabled hyper-converged infrastructure to facilitate easy access of data to the industry for meaningful usage. Total data uploaded in NDR till 31st December 2022 is 3.284 million line kilometres (LKM) of 2D Seismic Data, 1.041 million square kilometres (SKM) of 3D Seismic data and 22,563 number of well and log data and 46,826 number of Reports.

ii. **Re-assessment of Hydrocarbon Resources:** For updated estimation of hydrocarbon resource potential in the country, re-assessment of hydrocarbon resources for all 26 sedimentary basins in the country was completed in 2017 almost after two decades of earlier estimation. This resulted in prognosticated conventional hydrocarbon resources of the order of 41.87 billion tonnes (oil and oil equivalent of gas), which is about 49% increase as compared to earlier estimate of 28.08 billion tonnes (oil and oil equivalent of gas).

iii. **National Seismic Programme (NSP):** The National Seismic Programme (NSP) was launched on 12th October 2016 for conducting 2D seismic surveys for data Acquisition, Processing, and Interpretation (API) of 48,243 Line Kilo Meters (LKM) in un-appraised sedimentary basins in onland areas with a sanctioned cost of ₹ 2,932.99 crore. It was executed by ONGC and OIL. As on date, 97.34 % of the project or 46,752 LKM Seismic Data Acquisition, Processing and Interpretation (API) is completed and data has been submitted to National Data Repository (NDR) along with reports. Remaining 2D data of geographical inaccessible area, which could not be acquired due to inaccessible terrain and hostile environment, is being taken up through Airborne Geophysical Survey. Third-Party evaluation study of NSP data has been carried out by Gujarat Energy Research and Management Institute (GERMI), Gandhinagar, a report of which is available at NDR.

The data generated under NSP using long spreads (12 to 18 Km) and modern technology has provided vital sub-surface geological information in many unappraised areas which will facilitate understanding of the geological set-up of these basins. The presence of sub-trappean Mesozoic sediments has also been indicated in some of the areas. The data has provided significant leads towards the extension of existing producing basins as the information about the tectonics framework has improved. Features of geological interest are seen in 2D lines of many such basins viz. Mahanadi, Kutch-Saurashtra, Vindhyan, Ganga, Bengal, Himalayan Foreland, KG, Rajasthan, Ganga, Chhattisgarh, Cuddapah, Deccan Synclise etc.

iv. **Airborne Gravity and Gradiometry (AGG) Survey:** To cover the inaccessible and hostile geographical areas which could not be covered under NSP project, a volume of 40,000 flight LKM Airborne Geophysical Survey has also been planned with approximate cost of INR 80 crores. Oil India Ltd. has been selected as Nodal agency for carrying out Airborne Gravity and Gradiometry (AGG) survey and has awarded the contract to successful bidder through a tender and are expected to complete the survey during FY 2022-23. Presently, applications for statutory clearances have been applied by the Contractor. The work can be started, once, clearances are received from DGCA.

v. **Complete Appraisal of Andaman Basin:** In order to cover the entire Basin with 2D Seismic Appraisal, about 2.8 lakh sq. km. of Andaman basin has been recently surveyed through 22,500 LKM 2D Seismic API. Data acquisition and analysis is complete.

vi. **Appraisal of Offshore basin area upto Exclusive Economic Zone (EEZ):** With a view to completely appraise entire offshore area, work initiated to acquire around 82,000 LKM 2D broadband seismic in eastern and western offshore area upto Exclusive Economic Zone EEZ with planned completion upto April 2024. ONGC is entrusted as nodal agency for EEZ survey. As on 31st Dec 2022, around 23,431 LKM Seismic data has already been acquired under the EEZ survey.

## 1.17. Guidelines for Early Monetization of Hydrocarbon Discoveries, Jun'2020

Monetization of hydrocarbon discoveries before completion of other activities such as Appraisal, Declaration of Commerciality (DoC) and submission of Field Development Plan (FDP), etc. in the Block under Production Sharing Contract/Revenue Sharing Contract allowed as per guidelines issued on 23.06.2020. The monetization of discovery at an early stage within prescribed contractual timelines has been issued in the public interest as a step towards energy security of the country. Benefitting from these guidelines, Asokenagar-1 discovery of ONGC is monetized and put on production in December 2020.

## 1.18. MoPNG Monitoring Dashboard, 2019

The Monitoring dashboard of MoPNG was launched during 2019 for online monitoring and analysis of various KPIs pertaining to exploration and production performance of Nomination and PSC/ RSC/CBM regime.

## 1.19. Investor Outreach

Regular outreach to E&P community through national and international events/road shows held including in Mumbai on 29th April 2022, London on 7th-8th July 2022 and at Houston on 27th & 28th September 2022. The following has been launched during the Investor's meet:

i. **Mega OALP Bid Round-IX** launched on 10th Oct 2022, offering 26 open acreage blocks covering an area of approximately 2.23 lakh sq.km for Exploration and Development through International Competitive Bidding. The offered blocks include 15 Ultra Deep-Water Blocks, 8 Shallow Water and 3 Onland Blocks.

ii. **Special CBM Bid Round-2022 (SCBM-2022)** launched on 10th Oct 2022, offering 16 CBM blocks covering around 5,860 sq. km. area through International Competitive Bidding (ICB) bidding till 17.03.2023. Bid submission will start on 01.05.2023 and end on 31.05.2023.

## 1.20. Natural Gas Grid and City Gas Distribution (CGD)

Gas Pipeline infrastructure is an economical and safe mode of transporting the natural gas by connecting gas sources to gas consuming markets. A Natural Gas grid determines the structure of the gas market and its development. Therefore, an interconnected National Gas Grid has been envisaged to ensure the adequate availability and equitable distribution of natural gas in all parts of the country. India's gas pipeline infrastructure is growing rapidly in tune with increasing demand and growing natural gas supplies. India currently has authorized cross country natural gas pipeline network of ~33,600 Km., of which ~22,300 Km. of pipelines are operational and about 13,000 Km. pipelines are under construction as on 30.09.2022.




A City Gas Distribution (CGD) network is an interconnected network of gas pipelines to make supply of Natural Gas to the domestic, commercial or industrial premises and Compressed Natural Gas (CNG) stations situated in the various Geographical Areas across the country, identified by the Petroleum and Natural Gas Regulatory Board (PNGRB), based on trunk gas pipeline connectivity or gas sources and techno-commercial feasibility. The Piped Natural Gas (PNG) connections and establishment of Compressed Natural Gas (CNG) stations are the part of development of City Gas Distribution (CGD) Networks and the same is being carried out by the entities authorized by Petroleum and Natural Gas Regulatory Board (PNGRB). After completion of 11 A CGD bidding round, 295 Geographical Areas (GAs) have been authorized covering about 98% of the population and 88% of total geographical area of the country, spread over around 630 districts in 28 states/UTs including all cities under these GAs, have been covered under the CGD network. Further, as on 30th November 2022, a total of 1,02,03,779 domestic PNG connections, 36,467 commercial PNG connections and 14,503 industrial PNG connections have been provided across the country by various entities, authorized by PNGRB. Further as on November 2022, a total of 4918 CNG stations are operational in the country.

## 1.21. Energy Diplomacy

India's energy diplomacy is focused towards sustaining and promoting energy engagements with hydrocarbon rich countries and prominent international organizations dealing with energy matters in order to secure India's burgeoning energy needs.

Last year was unique in terms of extreme volatility and uncertainty that the world energy markets witnessed on account of geo-political disruptions. Such high degree of volatility wreaked havoc on energy importers and tested their limits of energy and food security. India, as a leading energy consumer and importer, took the leadership role on world stage and became leading voice of the group of energy importer nations to nudge energy exporting groups towards a sustainable, balanced and responsible pricing.

Energy collaboration has remained an important facet of bilateral engagements both with India's traditional energy partners and with newly emerging energy suppliers. Our relationship with many of our suppliers like UAE, USA and Russia has transformed into a strategic partnership for mutual investment.

The following salient features of Energy Diplomacy merit mentioning:

- Supporting Indian refiners for securing uninterrupted and timely supply of crude oil.
- Geographical diversification and widening of oil & gas sourcing including the acquisition of E&P assets by Indian PSUs.
- Launching initiatives to promote 'Neighborhood first policy' in the oil and gas sector by building energy corridors and energy bridges.
- Re-negotiating long term Oil and LNG deals to reflect the changing energy prices.
- Developing India as a prominent venue for global energy events-the inauguration of the first India Energy Week, holding the ninth meeting of the Asian Ministerial Energy Roundtable and the Third Energy Ministers Meeting of the Shanghai Cooperation Organization.
- Developing close linkages with International organizations and institutionalizing dialogues.
- Leveraging India's relationship and huge hydrocarbon needs with multilateral energy organizations such as OPEC, IEF & IEA, where India's voice can make a difference towards balancing the needs of producer and consumer nations.
- Announced the formation of a Global Biofuel Alliance to promote decarbonization and circularity of energy sources.

## 1.22. Sustainable Alternative Towards Affordable Transportation (SATAT)

Compressed Bio Gas (CBG) is purified and compressed, which is produced through a process of anaerobic decomposition from various waste/ biomass sources like agriculture residue, cattle dung, sugarcane press mud & spent wash of distilleries, sewage water, municipal solid waste (MSW), biodegradable fractions of industrial waste etc. "Sustainable Alternative Towards Affordable Transportation (SATAT)" initiative was launched on 1st October 2018 wherein Oil and Gas Marketing Companies (OGMCs) are inviting Expression of Interest (EoI) from potential investors/entrepreneur to procure CBG for further selling to automotive and industrial customers. The initiative envisages setting up of 5,000 plants till 2023-24 by private entrepreneurs. Till December, 2022 OGMCs participating in SATAT have issued 3,826 Letters of Intent to entrepreneurs. So far 40 CBG/biogas plants with a total capacity of ~~225 tons per day have been commissioned and sale of CBG has been initiated from 97 Retails Outlets. Further, under CBG CGD synchronization scheme, CBG sale has been started in 12 Geographical Areas of CGD Network. Under this initiative various enablers have been provided for development of CBG sector. CBG projects have been included under Priority Sector Lending by Reserve Bank of India. State Bank of India, Bank of Baroda, Canara Bank and some other banks have developed exclusive loan product for financing of CBG projects. Canara Bank has been nominated as Nodal Banker under SATAT. Bio manures produced from CBG plants has been covered as "Fermented Organic Manure" (FOM) and Liquid Fermented Organic Manure (FLOM) under Fertilizer Control Order (FCO) 1985. Department of Fertilizers have issued letter to Fertilizer companies for mandatory offtake of FOM with chemical fertilizers as a "Basket approach". In addition, CPCB has included CBG plants under 'white category' status on case-to-case basis. Ministry of Petroleum and Natural Gas has issued policy guidelines for co-mingling of CBG with Natural Gas in CGD network to facilitate its offtake. OGMCs have revised CBG procurement price from 1st June 2022. Now CBG prices are linked with Retail Selling Price (RSP) of CBG which will be at par with CNG RSP. Under SATAT, minimum procurement price is ₹ 54/- per kg plus GST. In addition, under CBG-CGD synchronization scheme from 1st December, 2022 GAIL has revised biogas/CBG procurement price from ₹ 1,082/ MMBTU to ₹ 1,470/MMBTU.

## 1.23. National Policy on Biofuels-2018

The Government had notified the National Policy on Biofuels 2018, later amended in June 2022, which envisages an indicative target of 20% blending of ethanol in petrol by Ethanol Supply Year (ESY) 2025-26 and 5% biodiesel in diesel by 2030. This goal is to be achieved by:

a. Reinforcing ongoing ethanol/biodiesel supplies through increasing domestic production.

b. Setting up Second Generation (2G) bio refineries.

c. Development of new feedstock for biofuels.

d. Development of new technologies for conversion to biofuels.

e. Creating suitable environment for biofuels and its integration with the main fuels.

## 1.24. NON CONVENTIONAL ENERGY

**1.24.1. EBP Programme:** Ethanol Blended Petrol (EBP) Programme aims at achieving multiple outcomes such as addressing environmental concerns, reducing import dependency and providing boost to the agriculture sector. To boost the indigenous production of ethanol, the Government has taken number of steps since 2014. These include re-introduction of administered price mechanism, permitting additional feed stocks for ethanol production which includes both sugarcane based and grain based (maize and surplus stocks of rice with Food Corporation of India) sources for ethanol production, amending Industries (Development 8s Regulation) Act, 1951 for bringing exclusive control of the central government over denatured ethanol, reduction in Goods & Service Tax (GST) rates from 18% to 5% on ethanol utilized under EBP Programme, notifying National Policy on Biofuels-2018, publishing "Ethanol Procurement Policy on a Long term basis" to give long term visibility to investors, Interest Subvention Scheme for augmentation of ethanol production capacity and enhanced, differentiated and remunerative ethanol prices year on year.

The aforesaid measures have increased the quantity of ethanol procured/blended from 38 crore litres during Ethanol Supply Year (ESY - Period from December to November) 2013-14 to 433.6 crore litres in ESY 2021-22. The blending percentage has also increased from 1.53% to 10.02% in the corresponding period.

Since the Government has advanced the target of 20% ethanol blending in petrol from 2030 to ESY 2025-26, the estimated requirement of ethanol to achieve 20% blending will be around 1,016 crore litres during ESY 2025-26 for which the distillation capacity needs to be doubled from existing 722 crore litres per annum to 1,500 crore litres per annum. Accordingly, OMCs published an Expression of Interest (EoI) to sign agreements with potential project proponents who wish to establish new ethanol plants in ethanol deficit states. Public Sector OMCs have signed Long Term Offtake Agreements (LTOA) with 131 project proponents desirous of setting up dedicated ethanol plants with a production capacity of 431 core litres per annum.

The ex-mill prices of ethanol produced to be paid to the suppliers from different feedstock for ESY: 2022-23 are as under:

| Raw Material | Ethanol Ex-mill price (₹/litre) |
|---|---|
| C heavy molasses @ | 49.41 |
| B heavy molasses @ | 60.73 |
| Sugarcane juice/sugar/sugar syrup @ | 65.61 |
| Damaged Food Grains/Others # | 55.54 |
| Surplus rice issued by FCI # | 58.50 |
| Maize # | 56.35 |
| @: Price fixed by Government #: Price fixed by OMCs<br>Transportation and GST are payable in addition to the above | |

**1.24.2. 2G Ethanol Programme:** Financial Assistance under PM JI-VAN Yojana has been approved for four Commercial Projects at Panipat (IOCL), Bargarh (BPCL), Bathinda (HPCL) and Numaligarh (NRL) and one demonstration project of IOCL at Panipat. The 2G ethanol bio-refinery at Panipat has been dedicated to the Nation by the Hon'ble Prime Minister.



**1.24.3. Biodiesel Programme:** During the period from April to November, 2022, OMCs have procured 5.83 crore litres of Biodiesel for blending with Diesel.

**1.24.4. Bio-Jet (ATF):** Government had constituted a Committee in June 2021 to take forward the Sustainable Aviation Fuel (SAF)/Bio-Aviation Turbine fuel (Bio-ATF) program in the country. The Committee has looked into various aspects of the Bio-ATF program in the country inter alia including raw materials availability, demand for ATF, technologies for SAF Production, Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), Bureau of Indian Standards (BIS), affects of SAF on engine performance, blending percentages, best international practices, etc. in a comprehensive manner so as to take ahead the SAF/Bio-ATF program in India and submitted the report to the Ministry. Further discussions on the report of the Committee with stakeholders have since been initiated. The use/adoption of SAF helps in reduction of Green House Gas (GHG) emission.

**1.24.5. World Biofuel Day:** World Biofuel Day is observed every year on 10th August to create awareness about the importance of non-fossil fuels as an alternative to conventional fossil fuels and to highlight the various efforts made by the Government in the Biofuel sector.

The theme for this year's World Biofuel Day was "Biofuels towards a Carbon Neutral World". On the occasion of World Biofuel Day, MoP&NG organized a Webinar to discuss issues regarding promotion & propagation of biofuels. On this day, the 2G Ethanol bio-refinery in Panipat was dedicated to the Nation by the Hon'ble Prime Minister.



Launch of 2G Ethanol Bio-Refinery in Panipat by Hon'ble Prime Minister

## 1.25. Outlay for Ministry of Petroleum & Natural Gas

Capital expenditure (CAPEX) for the FY 2021-22 is ₹ 1,08,556 crore i.e. 103% of the total BE of FY 2021-22 (₹ 1,05,359 crore). Total budgeted Internal and Extra Budgetary Resources (IEBR) for CPSE's under the Ministry of Petroleum and Natural Gas in FY 2022-23 (₹ 1,11,354 crore), which is 3.1% higher over actual expenditure of FY 2021-22 (₹ 1,07,968 crore). During current FY 2022-23 (April-December), actual CAPEX is ₹ 77,631 crore which is 69.7% of BE 2022-23 (₹ 1,11,354 crore). The trend in Sector-wise IEBR of under Petroleum & Gas Sector is depicted in **Appendix-VIII.**

## 1.26. Pradhan Mantri Ujjwala Yojana

"Pradhan Mantri UjjwalaYojana" was launched by Hon'ble Prime Minister on 01.05.2016, with an objective to provide deposit free LPG connections to women belonging to the 5 crore Below Poverty Line (BPL) families over a period of 3 years starting from FY 2016-17. Government subsequently increased the scope from 5 crore to 8 crore which was to be achieved by FY 2019-20. The Government also extended the benefit of PMUY to such poor families who had been left out on account of their names not appearing in either the SECC list or 7 identified categories to cover all poor families of the country.

Under PMUY, Government provides deposit free LPG connection to the adult woman member of a BPL family. Government bears the cost of security deposit towards cylinder and Pressure Regulator, DGCC Card, Suraksha Hose and administrative/installation charges amounting ₹ 1,600/- for each new connection. The target of releasing 8 crore LPG connections under PMUY scheme was achieved on 7th September, 2019, 7 months ahead of the target date of 31st March, 2020.



Hon'ble Finance Minister during her Budget Speech for FY 2021-22 announced that Ujjwala Scheme which has benefited 8 crore households would be extended to cover 1 crore more beneficiaries. Accordingly, Ujjwala 2.0 was launched in the esteemed presence of the Hon'ble Prime Minister in the Mahoba District of Uttar Pradesh on 10th August, 2021 on pan India basis to provide additional one crore LPG connections. For the first time free first refill and stove are being provided to beneficiaries under Ujjwala 2.0. Further, special provision has been made for migrant families to avail new connection. Women applicants from migrant families may submit self-declaration as proof of address and family declaration under Ujjwala 2.0. For the first time applicants can apply online for an Ujjwala connection using scheme website www.pmuy.gov.in. The target of 1.0 crore under Ujjwala 2.0 was duly achieved by January, 2022. Further, to cover the left-out households, the target under the scheme was enhanced by additional 60 lakh connections to 1.6 crore and same was achieved during December, 2022. As on 01.04.2023, a total of 1.6 crore LPG connections have been released under Ujjwala 2.0.

## 1.27. PAHAL (DBTL Scheme)

Government of India launched Direct Benefit Transfer for LPG consumer (DBTL) scheme namely, 'PAHAL', in 54 districts of the country on 15.11.2014. Later the scheme was extended all over the country. As on 01.12.2022, 29.04 crore LPG consumers have become cash transfer compliant under the scheme by either linking their Aadhaar numbers with their bank accounts and consumer number or directly linked their consumer number with bank account without using Aadhaar. The scheme aims to rationalise subsidies and cut subsidy leakages. Under PAHAL scheme, LPG



Flex Speed carousel at HPCL's Cherlapally LPG Plant

consumers get their LPG refills at non-subsidised price and receive applicable LPG subsidy directly into their bank accounts. With the implementation of PAHAL, new regime of transparency in subsidy management has been put in place empowering the LPG consumers in the country. PAHAL has further helped in identifying 'ghost' accounts, multiple accounts and inactive accounts.

To ensure targeting financial resources to really needy, Hon'ble Prime Minister of India appealed to all well-off LPG consumers to voluntarily surrender their LPG subsidy by launching 'GiveItUp' campaign. GiveItUp campaign evoked huge response from socially committed individuals and has resulted in more than 1.12 crore consumers giving up their LPG subsidy voluntarily till date. GiveItUp campaign of the government has received widespread acclaim from all over the world and is a leading and one of the earliest example of nudge tool used in Public Policy inspired from the domain of Psychology and Behavioural Economics.

## 1.28. Promotion of Digital Payments

There has been a significant expansion of digital payment infrastructure at retail outlets. As on 26.11.2022, 4,32,469 POS terminals and 1,03,982 e-wallet facility have been provided at 75,223 petrol pumps across the country, 69,775 retail outlets have been enabled with BHIM UPI. All the LPG Distributors and City Gas distribution companies are enabled with BHIM UPI."

## 1.29. Electric Vehicle Charging Station

In order to increase the electric vehicle charging infrastructure in the country, Oil Marketing companies are putting up Electric Vehicle Charging Stations (EVCS) at their Retail outlets (ROs) in different parts of the country in phased manner based on techno commercial feasibility and compliance of PESO norms. As on 01.12.2022, OMCs have put up 4,644 EV charging stations and 77 Battery Swapping stations have been installed at their ROs.

## 1.30. Market Authorization

Ministry of Petroleum and Natural Gas vide Resolution dated 8.11.2019 revised the guideline for authorization to market transportation fuels i.e. MS & HSD, to promote ease of doing business and boost private players to invest in the retail sector.

## 1.31. Start up India:

Under the Start-up India initiative of Oil and Gas Sector, proposals/ applications are invited through open advertisements by the individual PSUs for funding and mentoring. The themes for the proposals include leveraging Internet of Things (IoT) in Upstream/ Midstream/ Downstream operations of Oil PSUs, Digitization of business processes, Green Fuels, Alternative Energy, Improved technologies for Hydrocarbon industry besides topics of societal relevance. Before the round of receiving Start-up applications, Oil PSUs also organize Hackathon/ iDEATION challenges periodically for the Start-ups to showcase their talents and provide innovative ideas.

The PSUs under the Ministry of Petroleum and Natural Gas have created startup funds aggregating to ₹ 405 crore. At present, a total no. of 232 Startups are being funded by oil and gas PSUs with disbursed fund value of approximately ₹ 208 crores. Some startups supported by Oil and Gas PSUs have already matured.

## 1.32. Skill Development

Under Skill India initiative, Hydrocarbon Sector Skill Council (HSSC) was set up under Societies Registration Act, 1860 on 26.04.2016. An MoU for collaboration in the area of skill development was signed between Ministry of Petroleum & Natural Gas and Ministry of Skill Development & Entrepreneurship on 28th November, 2016. Several high priority trades were identified in consultation with the Industry members for National Occupational Standard (NOS)/ Qualification Pack (QP) development. Till date, 20 QPs have been approved by National Skill Qualification Committee (NSQC).

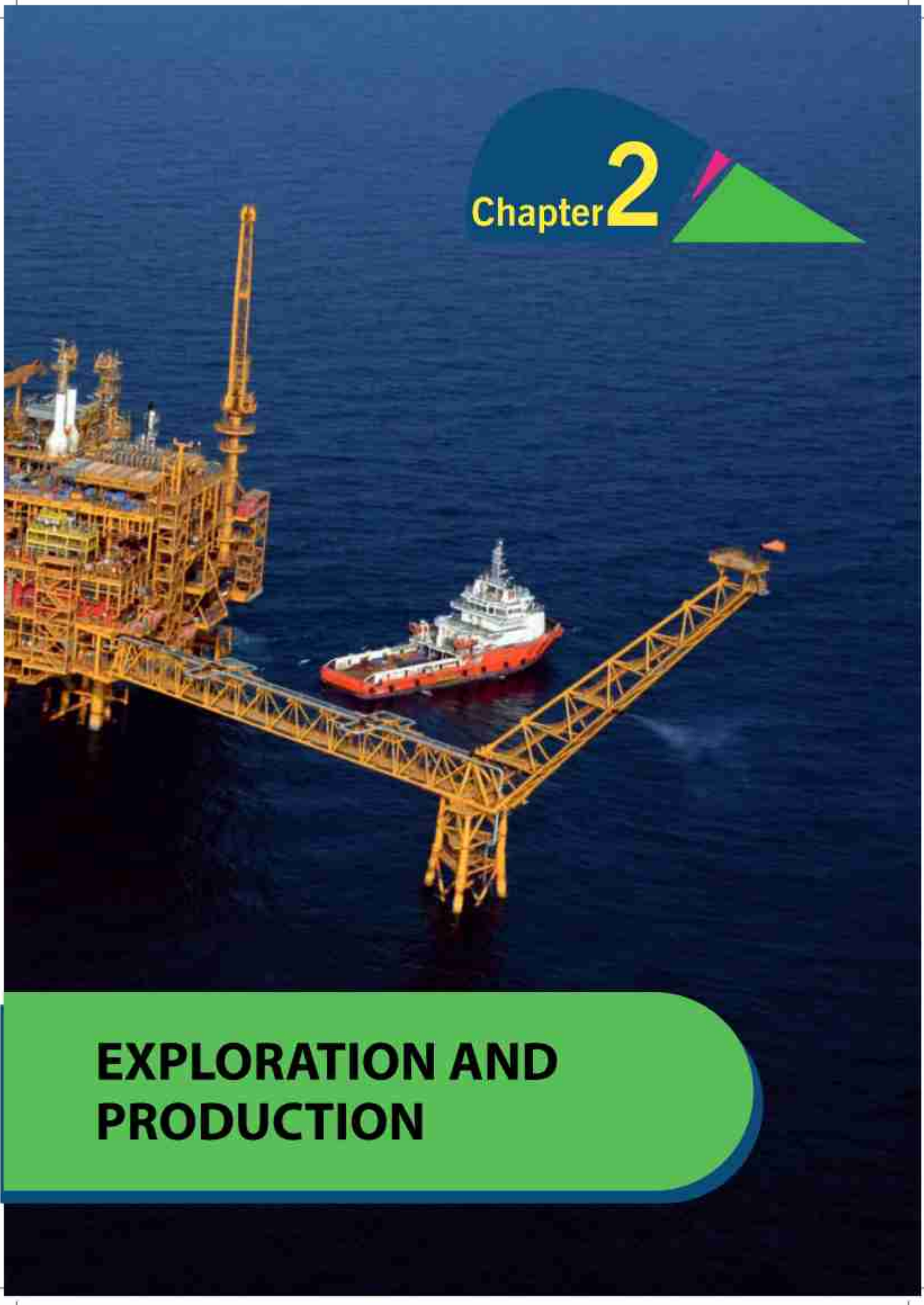
Skill Development Institutes (SDIs) for hydrocarbon sector have been set up at six cities viz Bhubaneswar, Vizag, Kochi, Ahmedabad, Guwahati and Raebareli. Till Sept'2022, more than 23,000 trainees have been trained in these SDIs.

The permanent campus of Skill Development Institute (SDI), Bhubaneswar, which envisages providing world class industry-based skill training using state of the art infrastructure and technology to create an industry ready talent pool was dedicated to the Nation on 20th August, 2021.



GAIL's Pata Petrochemical complex at Auraiya, UP





Chapter 2

# EXPLORATION AND PRODUCTION

# 2 Exploration and Production

## 2.1. Context/Background

**2.1.1.** The Directorate General of Hydrocarbons (DGH) was established under the administrative control of Ministry of Petroleum and Natural Gas by Government of India Resolution in 1993. The objective of setting up of DGH was to promote sound management of the Indian oil and natural gas resources having a balanced regard for environment, safety, technological and economic aspects of petroleum activity. In addition, DGH has been strengthened with certain responsibilities concerning the Production Sharing Contracts for Discovered fields/Exploration blocks, promotion of investment through implementation of policies including Discovered Small Field Policy, Hydrocarbon Exploration & Production Policy (HELP) and monitoring of E&P activities.

## 2.2. Sedimentary Basins in India

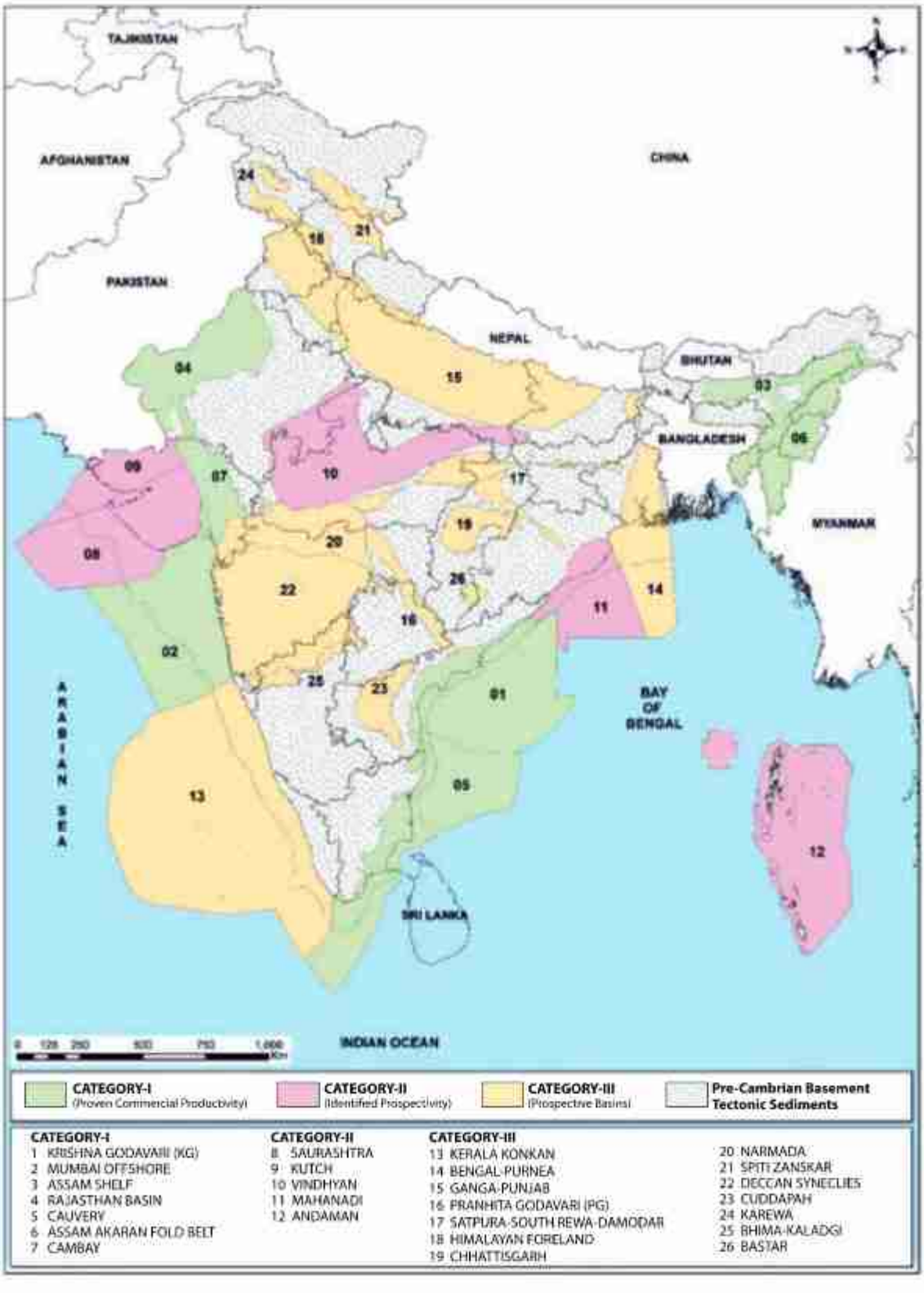
**2.2.1.** India has 26 sedimentary basins covering an area of 3.36 million square kilometres. The onland sedimentary basins of India have an aerial extent of about 1.63 million square kilometres; offshore sedimentary basins, upto the 400 meters isobath have an aerial extent of about 0.41 million square kilometres and in the deepwater beyond 400 meters isobath, the sedimentary area has been estimated to be about 1.32 million square kilometres.

**2.2.2.** The Indian sedimentary basins have been broadly divided into three categories based on their degree of prospectivity as presently known which is as under:

**TABLE 2.1: CATEGORIES OF INDIAN SEDIMENTARY BASINS**

| Type of Basins | Area (Sq. Km.) | Hydrocarbons Prospectivity | Basins/ Region |
|---|---|---|---|
| Category-I (7 Basins) | 9,98,325 | Established commercial production | Cambay, Assam Shelf, Mumbai Offshore, Krishna Godavari, Cauvery, Assam Arakan Fold Belt and Rajasthan |
| Category-II (5 Basins) | 7,80,974 | Known accumulation of hydrocarbons but no commercial production as yet | Kutch, Mahanadi, Andaman, Vindhyan, Saurashtra |
| Category-III (14 Basins) | 15,86,150 | Indicated hydrocarbon shows that are considered geologically prospectivity | Himalayan Foreland, Ganga-Punjab, Kerala-Konkan, Bengal-Purnea, Karewa, Spiti-Zanskar, Satpura-South Rewa-Damodar, Narmada, Deccan Syneclise, Bhima-Kaladgi, Cuddapah, Pranhita-Godavari, Bastar, Chhattisgarh |
| Total | **33,65,449** | | |

## INDIAN SEDIMENTARY BASIN



**2.2.3.** Crude oil and Natural Gas production in the country is mainly confined to Category-I sedimentary basins. In addition, significant quantity of petroleum resources has been established in five Category-II basins, however commercial production is yet to commence from these basins. Recently production has been commenced from Bengal basin and the same will be poised for category upgrade in next reassessment study. The distribution of total Indian sedimentary area of 3.36 million square kilometre under different categories is presented as under:




**2.3.** Estimated Resources of Conventional Hydrocarbon Resources- Crude Oil and Natural Gas.

**2.3.1.** The prognosticated conventional hydrocarbon resources in 26 sedimentary basins of the country are of the order of 41.87 billion tonnes of oil and oil equivalent of gas (O+OEG), which is about 49% increase as compared to earlier estimates of 28.08 billion tonnes of oil and oil equivalent of gas (O+OEG). The basin-wise details are as under:

**TABLE 2.2: ESTIMATED HYDROCARBON RESOURCES IN INDIA**

| Basin Category | No. | Basin Name | Prognosticated Resource (MMTOE) Estimate 2017 |
|---|---|---|---|
| Category-I (Basins with reserves being produced and Exploited) | 1 | Assam Arakan Fold Belt | 1,632.80 |
| | 2 | Assam Shelf | 6,001.20 |
| | 3 | Cambay | 2,585.60 |
| | 4 | Cauvery | 1,964.40 |
| | 5 | Krishna Godavari | 9,554.50 |
| | 6 | Mumbai Offshore | 9,646.00 |
| | 7 | Rajasthan | 4,126.00 |
| **Category-I Total** | | | **35,510.50** |
| Category-II (Basins with contingent resources to be developed and monetized) | 8 | Andaman | 371.40 |
| | 9 | Kutch | 898.40 |
| | 10 | Mahanadi | 650.60 |
| | 11 | Saurashtra | 1,325.20 |
| | 12 | Vindhyan | 632.50 |
| **Category-II Total** | | | **3,878.10** |
| Category III (Basins with only prospective resources to be explored and discovered) | 13 | Bastar | 1.30 |
| | 14 | Bengal-Purnea | 828.30 |
| | 15 | Bhima-Kaladgi | 3.20 |
| | 16 | Chhattisgarh | 25.00 |
| | 17 | Cuddapah | 5.10 |
| | 18 | Deccan Syneclies | 11.00 |
| | 19 | Ganga-Punjab | 128.40 |
| | 20 | Himalayan Foreland | 44.40 |
| | 21 | Karewa | 4.00 |
| | 22 | Kerala Konkan | 1,244.60 |
| | 23 | Narmada | 18.00 |
| | 24 | Pranhita Godavari | 95.40 |
| | 25 | Satpura-South Rewa-Damodar | 63.00 |
| | 26 | Spiti-Zanskar | 11.10 |
| **Category-III Total** | | | **2,482.80** |
| **Total (MMTOE)** | | | **41,871.40** |

** MMTOE : Million Metric Tonne of oil and oil equivalent of gas*

**2.3.2. Implementation of Petroleum Resources Management System (PRMS) for assessing HC resources:** The "Petroleum Resources Management System (PRMS)" has been implemented from 1st April 2021 for maintaining and reporting "Reserves and Resources" of conventional oil & gas at the country level annually for all blocks/fields across all E&P regimes-nomination and contract (PSC, RSC & CBM).

DGH in March 2021 notified all Operators to submit "Reserves and Resources" of oil & gas according to PRMS standards for respective blocks and fields yearly as of 1st April 2021. Accordingly, based on data provided by Operators, "Reserves and Resources" of conventional hydrocarbon of the country have been estimated as on 01.04.2022.

**2.3.3. Country's Conventional HC Reserves (2P) and Resources (2C) as on 01st April 2022:** There are five E&P operating regimes in the country, namely Nomination, Production Sharing Contract (PSC), Open Acreage Licensing Policy (OALP), Discovered Small Fields (DSF), and Coal Bed Methane (CBM) for conventional and unconventional hydrocarbon reservoirs.

As on 1st April 2022, conventional oil and gas resources (2P+2C) of the country have been estimated as about 652 MMT oil and 1,138 BCM gas.

Nomination regime fields operated by two National Oil Companies (NOC), Oil & Natural Gas Corporation Ltd. (ONGC) and Oil India Limited (OIL) and together have the lion's share of about 74% and 60% in total recoverable (2P+2C) oil and gas volumes respectively, followed by PSC/RSC Operators. The total 2P reserves at the country level for oil and gas are about 449 MMT and 649.6 BCM; the NOCs (nomination regime fields) have a significant share of about 82% and 58% respectively. The total 2C contingent resources at the country level are about 203 MMT and 489 BCM; the NOCs (nomination regime fields) have a major portion of about 55% and 63% respectively.

The reported contingent resources (2C) at the country level are significantly very high and need to be prioritized by new or re-development projects within a defined time frame. EOR/New EOR methods, which have already been modelled and are technically matured after the successful pilot phase, need to be commercially implemented at the field scale to upgrade the contingent resources to reserves. Government is constantly interacting with all E&P Operators for maximizing the reserves at a field level by adopting the best global practices in Reservoir Management.



ONGC's Onshore rig at Silchar, Assam

**TABLE 2.3: CRUDE OIL AND NATURAL GAS RESERVE (2P) AND RESOURCE (2C) POSITION AS ON 01.04.2022**

**Conventional Hydrocarbon Reserves status as of 1st April 2022 (Provisional)**

| Regime | 2P In -Place | | 2P EUR | | Accretion during 2021-2022 | | Reserves (2P) | | Contingent Resources (2C) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Oil + Cond. (MMT) | Gas (BCM) | Oil + Cond. (MMT) | Gas (BCM) | Oil+ Cond. (MMT) | Gas (BCM) | Oil+ Cond. (MMT) | Gas (BCM) | Oil+ Cond. (MMT) | Gas (BCM) |
| Nomination (ONGC & OIL) | 6175.68 | 2784.01 | 1663.59 | 1295.82 | 19.41 | 20.59 | 369.61 | 377.30 | 112.39 | 307.63 |
| PSC | 1215.78 | 794.01 | 220.63 | 331.04 | -0.49 | -5.49 | 75.20 | 200.64 | 86.50 | 130.55 |
| DSF | 54.61 | 52.39 | 4.21 | 16.21 | 2.47 | 7.61 | 4.18 | 16.21 | 3.99 | 8.79 |
| CBM | 0.00 | 234.05 | 0.00 | 58.71 | 0.00 | -2.95 | 0.00 | 55.42 | 0.00 | 41.51 |
| OALP | 0.50 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.34 |
| **Grand Total** | **7,446.58** | **3,864.97** | **1,888.44** | **1,701.78** | **21.39** | **19.75** | **449.00** | **649.56** | **203.02** | **488.82** |

**2.3.4. Unconventional Hydrocarbon Resources Coal Bed Methane (CBM) Resources:** The estimated CBM resources are of the order of 2,600 Billion Cubic Metres (BCM) or 91.8 Trillion Cubic Feet (TCF) spread over in 11 States in the country. The State-wise details of CBM resources are as under:

**TABLE 2.4: STATE WISE DISTRIBUTION OF COAL BED METHANE RESOURCES IN INDIA as on 01.04.2022**

| No. | State | Estimated CBM Resources (BCM) | Gas In-Place* (GIIP) (BCM) |
|---|---|---|---|
| 1 | Jharkhand | 722 | 53.42 |
| 2 | Rajasthan | 360 | 0.00 |
| 3 | Gujarat | 351 | 0.00 |
| 4 | Odisha | 244 | 0.00 |
| 5 | Chhattisgarh | 241 | 0.00 |
| 6 | Madhya Pradesh | 218 | 103.36 |
| 7 | West Bengal | 218 | 77.28 |
| 8 | Tamil Nadu | 105 | 0.00 |
| 9 | Telangana & Andhra Pradesh | 99 | 0.00 |
| 10 | Maharashtra | 34 | 0.00 |
| 11 | North East | 9 | 0.00 |
| | **Total CBM Resource** | **2,599** | **234.05** |

* Note: Provisional data. Reserves figures as per PRMS reporting awaited from few Operators

### 2.3.5 Shale Gas/Oil Resource

It is estimated that a number of sedimentary basins (Gangetic plain, Gujarat, Rajasthan, Andhra Pradesh and other coastal areas) in India, including the hydrocarbon bearing ones- Cambay, Assam-Arakan and Damodar estimates of shale gas and oil are prospective from shale oil and gas point of view in the Indian sedimentary basins carried out by some agencies are as under:

i. ONGC in August, 2013 has estimated Shale (1995-96). During the course of implementation of Gas resources of 187.5 TCF for 5 basins namely pre-NELP and NELP rounds and other exploration Cambay, Krishna Godavari, Cauvery, Ganga and Assam.

ii. Central Mine Planning and Design Institute geological understanding and new technology. With (CMPDI): in July, 2013 has estimated Shale Gas the increase in exploration spread and quantum jump resources of 45.8 TCF for one basin, namely Gondwana.

iii. United States Geological Survey (USGS) in resource assessment of all sedimentary basins of January, 2011 estimated Technical Recoverable Shale Gas of 6.1 TCF in three basins namely Cambay, Krishna Godavari and Cauvery.

In order to understand the prospectivity and untap the Shale Gas and Oil resource potential in India, Government of India on 14th December, 2013 notified the policy guidelines for exploration and exploitation of Shale gas and oil by National Oil Companies (NOCs) in their onland Petroleum Exploration Lease (PEL)/Petroleum Mining Lease (PML) blocks awarded under the nomination regimes.

The companies were required to carry out exploration in their PML and ML areas in three phases. ONGC and OIL India Ltd were allotted 50 and 6 blocks respectively for assessment under Phase-I. ONGC identified 50 blocks in 4 basins and OIL identified 6 blocks in 2 basins in Phase-I.

ONGC identified 50 blocks in 4 basins viz. Assam, KG, Cauvery & Cambay basin in Phase-I. OIL identified 6 blocks in 2 basins viz. Jaisalmer and Assam basins in Phase-I.

Till date ONGC has drilled 30 wells and OIL has drilled 4 wells for Shale Oil and Gas exploration in Phase-I.

Under Hydrocarbon Exploration and Licensing Policy (HELP), 2016 the single licence enables the contractor to explore conventional as well as unconventional oil and gas resources including CBM, shale gas/oil, tight gas and gas hydrates under a single license.

In August 2018, the Government of India notified a Policy framework for Exploration and exploitation of Unconventional hydrocarbons in existing acreages under existing Production Sharing Contracts (PSC), Coal Bed Methane (CBM) Contracts and Nomination fields.

### 2.3.6. Re-assessment of Hydrocarbon Resources

For updated estimation of hydrocarbon resource potential in the country, re-assessment of hydrocarbon resources for all 26 sedimentary basins in the country was completed in 2017 almost after two decades of earlier estimation. This resulted in prognosticated conventional hydrocarbon resources of the order of 41.87 billion tonnes of oil and oil equivalent of gas (O+OEG), which is about 49% increase as compared to earlier estimate of 28.08 billion tonnes of O+OEG.

## 2.4. Crude oil and Natural Gas Production

**2.4.1.** Crude oil production in FY 2022-23 (April to December 2022) is about 22.08 Million Metric Tonne (MMT). About 77% of crude oil is by ONGC and OIL from Nomination regime (excluding JV share) and remaining 23% is by Private/JV companies from Contractual regime.

**2.4.2.** In FY 2022-23 (up to December, 2022), the share of offshore crude oil production is about 49.5%. The remaining onland crude oil production was from mainly Andhra Pradesh, Arunachal Pradesh, Assam, Gujarat, Rajasthan, Tamil Nadu, West Bengal etc. The details of crude oil production in FY 2022-23 (up to December 2022) and last 5 years are as under:

**TABLE 2.5: STATE-WISE CRUDE OIL PRODUCTION TRENDS (MMT)**

| Location Type | State/ Location | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (P) (Apr-Dec 2022) |
|---|---|---|---|---|---|---|---|
| Offshore | Eastern Offshore | 0.83 | 0.65 | 0.56 | 0.74 | 0.63 | 0.40 |
| | Gujarat Offshore | 0.4 | 0.74 | 0.59 | 0.41 | 0.34 | 0.29 |
| | Western Offshore | 16.92 | 15.48 | 14.85 | 14.24 | 13.60 | 10.24 |
| **Offshore Total** | | **18.14** | **16.87** | **16** | **15.39** | **14.57** | **10.93** |
| **Share of PSUs** | | **16.24** | **14.97** | **14.54** | **14.24** | **13.62** | **10.25** |
| **Share of Private/JVs** | | **1.91** | **1.9** | **1.47** | **1.15** | **0.95** | **0.68** |
| Onland | Andhra Pradesh | 0.3 | 0.3 | 0.24 | 0.19 | 0.20 | 0.18 |
| | Arunachal Pradesh | 0.05 | 0.04 | 0.06 | 0.05 | 0.05 | 0.03 |
| | Assam | 4.34 | 4.31 | 4.09 | 3.9 | 3.99 | 3.12 |
| | Gujarat | 4.59 | 4.63 | 4.71 | 4.65 | 4.63 | 3.64 |
| | Rajasthan | 7.89 | 7.67 | 6.65 | 5.89 | 5.89 | 3.93 |
| | Tamil Nadu | 0.35 | 0.4 | 0.42 | 0.41 | 0.37 | 0.25 |
| | Tripura | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 |
| | West Bengal | | | | 0.0001 | 0.0001 | 0.00001 |
| **Onland Total** | | **17.52** | **17.34** | **16.17** | **15.1** | **15.12** | **11.15** |
| **Share of PSUs** | | **9.36** | **9.37** | **9.2** | **8.87** | **8.82** | **6.84** |
| **Share of Private/JVs** | | **8.15** | **7.97** | **6.97** | **6.23** | **6.30** | **4.31** |
| **Grand Total** | | **35.66** | **34.2** | **32.17** | **30.49** | **29.69** | **22.08** |
| **Share of PSUs** | | **25.6** | **24.34** | **23.73** | **23.11** | **22.44** | **17.08** |
| **Share of Private/JVs** | | **10.06** | **9.87** | **8.44** | **7.39** | **7.25** | **5.00** |

**2.4.3.** Natural Gas production in 2022-23 (up to December, 2022) is about 25.87 Billion Cubic Metre (BCM). About 67% of natural gas production is by ONGC and OIL from Nomination regime (excluding JV share) and remaining 33% is by Private/JV companies from Contractual regime.

**2.4.4.** The share of offshore natural gas production in FY 2022-23 (up to December, 2022) is about 68%. The remaining natural gas production including CBM was from 10 States viz., Andhra Pradesh, Arunachal Pradesh, Assam, Gujarat, Rajasthan, Tamil Nadu, Tripura, Jharkhand, Madhya Pradesh and West Bengal. The details of Natural gas production in 2022-23 (up to December, 2022) and last 5 years are as under:

**TABLE 2.6. STATE-WISE NATURAL GAS PRODUCTION TRENDS (MMSCM)**

| Location Type | State/ Location | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (P) (Apr - Dec 2022) |
|---|---|---|---|---|---|---|---|
| Offshore | Eastern Offshore | 2816.7 | 2458.9 | 1823.1 | 1621.5 | 7024.8 | 5953.5 |
| | Gujarat Offshore | 97.7 | 122.2 | 128.7 | 147.6 | 163 | 174.2 |
| | Western Offshore | 19096.2 | 19535.9 | 18683.6 | 16659.9 | 15681.1 | 11423.7 |
| **Offshore Total** | | **22,010.6** | **22,117.1** | **20,635.4** | **18,429.1** | **22,868.9** | **17,551.4** |
| **Share of PSUs** | | **17,791.2** | **19,041.8** | **18,576** | **17,086.4** | **15,942.9** | **11,554.9** |
| **Share of Private/JVs** | | **4,219.5** | **3,075.3** | **2,059.4** | **1,342.6** | **6,926** | **5,996.5** |
| Onland | Andhra Pradesh | 955.9 | 1076.5 | 906.1 | 827.5 | 808.6 | 544.5 |
| | Arunachal Pradesh | 29.5 | 27.8 | 45.6 | 55.4 | 57.7 | 40.8 |
| | Assam | 3219 | 3289.1 | 3141.2 | 2995.4 | 3371.5 | 2686.5 |
| | Gujarat | 1606.7 | 1402.2 | 1347.7 | 1138.4 | 1017.3 | 699.7 |
| | Rajasthan | 1436.4 | 1483.2 | 1882.5 | 2039.7 | 2618.8 | 1747.2 |
| | Tamil Nadu | 1207.2 | 1207.9 | 1096.7 | 910.9 | 1066.5 | 845.6 |
| | Tripura | 1440.4 | 1554.3 | 1472.8 | 1633.8 | 1530.8 | 1237.9 |
| Onland-CBM | Jharkhand | 4 | 3.6 | 4.6 | 1.7 | 4 | 6.8 |
| | Madhya Pradesh | 199.8 | 356.7 | 344.9 | 333.7 | 290.1 | 201.7 |
| | West Bengal | 531.1 | 350.2 | 305.9 | 307 | 389.2 | 303 |
| **Onland CBM** | | **10,629.9** | **10,751.5** | **10,547.9** | **10,243.4** | **11,154.6** | **8,313.6** |
| **Share of PSUs** | | **8,511** | **8,350** | **7,837.5** | **7,265.3** | **7,578.3** | **5,794.1** |
| **Share of Private/JVs** | | **2,118.9** | **2,401.5** | **2,710.4** | **2,978.1** | **3,576.3** | **2,519.6** |
| **Grand Total** | | **32,640.5** | **32,868.6** | **31,183.3** | **28,672.4** | **34,023.5** | **25,865** |
| **Share of PSUs** | | **26,302.2** | **27,391.8** | **26,413.6** | **24,351.7** | **23,521.2** | **17,349** |
| **Share of Private/JVs** | | **6,338.3** | **5,476.8** | **4,769.8** | **4,320.7** | **10,502.3** | **8,516.1** |

**2.4.5.** Commercial production of Coal Bed Methane (CBM) in India commenced since July 2007 from Raniganj (South) block in West Bengal. At present 08 CBM Blocks are active, of which 05 blocks are under production. This includes test gas from 1 CBM block and commercial production from other 4 CBM blocks. CBM production during December 2022 was around 1.81 MMSCMD including 0.28 MMSCMD from Raniganj (South), 0.81 MMSCMD from Raniganj (East), 0.69 MMSCMD from Sohagpur (West) and 0.03 MMSCMD from Jharia and Bokaro. Cumulative CBM production till December-2022 is around 5.59 BCM. Share of CBM in total gas production in the country stood at around 3%.

## 2.5. Indian Sedimentary Area

As per India Hydrocarbon Vision 2025, 100% Indian sedimentary area is to be appraised. Onland area covers 1.63 Million Sq. Km. (48.5%) and Offshore area covers 1.73 Million Sq. Km. As of now, around 61% of the basinal areas have

been appraised. Under special arrangements with the Indian Navy, 'No Go' areas have been reduced by almost 99%. Similar efforts are being made with DRDO and Department of Space so that hitherto unexplored area can be prospected.

## 2.6. Blocks Awarded for Exploration and Production

**2.6.1.** Government of India signed 310 production sharing contracts including 29 discovered fields (One PSC signed for Panna & Mukta Fields), 28 exploration blocks under pre-NELP Exploration Blocks and 254 blocks under NELP regime with National Oil Companies and Private (both Indian and Foreign)/Joint Venture companies as licensee/lessee for blocks. Also 85 Revenue Sharing Contracts (RSCs) have been signed under three Discovered Small Field (DSF) Bidding Rounds involving 85 Contract Areas. Further, during the seven (07) concluded Open Acreage Licencing Programme (OLAP) Bid Rounds under Hydrocarbon Exploration and Licencing Policy (HELP), total 134 RSCs have been signed. At present, out of 310 PSCs & 219 RSCs signed so far under various bidding rounds (Discovered Field, Pre-NELP, NELP, HELP and DSF), 63 PSCs and 180 RSCs are currently operational.

**2.6.2.** Petroleum Exploration Licenses (PEL) for domestic exploration & production of crude oil and natural gas have been granted under the different regimes over a period of time:

a) **Nomination Basis:** Petroleum Exploration License (PEL) is granted to National Oil Companies viz. Oil and Natural Gas Corporation Ltd (ONGC) and Oil India Ltd. (OIL) on nomination basis prior to implementation of NELP.

b) **Pre-NELP Discovered Field:** Government offered Petroleum Mining Lease (PML) of small/medium sized discovered fields (proven reserves were discovered by ONGC and OIL) to the private sector in August 1992. Production Sharing Contracts (PSCs) awarded during 1991-1993 had the distinctive feature of operators as private companies. Government of India has signed 28 contracts (One PSC for Panna-Mukta) for 29 discovered fields under Pre-NELP Discovered (Small and Medium size fields) regime. There are 21 operational Pre-NELP Discovered Fields as on Dec'2022. PSCs of 10 Pre-NELP Fields have been extended and under extension for 2 Fields under GoI Extension Policy dated 28.03.2016.

c) **Pre-NELP Exploration Blocks:** 28 Exploration Blocks are awarded to private companies between 1990 and prior to implementation of NELP where ONGC and OIL have the rights for participation in the block after hydrocarbon discoveries. There are 9 operational Pre-NELP Exploration Blocks as on Dec'2022. PSCs of 2 Pre-NELP Exploration Blocks have been extended under GoI Extension Policy dated 07.04.2017.

d) **New Exploration Licensing Policy (NELP)-1999 onwards:** Under NELP, exploration blocks were awarded to Indian Private and foreign companies through international competitive bidding process where National Oil Companies viz, ONGC and OIL also competed on equal footing. There are 33 operational NELP Blocks as on Dec'2022.

e) **Discovered Small Field (DSF) Policy:** Under Discovered Small Field Policy, Government has awarded 85 Contract area, DSF-I, DSF-II & DSF-III Bid Rounds, based on Revenue Sharing Model. As on Dec'2022, Revenue Sharing Contracts (RSCs) for 85 Contract Areas have been signed under three Discovered Small Field (DSF) Bidding Rounds. 48 DSF Contracts are operational based on granted PML.

f) **Hydrocarbon Exploration & Licencing Policy (HELP):** Under the policy, Government has awarded 134 Exploratory Blocks on Revenue Sharing basis under seven concluded Open Acreage Licensing Policy (OALP) bid rounds.

## 2.7 Petroleum Exploration Licence (PEL) and Petroleum Mining Lease (PML)

**2.7.1.** Under Nomination regime, ONGC is operating in 5 PEL (2,995.00 Sq. Km.) and 310 long term PML blocks covering an area of about 28,440.83 Sq. Km. Besides, ONGC is also operating in 18 short term 7 year PML blocks falling in different basins covering about 18,611.75 Km2 area. In addition, OIL is operating 2 PEL and 25 PML fields under nomination regime covering an area of 4,946.73 Sq. Km. The basin-wise details of PEL/PML operated by ONGC and OIL are as under:

**TABLE 2.7A. BASIN-WISE PEL OPERATIVE & PML BY ONGC UNDER NOMINATION REGIME AS ON 31.12.2022**

| Company/ Operator | Basin/State | | PEL | | PML | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Long term | | Short term (7 year) | | | |
| | | | No. | Area (Km2) | No. | Area (Km2) | No. | Area (Km2) | No. | Area (Km2) |
| ONGC | Assam-Arakan | Assam | - | - | 42 | 1446.08 | 4 | 858.43 | 46 | 2304.51 |
| | | Nagaland | 3 | 1590.00 | 1 | 12.00 | - | - | 4 | 1602.00 |
| | | Tripura | - | - | 16 | 1682.07 | 2 | 1363.05 | 18 | 3045.12 |
| | Cambay | Gujarat | - | - | 156 | 5565.49 | 3 | 111.25 | 159 | 5676.74 |
| | Cauvery | Tamil Nadu-Onland | - | - | 24 | 644.68 | 2 | 3311.72 | 26 | 3956.40 |
| | | Cauvery-Offshore | | | 1 | 11.00 | - | - | 1 | 11.00 |
| | Krishna -Godavari | Andhra Pradesh-Onland | - | - | 34 | 1019.51 | 3 | 3309.58 | 37 | 4329.09 |
| | | KG-Offshore | - | - | 7 | 570.86 | - | - | 7 | 570.86 |
| | Kutch Offshore | | 1 | 420.00 | - | - | - | - | 1 | 420.00 |
| | Saurashtra Offshore | | - | - | 1 | 392.52 | 1 | 29.07 | 2 | 421.59 |
| | Mumbai Offshore | | 1 | 985.00 | 24 | 16256.98 | 3 | 9628.65 | 28 | 26870.63 |
| | Jaisalmer | Rajasthan | - | - | 4 | 839.64 | - | - | 4 | 839.64 |
| | | **Total-ONGC** | **5** | **2,995** | **310** | **28,440.83** | **18** | **18,611.75** | **333** | **50,047.58** |
| | | | | | **Nomination PML: 328 Area(Km2): 47,052.58** | | | | | |

**TABLE 2.7B. BASIN-WISE OPERATIVE PEL & PML BY OIL UNDER NOMINATION REGIME AS ON 31.12.2022**

| Company/ Operator | Basin | | PEL | | PML | | Total | |
|---|---|---|---|---|---|---|---|---|
| | | | No. | Area (Km2) | No. | Area (Km2) | No. | Area (Km2) |
| OIL - Nomination | Rajasthan | onland | - | - | 2 | 462.17 | 2 | 462.17 |
| | Assam-Arakan | onland | 2 | 136.75 | 23 | 4347.81 | 25 | 4484.56 |
| **Total-OIL** | | | **2** | **136.75** | **25** | **4,809.98** | **27** | **4,946.73** |

**2.7.2.** Private/JV companies under PSC regime are operating 24 PEL and 65 PML blocks covering an area of 29,664 Sq. Km. The basin-wise details of PEL/PML operated by private/JV companies are as under:

**TABLE 2.8. BASIN-WISE PEL & PML WITH PRIVATE/JOINT VENTURE COMPANIES UNDER PSC REGIME AS ON 31.12.2021**

| Basin Name | PEL | | PML | |
|---|---|---|---|---|
| | PEL (No.) | Area (Sq. Km) | PEL (No.) | Area (Sq. Km) |
| Assam-Arakan Fold Belt | 1 | 3213 | 0 | 0 |
| Assam-Arakan Shelf | 6 | 6608 | 4 | 263 |
| Bengal-Purnea | 1 | 3940 | 0 | 0 |
| Cambay | 5 | 842 | 43 | 1220 |
| Cauvery | 2 | 267 | 2 | 156 |
| Krishna Godavari | 2 | 2076 | 12 | 2388 |
| Kutch | 2 | 1594 | 0 | 0 |
| Mahanadi | 1 | 832 | 0 | 0 |
| Mumbai | 2 | 1965 | 0 | 0 |
| Rajasthan | 0 | 0 | 4 | 3287 |
| Saurashtra | 1 | 552 | 0 | 0 |
| Vindhyan | 1 | 462 | 0 | 0 |
| **Grand Total** | **24** | **22,349** | **65** | **7,315** |

**TABLE 2.9. BASIN-WISE PML WITH PRIVATE /JOINT VENTURE COMPANIES UNDER DSF AS ON 31.12.2022**

| Basin Name | No. of PML | PML Area (Sq. Km) |
|---|---|---|
| Assam-Arakan Fold Belt | 1 | 47 |
| Assam Shelf | 8 | 168 |
| Bengal-Purnea | 1 | 541 |
| Cambay | 8 | 1037 |
| Krishna Godavari | 9 | 1384 |
| Kutch | 2 | 2092 |
| Mumbai | 16 | 6285 |
| Rajasthan | 1 | 73 |
| **Total** | **46** | **11,628** |

* 2 PMLs for DSF-III contract: AA/ONDSF/PATHARIA/2021 & AA/ONDSF/TUKBAI/2021 is granted but it will be effective once PML deed is signed.

### 2.7.3. Status of grant of Petroleum Exploration Licence (PELs), as of 31st December 2022 under HELP

Total 167 Petroleum Exploration License (PEL) were involved in 134 blocks awarded in seven rounds of bid, out of which 138 PELs for an area of 1,81,838.1 Sq. Km have been granted till 31st December 2022. Two numbers of PEL was denied by Union Territory of Puducherry for an area of 40.53 Sq. Km. Further 10 PEL of an area of 7,136.41 sq. km was not granted by the State Govt. of Tamil Nadu, Andhra Pradesh and Union Territory of Puducherry. This area has been surrendered. Remaining 17 PELs for an area of 18,161.43 Sq. Km. are pending from various State Governments. Summary of status of PELs is as under:

**TABLE 2.10. BASIN-WISE PEL WITH PRIVATE/JOINT VENTURE COMPANIES UNDER RSC REGIME AS ON 31.12.2021**

| OALP Bid Round | Total No. of PELs | PEL Granted | PEL Pending | PEL Denied |
|---|---|---|---|---|
| OALP I | 76 | 66 | 2 | **8 |
| OALP II | 18 | 17 | 1 | |
| OALP III | 21 | 15 | 2 | **4 |
| OALP IV | 7 | 7 | - | - |
| OALP V | 13 | 13 | - | - |
| OALP VI | 24 | 14 | 10 | - |
| OALP VII | 8 | 6 | 2 | - |
| **Total** | **167** | **138** | **17** | **12** |

*Some of the awarded blocks falls under the jurisdiction of multiple states hence the number of PELs are more than the number of awarded blocks.
** Due to Non-grant of PEL in the State of Tamil Nadu, Puducherry & Andhra Pradesh, the Block/Part Area is surrendered by the Contractor.

**TABLE 2.11. BASIN WISE STATUS OF PEL UNDER OALP AS ON 31.12.2022**

| Basin | Total No. of PELs | PEL Granted | PEL Pending | PEL Denied |
|---|---|---|---|---|
| Andaman-Nicobar | 6 | 6 | 0 | |
| Assam Arakan Fold Belt | 17 | 16 | 1 | |
| Assam Shelf | 30 | 28 | 2 | |
| Bengal-Purnea | 5 | 4 | 1 | |
| Cambay | 6 | 5 | 1 | |
| Cambay | 19 | 18 | 1 | |
| Cauvery | 15 | 6 | 2 | 5*; 2** |
| Cuddapah | 1 | 0 | 1 | |
| Ganga-Punjab | 4 | 2 | 2 | |
| Himalayan Foreland | 1 | 1 | 0 | |
| Kerala Konkan | 1 | 1 | 0 | |
| Krishna Godavari | 9 | 4 | 0 | 5** |
| Kutch | 8 | 7 | 1 | |
| Mahanadi | 9 | 9 | 0 | |
| Mumbai Offshore | 8 | 8 | 0 | |
| Narmada | 2 | 0 | 2 | |
| Rajasthan | 16 | 15 | 1 | |
| Satpura-South Rewa-Damodar | 1 | 0 | 1 | |
| Saurashtra | 1 | 0 | 1 | |
| Saurashtra | 3 | 3 | 0 | |
| Vindhyan | 5 | 5 | 0 | |
| **Grand Total** | **167** | **138** | **17** | **12** |

Some of the Basins cover multiple jurisdiction such as Onshore/Offshore or multiple states
*5 PEL denied by Tamil Nadu/Puducherry, Operator Surrendered the area/Block.
** Due to Non grant of 7 PELs comprising the States Tamil Nadu, Andhra Pradesh and Puducherry, Operator Surrendered the Block.

## 2.8. Exploratory Efforts by ONGC and OIL under Nomination Regime

ONGC and OIL have carried out 9,17,333 line kilometre (LKM) of 2D seismic survey; 1,46,434 Sq. Km. of 3D seismic survey and drilled 6,826 exploratory wells since inception as on 31st December, 2020. The details of exploratory efforts in terms of 2D, 3D seismic and exploratory wells made by ONGC and OIL are as under:

**TABLE 2.12. EXPLORATORY INPUTS BY ONGC AND OIL UNDER NOMINATION REGIME**

| Sr.No. | Company | Cumulative exploratory efforts as on 31.12.2021 | | Exploratory Well (No.) |
|---|---|---|---|---|
| | | 2D seismic (LKM) | 3D seismic (Sq. Km.) | |
| 1 | **ONGC - Nomination** | 8,83,040 | 1,34,723 | 6,408 |
| 2 | **Oil India Ltd. - Nomination** | 34,293 | 11,711 | 418 |
| | **Total** | **9,17,333** | **1,46,434** | **6,826** |

## 2.9. Exploratory Efforts by Private/JV companies under PSC & RSC

**2.9.1.** The basin-wise exploratory efforts made by Private/Joint venture companies in terms of 2D seismic, 3D seismic and exploratory wells under PSC and RSC Regimes as on 1st April, 2022 are as under:

**TABLE 2.13. TOTAL EXPLORATORY INPUTS IN PSC REGIME AS ON 31.12.2022**

| Basin Name | 2D Seismic LKM | 3D Seismic SKM | Exploratory Wells (Nos.) |
|---|---|---|---|
| Andaman-Nicobar | 27070 | 16562 | 6 |
| Assam-Arakan Fold Belt | 1352 | 613 | 4 |
| Assam-Arakan Shelf | 5468 | 2203 | 41 |
| Bengal-Purnea | 5247 | 4909 | 13 |
| Cambay | 29994 | 9167 | 317 |
| Cauvery | 64727 | 44561 | 51 |
| Deccan Syneclise | 476 | 0 | 0 |
| Ganga | 3876 | 263 | 4 |
| Himalayan-Foreland | 810 | 0 | 1 |
| Kerela Konkan | 52290 | 14035 | 7 |
| Krishna Godavari | 76106 | 70711 | 207 |
| Kutch | 2985 | 8345 | 21 |
| Mahanadi | 59542 | 64659 | 53 |
| Mumbai | 21349 | 27285 | 51 |
| Pranhita Godavari | 195 | 0 | 1 |
| Rajasthan | 14157 | 16396 | 311 |
| Satpura-South Rewa-Damodar | 2050 | 304 | 2 |
| Saurashtra | 16037 | 15428 | 16 |
| Vindhyan | 3918 | 858 | 8 |
| Ganga-Punjab | 2542 | 1420 | 4 |
| **Grand Total** | **3,90,191** | **2,97,718** | **1,118** |

**TABLE 2.14. TOTAL EXPLORATORY INPUTS IN RSC REGIME (OALP) AS ON 31.12.2022**

As on 31" December 2022, contractors of the blocks have acquired 29,368.48 LKM of 2D Seismic data and 24,205.6 Sq. Km of 3D Seismic data of CWP.

| Basin | Acquired 2D Seismic (LKM) | Acquired 3D Seismic (LKM |
|---|---|---|
| Andaman-Nicobar | 8501 | 2130 |
| Assam Arakan Fold Belt | 509 | 129 |
| Assam Shelf | 2572 | 359 |
| Bengal Purnea | 100 | 701 |
| Cambay | 1519 | 893 |
| Cauvery | 0 | 1500 |
| Kerala-Konkan | 0 | 1028 |
| Krishna Godavari | 431 | 1514 |
| Kutch | 398 | 1358 |
| Mahanadi | 2305 | 3602 |
| Mumbai Offshore | 940 | 7711 |
| Rajasthan | 10651 | 655 |
| Saurashtra | 202 | 1288 |
| Vindhyan | 1241 | 1339 |
| **Total** | **29,368** | **24,206** |

## 2.10. Hydrocarbon Discoveries in 2022-23 upto December 2022

As on 31.12.2022 total 11 HC discoveries have been made, including 6 discoveries in Nomination Regime and 5 discoveries in Contractual Regimes.

**TABLE 2.15. HYDROCARBON DISCOVERIES IN 2022-23**

| Sl. No. | Company | Oil Discovery | Gas Discovery | Total |
|---|---|---|---|---|
| 1 | ONGC (Nomination) | 1 | 4 | 5 |
| 2 | OIL (Nomination) | 1 | 0 | 1 |
| 3 | PSC/RSC | 3 | 2 | 5 |
| | **Total** | **5** | **6** | **11** |

During the period, ONGC has made 7 hydrocarbon discoveries in its operated acreages in nomination & contractual regime. Out of these, 5 are in onshore and 2 in offshore acreages. Out of these, two on-land discoveries viz. Mandapeta-60 and Kesanapalli- West Deep-7 have been monetized by ONGC. The details of hydrocarbon discoveries made in 2022-23 up to December, 2022 are as under:

**TABLE 2.16. HYDROCARBON DISCOVERIES BY ONGC**

| Sl. No. | Basin/State | Well No. | Type of Hydrocarbon | Acreage |
|---|---|---|---|---|
| Onshore | | | | |
| 1 | KG-Onland (Andhra Pradesh) | Mandapeta-60 | Gas | Mandapeta PML |
| 2 | | Malleshwaram-22 | Gas | Malleswaram PML |
| 3 | | Kesanapalli West Deep-7 | Oil & Gas | Adaavipalem–Ponammanda PML (Surface Position)/ Vainetyam PML (Sub-surface Position) |
| 4 | | Karugorumilli-1 | Gas | Godavari Onland |
| 5 | Bengal Onland | Kankpul-1 | Gas | WB-ONN-2005/4 |
| Offshore | | | | |
| 6 | KG-Offshore (East Coast) | GS-15-22 | Gas | Vainetyam |
| 7 | Mumbai Offshore (West Coast) | MBS171HAA-1 | Gas | MB-OSHP-2017/1 |

**Hydrocarbon Discoveries by OIL:** During FY 2022-23 (upto December 2022), OIL has made one discovery (oil) in well Sesabil-1, Hugrijan PML, Assam in Dec' 2022 which, during initial testing has established presence of hydrocarbon. Detail well testing is planned to establish commerciality of the discovery.

**Hydrocarbon Discoveries in Contractual Regime:** Also, five hydrocarbon discoveries, have been notified under Contractual Regime in 2022-23 up to December, 2022. The details of hydrocarbon discoveries are as under:

| Sl. No. | Discovery Name | Block | Basin | NELP/ Pre-NELP | Operator | Oil / Gas |
|---|---|---|---|---|---|---|
| 1 | FB-1 | CB-ONHP-2017/7 | Cambay | OALP | Vedanta | Oil |
| 2 | RE-7 | Ravva | Krishna Godavari | Pre-NELP Field Round | Vedanta | Oil |
| 3 | Kankpul-1(K-WB-C) | WB-ONN-2005/4 | Bengal | NELP | ONGC | Gas |
| 4 | RF-10 | Ravva | Krishna Godavari | Pre-NELP Field Round | Vedanta | Oil |
| 5 | MBS171HAA-1 | MB-OSHP-2017/1 | Mumbai Offshore | OALP | ONGC | Gas |

## 2.11. National Data Repository (NDR)

**2.11.1.** The Government of India notified the Open Acreage Licensing Programme (OALP) as a part of the Hydrocarbon exploration and Licencing Policy (HELP) on 30th June, 2017.

National Data Repository (NDR) was set up at DGH and launched on 28th June, 2017 to make the entire Exploration and Production (E&P) data available for commercial exploration, research and development and academic purposes. NDR was a pre-requisite and key component for making OALP operational to view the surface and sub-surface geological, geophysical and other technical data by the investors.

Entire country's E&P data is being uploaded in NDR so that any interested party from around the globe can have access to these data for placing interest of the open block of their choice through OALP.

Cumulative data loaded in NDR as on 31st December 2022:

a) 2D Seismic Data : 3.284 Million LKM

b) 3D Seismic Data : 1.041 Million SKM

c) Well and Log Data : 22,563 No. of Wells

d) Well Reports : 46,826 Nos. of reports

Further, complete upgradation of the National Data Repository is planned through cloud enabled database platform with the aim to further improve the data accessibility, reporting and enhanced storage.

## 2.12. Policy Initiatives taken by the Government for Enhancing Crude Oil and Gas Production

In a major drive to give a boost to upstream hydrocarbon sector, the Government has unveiled a series of policy initiatives. The reforms in hydrocarbon sector are based on the guiding principles of enhancing domestic oil and gas production, increasing investment, generating sizable employment, enhancing transparency, and reducing regulatory burden. Some of the notable policy reforms are listed as under:

**2.12.1.** Hydrocarbon Exploration and Licencing Policy/Open Acreage Licensing Programme (March 2016)

In March 2016, Government launched Hydrocarbon Exploration Licensing Policy (HELP). HELP is a paradigm shift from Cost Recovery to Revenue Sharing Mechanism wherein contractor shares revenue with the Government from the start of the production. Contractor quotes Revenue Share percentage at LRP and HRP at the time of bid submission.

It was a giant step towards improving the 'Ease of Doing Business' in the Indian Exploration and Production (E&P) sector as Government does not require to interfere in day-to-day business activities of Contractor. The Government introduced the Open Acreage Licensing Program (OALP) as a part of the Hydrocarbon Exploration and Licensing Policy (HELP) on 30th March 2016 and formally it was put in operation w.e.f. 1st July 2017 which gives exploration companies the option to select the exploration blocks on their own, without having to wait for the formal bid round from the Government.

HELP comes with attractive and liberal terms like reduced royalty rates, no oil cess, marketing and pricing freedom, round the year bidding, freedom to investors for carving out blocks of their interest, a single license to cover both conventional and unconventional hydrocarbon resources, exploration permission during the entire contract period, and an easy, transparent and swift bidding and awarding process. HELP also encourages Round the Year submission of Expression of Interest (EOI) in 3 windows (April 1st to July 31st, August 1st to November 30th and December 1st to March 31st) by the interested bidders.

**Salient features of HELP**

- Opportunity to carve out blocks using National Data Repository (NDR)
- Unified Licence for both conventional and unconventional Hydrocarbons
- Simple and easy to administer Revenue Sharing model
- Low regulatory burden
- Easy entry and exit barriers
- Complete transparency and time bound process
- Level playing field for global private companies as well as National Oil Companies
- Market pricing and free market access
- Concessional royalty regime for Ultra-Deep water and Shallow Water areas
- Exploration rights for full contract life

The first OALP Bid Round, under HELP, was launched by the Government in January 2018. The govt. launched state-of-art National Data Repository, a database comprising all the geo-scientific data of hydrocarbon resources in the country, in 2017 in a bid to enable potential investors to take informed decisions.

Government further notified policy reforms in upstream sector on 28th February 2019 under HELP to increase exploration activities, attract domestic and foreign investment in unexplored/ unallocated areas of sedimentary basins and promote ease of doing business by streamlining and expediting the approval processes. These reforms were made applicable from OALP Round IV onwards. Category specific Bid Evaluation Criteria with more weightage to exploratory work programme in Category-I basins (70% vis-à-vis 50% earlier), Category-II and III type blocks bid based on exploratory work programme only, shorter exploration period, concessional royalty rates to expedite oil and gas production, introduction of alternate dispute resolution mechanism and Empowered Coordination Committee (ECC) for expediting statutory clearances/approvals.

With the successful roll out of the HELP/OALP, based on the world-class National Data Repository (NDR), the Government has achieved massive enhancement of exploration acreage in India. A sneak peek at increase/projected active acreage, post introduction of OALP bid rounds are as under

**a. Summary of Participation**

In Seven OALP bid rounds, out of the offered 139 blocks, 134 exploration blocks covering an area of 2,07,692 Sq. Km. have been awarded to successful bidders. No bids were received for the five (5) offered blocks under OALP-Round-III with focus on CBM. Total 239 bids were received for remaining 134 blocks that are spread over 19 Sedimentary Basins.

Summary of participation in OALP rounds is as under:

| OALP Bid Round | Blocks on offer | Number of participants | No. of bids | Area on offer (Sq. Km.) | Area awarded (Sq. Km.) |
|---|---|---|---|---|---|
| OALP-I | 55 | 9 | 110 | 59,283 | 59,283 |
| OALP-II | 14 | 8 | 33 | 29,233 | 29,233 |
| OALP-III | 23* | 5 | 42 | 31,722 | 29,765 |
| OALP-IV | 7 | 2 | 8 | 18,510 | 18,510 |
| OALP-V | 11 | 3 | 12 | 19,789 | 19,789 |
| OALP-VI | 21 | 3 | 24 | 35,346 | 35,346 |
| OALP-VII | 8 | 4 | 10 | 15,766 | 15,766 |
| **Total** | **139** | **34** | **239** | **2,09,649** | **2,07,692*** |

* No bid received for five CBM Blocks.

## Summary of blocks awarded, and work carried out so far

- As on 31.12.2022, seven OALP bid rounds have been concluded with the award of 134 exploration blocks covering 2,07,692 Sq. Km. area for E&P activities. However, post relinquished of seven blocks, 127 exploration blocks are operational covering 2,00,632 Sq. Km area.
- Committed investment ~3.13 USD billion up to OALP Bid Round-VII.
- Committed Work Programme in the 127 operational blocks under seven OALP Bid Rounds is 27,745 LKM 2D Seismic; 56,443 SKM 3D seismic and 470 Exploratory Wells.
- Exploration activities in these awarded blocks are progressing and around 29,368 LKM 2D Seismic Survey, 24,206 SKM 3D Seismic Survey have been completed and 21 Wells have been drilled till Q3 2022-23 since inception.
- As of date, 5 discoveries (3 oil + 2 gas) have been made by M/s Vedanta (2 in Rajasthan and 2 in Cambay Basins) and ONGC (1 in Mumbai Offshore Basin). Oil Discoveries: KW2 Updip-1, Durga-1 & FB-1; Gas/Condensate Discovery: Jaya-1 & MBS171HAA-A.

**NOTIFIED DISCOVERIES IN OALP**

| Sl. No. | Block& Basin | OALP Round | Operator | Well/Discovery | Type of Discovery |
|---|---|---|---|---|---|
| 1 | RJ-ONHP-2017/1 (Rajasthan Basin) | I | Vedanta | Kw-2-Updip 1 | Oil |
| 2 | | | | Durga-1 | Oil |
| 3 | CB-ONHP-2017/2 (Cambay Basin) | I | | Jaya-1 | Gas & Condensate |
| 4 | CB-ONHP-2017/7 (Cambay Basin) | I | Vedanta | FB-1 | Oil |
| 5 | MB-OSHP-2017/1 (Mumbai Offshore Basin) | I | ONGC | MBS171HAA-A | Gas & Condensate |

- **OALP Bid Round-VIII:** Launched on 7th July 2022 offering 10 blocks comprising a total area of 36,364 Sq. Km. for International Competitive Bidding till 16.05.2023.
- **Special CBM Bid Rounds under OALP:** In addition, the Government of India had launched two Special CBM Bid Rounds (SCBM) under the Open Acreage Licensing Policy (OALP). In the first SCBM round, launched on 22nd September 2021, 15 CBM Blocks covering 8,458 Sq. Km. with ~700 BCM prognosticated CBM resource were offered through International Competitive Bidding (ICB). Based on bid evaluation of the five (05) bids

received, 4 CBM Blocks covering 3,862 Sq. Km area were awarded to three companies, including 02 private companies and Revenue Sharing Contract (RSC) with Government of India signed on 9th September 2022.

- Further, Government on 10th October 2022 launched 2nd Round of Special CBM Bid Round, wherein 16 CBM blocks covering around 5,860 Sq. Km. area are offered for bidding through International Competitive Bidding (ICB).
- **OALP Bid Round-IX (Mega Offshore OALP Bid Round-IX):** Government on 10th Oct 2022, launched Mega OALP Bid Round-IX offering 26 open acreage blocks covering an area of approximately 2.23 lakh Sq. Km. for Exploration and Development through International Competitive Bidding. Out of these 26 blocks, 18 are carved out by Government and 8 as a result of EoIs received from potential investors. 15 Blocks are in Ultra Deep-Water, 8 Blocks are in Shallow Water and 3 Blocks are in Onland.

### 2.12.2. Discovered Small Field Policy (DSF)

**DSF Policy: Background.**

- The Marginal Field Policy was approved by the Cabinet Committee on Economic Affairs (CCEA) on 2nd September, 2015 and notified vide Notification No. O-19018/22-95-ONG-III dated 14.10.2015 to bring un-monetized discoveries of National Oil Companies (NOCs) on production. This Policy was later renamed as Discovered Small Field (DSF) Policy. DSF Round-I was launched on 25th May 2016.
- The CCEA in its meeting dated 7th February 2018 approved extension of this Policy to include un-monetized discoveries/small fields from Production Sharing Contract (PSC) regime along with un-monetized discoveries of Nomination regime. DSF-II Round was launched on 09th August 2018. Government also decided to extend the DSF Policy for future bidding rounds. For this purpose, a Committee comprising of Additional Secretary/Additional Secretary & Financial Advisor (MoPNG), JS (Exploration, MoPNG) and Director General of Hydrocarbons will identify Fields/ Discoveries to be put on offer in consultation with CMD (ONGC) and CMD (OIL) for future bidding round. The DSF Policy extension was notified vide Notification No. O-31018/149/2016-ONG-III dated 5th April 2018.

Salient Fiscal and Policy Features of DSF Rounds

- Single license for conventional and non-conventional hydrocarbons
- No restriction on exploration activity during Contract Period
- No upfront Signature Bonus
- Bids invited under International Competitive Bidding.
- Pricing and Sale-marketing Freedom
- Reduced Royalty, No Cess, Exemption from custom duty
- Eligibility: No Technical Experience Required, up to 100% participation by Foreign companies
- Equal weightage to work-program (50%) and revenue share (50%) in biddable parameters
- Cap on Higher Revenue Point (HRP) at 50%
- Incentives on early commercial production
- Reduced Liquidated Damages (LD) amounts (75% reduction of LD rates of DSF-I &II)
- Suitable Exit Option

Three DSF rounds have been conducted so far. Salient details are as under:

**DSF Bid Round-I 2016**

- Launch date: 25th May 2016
- Offered Areas: 46 Contract Area (67 Fields/Discoveries), 1,551 Sq. Km. of area, 86 MMTOE of In-place
- 134 bids were received for 34 contract areas
- Awarded: 30 Contract Areas (43 Fields/Discoveries), 777 Sq. Km. of Area, 45 MMTOE of In-place
- Contact signing date: 27th March 2017

**DSF Bid Round-II 2018**

- Launch date: 09th Aug 2018
- Offered Areas: 25 Contract Area (59 Fields/Discoveries), 3,042 Sq. Km. of area, 190 MMTOE of Inplace
- 145 bids were received in 24 Contract Areas
- Awarded: 24 Contract Area (58 Fields/Discoveries), ~3,000 Sq. Km of Area, 188.9 MMTOE of Inplace.
- Contact signing date: 7th March 2019

**DSF Bid Round-III 2022**

- Launch date: 10th June 2021.
- Offered Areas: 32 Contract Area (75 Fields/Discoveries), ~13,000 Sq. Km. of area, 232 MMTOE of Inplace
- 107 bids were received for 32 contract areas (CA).
- 27 Companies participated (04 PSU & 2 Foreign Companies).
- RSC signed for 30 Contract Area (72 Fields/ Discoveries), 12,400 Sq. Km. of Area, 230 MMTOE of Inplace.
- Contact signing date: 9th Sept. 2022.

**Status of DSF-I, II & III Contract is as under:**

| Sl. No. | Status | DSF-I | DSF-II | DSF-III | Total |
|---|---|---|---|---|---|
| 1 | Awarded Contract Area (CA) | 30 | 24 | 31 | 85 |
| 2 | CAs where PML pending | 4 | 5 | 13 | 22 |
| 3 | Contract Area under relinquishment | 6 | | | 6 |
| 4 | Cases under termination/ terminated | 5 | 5 | | 10 |
| 5 | RSC to be signed | | | 1* | 1 |
| 6 | Operational | 15 | 14 | 17 | 46 |

* One Contract Area- RSC yet to be signed

**2.12.3. Bidding for CBM Blocks:** The Government of India formulated Coal Bed Methane (CBM) policy in 1997. About 26,000 Sq. Km. was identified for CBM exploration in the country.

- India's CBM resources are estimated at around 2,600 billion cubic meters (BCM).
- Four CBM bidding rounds have been implemented by MOP&NG, resulting in the award of 33 CBM blocks [including 2 blocks on Nomination and 1 block through the Foreign Investment Promotion Board (FIPB) route] covering 16,598 Sq. Km.
- At present 08 CBM Blocks are active pertaining to earlier CBM rounds out of which 05 blocks are under production. The cumulative production of CBM up to December-2022 is around 5.58 BCM.
- Special CBM Bid Round 2021 under OALP (SCBM-2021): The Government of India on 22nd September 2021 launched the Special CBM Bid Round- 2021 under the Open Acreage Licensing Policy (OALP) wherein 15 CBM Blocks, covering 8,458 Sq. Km. with ~700 BCM prognosticated CBM resource, were offered through International Competitive Bidding (ICB). Bidding concluded on 31.05.2022.

  Under SCBM Bid Round- 2021, four (4) Blocks were awarded to 03 companies (ONGC, Vedanta and Invenire Petrodyne Energy) covering an area of 3,862 Sq. Km. Out of these 04 blocks, PEL has been granted for 02 blocks.
- Special CBM Bid Round 2022 under OALP (SCBM-2022): Government on 10th October 2022 launched 2nd Round of Special CBM Bid Round, wherein 16 CBM blocks covering around 5,817 Sq. Km area are under offer through International Competitive Bidding (ICB). All offered 16 Blocks are in Category-III basins.

**2.12.4. National Seismic Programme (NSP) project**

The Government has taken up programme of undertaking 2D seismic survey of entire unappraised areas. National Seismic programme (NSP) 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 project was 29,321.99 crore.

With total acquisition, processing and interpretation (API) of 46,960 LKM 2D seismic data out of the target 48,243 LKM (97% achievement), the project is deemed complete with total expenditure of around 1,950.00 crore. Remaining of the 3% planned seismic data acquisition could not be taken due to inaccessible terrain and difficult geographical areas. All processed and interpreted data of 46,960 LKM 2D data along with reports has been updated on National Data Repository (NDR). Gujarat Energy Research and Management Institute (GERMI), Gandhinagar has been entrusted with the task of carrying out a Third-Party evaluation study of NSP data.

To cover the remaining inaccessible and hostile geographical areas under NSP project, a volume of 40,000 flight LKM Airborne Geophysical Survey has been initiated with approximate cost of INR 80 crores. Oil India Ltd. has been appointed as the Nodal agency and Contract awarded for carrying out the AGG and

Gravity-Magnetic data API. The Contractor has applied for statutory clearances and work likely to commence post clearances from DGCA.

**Comprehensive Appraisal of Andaman Basin Area:**

Government of India launched the NSP with the objective to appraise the un-appraised areas of the Indian sedimentary basins, and to boost the exploration activities in the country. NSP began with the exploration activities in the on-land part of the sedimentary basins. Un-appraised offshore areas have been taken, starting with Andaman deep offshore survey.

Andaman Basin is a potential petroleum proliferous basin located in the south-eastern part of the Bay of Bengal in the proximity of the most prolific petroleum provinces of Southeast Asia. Andaman Basin including the total EEZ boundary area measures 6,64,080 Sq. Km. and comprises a major chunk of the un-appraised area of the offshore sedimentary basins of India. The basin has been appraised to the extent of 36% with 71,290 LKM of 2D seismic and 13,710 Sq. Km of 3D seismic data and 22 exploratory wells, in the eastern part of the basin.

The 2D/3D seismic or well data acquired in the basin was scanty and the data coverage was moderate to sparse. The area surrounding the Andaman & Nicobar (A&N) islands has significant potential for oil and gas, but the exploratory activities could not be taken up there because most of the area was designated as a "No-Go" Zone (0.37 million sq. km. of the "No-Go" zone area falls in the Andaman Basin).

Pursuant to the directives of the Island Development of Authority (IDA) and the decisions taken by the Empowered Coordination Committee (ECC) of the Cabinet Secretariat, DGH formulated a plan to carry out seismic survey for the purpose of gathering geo-scientific data for evaluation of the hydrocarbon resource potential of the areas in close coordination with the Department of Space and associated safety directives related to the areas concerned. Accordingly, DoS and DGH laid down an appropriate framework to ensure that there is no impact on the Space Mission of Government of India, while side by side, scientific assessment is carried out of the prolific hydrocarbon resource potential of the Andaman Basin.

For comprehensive appraisal of Andaman offshore, DGH formulated a plan to acquire 22,500 LKM 2D Broadband seismic data acquisition, processing, and interpretation thereof covering basinal area of approx. 2,81,613 Sq. Km. The project has been implemented through M/s Oil India Limited. A total of 22,500 LKM seismic data was acquired in deep Andaman offshore. Data acquisition, processing & interpretation has been completed and data is uploaded on NDR portal.

**Appraisal of Offshore Basin Areas up to Exclusive Economic Zones (EEZ):**

Consequent to the decision taken by the Empowered Coordination Committee (ECC) under the chairmanship of Cabinet Secretary in its 4th meeting held on 10th January 2022, Government initiated appraisal of around 1.13 million Sq. Km. unappraised offshore area up to Exclusive Economic Zone (EEZ). ONGC has been entrusted as nodal agency for the EEZ survey. Accordingly, ONGC awarded the contract for carrying out 82,353 LKM 2D Broadband Seismic Data Acquisition covering three sectors viz. Western, Eastern and Andaman Offshore up to EEZ. Appx. 23,431 LKM seismic data has been acquired till 31st December 2022.

### 2.12.5. Natural Gas Marketing Reforms

- Taking another significant step to move towards gas based economy, Government approved 'New Domestic Natural Gas Pricing Guidelines' in October, 2014, based on the prices prevailing in major international hubs like Henry Hub (USA), Alberta (Canada), NBP (UK), Russia etc. to strike a balance between the requirements of both producing and consuming sectors. The prices of natural gas are revised after every six months and notified by Petroleum Planning and Analysis Cell (PPAC) under MoPNG. This policy has helped standardize the domestic natural gas prices, determined on pre-defined parameters in a transparent way without Government intervention. These Guidelines are applicable to natural gas produced from Nomination Fields and NELP, Pre-NELP Blocks/Fields, where pricing is to be approved by Government under per Production Sharing Contract (PSC).
- Subsequently, from 2015 onwards, Government provided marketing and pricing freedom for gas under DSF, OALP,

CBM regimes and for gas produced from North-Eastern Region (NER) and new gas discoveries after 28.02.2019 under all regimes.

- To incentivize gas production from difficult areas such as High Pressure- High Temperature (HP-HT) reservoirs and deepwater and ultra-deepwater areas, Government, on 23rd March, 2016, granted marketing including pricing freedom on natural gas production with a price ceiling announced on half yearly basis by Petroleum Planning and Analysis Cell (PPAC).
- Taking another significant step to move towards gas based economy, 'Natural Gas Marketing Reforms' were announced vide Notification dated 15.10.2020, to prescribe standard procedure to discover market price of gas to be sold in the market by gas producers, through a transparent and competitive process through electronic bidding; permit Affiliates to participate in bidding process for sale of gas and allow marketing freedom to certain Field Development Plans (FDPs) where Production Sharing Contracts already provide pricing freedom. Subsequently, detailed guidelines for Discovery of Market Price for Domestically Produced Natural Gas through e-bidding were issued vide Notification dated 03.12.2020. Agencies empanelled by DGH for carrying out e-bidding also been notified.
- Furthermore, gas producers having pricing and marketing freedom have been permitted additional option for selling small quantity of gas (i.e. up to 500 MMSCM per annum) through gas exchanges authorized by PNGRB vide OM dated 19.08.2021.
- As a further momentum to gas reforms and saving the environment, Government issued detailed guidelines for monetization of Ad-hoc/Test Gas produced during the Testing of oil and gas well vide OM dated 22.11.2021.
- Vide Notification dated 13th January, 2023, Government provided clarifications on discovery of market price and sale and resale of gas produced from discoveries in Deepwater, Ultra Deepwater and High Pressure/ High Temperature areas with marketing and pricing freedom.

### 2.12.6. Policy Framework to Promote and Incentivize Enhanced Recovery Methods for Oil and Gas (October 2018)

- The Government approved the Policy framework to promote and incentivize Enhanced Recovery (ER)/Improved Recovery (IR)/Unconventional Hydrocarbon (UHC) production methods/techniques through fiscal incentives in the form of partial waiver of royalty and cess and an enabling ecosystem to improve productivity of existing fields and enhance overall production of domestic hydrocarbons. Pursuant to the Policy, an Enhanced Recovery (ER) Committee has been constituted to oversee the implementation of the policy.
- Under the present policy, a total of 202 fields were preliminarily screened out of which 34 suitable ER fields were identified and 15 ER proposals were approved for commencement of pilot phase. After the completion of the pilot phase, which usually takes 2 to 3 years, an assessment based on the pilot performance will be carried out by the Operator to formulate a commercial ER implementation plan for the field. Based on this plan for commercial ER implementation, the ER Committee of MoPNG shall decide upon the quantum of fiscal incentive to be made available to the Operator for the project under the ER Policy.

### 2.12.7. Policy on Crude Oil Deregulations (June, 2022)

- The Cabinet Committee on Economic Affairs approved the 'Deregulating Sale of Domestically Produced Crude Oil'. Through this policy decision, Government shall cease to allocate crude oil and condensate with effect from 01.10.2022, granting marketing freedom across all policy regimes. The condition in the Production Sharing Contracts (PSCs) to sell crude oil to the government, or its nominee, or government companies shall be waived off and all exploration and production operators will be free to sell crude oil from their fields in domestic market. However, as earlier, export of crude oil will not be permissible. The government revenues like Royalty, Cess, and Contractual Payments, etc. shall be calculated based on the sales price or the price of Indian Basket of Crude Oil, as calculated by Government nominated Agency, whichever is higher.

### 2.12.8. Policy Framework for Exploration & Exploitation of Unconventional Hydrocarbons (August 2018)

- The policy has been introduced to encourage the existing Contractors to unlock the potential of unconventional hydrocarbons including shale oil and gas and CBM in the existing acreages under PSCs and CBM contracts subject to conditions stipulated in policy document. This was not permitted earlier. Due to this policy, an area of 72,027 Sq. Km. held under PSCs and 5,269 Sq. Km. area under CBM contracts has been opened for simultaneous exploration and exploitation of conventional or unconventional hydrocarbons.

### 2.12.9. Enhanced Prospectivity Perception through Data Generation

- Upgradation of National Data Repository (NDR): NDR acts as a repository of geo-scientific database of the country and plays a key role in facilitating prospective bidders to carve out their choice of blocks for bidding under OALP. In order to cope with the ever-increasing demands of E&P data, NDR is being upgraded to cloud-enabled hyper-converged infrastructure to facilitate easy access of data to the industry for meaningful usage.
- Re-assessment of Hydrocarbon Resources: For updated estimation of hydrocarbon resource potential in the country, re-assessment of hydrocarbon resources for all 26 sedimentary basins in the country was completed in 2017 almost after two decades of earlier estimation. This resulted in prognosticated conventional hydrocarbon resources of the order of 41.87 billion tonnes of oil and oil equivalent of gas (O+OEG), which is about 49% increase as compared to earlier estimate of 28.08 billion tonnes of O+OEG (1995-96 estimate).

### 2.12.10. Policy Reforms in Exploration and Licensing Policy for enhancing domestic exploration and production of oil and gas (28th February, 2019):

Government notified 'Reforms in Exploration and Licensing Policy for enhancing domestic exploration and production of oil and gas' on 28th February 2019 with the objective to intensify exploration activities, attract foreign and domestic investment and enhance domestic production. The major features of Policy Reforms are as under:

- Shifting of focus from 'revenue' to 'production' maximisation.
- No Revenue Sharing with Government in Category-II & III sedimentary basins.
- Boost to exploration activities by assigning greater weightage to exploration work programme.

(a) For unexplored areas in Category-I basins, 70% weightage to Minimum Work Programme and 30% weightage to Revenue Sharing with cap of 50% at Highest Revenue Sharing point (HRP) and

(b) For Category-II and III sedimentary basins 100% weightage for Minimum Work Programme,

- Shorter exploration period for early development.
- Fiscal concessions for early monetization and commercial production.
- Marketing and Pricing freedom for natural gas.
- The policy envisages bidding out of 68 (64 by ONGC & 4 by OIL) small and marginal producing nomination fields operated by National Oil Companies (NOCs) to have collaboration with private E&P players for inducting new and innovative technology, infusing fresh investment and best management practices to enhance production of oil and gas. Out of 64 fields of ONGC, contracts have been awarded for 60 fields by ONGC while tendering is under process for 4 fields of OIL.
- The MoU of ONGC and OIL were restructured with 50% weightage for physical production, other physical parameters 30%. Financial performance parameters 20%.
- Redefining the Role of DGH by delegation of additional powers and functions to DGH to strengthen the compliance/regulatory, developmental and coordination role of DGH.
- Simplified and investor friendly Model Bid documents including increasing of bidding cycle frequency from twice to thrice in a year.

### 2.12.11. Guidelines for Early Monetization of Hydrocarbon Discoveries, June 2020

As a step towards energy security of the country, the guidelines was issued on 23.06.2020 for monetization of discovery under Production Sharing Contract/Revenue

Sharing Contract at an early stage within prescribed contractual timeline i.e. before completion of other activities such as Appraisal, Declaration of Commerciality (DoC) and submission of Field Development Plan (FDP).

## 2.13 Major Reforms taken for enhancing Ease of Doing Business (EODB) in E&P

- **Reducing Compliance Burden-Simplification of Procedures and Processes for submission of Documents on Self Certification basis:** With a view to make the system transparent and faster, under Ease of doing business, guidelines for simplification of procedures and processes for submission of documents on self-certification were issued on 28.02.2020 wherein government rationalized 37 processes in 3 categories under PSC contract. These 37 processes are further reduced to 18 processes.
- **Notification regarding Dispute Resolution Committee (2019):** External Committee of eminent persons/experts has been set up vide Notification dated 16.12.2019 and modalities and structure of Dispute Resolution Mechanism has been finalized.
- **Delegation of powers to DGH (2018-2020):** To streamline the operations under PSC and removing the extra layers of approvals, all powers except for few, have been delegated to DGH for Contract Management.
- **Implementation of Single Window Clearance System (2019):** Directorate General of Hydrocarbons (DGH) of behalf of MOP&NG has launched a portal that connects upstream companies to different arms of the government and allows electronic filing/online submission of applications to obtain various clearances/ approvals/Certificates like PEL/PML, Vessel Clearance, Expat Clearance, PSC Contract Management Processes, Essentiality Certificates etc.
- **Digitalization E&P Roadmap document:** With the intent to identify and facilitate opportunities for digitalization across the entire upstream value chain through collaboration with the entire India E&P ecosystem, the 'Digitization Roadmap for E&P Industry' was released by Secretary, PNG on 10th June, 2021.
- **Performance Monitoring Dashboard:** A comprehensive Digital Monitoring Dashboard was created in 2019 for monitoring various key E&P performance indicators. It has been integrated with the MoPNG portal in 2021.

### 2.13.1. Investor Outreach:

i. Regular outreach to E&P community through national and international events/road shows held including in Mumbai on 29th April 2022, London on 7th-8th July 2022 and at Houston on 27th & 28th September 2022.

ii. Mega Offshore OALP Bid Round-IX: During the Investor outreach program at Houston, Government on 10th Oct 2022, launched Mega OALP Bid Round IX offering 26 open acreage blocks covering an area of approximately 2.23 lakh Sq. Km for Exploration and Development through International Competitive Bidding. The offered blocks include 15 Ultra Deep-Water Blocks, 8 Shallow Water and 3 Onland Blocks.

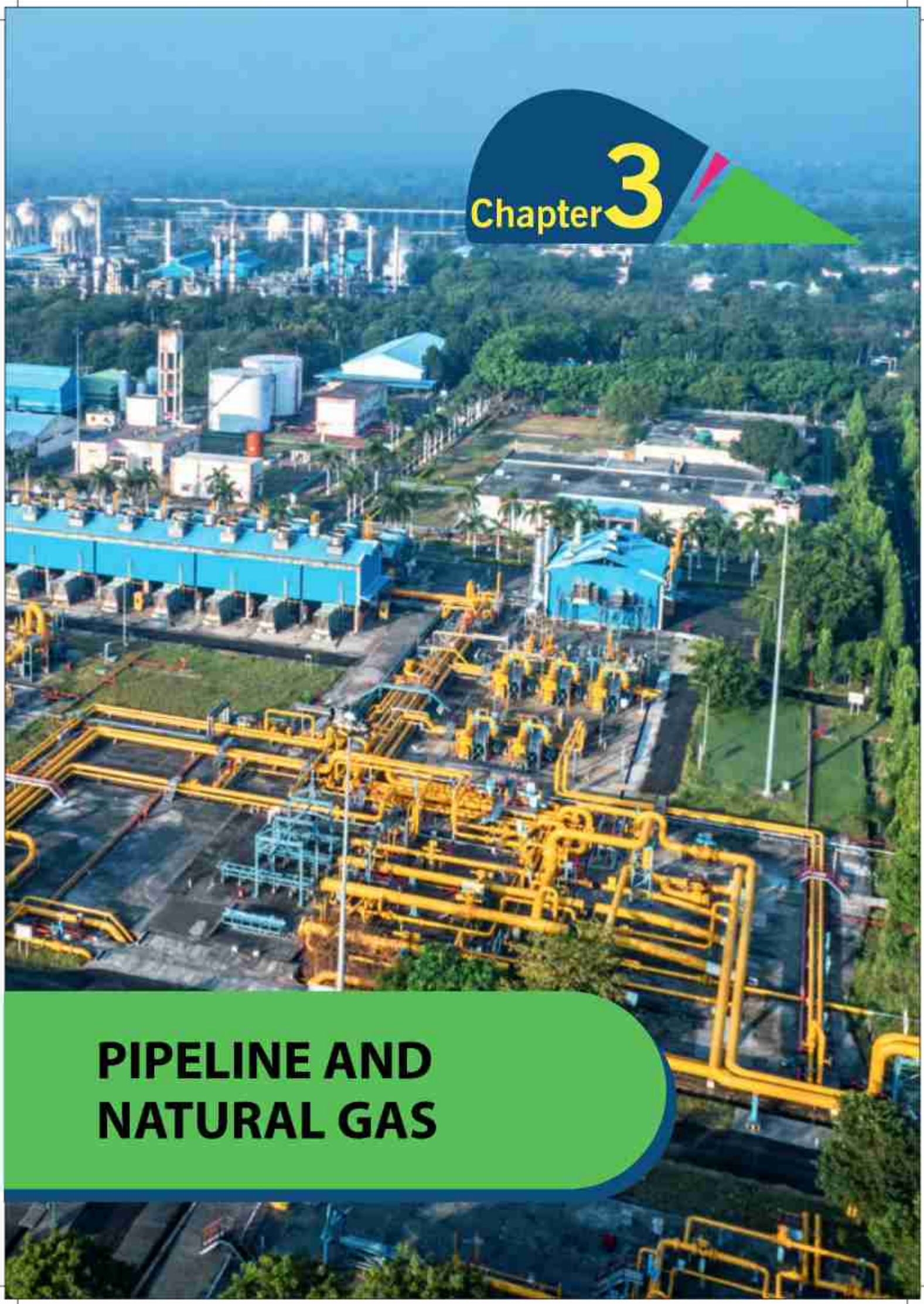
iii. 2nd Round of Special CBM Bid Round launched on 10th October 2022 offering 16 CBM blocks through International Competitive Bidding (ICB). Bid submission will start on 01.05.2023 and end on 31.05.2023.

iv. E&P companies are being encouraged to take up large acreages in the newly opened EEZ, supported by quality data and a pro-investor incentive structure. In order to reach out to foreign investors, GoI is pro-actively engaging with them at roadshows and bilateral events.

v. Recently, one global major has signed a Heads of Agreement (HoA) with a NOC for Deepwater exploration in East and West coasts of India and other two other Global Majors are engaged in separate partnership talks for upstream projects in India.







Chapter 3

# PIPELINE AND NATURAL GAS

# 3 Pipeline and Natural Gas

India is not only 3rd largest energy consumer in the world after China and USA, but also one of the fastest growing energy consumers. In year 2021, the primary energy consumption in the country was about 839 Million Tonnes of Oil equivalent (Mtoe) and Natural Gas has a share of 6.4% of the country's primary energy mix. It has been envisaged to increase the share of natural gas in primary energy mix of the country from current level to 15% in coming years.

In order to move forward, thrust has been put to enhance domestic gas production, encourage the import of Liquefied Natural Gas (LNG) and augment LNG import capacity, completion of national gas grid and speedier roll out of City Gas Distribution (CGD) network across the country.

## 3.1. Gas Grid

Gas Pipeline infrastructure is the most economically feasible and safest mode of transporting the natural gas by connecting gas sources to gas consuming markets. Gas pipeline practically determines the structure of the gas market and its development. Therefore, an inter connected National Gas Grid is envisaged to ensure the adequate availability and equitable distribution of natural gas in all parts of the country. Till December, 2022, about 22,335 Km. long gas pipeline network is under operation in the country and around 12,955 Km. pipeline is under various stages of construction. Efforts are being made to complete the Gas Grid in a time manner.

Further, Hon'ble Prime Minister Shri Narendra Modi dedicated the Bokaro Angul Section (533 Km) of the prestigious Pradhan Mantri Urja Ganga Project to the nation on 12th of July 2022, which was a milestone effort towards the creation of 'One Nation One Gas Grid'. The pipeline has been built by GAIL (India) Ltd with an investment of ₹ 2,500 Crores. Further, on 12th Nov'22, Hon'ble Prime Minister has laid the foundation stone for Srikakulam-Angul Gas Pipeline, which is 744 Km long Gas pipeline and being executed by GAIL with an investment of ₹ 2,658 crores. This pipeline has strategic importance in the National Gas Grid as it will connect two important gas networks and serve customers in several districts of Andhra Pradesh and Odisha.

In order to develop gas pipeline network in the Eastern part of the country, the Cabinet Committee on Economic Affairs (CCEA) has approved partial capital grant at 40 percent (₹ 5,176 crore) of the estimated capital cost of ₹ 12,940 crore to GAIL for the development of Jagdishpur-Haldia and Bokaro-Dhamra Pipeline (JHBDPL) project. This project will connect Eastern part of the country with National Gas Grid and will ensure the availability of clean and eco-friendly fuel i.e. Natural Gas to the industrial, commercial, domestic and transport sectors in the States of Uttar Pradesh, Bihar, Jharkhand, Odisha and West Bengal. These pipeline Projects would support the revival of 3 Fertilizer Plants namely Gorakhpur, Barauni and Sindri along the route of these pipeline projects. Connecting North east part with NGG has become more viable after the advent of JHBDPL (Pradhan Mantri Urja Ganga project). The pipeline is also being extended from Barauni to Guwahati (via Siliguri & Bongaigaon), as an integral part of JHBDPL to connect North East Region (NER) with the National Gas Grid.

729 Km long Barauni-Guwahati pipeline is passing through three states namely Bihar, West Bengal and Assam. Total 3,384 Km pipeline i.e. Jagdishpur-Haldia & Bokaro-Dhamra and Barauni-Guwahati is being executed with the total estimated investment of ₹ 15,520 crore. Further, 253 Km of Dhamra-Haldia Pipeline section has also been authorised to GAIL as an expansion of JHBDPL Project. Out of the above, 3,035 Km pipeline has been laid and 1,770 Km of Pipeline has been commissioned. Pipeline has been connected and gas supply commenced to 4 Fertilizer Plants namely HURL Gorakhpur, Barauni, Sindri and Matix Fertilizer. Connectivity has also been provided to Varanasi, Patna, Ranchi, Jamshedpur City Gas distribution and other CGDs

en-route the pipelines in the states of Uttar Pradesh, Bihar, Jharkhand and West Bengal. In addition, 326 Km has been mechanically completed and under commissioning.

A MoU was signed among oil and gas CPSEs i.e. GAIL, IOCL, OIL, ONGC and NRL to form a joint venture company which will lay the pipeline connecting all north eastern State capital including Sikkim. Accordingly, "Indradhanush Gas Grid Ltd" (IGGL) a JVC has been incorporated on 10.08.2018. This JVC is developing trunk pipeline connectivity in all North Eastern States i.e. Assam, Sikkim, Mizoram, Manipur, Arunachal Pradesh, Tripura, Nagaland and Meghalaya in a phased manner. PNGRB issued final authorization to IGGL on 17.11.2020 for the development of North-East gas pipeline grid. This project will also facilitate developing City Gas projects which will ensure the availability of clean cooking fuel to the households and environment friendly fuel to the industrial, commercial and transport sectors in major cities of North Eastern States. CCEA has approved Capital Grant (60% of project cost) of ₹ 5,559 crore to improve viability of project.

In the Southern region, work is under progress for construction of remaining ~300 Km long Kochi-Kottanad-Bangalore-Mangaluru (KKBMPL) Natural Gas pipeline in the state of Tamil Nadu.

IOCL is laying 1,440 Km Pipeline of capacity 35 MMSCMD for supply of Natural Gas to anchor customers and city gas distribution in states of Tamil Nadu, Andhra Pradesh, Karnataka and UT of Puducherry. This project aims at establishing National Gas Grid in parts of Southern India, in line with the GoI vision of creating a gas based economy.

The project is being implemented in 3 phases. Phase 1 (Ennore LNG Terminal to Manali 22.9 Km) and Phase 2 (Ramanathapuram to Tuticorin 143 Km) of project has been completed. Ennore-Chengalpet (115 Km) and Thiruvallur Bengaluru (271 km) section of Phase 3 has been completed while Chengepet-Ramanathapuram section is mechanical completed and is expected for completion by Nov 2023.

The pipeline will help in catalysing the industrial growth in the Region through supply of environment friendly natural gas to potential anchor customers such as Hyundai Motors, Saint Gobain Glass, Harsha Exito Engg., Ultramarine & Pigments Ltd. and Thirumalai Chemical Ltd. Pipeline will also feed Natural gas to Chittoor, Kolar and Vellore GAs of M/s Atlantic Gulf & Pacific Company (AGP), Bengaluru Urban GA of M/s GAIL and Krishnagiri GA of IOCL, Chennai & Thiruvallur GAs of Torrent Gas and Kanchipuram GA of Atlantic Gulf & Pacific Company (AGP) in a cost-effective manner.

Supply of cleaner and greener fuel to domestic, commercial and transport segment customers will improve the quality of life and ease of living apart from ensuring environmental well being.

## 3.2. Re-gasification infrastructure in the country

Country commenced the first import of Liquefied Natural Gas (LNG) in year 2004 with the establishment of its first re-gasification LNG (RLNG) terminal located at Dahej (Gujarat). The import of LNG is being carried out as Open General License (OGL) item. The imported RLNG is being supplied at market determined prices as per contractual agreement between suppliers and buyers across the country. Establishment of LNG terminals is also permitted as an infrastructure project and eligible for 100% Foreign Direct Investment (FDI).

At present, the Country is having six (6) operational LNG re-gasification terminals operational with capacity of about 39.2 MMTPA (~ 140 MMSCMD). The terminal-wise details are as under:

| Location | Owner & Operator | Capacity (MMTPA) |
|---|---|---|
| Dahej (Gujarat) | PLL | 17.5 |
| Hazira (Gujarat) | SHELL | 5 |
| Kochi (Kerala) | PLL | 5 |
| Dhabol (Maharashtra)* | GAIL (KLPL) | 1.7 |
| Mundra (Gujarat) | GSPC LNG Ltd | 5 |
| Ennore (Tamilnadu) | IOCL | 5 |
| **Total Capacity (MMTPA)** | | **39.2** |

(Note: *Name plate capacity is 5 MMTPA but in absence of the breakwater, the terminal can only operate at 1.7 MMTPA)

In addition to above, following LNG terminals are under construction:

| Location | Owner & Operator | Capacity (MMTPA) |
|---|---|---|
| Dhamra (Odisha) | Adani LNG Pvt Ltd | 5 |
| Dhabol Expansion | GAIL(KLPL) | 3.3 |
| Jaigarh (Maharashtra) | H-Energy | 4 |
| Jafrabad (Gujarat) | Swan Energy | 5 |
| Chara(Guajrat) | HPLNG | 5 |
| **Total Capacity (MMTPA)** | | **22.3** |

## 3.3. City Gas Distribution (CGD)

A City Gas Distribution (CGD) network is the interconnected network of pipelines to supply natural gas to domestic, industrial or commercial premises and CNG stations situated in a specified Geographical Area (GA). CGD networks are being developed based on the availability of trunk gas pipeline connectivity or gas sources and techno-commercial feasibility in a GA.

CGD network ensures the supply of environment friendly cooking fuel at the door step of domestic households in the form of Piped Natural Gas (PNG) as well as clean fuel to transport sector in the form of Compressed Natural Gas (CNG). The usage of CNG in transport sector helps in curbing the vehicle emissions in urban area and it improves the air quality.

- Till May 2014, CGD networks was available in about 34 Geographical Areas (GAs) spread over 66 districts (part/full) in different part of the country.
- During the years 2014-17, additional 58 GAs spread over 70 districts (part/full) were covered for CGD network till 8th round of CGD bidding.
- With the successful conclusion of 9th & 10th CGD bidding rounds in 2019, the coverage of CGD network was extended to additional 136 GAs covering 174 districts (part/full) spread over 22 states and UTs.
- In 2022, PNGRB concluded 11th and 11A CGD bidding round and authorized 67 more GAs. With the completion of this round, the potential coverage of CGD network has expanded to about 98% of country's population spreading over 88% of India's area.
- PNG supplies to domestic households has increased from a level of 25.4 lakh (May 2014) to 103.93 lakh (as on 31.12.2022). In total, 5,040 CNG stations (as on 31.12.2022) are making clean and economical transportation fuel available to about 55 lakh CNG vehicles across the country.

In order to promote the expansion of City gas networks and enhance the usage of natural gas in cities, the Government has taken following steps.

i. Domestic gas, which is cheaper than imported gas, has been allocated to meet the entire requirement of PNG (D) and CNG (T) segments of CGD sector and it has been kept under no cut category.

ii. Public Utility Status granted to CGD Projects by Ministry of Labour and Employment (MoLE).

iii. Ministry of Defence (MoD) has issued guidelines for use of PNG in its residential areas/unit lines.

iv. Dept. of Public Enterprises (DPE) has issued guidelines to Public Sector Enterprises (PSEs) to have the provisions of PNG in their respective Residential complexes.

v. Ministry of Housing & Urban Affairs (MOHUA) has issued advisory to State Governments on following aspects.

a. To standardize the Road Restoration/ permission charges along with time bound permission in accordance with the local conditions.

b. Earmarking of land plot for development of CNG Stations at the planning stage of town/city and same should be specified in the revised Master Plan.

c. Relevant modification in building by-laws for providing gas pipeline infrastructure in residential & commercial buildings at architectural design stage.

vi. Further, MOHUA has directed to CPWD & NBCC to have the provisions of PNG in all Government Residential complexes.

vii. DIPP notified amended Rule 2018 to ease out process to set up CNG dispensing facilities at existing OMC ROs.

## 3.4. Sustainable Alternative Towards Affordable Transportation (SATAT)

"Sustainable Alternative Towards Affordable Transportation (SATAT)" initiative was launched on 1st October 2018 wherein Oil and Gas Marketing Companies (OGMCs) are inviting Expression of Interest (EoI) from potential investors/entrepreneur to procure CBG for further selling to automotive and industrial customers.

Under this initiative various enablers have been provided for development of CBG sector. CBG projects have been included under Priority Sector Lending by Reserve Bank of India. State Bank of India, Bank of Baroda, Canara Bank and some other banks have developed exclusive loan product for financing of CBG projects. Bio manures produced from CBG plants has been covered as "Fermented Organic Manure" (FOM) and Liquid Fermented Organic Manure (FLOM) under Fertilizer Control Order (FCO) 1985. Department of Fertilizers have issued letter to Fertilizer companies for mandatory off take of FOM with chemical fertilizers as a "Basket approach". In addition, CPCB has included CBG plants under 'white category' status on case-to-case basis. Ministry of Petroleum and Natural Gas has issued policy guidelines for co-mingling of CBG with Natural Gas in CGD network to facilitate its off take. From 1st June 2022, OGMCs have linked CBG procurement price with Retail Selling Price (RSP) of CNG. Under SATAT Minimum procurement price is ₹ 54/- per kg plus GST. In addition, under CBG-CGD synchronization scheme from 1st December, 2022 GAIL has revised biogas/CBG procurement price from ₹ 1,082/ MMBTU to ₹ 1,470/MMBTU.

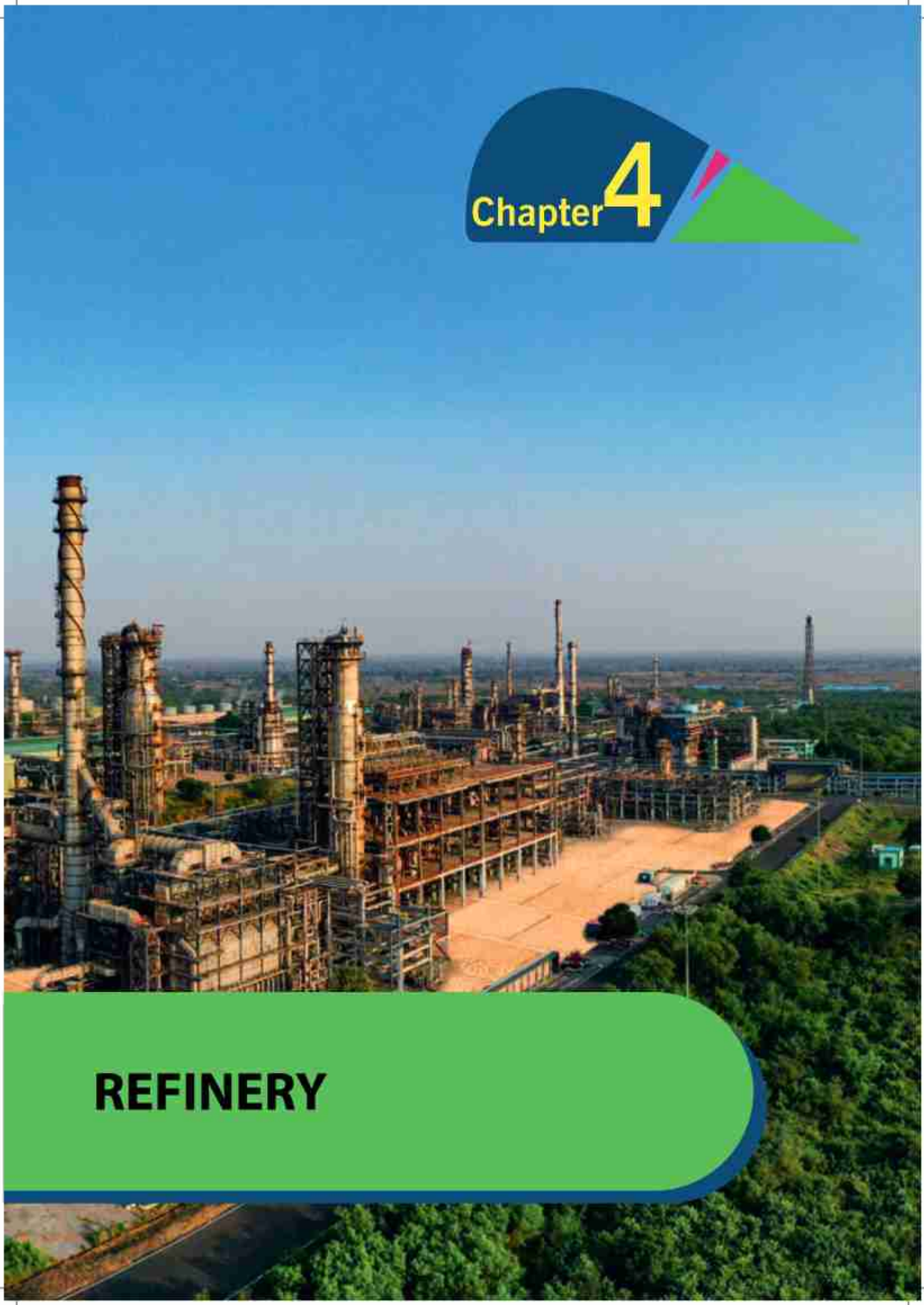
Till December, 2022, OGMCs participating in SATAT have issued 3,826 Letters of Intent to entrepreneurs. So far 40 CBG/biogas plants with a total capacity of ~~225 tons per day have been commissioned and sale of CBG has been initiated from 97 Retail Outlets. Further, under CBG CGD synchronization scheme, CBG sale has been started in 12 Geographical Areas of CGD Network.



GAIL's Gas processing plant at Vijaipur, MP



Chapter 4



# REFINERY

# 4 Refinery

**4.1.** The Indian refining industry has established itself as a major player globally. India is emerging as a refinery hub and refining capacity exceeds the demand. The country's refining capacity has increased from a modest 62.0 Million Metric Tonnes Per Annum (MMTPA) in 1998 to 251.216 MMTPA, comprising of 23 refineries – 19 under Public Sector, 3 under Private Sector and 1 in Joint Venture (JV).

The capacity wise details of the refineries are given below:

| S. No. | Refinery Location/ Year of commissioning | Name of the Company | Name Plate Capacity (MMTPA) |
|---|---|---|---|
| 1 | Digboi-1901 # | Indian Oil Corporation Ltd. | 0.650 |
| 2 | Guwahati-1962 | | 1.000 |
| 3 | Barauni-1964 | | 6.000 |
| 4 | Koyali-1965 | | 13.700 |
| 5 | Bongaigaon-1974 | | 2.7 |
| 6 | Haldia-1975 | | 8.000 |
| 7 | Mathura-1982 | | 8.000 |
| 8 | Panipat-1998 | | 15.000 |
| 9 | Paradip-2016 | | 15.000 |
| 10 | Manali-1965 | Chennai Petroleum Corporation Ltd. | 10.500 |
| 11 | Nagapattinam-1993 @ | | 0 |
| | **Total IOCL Group** | | **80.55** |
| 12 | Mumbai-1954 | Hindustan Petroleum Corporation Ltd. | 9.500 |
| 13 | Visakhapatnam-1957 | | 8.300 |
| | **Total HPCL** | | **17.800** |
| 14 | Mumbai-1955 | Bharat Petroleum Corporation Ltd. | 12.000 |
| 15 | Kochi -1963 | | 15.500 |
| 16 | Bina-2011 | | 7.800 |
| | **Total BPCL** | | **35.300** |
| 17 | Numaligarh-2000 | Numaligarh Refinery Ltd. | 3.000 |
| 18 | Mangalore-1996 | Mangalore Refinery & Petrochemicals Ltd. | 15.000 |
| 19 | Tatipaka, AP-2001 | Oil & Natural Gas Corporation Ltd. | 0.066 |
| | **Sub-Total PSU** | | **151.716** |
| 20 | Jamnagar, RIL DTA,1999 | Reliance Industries Ltd. | 33.000 |
| 21 | RIL SEZ, 2008 | Reliance Industries Ltd. | 35.200 |
| 22 | Vadinar, 2006 | Nayara Energy | 20.000 |
| | **Sub-Total Private sector** | | **88.200** |
| 23 | Bhatinda, HMEL, 2012 | HPCL Mittal Energy Ltd | 11.300 |
| | **Sub-Total Joint Venture** | | **11.300** |
| | **Total** | | **251.216** |

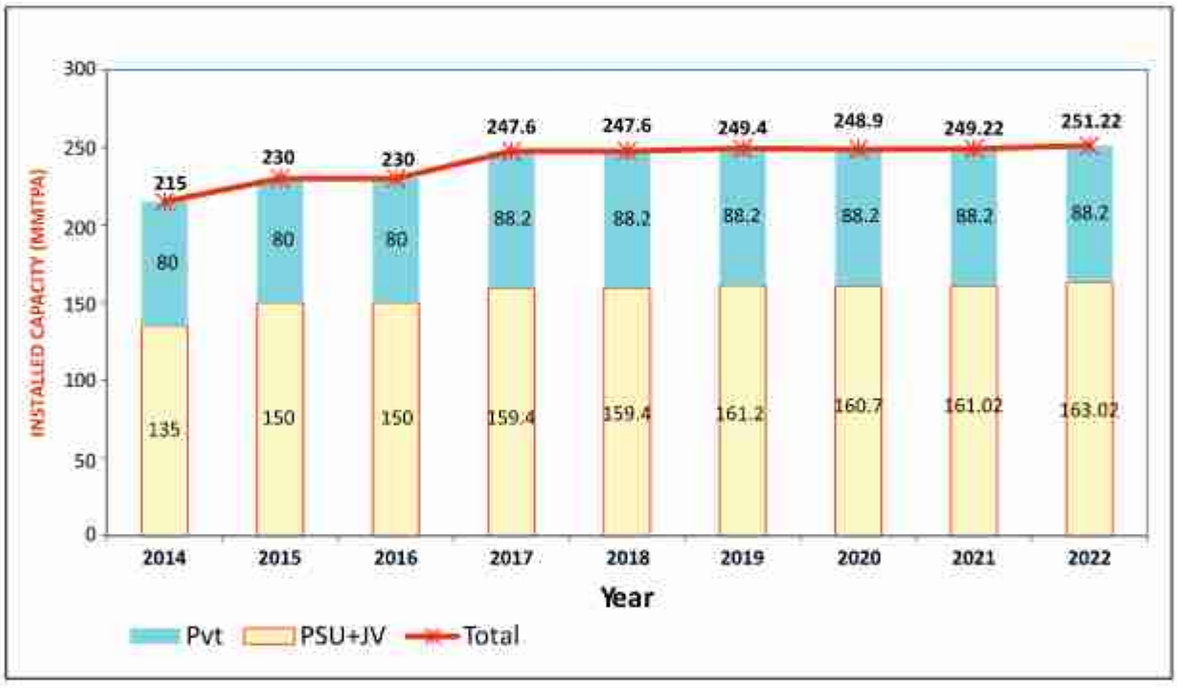
# Refinery was set up at Digboi in 1901 by Assam Oil Company Ltd. and later on IOCL took over the refinery on 14.10.1981.

@ Operation of Cauvery Basin Refinery (CBR) of CPCL of 1.0 MMTPA has been stopped since 1.4.2019 to carryout project activities for new 9 MMTPA capacity refinery.

**4.1.1** The refining capacity is not only sufficient for domestic consumption but leaving a substantial surplus also for export of petroleum products. Since 2001-02, India is a net exporter of petroleum products. During year 2022 – 2023 (April 2022 to January 2023), the country has exported 50.2 Million Metric Tonnes (MMT) (provisional) of Petroleum products worth US $ 49.2 Billion (provisional).

## 4.2. Refining Capacity Addition over the years

**4.2.1.** The graphical representation of the refining capacity addition over the years shown in Graph.




## 4.3. New Refinery and Expansion of Existing Refineries

### Green Field Refinery

| S.No. | Name of the Company | Location of the Refinery | Target year | Capacity, MMTPA |
|---|---|---|---|---|
| 1 | HPCL Rajasthan Refinery Limited (HRRL) | Barmer, Rajasthan | 2025-26 | 9.0 |

The Capacity expansion planned till 25-26 is as under:

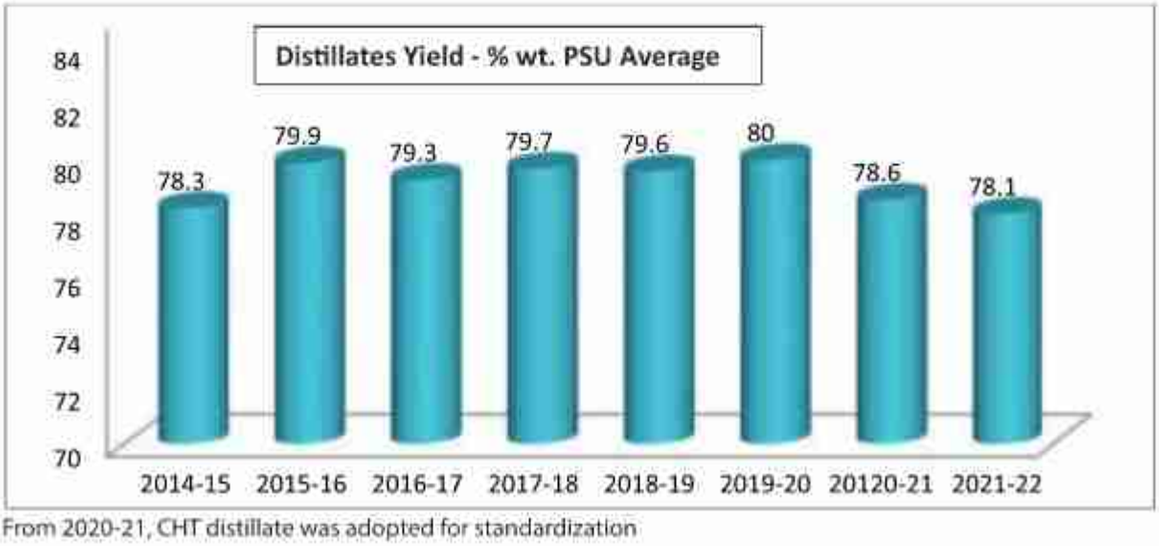
| S.No. | Name of the Company | Location of the Refinery | Target year | Increase in Capacity, MMTPA |
|---|---|---|---|---|
| 1 | Indian Oil Corporation Limited (IOCL) | Guwahati, Assam | 2023-24 | 0.20 |
| 2 | Indian Oil Corporation Limited (IOCL) | Barauni, Bihar | 2024-25 | 3.00 |
| 3 | Indian Oil Corporation Limited (IOCL) | Digboi, Assam | 2025-26 | 0.35 |
| 4 | Indian Oil Corporation Limited (IOCL) | Koyali, Gujarat | 2025-26 | 4.30 |
| 5 | Indian Oil Corporation Limited (IOCL) | Panipat , Haryana | 2025-26 | 10.0 |
| 6 | Hindustan Petroleum Corporation Limited (HPCL) | Visakhapatnam, Andhra Pradesh | 2023-24 | 6.70 |
| 7 | Numaligarh Refineries Limited (NRL) | Numaligarh, Assam | 2024-25 | 6.00 |
| 8 | RIL-DTA | Jamnagar, Gujarat | 2024-25 | 7.50 |

## 4.4. Refinery Performance Improvement

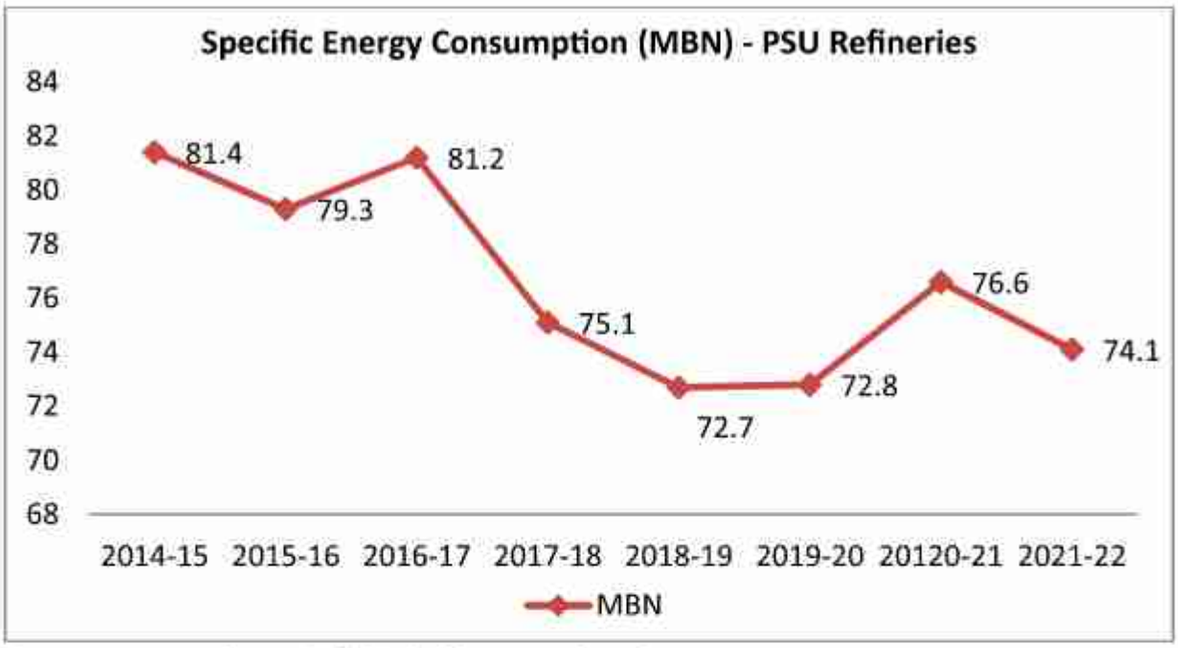
**4.4.1.** Indian public sector refineries are equipped with modern technologies and have continuously upgraded the technologies in line with the International trend and as per the requirement. Indian refineries have accorded top priority to reduce the energy consumption through various energy conservation measures.

The Centre for High Technology (CHT) carried out a Performance Benchmarking Study of public sector Refineries through M/s Solomon Associates for consecutive cycles 2010, 2012, 2014, 2016, 2018 and 2020. Calendar year 2022 study shall be taken up in 2023.

The distillate yield and quality of petrol/diesel has been improved progressively by PSU refineries through adoption of modern technologies. The PSU refineries' average distillate yield (wt% on crude) has improved from 73.3% in 2005-06 to 80% in 2019-20. Similarly, energy conservation measures have helped the industry in reducing the Specific Energy Consumption (MBN), measured in terms of MBTU/bbl/NRGF by 26% during the period 2005-06 to 2019-20. As Fuel & Loss varies with the complexity of the refinery, the MBN methodology was developed by CHT to capture Fuel & Loss along with complexity. The MBN methodology was revamped to reflect technological trends based on input from consultants and reporting has been changed to New MBN from 2015-16.




From 2020-21, CHT distillate was adopted for standardization




From 2014-15 onwards, new MBN Methodology was adopted

## 4.5. Auto Fuel Quality Up-gradation

The supply of BS-IV quality fuel across the entire country was completed in phases by 01.04.2017. Govt. decided to leap frog directly from BS-IV to BS-VI emission norms in the country w.e.f. 01.04.2020. Ministry of Road transport & Highways, vide Notification No. GSR 889(E) dated 16.09.2016, notified emission standards for BS-VI fuels. Considering rise in pollution level in Delhi, Government implemented BS-VI in NCT Delhi w.e.f. 01.04.2018, followed by major parts of NCR from 1st April, 2019. The nationwide supply of BS-VI quality fuels commenced from 1st April, 2020.



View of IOCL's Panipat Refinery

## 4.6. BRIEF DESCRIPTION OF THE REFINERIES

### Public Sector Refineries

### IOCL Refineries

#### 4.6.1. Digboi Refinery (Assam)-Indian Oil Corporation Limited (IOCL)

Digboi Refinery was commissioned in 1901 by Burmah Oil Company Ltd. (later Assam Oil Company Ltd.). Indian Oil Corporation Ltd. took over the Refinery and marketing management of Assam Oil Company Ltd. with effect from 14.10.1981 and created a separate division. This division had both Refinery and Marketing operations. Digboi refinery is the oldest operating refinery in the world and produces premium grade Paraffin wax and micro-crystalline wax. The present capacity of the Refinery is 0.65 MMTPA. The crude refining capacity utilisation of the refinery was 109.92 % in 2021-22.

#### 4.6.2. Guwahati Refinery (Assam)-Indian Oil Corporation Limited (IOCL)

Guwahati Refinery was commissioned in January, 1962 with design capacity of 0.75 MMTPA. The refinery was set up in collaboration with Romania. Guwahati refinery was first refinery in the Public Sector. It was the first refinery to install "Indmax Unit", a novel technology developed by IOCL R&D Centre for upgrading heavy ends to LPG, motor spirit and diesel oil in 2003. The present capacity of the Refinery is 1.00 MMTPA. The crude refining capacity utilisation of the refinery was 73.02 % in 2021-22.

#### 4.6.3. Barauni Refinery (Bihar)-Indian Oil Corporation Limited (IOCL)

Barauni Refinery was commissioned in July, 1964. The refinery was set up in collaboration with the then Soviet Union. The refinery, which was originally designed for processing indigenous Assam crudes, was subsequently revamped and expanded and is now capable of processing imported crudes. The present capacity of the Refinery is 6.00 MMTPA. The crude refining capacity utilisation of the refinery was 93.66 % in 2021-22.

#### 4.6.4. Koyali Refinery (Gujarat)-Indian Oil Corporation Limited (IOCL)

Koyali Refinery was commissioned in October, 1965. The refinery was set up in collaboration with former Soviet Union. Koyali refinery commissioned the country's first Hydrocracker Unit for conversion of heavier ends of crude oil to high value superior quality kerosene/ATF and Diesel. It also has the world's largest single train Linear Alkyl Benzene (LAB) plant which marked IOCL's entry into Petrochemicals. The present capacity of the Refinery is 13.70 MMTPA. The crude refining capacity utilisation of the refinery was 98.35 % in 2021-22.

#### 4.6.5. Bongaigaon Refinery (Assam)-Indian Oil Corporation Limited (IOCL)

Bongaigaon Refinery & Petrochemicals Ltd. (BRPL) was incorporated on 20th February 1974, as a fully owned Central Government company. BRPL became a subsidiary of Indian Oil Corporation Ltd. in March 2001. BRPL was amalgamated with the holding company, Indian Oil Corporation Limited effective from March 25, 2009. BRPL which was originally processing Assam crudes is now capable of processing imported crudes. The present capacity of the Refinery is augmented from 2.35 to 2.7 MMTPA in 2020-21. Capacity of BGR enhanced to 2.70 MMTPA. However, enhanced capacity will be realized after augmentation of BR-BGR Crude Pipeline. The crude refining capacity utilisation of the refinery was 97.72% in 2021-22.

#### 4.6.6 Haldia Refinery (West Bengal)- Indian Oil Corporation Limited (IOCL)

Haldia Refinery of IOCL was commissioned in January 1975. A coastal Refinery is situated 136 km down-stream of Kolkata in the district of Purba Medinipur, West Bengal, near the confluence of river Hoogly and Haldia. It is also one of the two refineries of IOCL Group Companies producing Lube Oil Base Stocks (LOBS) apart from being the sole producer of Jute Batching Oil (JBO). Initially installed with a crude processing capacity of 2.50 MMTPA, capacity of the Refinery was increased in stages to present 8.00 MMTPA. The Crude refining capacity utilization of the refinery was 91.25 % during the year 2021-22.

#### 4.6.7. Mathura Refinery (Uttar Pradesh)-Indian Oil Corporation Limited (IOCL)

Mathura Refinery was commissioned in January, 1982. The primary units of the refinery were designed by USSR. It is first Green Refinery of Indian equipped with elaborate environment monitoring system and ecological park. It also uses natural gas to control SO2 emissions from the refinery. The present capacity of the Refinery is 8.00 MMTPA. The crude refining capacity utilisation of the refinery was 114.03 % in 2021-22.

#### 4.6.8. Panipat Refinery (Haryana)-Indian Oil Corporation Limited (IOCL)

Panipat Refinery was commissioned in 1998. Panipat refinery is the first modern integrated refinery cum Petrochemical complex in public sector. The Purified Terephthalic Acid (PTA) plant is the largest in the country. The commissioning of Panipat Naphtha Cracker Unit, Mono ethylene Glycol (MEG) unit, Poly propylene (PP) unit, Linear Low-density Poly Ethylene (LLDPE) and High-density Poly ethylene (HDPE) units etc. heralded Indian Oil's entry into Plastics Industry.

The present capacity of the Refinery is 15.00 MMTPA. The crude refining capacity utilisation of the refinery was 98.99% in 2021-22.

#### 4.6.9. Paradip Refinery (Odisha)-Indian Oil CorporationLimited (IOCL)

Paradip Refinery was dedicated to the nation by the Hon'ble Prime Minister 07.02.2016. Paradip Refinery is Indian Oil's most prestigious and capital-intensive project till date and this is the 11th refinery of group of IOCL, located at Paradip, Odisha. This refinery will serve as an economic stimulus for industrial development in the region by way of immediate potential growth of ancillary industries.

This refinery is the most modern refinery with state-of-the-art technologies from various technology licensors across the world. The refinery was designed to process 15.0 MMTPA crude with an overall Nelson complexity factor of 12.2 (present 10.8), which makes it capable of processing broad basket of crude including high sulphur heavy crudes.

The Refinery is configured to produce LPG, Propylene, Motor Spirit, ATF and HSD. The refinery is capable to produce Euro-IV/Euro-V quality transportation fuel right from the commissioning. The distillate yield from the refinery is expected to be best in class with 81.10% with no black oil production. The present capacity of the Refinery is 15.00 MMTPA. The crude refining capacity utilisation of the refinery was 88.12% in 2021-22.

### HPCL Refineries

#### 4.6.10. Mumbai Refinery (Maharashtra)-Hindustan Petroleum Corporation Limited (HPCL)

Mumbai Refinery was first incorporated in 1952 as Standard Vacuum Refining Company of India (StanVac) which was commissioned in 1954. In 1962 StanVac was named ESSO India Limited. In 1969, Lube India Ltd came into existence formanu facturing Lube Oil Base Stock (LOBS). On 15th July, 1974 the undertakings of ESSO and Lube India Ltd. were nationalized and merged to form Hindustan Petroleum Corporation Limited (HPCL). HPCL-Mumbai refinery is the only refinery of HPCL to produce Lube Oil Base Stocks. The refinery also produces special products like Food Grade Hexane, Rubber Processing (RPO), Diana Processing oil etc. The capacity of the Refinery has been augmented from 7.5 to 9.5 MMTPA w.e.f 1st April'2022. The crude refining capacity utilisation of the refinery was 74.1 % in 2021-22.

#### 4.6.11. Visakh Refinery (Andhra Pradesh)-Hindustan Petroleum Corporation Limited (HPCL)

HPCL's Visakh Refinery was commissioned in 1957 by Caltex Oil Refining (India) Ltd. The Refinery was taken over by the Government of India in 1976 and was consequently amalgamated with HPCL in 1978. HPCL-Visakh refinery is first oil Refinery on the East Coast and was one of the first major industries of Visakhapatnam. With the commissioning of the Single Point Mooring (SPM) facility at Visakh in the year 2010, Very Large Crude Carriers (VLCC), which carry up to 2 million barrels of oil, can now be received at Visakh Refinery. The Indian Strategic Petroleum

Reserves Ltd. (ISPRL) exists nearby the refinery. The present capacity of the Refinery is 8.30 MMTPA. The crude refining capacity utilisation of the refinery was 101.32% in 2021-22.

## BPCL Refineries

### 4.6.12. Mumbai Refinery (Maharashtra)–Bharat Petroleum Corporation Limited (BPCL)

The refinery in Mumbai was commissioned in January 1955 under the ownership of Burmah Shell Refineries Ltd. Following the Government acquisition of the Burmah Shell, Bharat Petroleum Corporation Ltd came into existence on 24th January 1976. BPCL-Mumbai refinery has pioneered the processing of indigenous crude oil and currently can handle processing of 72 types of crude oil. The refinery has also Lube Base Oil Unit for production of environment friendly Group II base oil. The present capacity of the Refinery is 12.00 MMTPA. The crude refining capacity utilisation of the refinery was 120.34 % in 2021-22.

### 4.6.13. Kochi Refinery (Kerala)-Bharat Petroleum Corporation Limited (BPCL)

The Kochi Refinery Ltd (KRL) was set up in pursuance of formation agreement dated 27th April, 1963 between Govt. of India, Philips Petroleum Co. of USA and Duncan Brothers of Calcutta. The refinery has been amalgamated with Bharat Petroleum Corporation Ltd in 2006. The refinery is equipped to receive crude oil in Very Large Crude Carriers (VLCC). Kochi refinery has undertaken an ambitious plan to diversify into petrochemical manufacturing for value addition. The present capacity of the Refinery is 15.50 MMTPA. The crude refining capacity utilisation of the refinery was 99.36% in 2021-22.

### 4.6.14. Bina Refinery-Bharat Oman Refineries Limited (BORL) (Madhya Pradesh)

Bina refinery was set up by Bharat Oman Refineries Limited (BORL), a joint venture of Bharat Petroleum Corporation Limited (BPCL) and Oman Oil Corporation Limited (OOCL) was commissioned in May 2011. Since March 2020, the Company become subsidiary of Bharat Petroleum Corporation Limited and in July 2021, OQ SAOC entire shareholding was purchased by Bharat Petroleum Corporation Limited.

Bina refinery is the first refinery in central part of India and augments the availability of petroleum products in central and northern India. Other facilities include Single Point Mooring facility (SPM), Crude Oil storage Terminal (COT) at Vadinar in Gujarat and 935 Km. long cross-country crude pipeline from Vadinar to Bina (VBPL). The present capacity of the Refinery is 7.80 MMTPA. The crude refining capacity utilisation of the refinery was 94.99 % in 2021-22.

## CPCL Refineries

### 4.6.15. Manali Refinery (Tamil Nadu)-Chennai Petroleum Corporation Ltd. (CPCL)

Chennai Petroleum Corporation Limited (CPCL), formerly known as Madras Refineries Limited (MRL) was formed as a joint venture in 1965 between the Government of India (GoI), AMOCO and National Iranian Oil Company (NIOC). CPCL became a subsidiary of IOCL in 2001. CPCL-Manali refinery is one of the most complex refineries in India with Fuel, Lube, Wax and Petrochemical feedstocks production facilities. The 5.8 MGD Sea Water Desalination Project to augment the water requirements of its refinery was first of its kind in the industry. The present capacity of the Refinery is 10.50 MMTPA. The crude refining capacity utilisation of the refinery was 86.1% in 2021-22.

### 4.6.16. Cauvery Basin Refinery (Nagapattinam-Tamil Nadu)-Chennai Petroleum Corporation Limited (CPCL)

Operation of Cauvery Basin Refinery (CBR) of CPCL of 1.0 MMTPA Capacity has been stopped since 01.04.2019 and a new refinery of 9 MMTPA has been planned.

## NRL Refinery

### 4.6.17. Numaligarh Refinery (ASSAM)- Numaligarh Refinery Limited (NRL)

Numaligarh Refinery, popularly known as "Assam Accord Refinery" was commissioned in October, 2000. Current shareholding pattern of NRL is: Oil India Limited (72.15%) , Government of Assam (23.48%) and Engineers India Limited (4.37%). NRL is the largest refinery in the North-East equipped with modern units Hydrocraker and Delayed Coker

for maximising distillate yield. The present capacity of the Refinery is 3.00 MMTPA. The crude refining capacity utilisation of the refinery was 87.48% in 2021-22.

## MRPL Refinery

### 4.6.18. Mangalore Refinery (KARNATAKA)-Mangalore Refinery and Petrochemicals Ltd. (MRPL)

Mangalore Refinery and Petrochemicals Limited (MRPL) was commissioned in March 1996. MRPL was originally set up as a Joint Venture refinery, promoted by Hindustan Petroleum Corporation Ltd. (HPCL) and the Aditya Birla Group of Companies. In March, 2003 MRPL became a subsidiary of ONGC. The Refinery has got a versatile design with high flexibility to process Crudes with 24 to 46 API gravity and has high degree of Automation. MRPL is the only Refinery in India to have 2 Hydrocrackers producing Premium Diesel (High Cetane). It is also the only Refinery in India to have 2 CCRs producing Unleaded Petrol of High Octane. The present capacity of the Refinery is 15.00 MMTPA. The crude refining capacity utilisation of the refinery was 99.13% in 2021-22.

## ONGC Refinery

### 4.6.19. Tatipaka Refinery (Andhra Pradesh)-Oil & Natural Gas Corporation Limited (ONGC)

The refinery, set up as mini refinery (Phase-I) of ONGC, was commissioned in September, 2001 at Tatipaka in East Godavari District of Andhra Pradesh. The present capacity of the Refinery is 0.066 MMTPA. The crude refining capacity utilisation of the refinery was 113.83% in 2021-22.

## Joint Venture Refinery

### 4.6.20. Guru Gobind Singh Refinery-HPCL-Mittal Energy Limited (HMEL), Bathinda (Punjab)

Guru Gobind Singh Refinery (GGSR), owned by HPCL-Mittal Energy Limited (HMEL), a joint venture between HPCL and Mittal Energy Limited, was commissioned in April, 2012. The refinery is a testimony to a successful Public Private Partnership in the oil and gas sector given the strategic location of Bathinda, the refinery will serve fuel requirements of the northern States of India. HMEL has also incorporated a wholly owned subsidiary HPCL-Mittal Pipelines Limited (HMPL) to set up and operate an SPM for crude oil receipt, storage and cross-country transportation of crude oil. The present capacity of the Refinery is 11.30 MMTPA. The crude refining capacity utilisation of the refinery was 115.28% in 2021-22.

## Private Sector Refineries

### 4.6.21. Reliance Industries Limited (Domestic Tariff Area) (RIL-DTA), Jamnagar (Gujarat)

The refinery was commissioned in July 1999. RIL-DTA was the first private sector refinery in the country. RIL-DTA is the World's biggest grassroots Refinery having a petrochemical plant for the production of paraxylene, a polymer plant for the production of Polypropylene. The present capacity of the Refinery is 33.00 MMTPA. The crude refining capacity utilisation of the refinery was 105.32% in 2021-22.

### 4.6.22. Reliance Industries Limited- SEZ (RIL-SEZ), Jamnagar (Gujarat)

The refinery was commissioned in Dec 2008. An export based SEZ refinery has a unique design and path breaking configuration with 'Clean Fuels' process plant. It is designed with high level of flexibility to change grades based on economy and to capture margins based on market dynamics. The new SEZ refinery was the first refinery in India to produce Euro-IV grades of gasoline and diesel. The present capacity of the Refinery is 35.20 MMTPA. The crude refining capacity utilisation of the refinery was 80.3% in 2021-22.

### 4.6.23. Nayara Energy Limited, Vadinar Refinery, Vadinar (Gujarat)

The refinery was commissioned in November, 2006. Vadinar refinery is the single-location second largest refinery in the country. The present capacity of the Refinery is 20.00 MMTPA. The crude refining capacity utilisation of the refinery was 100.82% in 2021-22.


MAP OF REFINERIES IN INDIA
Refining Capacity - 251.2 MMTPA
N
BHATINDA (11.3)
PANIPAT (15.0)
MATHURA (8.0)
RAJASTHAN REFINERY BARMER (HRRL) (9.0)
KOYALI (13.7)
BINA (7.8)
NUMALIGARH (3.0)
BARAUNI (6.0)
HALDIA (8.0)
SONGAIGAON (2.7)
DIGBOI (0.65)
GUWAHATI (1.0)
NAYARA (20.0)
JAMNAGAR
MUMBAI (12.0)
MUMBAI (8.5)
PARADIP (15.0)
VIZAG (8.3)
Bay of Bengal
Arabian Sea
TATIPAKA (0.07)
MANGALORE (15.0)
CHENNAI (10.5)
Andaman & Nicobar Islands
Lakshadweep
KOCHI (15.5)
CAUVERY BASIN REFINERY (CBRPL), NAGAPATTINAM (9.0)
(Capacity in MMTPA)
New Refineries (Upcoming)
INDIAN OCEAN
Map not to Scale

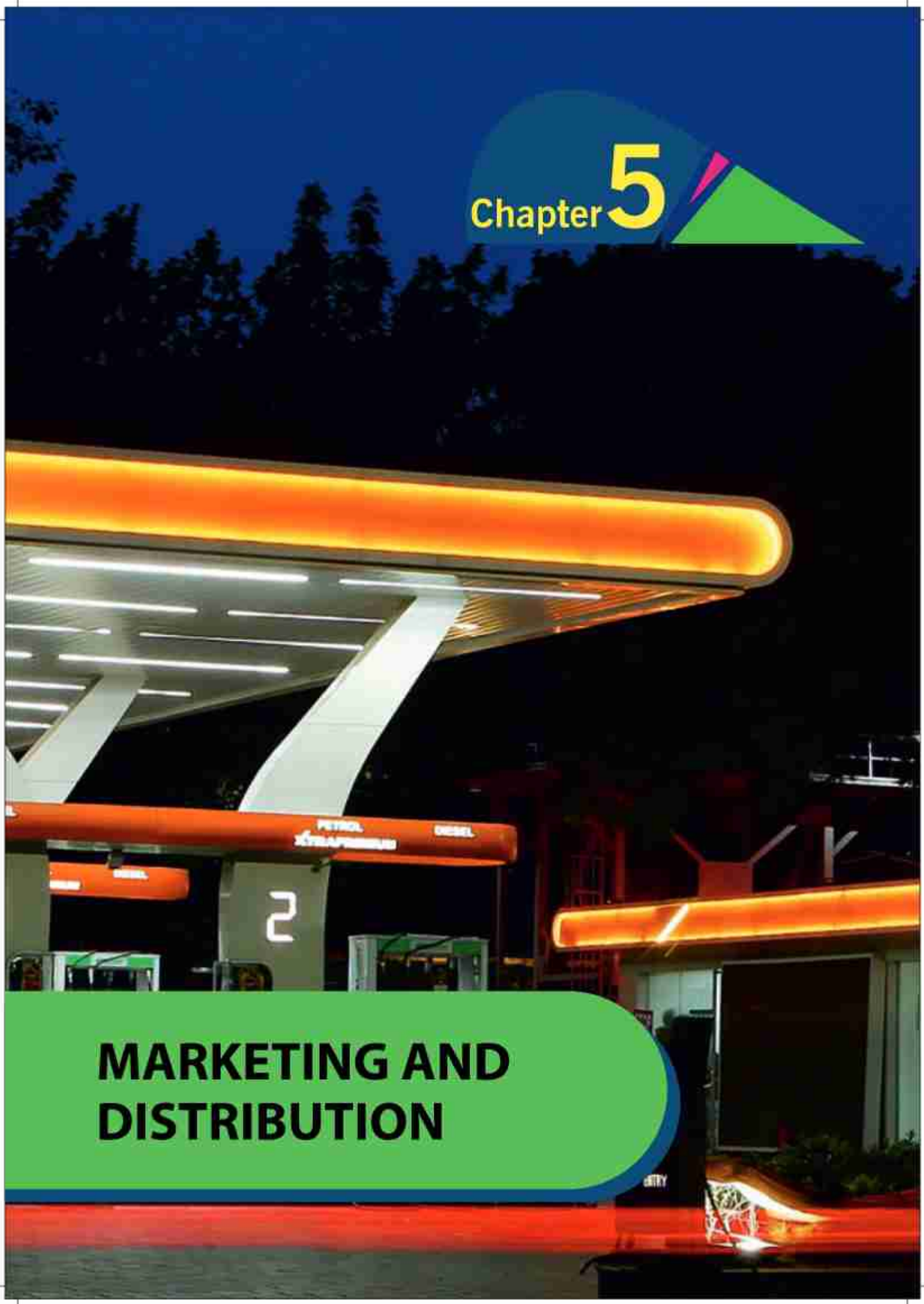


View of BPCL's Mumbai Refinery



View of IOCL's Barauni Refinery


IndianOil
PETROL
DIESEL
PETROL
DIESEL
PETROL
PETROL


Chapter 5
MARKETING AND DISTRIBUTION

# 5 Marketing and Distribution

## 5.1. Retail Marketing Infrastructure of LPG

The retail marketing of petroleum products in India is done by the Public Sector Oil Marketing Companies (OMCs) i.e. Indian Oil Corporation Ltd. (IOCL), Hindustan Petroleum Corporation Ltd. (HPCL), Bharat Petroleum Corporation Ltd. (BPCL) and Private Companies such as Reliance Industries, Essar, Shell etc. There are 206 LPG Bottling Plants having rated bottling capacity of 21,921 TMTPA, operated by Public Sector Oil Marketing Companies and 25,341 LPG distributorships in the country as on 01.01.2023. Total active LPG consumers as on 01.01.2023 in the country are 31.37 crore. During the period April-December 2022, total 93 new LPG distributorships have been commissioned in the country. Also a total of 92.46 lakh new LPG connections have been issued by OMCs during this nine month period including 60 lakh connections under Ujjwala 2.0 scheme.

## 5.2. Major Initiatives

### 5.2.1. PAHAL (DBTL Scheme)




Government of India launched Direct Benefit Transfer for LPG consumer (DBTL) scheme namely, 'PAHAL' (Pratyaksh Hanstantrit Labh), in 54 districts of the country on 15.11.2014. Later the scheme was extended to all over the country and as on 01.01.2023, a total of 29.06 crore LPG consumers have joined the scheme.

The scheme aims to rationalise subsidies and cut subsidy leakages. LPG consumers who join the PAHAL scheme, get their LPG refills at non-subsidised price and receive LPG subsidy (as per their entitlement) directly into their bank accounts. With the implementation of PAHAL, new regime of transparency in subsidy management has been put in place empowering the LPG consumers in the country. PAHAL has further helped in identifying 'ghost' accounts, multiple accounts and inactive accounts. This resulted in curbing diversion of subsidised LPG to commercial purposes.

As a part of subsidy management, the Hon'ble Prime Minister of India appealed to all well-off LPG consumers to voluntarily surrender their LPG subsidy by launching 'GiveItUp' campaign. GiveItUp campaign evoked huge response from socially committed individuals and has resulted in more than 1.12 crore consumers giving up their LPG subsidy voluntarily as on 01.01.2023. GiveItUp campaign of the government has received widespread acclaim from all over the world and is a leading and one of the earliest example of Nudge tool used in Public Policy inspired from the domain of Psychology and behavioural Economics.

### 5.2.2. Pradhan Mantri Ujjwala Yojana (PMUY)

In May 2016, Ministry of Petroleum and Natural Gas (MoPNG), introduced the 'Pradhan Mantri Ujjwala Yojana' (PMUY) as a flagship scheme with an objective to make LPG, a clean cooking fuel available to the rural and deprived households which were otherwise using traditional cooking fuels such as firewood, coal, cow-dung cakes etc. Usage of traditional cooking fuels had detrimental impacts on the health of rural women as well as on the environment.

Hon'ble Prime Minister of India formally launched the scheme on 01.05.2016.

Initially, PMUY envisaged a target of 5 crore connections over a period of 3 years starting from FY 2016-17. Later, the target of Pradhan Mantri Ujjwala Yojana (PMUY) was increased from five crore to eight crore by Government which was supposed to be achieved by FY 2019-20. Along with the increase in target, Government also extended the benefit of PMUY to such poor families who had been left out on account of their names not appearing in either the SECC list or 7 identified categories to cover all poor families of the country. This extended list of beneficiaries included categories i.e SC, ST, Pradhan Mantri Awas Yojana, Most Backward Classes, Antyodaya Anna Yojana, tea & ex-tea garden tribes, forest dwellers, island & river island people and poor household as per 14-point self-declaration by applicant.

Under this scheme, the Government provides deposit free LPG connection to the adult woman member of poor households. Government bears the cost of security deposit towards cylinder and Pressure Regulator, DGCC Card, Suraksha Hose and administrative/installation charges amounting ₹ 1,600/-for each new connection.

The target of releasing 8 crore LPG connections under PMUY scheme was achieved on 7th September, 2019, 7 months ahead of the target date of 31st March, 2020.

**UJJWALA 2.0**



Hon'ble Finance Minister during her Budget Speech on 01.02.2021 announced that Ujjwala Scheme which has benefited 8 crore households would be extended to cover 1 crore more beneficiaries.

Accordingly, the Ujjwala 2.0 was launched in the esteemed presence of the Hon'ble Prime Minister in the Mahoba District of Uttar Pradesh on 10th August, 2021 on pan India basis to provide additional one crore LPG connections under PMUY.

Along with a deposit free LPG connection, Ujjwala 2.0 provides first refill and hotplate free of cost to all the beneficiaries. Special provision has been made for migrant families to avail new connections. Migrant will not be required to submit ration cards or address proof. A self-declaration for both 'family declaration' and as a 'proof of address' will suffice.

Online application option has been provided for the first time for applicants along with existing options like CSC centers, Helpdesk and OMC distributors etc. Applicants can apply online for an Ujjwala connection using scheme website www.pmuy.gov.in.

The target of 1.0 crore under Ujjwala 2.0 was duly achieved by Jan'22. Further, to cover the left-out households, the target under the scheme was enhanced by additional 60 lakh connections to 1.6 crore and same was achieved during Dec'22. As on 01.01.2023, a total of 1.6 crore LPG connections have been released under Ujjwala 2.0.

### 5.2.3. New LPG Connections

LPG domestic connections are easily available on demand and are released to the prospective customers once he/she approaches the concerned distributorship and fulfils the KYC formalities. LPG distributors of the OMCs immediately register and act on a request for a new LPG connection.

During FY 2021-22, nearly 1.58 crore new LPG connections were issued and in FY 2022-23, nearly 92.46 lakh new LPG connections have been released during the period April to December 2022.

**Across the counter LPG connections:** Further, to facilitate the prompt release of new LPG connections, provision has been enabled across the country to provide Domestic Non-subsidised LPG connections immediately across the counter to prospective customers.

To get an across the counter connection, Customer need to submit the KYC details along with Proof of Identity (POI) and Proof of Address

(POA). A Self-Declaration is accepted in place of Proof of Address if no other Address proof document is available with the customer. Aadhaar card is collected to check the presence of any other LPG connection in the applicant's name, which can also be a Proof of Identity.

**Portability for Domestic LPG customers**

a. **Refill Portability** Consumers are given an option to select a distributor other than his parent distributor while booking refill through portal and mobile app. The list of all distributors serving in the pin code/market is displayed to customer along with star rating. Facility was started as a pilot in 5 cities in July 2021 (Coimbatore, Chandigarh, Gurugram, Pune, Ranchi) and after successful pilot project, it was expanded across the country.

b. **LPG connection Portability for consumers** The facility of Online Transfer of LPG connection to another distributor serving in the same area has been provided first time to LPG customers through respective OMC's web-portals as well as their Mobile Apps.

### 5.2.4. Commissioning of New Distributorships

Currently, the selection process for all types of distributorships is undertaken under Unified Guidelines for Selection of LPG distributorships. In FY 2021-22, 214 new LPG distributorships were commissioned. In FY 2022-23, a total of 93 new LPG distributorships have been commissioned across the country during the period April-December, 2022.

**Numbers of active LPG domestic customers (In Crore)**




| LPG consumption (Thousand Metric Tonne) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LPG Category | 2020-21 | 2021-22 | December | | | April-December | | |
| | | | 2021-22 | 2022-23 (P) | Gr (%) | 2021-22 | 2022-23 (P) | Gr (%) |
| **1. PSU Sales:** | | | | | | | | |
| LPG-Packed Domestic | 25,128.1 | 25,501.6 | 2,235.3 | 2,253.9 | 0.8% | 18,839.5 | 18,891.4 | 0.3% |
| LPG-Packed Non-Domestic | 1,886.0 | 2,238.8 | 196.6 | 266.4 | 35.5% | 1,624.1 | 1,922.2 | 18.4% |
| LPG-Bulk | 361.9 | 390.9 | 26.4 | 40.3 | 52.7% | 270.6 | 302.9 | 11.9% |
| Auto LPG | 118.4 | 122.0 | 11.1 | 9.0 | -18.5% | 91.2 | 82.4 | -9.7% |
| **Sub-Total (PSU Sales)** | 27,494.3 | 28,253.3 | 2,469.3 | 2,569.6 | 4.1% | 20,825.4 | 21,198.9 | 1.8% |
| **2. Direct Private Imports*** | 64.2 | 82.0 | 9.99 | 6.4 | -36.4% | 65.0 | 57.2 | -12.0% |
| **Total (1+2)** | **27,558.4** | **28,335.3** | **2,479.3** | **2,575.9** | **3.9%** | **20,890.4** | **21,256.1** | **1.8%** |

*Source: Data available on DGCIS (Directorate General of Commercial Intelligence & Statistics)




## 5.3. Guidelines for Authorization to Market Transportation Fuels

MoPNG, vide Resolution dated 08.11.2019, revised the guidelines for authorization to market transportation fuels which have been published in the Gazette of India. The revised guidelines would promote ease of doing business and boost private players to invest in retail sector. The said resolution is available on the website of MoPNG. Following are the main features of the said guidelines :-

(i) The resolution applies for marketing of only Motor Spirit and High Speed Diesel for "Bulk" and "Retail" business.

(ii) An entity desirous of seeking authorisation for either retail or bulk must have a minimum net worth of ₹ 250 crore at the time of making application. In case authorization is required for both retail and bulk, minimum net worth will be ₹ 500 crore.

(iii) For retail authorisation, an entity has to set up at least 100 retail outlets, out of which 5% should be in the notified remote areas within 5 years of the grant of authorization. An effective mechanism (i.e., Bank Guarantees) has been prescribed to ensure that the entity deliver on its commitment to set up the ROs in remote areas. Further, Bank Guarantee is also required to be furnished for maintaining marketing discipline.

(iv) Under the said Resolution, the authorized entities are required to install facilities for marketing at least one new generation alternate fuels like Compressed Natural Gas (CNG), bio-fuels, Liquefied Natural Gas (LNG), electric vehicle charging points etc. at their proposed retail outlets (RO) within 3 years of operationalization of the said outlet subject to the entity complying with various other statutory guidelines.

Under the aforesaid resolution, MoPNG has granted marketing authorization to 12 new entities.

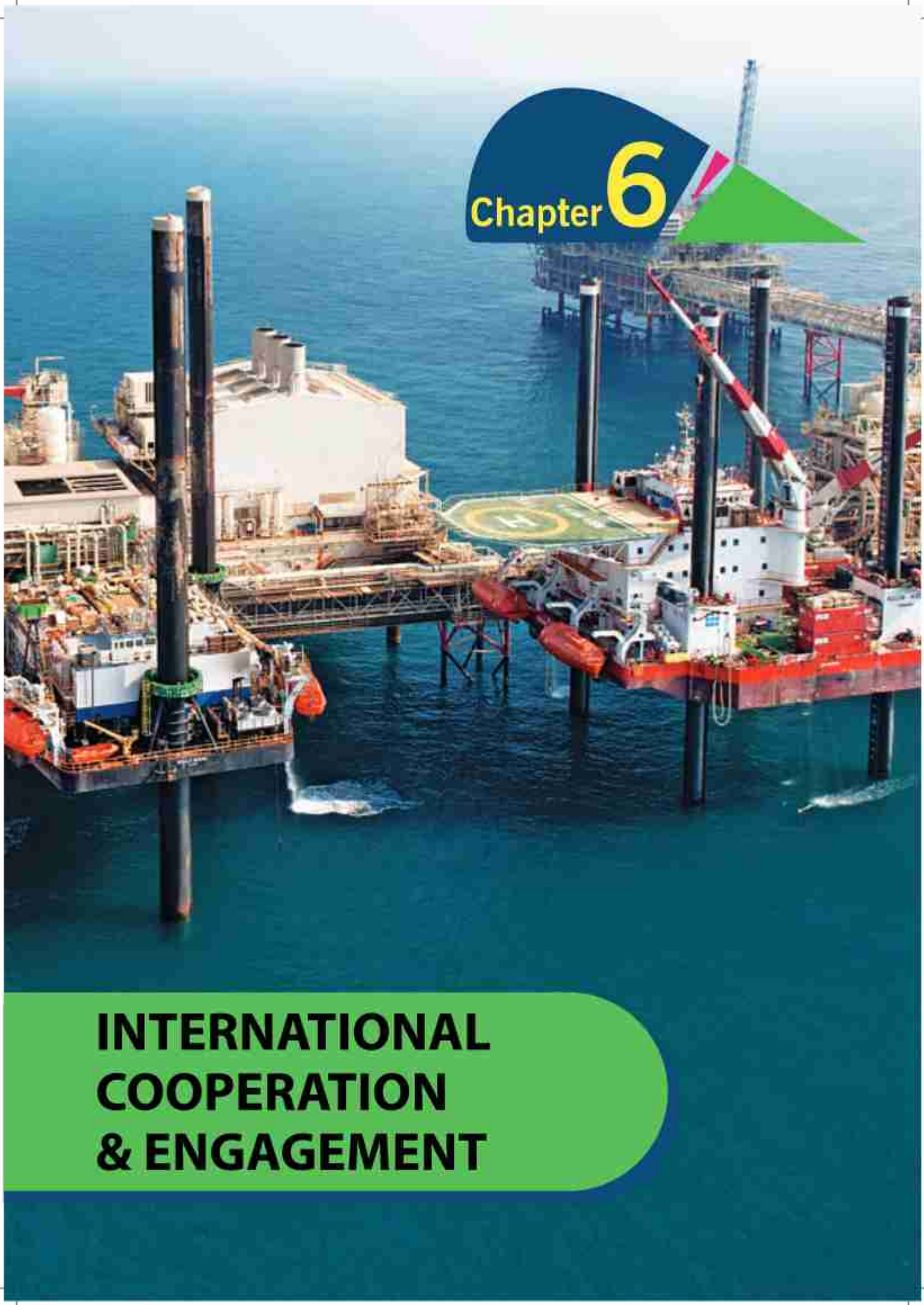
## 5.4. Promotion of Digital Payments undertaken by MoPNG:

There has been a significant expansion of digital payment infrastructure at retail outlets. As on 01.01.2023, 4,32,761 POS terminals and 1,03,992 e-wallet facility have been provided at 75,223 petrol pumps across the country, 69,775 retail outlets have been enabled with BHIM UPI. All the LPG Distributors and City Gas distribution companies are enabled with BHIM UPI.

### 5.4.1. Door to Door Delivery of Diesel (HSD):

The novel concept has been conceived towards doorstep delivery of HSD where any person duly authorized by oil company may purchase high speed diesel from such oil company, in a mobile Boat container or tank-truck with dispenser, only for the purpose for the site refuelling of aircraft, heavy vehicles or machineries, stationery equipment. This initiative is aimed at directly dispensing HSD into the stationery equipments of the end users.


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Chapter 6

# INTERNATIONAL COOPERATION & ENGAGEMENT

# 6 International Cooperation & Engagement

India is amongst the world's leading energy consumer and is widely considered as the emerging energy superpower as a demand driver of both conventional and clean energy resources. As per the latest world energy statistics, India is currently 3rd largest energy consumer, 3rd largest consumer of Oil, 3rd largest LPG consumer, 4th largest LNG importer and 4th largest refiner of the world.

In this context, it is pertinent to note that India's per capita energy consumption is only approximately 1/3rd of the World average. As India continues on a high trajectory of economic recovery and rapid urbanization and industrialization on account of "Atmanirbhar Bharat", India's demand for energy is bound to grow exponentially. This view on India's growth is unequivocally shared by top economic institutions and agencies.

According to International Energy Agency's (IEA) World Energy Outlook 2022, India's energy consumption will double by 2040. As per IEA, India's energy demand is expected to grow at about 3% per annum till 2040, compared to the global growth rate of 1%. The outlook also forecasts that India's share in global energy demand will double to 11% - the largest growth in that period of any country, from current 6% and India will overtake the European Union in terms of total energy consumption 2030. OPEC also resonates this view in its World Oil Outlook 2022 and forecasts that India will have the highest energy demand growth in the outlook, where demand is projected to increase from 18.6 mb/d in 2021 to 37.7 mb/d in 2045.

This potential comes in the backdrop of dependency on imports. Our dependency on imported crude oil and natural gas are **85%** and **48%** respectively. With a view to safeguard this rising demand and over-reliance on single sources, Government of India is working towards long term solutions for mitigation of geo-political risks arising out of concentrated sourcing of crude oil. This strategy can be summarised in India's four plank strategy for energy security namely diversification of energy supplies, increasing exploration and production footprint, using alternate energy sources, and meeting energy transition through the gas-based economy, green hydrogen and EVs.

The recent bold commitment by Hon'ble Prime Minister at COP26, Glasgow, signalling the country's strong action-based resolve for climate action, has set the roadmap for clean and green energy transitions. As a major energy consumer, India is fully cognizant of the need to combat climate change and is already taking a leadership role in promoting the usage of emerging fuels especially bio-fuels and green hydrogen. India will continue to use oil & gas to provide the base load of the demand, along with developing all sources of energy to meet its burgeoning energy demand.

## 6.1. Diversification of Crude Oil & LNG imports

Energy security of India has been prone to geopolitical risks due to limited number of exporters of oil and LNG and their geopolitically sensitive geographical location. As a safeguarding measure against this situation Indian government has prioritised the diversification of its crude oil import portfolio along with enhancing domestic oil production.

- Over the last five years, new suppliers of crude oil have been added in India's Crude basket i.e. USA, Russia, Canada, Angola, Guyana and Mexico. Similarly, LNG imports have also been diversified from Qatar to Australia, USA and Russia.
- The efforts result in, India's Crude oil imports from OPEC countries decreased to 71.0% of total imports during FY 2020-21 as compared to 78% during FY 2019-20. Further, India's dependence on LNG from Qatar has come down from 41% in FY 2019-20 to 39.8% in FY 2020-21.
- Import from Oil and Gas from Russia has also risen significantly in recent past. Most recently, in May 2022, Indian Oil Corporation Limited has concluded a long-term contract with Russia's Rosneft for the period of 11 months from May 2022-March 2023 for 4 million barrels of Urals grade of crude oil/month (approximately 6MMT/pa) with a

clause for relook in case discount dips below US$12/barrel, which can be renewed for 5 years on a year to year basis. Another Russian company, GazpromNeft has reached out to IndianOil for tying up for long-term contract, and both sides are negotiating for other Russian grades of crude.

- Other notable efforts in this direction include, emergence of United States as an important energy partner. Between 2017-18 and 2021-22, in a short span of 4 years (2021-22), US has become our 4th largest crude oil and 2nd largest LNG supplier to India accounting for more than 1,300% & 900% increase in imported quantity of crude and LNG respectively from 2017-18 volumes. IOCL for the first time imported Crude oil from Guyana in March 2021 and GAIL received its first direct shipment of LNG from Russia's Yamal LNG project in October 2021.

## 6.2. Enhanced Bilateral Energy Engagements with Key Partner Countries

### 6.2.1. Engagement with United States of America (USA)

- The India-US Strategic Energy Partnership (SEP) was launched by Shri Dharmendra Pradhan, previous Minister P&NG and Mr. Rick Perry, previous US Secretary of Energy in New Delhi on 17th April 2018. The SEP originally had four primary pillars of cooperation: (i) Oil and Gas; (ii) Power and Energy Efficiency; (iii) Renewable Energy; and (iv) Sustainable Growth.

- At the Climate Summit on 22nd April 2021 which was attended by Hon'ble PM and President Biden, both sides announced the India-US revamped Strategic Clean Energy Partnership (SCEP). This was a part of the US-India Agenda 2030: Climate and Clean Energy Partnership. The SCEP is co-chaired by Hon'ble Minister of Petroleum & Natural Gas Secretary, GoI and US Secretary of Energy.

- On 29th March 2021, previous Minister of Petroleum and Natural Gas, Shri Dharmendra Pradhan held an introductory meeting virtually with US Secretary of Energy H.E. Jennifer Granholm to review the existing India-US Strategic Energy Cooperation (SEP).

- During the visit of Mr. John Kerry, U.S. Special Presidential Envoy for Climate Change to India, we had discussions pertaining to these issues across the spectrum of the relevant Ministries in India dealing with these issues.

- Subsequent to these discussions, our sides have agreed to revamp the India-US SEP to reflect the new priorities of PM Narendra Modi and President Joe Biden with focus on promoting clean energy with low-carbon pathways and accelerating green energy cooperation.

- During the SEP Ministerial meeting held in September 2021 through virtual mode, the two sides announced:
  - Addition of a fifth Pillar on Emerging Fuels and Technologies, which signals joint resolve to promote cleaner energy fuels.
  - A new India-US Task Force on Biofuels was also announced to build on the scope of work on cooperation in biofuels sector.
  - Under the revamped SCEP, Oil and Gas pillar was re-christened into responsible Oil and Gas Pillar.

- First physical meeting of revamped SCEP took place in Washington D.C. on October 7th, 2022.



- In Washington D.C., Hon'ble Minister Hardeep Singh Puri co-chaired the Ministerial dialogue of US-India Strategic Clean Energy Partnership (USISCEP) on 7th October 2022 with HE Ms. Jennifer Granholm (SJG), Secretary of Energy, USA. Among other engagements during the aforesaid visit, Hon'ble Minister interacted with World Bank Officials on Climate Resilient Urban Infrastructure, participated in two executive roundtables with USA India Business Council in Washington D.C. and with USA India Strategic Partnership Forum in Houston and held discussions with CEOs of US based energy companies.
- During the SCEP meeting both sides agreed to take forward the clean energy collaboration through the **Launch of a new Energy Storage Task Force** to support large-scale integration of renewable energy needed to support the clean energy transition and the agreement on the **development of green energy corridor with a focus on production of green hydrogen** by bringing entrepreneurs of both the countries together with governmental support in providing conducive environment for commercial collaboration.

### 6.2.2. Engagement with Saudi Arabia

- India upholds long-standing collaboration under hydrocarbon sector with Saudi Arabia. Saudi Arabia is among the largest trade partner and a major source of energy for India. Saudi Arabia was the 2nd largest source of our crude oil and 3rd largest source of our LPG imports in 2021-22.
- Hon'ble Minister of Petroleum and Natural Gas had a meeting on 21st October'2022 with his Royal Highness, Prince Abdul Aziz Bin Salman Al Saud, Minister of Energy of Saudi Arabia. The discussions were held on Investment Opportunities in-India's refining sector by way of investment in West-coast Refinery, India's strategic Petroleum reserve program.

### 6.2.3. Engagement with UAE

- India and UAE are close trading and investment partner. Traditionally, UAE has been one of India's biggest partners in hydrocarbon sector. Together we are involved in trade of Crude Oil, LNG, LPG, Petroleum products as well as in exploration and production activities.
- India's relationship with UAE has been elevated to Strategic Partnership with focus on hydrocarbon sector.
- In the FY 21-22, UAE was the third largest source of Crude Oil, a second largest source of LPG and the second largest export destination for finished petroleum products.



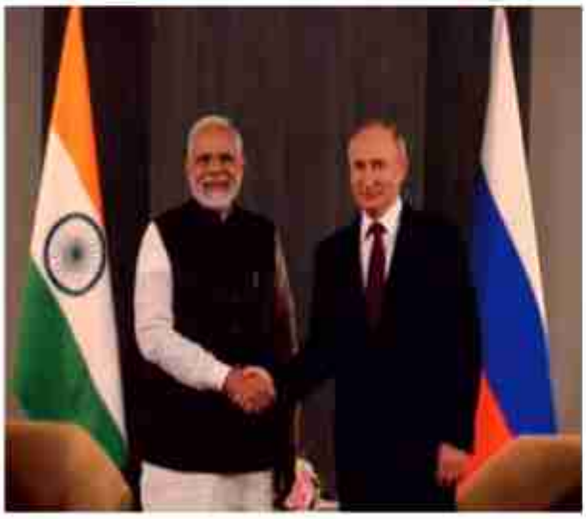
- During his visit to ADIPEC 2022 in Abu Dhabi, Hon'ble Minister Shri Hardeep Singh Puri met with H.E. Dr. Sultan Ahmed Al Jaber, Minister of Industry & Advanced Technology and oversaw the signing of Side Letter Agreement between ISPRL & ADNOC. Hon'ble minister also had bilateral meeting with H.E. Suhail Mohamed Al Mazrouei, Minister of Energy and Infrastructure, UAE during the event.

### 6.2.4. Engagement with Russia

- Russia has been a long-standing and time-tested partner for India. Development of India-Russia relations has been a key pillar of India's foreign policy. Since the signing of "Declaration on the India-Russia Strategic Partnership" in October 2000 (during the visit of President Putin), India Russia ties have acquired a qualitatively new character with enhanced levels of cooperation in almost all areas of the bilateral relationship.
- With investment of US$ 15.9 billion, Russia is the largest destination of investment for Indian oil & gas companies. Indian PSUs have participating interest in 5 producing blocks in Russia.

- Russia has also emerged as the largest investor in India's oil & gas sector with Rosneft-led consortium investing US$ 13 billion in Nayara Energy and will be investing an additional US$ 750 million towards expansion plan of its Vadinar Refinery for setting up a Polypropylene plant.
- In the face of extreme volatility in international crude oil prices, Indian PSUs have increased imports from Russia.





- Prime Minister Shri Narendra Modi met President of Russian Federation H.E Mr. Vladimir Putin today in Samarkand, Uzbekistan on the sidelines of the 22nd meeting of the Shanghai Cooperation Organization (SCO). This was the first meeting of both leaders this year, which marks the 75th anniversary year of establishment of diplomatic relations.
- OSD(IC), MOP&NG chaired the 24th Indo-Russia Joint Working Group on Energy and Energy Efficiency on 20th Dec'2022, wherein the two sides discussed on the current and future areas of cooperation in the Oil and Gas sector.

### 6.2.5. Engagement with Brazil

- Brazil was the 11th largest supplier of crude oil to India and 18th largest market for export of petroleum products from India in 2021-22.
- The Minister of Mines and Energy of the Federative Republic of Brazil, H.E. Mr. Bento Albuquerque paid an official visit to the Republic of India on April 19th-22nd, 2022 on the invitation of the Minister of Petroleum & Natural Gas of the Republic of India, Shri Hardeep Singh Puri.
- The leaders reviewed the existing bilateral cooperation across the entire spectrum of the energy sector and committed to enhance the beneficial partnership between the countries, and in this context expressed satisfaction at the important role bilateral energy cooperation plays in deepening the strategic partnership between the two countries.
- The two sides acknowledged the immense potential for collaboration between the two countries to scale up international production and use of sustainable bioenergy and biofuels, as an important vertical of the global transition to a low carbon future. In this context, they agreed on the importance of strengthening the bilateral cooperation in bioenergy. To this end, the two sides agreed to work towards developing an Indian-Brazil Alliance for Bioenergy and Biofuels.



### 6.2.6. Engagement with Kazakhstan

- Kazakhstan is India's largest trading partner in Central Asia. In 2021 our mutual bilateral trade was US$ 561 Million.
- H.E. Mr. Bakhyt Sultanov, Deputy Prime Minister-Minister of Trade and Integration of the Republic of Kazakhstan along with his delegation visited India for the 14th meeting of the India-Kazakhstan Inter governmental Commission on Trade, Economic, Scientific, Technical, Industrial and Cultural Cooperation that took place on 3rd June 2022.



- The India-Kazakhstan Inter-Governmental Commission (IGC) established in 1993 is the apex bilateral institutional mechanism for developing trade, economic, scientific, technological, industrial and cultural cooperation between the two countries.

### 6.2.7. Engagement with Guyana

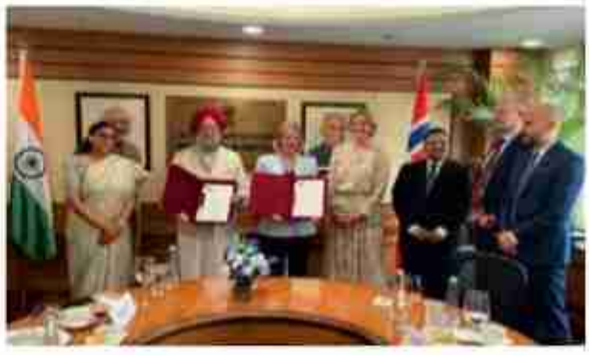
- The Minister of Petroleum & Natural Gas and Housing & Urban Affairs, Shri Hardeep S. Puri had a bilateral meeting with Mr. Vickram Bharrat, Minister for Natural Resources, Guyana on the sidelines of ADIPEC-2022 in Abu Dhabi on 31st October 2022. Officials from Indian PSUs also visited Guyana in August 2022 to explore opportunities of commercial collaborations.
- The Minister of Petroleum & Natural Gas and Housing & Urban Affairs, Shri Hardeep S. Puri called on the President of the Cooperative Republic of Guyana, Dr. Mohamed Irfaan Ali on 12th Jan 2023, during his official visit to India.



- During the meeting the leaders agreed on direct Government to Government cooperation across the entire spectrum of the oil & gas sector including increased long-term offtake, participation in exploration and production activities in Guyana, technical cooperation in the midstream and downstream sector and capacity building.

### 6.2.8. Engagement with Norway

- Norway is the biggest crude oil sourcing destination for India in North Sea region and 14th largest crude oil sourcing destination globally.
- Hon'ble Minister for Petroleum and Natural Gas & Housing and Urban Affairs met with Foreign Minister of Norway H.E. Anniken Huitfeldt & a business delegation consisting of representatives of leading Energy companies and had discussions on the synergies between our economies, especially in areas of E&P, green hydrogen & renewable energy. Two MoUs were signed: one between ONGC & Equinor for cooperation across the entire energy value chain & second, between IIT Madras & SEID Norway for development of a reactor for producing hydrogen.



## 6.3. Endeavours to 'Neighbourhood'

'Neighbourhood First' is one of the key elements of India's foreign policy. India shares the conviction that better connectivity, including energy links/corridors, with its neighbours will bring greater prosperity to all in an equitable and balanced manner.

### 6.3.1. Engagement with Bangladesh

- Bangladesh is an important energy partner in the immediate neighborhood. bilateral hydrocarbon trade has consistently increased. For FY21-22 it amounted to US$ 1.2 Bn which is an increase of over 140% y-o-y and more than 200% when compared with FY19-20.
- The inter-governmental MoU between India and Bangladesh for construction of the India-Bangladesh Friendship Pipeline (IBFPL) was signed during the visit of PM of Bangladesh to India in April 2017. The IBFPL is fast reaching commissioning stage and will be commissioned soon. This would be the 2nd transnational petroleum products pipeline in South Asian region after the India-Nepal cross-border pipeline. The pipeline is a 129.5 Km. long (of which 124.34 Km. is in Bangladesh and 5.16 Km. in India) cross border product pipeline, for transportation of High-Speed Diesel to Bangladesh.
- GAIL has also signed a summary of understanding with M/s Dipon Group, Bangladesh to supply natural gas by extending GAIL's Urja Ganga Pipeline upto India - Bangladesh border in West Bengal.

### 6.3.2. Engagement with Nepal

- India has been supplying 100% petroleum product requirements to Nepal since 1974.
- India and Nepal are exploring the possibility of extending HAPL pipeline till Chitwan, Construction of LPG & Natural Gas pipeline to Nepal.

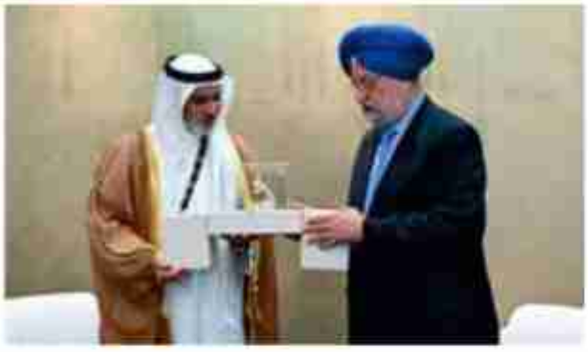
### 6.3.3. Engagement with Sri Lanka

- India and Sri Lanka have a vibrant energy partnership in both the upstream and downstream segments. India has traditionally been among Sri Lanka's largest trade partners and Sri Lanka remains among the largest trade partners of India in the SAARC.
- India is also one of the largest contributors to Foreign Direct Investment in Sri Lanka. A number of leading companies from India have invested and established their presence in Sri Lanka.
- During the time of energy crunch in Sri Lanka, India extended support by supplying petroleum products (692 TMT) worth US$ 791 Million against line of credits of total US$ 4 Billion extended to Sri Lanka.
- Indian companies are exploring development of Trincomalee region as an energy hub which is in line with Sri Lankan Government's plan for the region. Having a crude oil storage facility along with an integrated downstream sector, would not only help to build Sri Lanka's Energy security but also would generate additional revenue, employment, foreign investments, etc.
- Several Indian companies are exploring commercial and strategic opportunities in upstream, midstream and downstream sectors.

## 6.4. Engagements with International Organizations

### 6.4.1. Engagement with Organization of the Petroleum Exporting Countries (OPEC)

- Hon'ble Minister for Petroleum and Natural Gas & Housing and Urban Affairs had a meeting with Secretary General OPEC- Mr. Haitham Al Ghais, on the sidelines of ADIPEC-2022, where both leaders discussed ways to take forward India-OPEC Energy dialogue.
- India is constantly emphasing upon OPEC's leadership role in nudging the large producers of oil to move towards a more responsible pricing system in the overall interest of buyers and sellers.
- OPEC for the first time had introduced an India centric paper in OPEC's flagship publication "World Oil Outlook" 2021 issued in September 2021.



### 6.4.2. Engagement with International Energy Agency (IEA)

- Hon'ble Minister for Petroleum and Natural Gas & Housing and Urban Affairs had a meeting with Dr. Fatih Birol, ED IEA on 11th April 2022 and had discussions on of Strategic Partnership between India & IEA.
- Secretary, Petroleum had a meeting with Deputy Executive Director Ms. Mary Warlick on 6th April 2022 and had discussion on strengthening the ties between India-IEA.

### 6.4.3. Engagement with International Energy Forum (IEF)

- Hon'ble Minister for Petroleum and Natural Gas & Housing and Urban Affairs had a meeting with Secretary General, IEF- Mr Joseph McMonigle, wherein Hon'ble Minister elaborated on transformative initiatives taken by India in the Energy sector including several low carbon pathways.



- OSD (IC), Petroleum and Natural Gas represented Government of India at the 1st IEF Executive Board Meeting held on 13th June 2022 in Madrid. OSD (IC) shared that GoI is keen to host activities during our G20 Presidency and briefed the Board about India's interest in methane, and its engagement with the Quad on methane.

## 6.5. Indian Strategic Petroleum Reserves

- Under Phase-I, India has set up Strategic Petroleum Reserves (SPR) at three locations with a capacity of 5.33 MMT located at Vishakhapatnam (1.33 MMT), Mangalore (1.50 MMT) and Padur (2.5 MMT) (which can be used in the event of serious disruptions in global crude oil supply chain).
- The three SPRs can meet approximately 9.5 days of national demand. All the storage facilities have been filled with crude oil in April/May 2020.
- In July 2021, Cabinet accorded approvals for (i) utilizing part of the petroleum reserves created under Phase-I of SPR programme for commercialization operations and (ii) Under Phase-II, setting up of two additional commercial-cum-strategic facilities under PPP model with a total storage capacity of 6.5 MMT.
- India is looking to invite foreign investments under Phase-II of its SPRs planned at Padur-II (Karnataka) and Chandikhol (Odisha) dedicated SPMs and associated pipelines under PPP mode.
- This project is estimated to provide for an additional cover of about 12 days of India's crude oil requirement.
- In November, India has agreed to release 5 million barrels of crude oil from its Strategic Petroleum Reserves in parallel and in consultation with other major global energy consumers including the USA, People's Republic of China, Japan and the Republic of Korea to stabilize global oil market.

## 6.6. International Events Organized/ Participated by Ministry of Petroleum & Natural Gas

### 6.6.1. Gastech-Milan 2022

- Shri Hardeep S. Puri, Minister of Petroleum and Natural Gas & Housing and Urban Affairs, lead an official and business delegation to Milan, Italy, from 5th-7th September 2022, to attend the Gastech Milan-2022.




- During the visit Minister participated in three ministerial sessions and eleven bilateral meetings with his counterpart Ministers and with CEOs of global energy companies, who were attending the Gastech Milan-2022.
- The ministerial sessions were: (1) A New Perspective on Energy Security and Transition in Times of Profound Change in Global Energy Markets; (2) India Spotlight: Powering India's Energy Industry-New Avenues for a Sustainable Future; and (3) A Just Energy Transition for Developing Nations. The Minister took part in bilateral meetings.






- Gastech 2022 provided an excellent opportunity to highlight India's numerous initiatives in areas of E&P, green hydrogen, biofuels and gas-based economy. India also announced its flagship event India Energy Week to be held from Feb 6th-8th, 2023 and evinced interest from all major stakeholders in the global energy sectors.



### 6.6.2. ADIPEC-Abu Dhabi 2022

- Shri Hardeep S. Puri, Minister of Petroleum and Natural Gas & Housing and Urban Affairs visited UAE from 31st October 2022, to attend the Abu Dhabi International Petroleum Exhibition & Conference (ADIPEC-2022).
- During the visit, the Minister delivered his special remarks at the inaugural ceremony of ADIPEC-2022 along with the hosting Ministers i.e. H.E. Dr. Sultan Ahmad Al Jaber, Minister of Industry & Advanced Technology UAE, MD & Group CEO, ADNOC and H.E. Suhail Mohamed Al Mazrouei-Minister of Energy and Infrastructure UAE, and few select other Ministers: H.E Abdulaziz bin Salman Al Saud-Minister of Energy of Saudi Arabia, H.E. Haitham Al Ghais-Secretary General OPEC, and H.E. Tarek El Molla-Minister of Petroleum & Mineral Resources Egypt.



- Hon'ble Minister also took part in bilateral discussions with his counterparts from UAE, H.E. Suhail Mohamed Faraj Al Mazrouei,



Minister of Energy and Infrastructure, and H.E. Dr. Sultan Ahmad Al Jaber, Minister of Industry & Advanced Technology, MD & Group CEO, ADNOC, to strengthen energy cooperation within the overall framework of India-UAE Strategic Partnership.

- Hon'ble Minister also had meetings with his counterparts from various countries and Heads of international energy organizations and CEOs of global oil & gas companies.

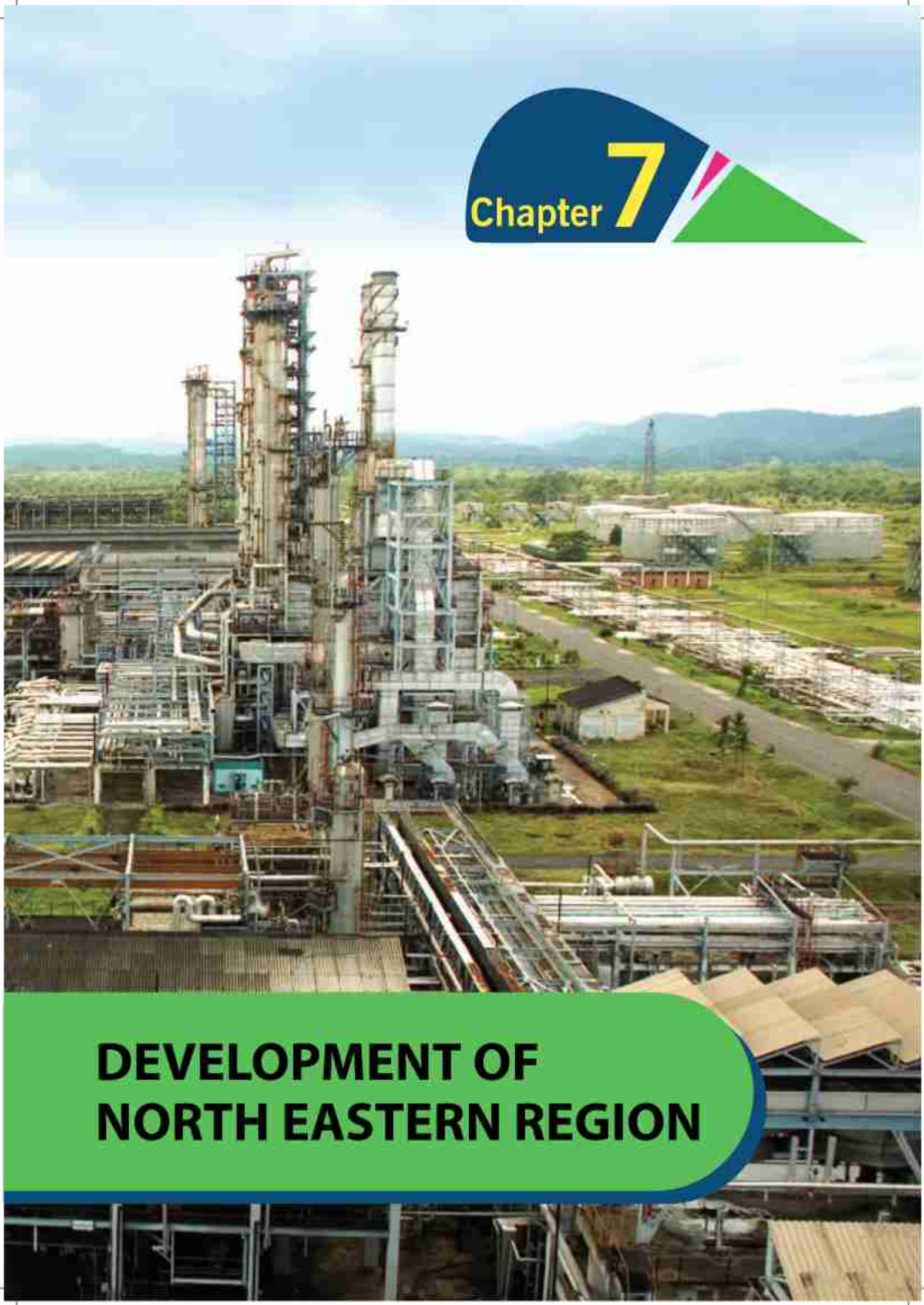
## 6.7. Acquisition of Overseas Asset

- The Ministry of Petroleum and Natural Gas is facilitating Indian oil & gas PSUs to aggressively pursue opportunities for acquiring quality oil and gas assets overseas to strengthen the country's energy security.
- Till May 2016, majority of investments by Indian oil & gas PSUs were in exploratory projects, which have a large gestation period. Further, there were assets in certain countries under Force Majeure due to geopolitical situations and economic sanctions.
- As on 1st April 2022, Indian PSUs have Participating Interest (PI) in 51 assets in 22 countries-out of which 22 producing assets, 21 exploratory assets, 3 pipelines and 5 under various stages of development. During the last 6 years Indian companies have acquired assets in UAE (Lower Zakum and Onshore Block-1), Oman (Mukhaizna) and Russia (Vankorneft & Tass Yuryakh).
- Till 1st April 2022 Indian PSUs have invested approx. US$ 37.94 billion in various E&P overseas assets. During FY 2021-22, the share of equity oil and gas for Indian PSUs from these assets was approx. 21.7 MMTOE, which works out to 34.1% of the India's domestic production.









Chapter 7

# DEVELOPMENT OF NORTH EASTERN REGION

# 7 Development of North-Eastern Region

## 7.1. Background

**7.1.1.** The history of oil and gas exploration in India dates back to the 19th century in the state of Assam located in the North-Eastern region of India. The first well that struck oil was in Makum area near Margherita during 1867 drilled by McKillop, Stewart & Co., barely 9 years after Drake's well in 1859 in Titusville, Pennsylvania. Subsequently, a number of wells were drilled in Makum and Namdang areas of Margherita and produced crude oil in minor quantities for more than two decades. The Assam Railway & Trading Co. Ltd, which was involved in the business of timber, coal, tea & construction of railway lines, drilled the first commercial well Digboi-1 (September, 1889-November, 1890- total depth of 662 ft) with an initial production of 200 gallons per day, opened up a new chapter in exploration and production of oil in this part of the world and the oil industry of India was officially born. During the subsequent years before independence of India, Digboi oil field was extensively developed and searched for new oil fields continued.

**7.1.2.** Other significant milestones in oil and gas exploration in North-East took place mainly during post-independence. These include the discoveries of the Nahorkatiya and Moran fields by Assam Oil Company (AOC) and Rudrasagar oil fields by Oil & Natural Gas Corporation Limited (ONGC) in 1953, 1956 and 1960 respectively. Subsequently, more than 100 oil and gas fields, that include fields such as Jorajan, Kumchai, Hapajan, Shalmari, Dikom, Kathaloni, Tengakhat, Bhogpara, Chabua, Baghjan, Barekuri, Tichna, Gojalia, Rokhia, Khubal, Hortoki have been discovered by Oil India Limited (OIL) and ONGC in the North-Eastern states of Assam, Arunachal Pradesh, Nagaland, Tripura and Mizoram.

**7.1.3.** Since then, both the national oil companies viz., OIL & ONGC have a long history of exploration and production (E&P) activities in the region. Later, the area was opened for exploration to private/JV and foreign companies through pre-NELP, NELP, DSF and OALP rounds of biddings. OIL & ONGC have proven substantial amounts of producible hydrocarbons and have technical know-how of producing and managing complex reservoirs and contributing to about 8.99 MMToE (2021-22) per annum of oil plus oil equivalent of gas (O+OEG) from their producing assets in North-East.

**7.1.4.** The prognosticated hydrocarbon resources of the country has been reassessed based on the newly acquired data. The prognosticated hydrocarbon resources (O+OEG) of Upper Assam Shelf basin has been upgraded to the order of 6,001.2 MMT from the level of 3,180 MMT and for Assam-Arakan Fold Belt



View of Heritage site of IOCL's Digboi Refinery

basin, the total prognosticated hydrocarbon resources are of the order of 1,633 MMT. The North-East region is having around 18% (7,634 MMT) of country's total prognosticated hydrocarbon resources. About 2,246.6 MMT of in place hydrocarbon reserves have been established so far by E&P companies, which means about 71% of hydrocarbon resources are under 'yet to discover' category.

**7.1.5.** The two national oil companies, namely, Oil and Natural Gas Corporation Limited (ONGC) and Oil India Limited (OIL) have been engaged in the North-East Region for exploration and exploitation of oil and gas for more than 60 years and generated a vast geo-scientific database and geological understanding of the basin.

## 7.2 Exploration Activities in North-East under the Nomination Regime

**7.2.1.** Oil India Limited (OIL) since its inception in February, 1959 has been actively pursuing exploration & development activities in the state of Assam. During 1962-65, various new technologies were adopted such as deviation drilling, dual completion, pressure maintenance etc. In 1968, exploration programme in Kharsang, Arunachal Pradesh began and in Kusijan areas, west of Digboi hydrocarbon was discovered.

**7.2.2.** During 1969-79, extensive geophysical survey and development effort in Assam and Arunachal Pradesh was carried out which led to the discovery of the Jorajan field in 1972 and establishment of gas resources in Eocene of Tengakhat (west of Naharkatiya) in 1973. As on 31.12.2022, OIL has acquired more than 25,050.96 GLKM of 2D seismic data and nearly 9,049.34 Sq. Kms of 3D seismic data in North-East.

**7.2.3.** During the nineties, intensive exploration/ exploratory well drilling & development activities resulted in discovery of fields such as Bogapani, Kumchai, Hapjan, Shalmari and Rajgarh. Deeper Exploration: After discovery of hydrocarbon in the deeper Eocene - Paleocene horizons, more thrust was given to explore into these horizons in different fields of Upper Assam. As a result, production from deeper reservoirs during late 1990's surpassed the production from shallower reservoirs (Barail and Tipam). This led to significant discoveries involving deeper prospects subsequently with depths ranging between 3550-3800 metres in the central basement high areas of Dikom-Kathaloni-Chabua-Matimekhana to more than 5500 metres in Mechaki areas towards the eastern flank of Upper Assam Basin. As on 1st January, 2023, OIL holds 2 exploration blocks in Northeast under nomination regime. OIL also holds 3 NELP exploration blocks in the North Eastern region. Under Open Acreage License Policy (OALP), OIL was awarded 16 blocks (7 Blocks in OALP Round-I, 3 Blocks in OALP Round-III and 2 Blocks each in OALP Rounds-V, VI & VI) as an operator in Northeast across Assam, Arunachal Pradesh, Nagaland & Tripura. OIL has been awarded 1 Block in South Tripura under DSF Round-II.

**7.2.4.** ONGC started its exploration work in Assam in 1956. Seismic surveys and geological mapping of the outcrop areas were initiated while gravity-magnetic surveys began in 1961. The analysis of seismic data along with the outcrop mapping data generated by ONGC and earlier workers helped refining the basin architecture and its evolution.

**7.2.5.** The first wild cat well of ONGC was drilled on Disangmukh structure in 1960, however, the first commercial oil discovery was on Rudrasagar structure in the same year. As a result of initial successes encountered in pursuing structural prospects the focus remained on identification of such prospects through seismic data. In the North-eastern Region, as on 31.12.2022, ONGC has drilled 811 exploratory wells in the state of Assam, 222 wells in Tripura, 3 in Meghalaya, 4 in Mizoram and 26 in the State of Nagaland.

**7.2.6.** The reservoirs of Barail Group belonging to Upper Eocene to Lower Oligocene age and those of Tipam Group of Upper Miocene age proved to be most prolific and drew significant attention of explorationists. A significant number of oil and gas fields, including Panidihing, Disangmukh, Lakwa, Lakhmani, Sonari, Geleki, Demulgaon, Amguri and Charali, were discovered with this exploration philosophy.

**7.2.7.** During the past nearly five decades, it has been ONGC's endeavour to prove the extension of the established hydrocarbon bearing areas of Sivasagar and Dhansiri Valley of North Assam Shelf and at the same time step out and explore new areas. In the process it has established hydrocarbon fields in the logistically difficult areas of Cachar and neighbouring states of Tripura and Nagaland.

**7.2.8.** Currently, ONGC holds 3 PEL blocks in the State of Nagaland under nomination regime. It also holds 65 PML blocks (46 in Assam,18 in Tripura,1 in Nagaland) in North East comprising both long term and short term PMLs. During 2022-23 as on 01.01.2023, ONGC acquired 34.54 LKM of 2D, 53.93 SKM of 3D seismic data and drilled 9 exploratory wells. Further exploratory G & G efforts are in progress to acquire more acreage in North Eastern region.

## 7.3 Exploration Activities in North-East under the PSC Regime

Under the PSC regime, exploration blocks were first awarded in the State of Assam in the year 1998 under Pre-NELP rounds of bidding. Subsequently, blocks were awarded under various rounds of NELP. 31 awarded blocks (Assam-20, Manipur- 2, Mizoram-3, Nagaland-3 and Tripura-3) cover an area of 43,376 Sq. Km. Out of these, 9 blocks are operational, 1 has been proposed for relinquishment and 21 blocks have been relinquished. In addition, there are 2 discovered fields under PSC regime, namely, Kharsang in Arunachal Pradesh and Amguri in Assam, which are on production. At present both the fields are operational.

## 7.4 Crude Oil and Natural Gas Production in North-East

**7.4.1.** The contribution in crude oil production by North Eastern States is about 13.6% of the total production. In FY 2021-22, crude oil production in North-East was about 4.04 Million Metric Tonnes (MMT). The state wise and company-wise trend of crude oil production in last 5 years is given below:

### Oil Production (in MMT)

| Company | Asset | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec 2022) |
|---|---|---|---|---|---|---|---|
| OIL Nomination | Arunachal Pradesh | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 |
| | Assam | 3.37 | 3.28 | 3.08 | 2.90 | 2.96 | 2.33 |
| **OIL Total** | | **3.38** | **3.29** | **3.10** | **2.92** | **2.98** | **2.35** |
| ONGC Nomination | Assam | 0.97 | 0.99 | 0.99 | 0.96 | 0.99 | 0.75 |
| | Tripura | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.002 |
| **ONGC Total** | | **0.97** | **0.99** | **0.99** | **0.96** | **0.99** | **0.75** |
| Contractual Regime | Arunachal Pradesh | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 |
| | Assam | 0.00 | 0.03 | 0.03 | 0.03 | 0.04 | 0.03 |
| **Contractual Regime Total** | | **0.04** | **0.06** | **0.06** | **0.06** | **0.07** | **0.05** |
| **Grand Total** | | **4.39** | **4.34** | **4.15** | **3.94** | **4.04** | **3.15** |

**7.4.2.** From the above table, it may be observed that in FY 2021-22 OIL has the share of ~74 % in crude oil production in North-East, followed by ONGC with a share of ~25 %. The share of Private/Joint Venture companies in crude oil production is about ~2 %.

**7.4.3.** The contribution in natural gas production by North-Eastern States in FY 2021-22 is about 14.6% of the total production. In 2021-22 natural gas production in North-East is about 4.95 Billion Standard Cubic Metre (BCM). The state-wise and company wise trend of natural gas production in last 5 years is given below:

### Gas Production (in BCM)

| Company | Asset | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec 2022) |
|---|---|---|---|---|---|---|---|
| OIL Nomination | Arunachal Pradesh | 0.01 | 0.01 | 0.04 | 0.05 | 0.05 | 0.04 |
| | Assam | 2.66 | 2.48 | 2.38 | 2.24 | 2.62 | 2.12 |
| **OIL Total** | | **2.67** | **2.49** | **2.42** | **2.29** | **2.67** | **2.16** |
| ONGC Nomination | Assam | 0.51 | 0.48 | 0.46 | 0.39 | 0.37 | 0.27 |
| | Tripura | 1.44 | 1.55 | 1.47 | 1.63 | 1.53 | 1.24 |
| **ONGC Total** | | **1.95** | **2.03** | **1.93** | **2.02** | **1.90** | **1.51** |
| PSC | Arunachal Pradesh | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 |
| | Assam | 0.05 | 0.32 | 0.30 | 0.37 | 0.38 | 0.30 |
| **PSC Total** | | **0.07** | **0.34** | **0.31** | **0.37** | **0.38** | **0.30** |
| **Grand Total** | | **4.69** | **4.86** | **4.66** | **4.68** | **4.95** | **3.97** |

**7.4.4.** From the above table, it may be observed that in FY 2021-22 OIL has the share of ~54% in natural gas production in North-East, followed by ONGC with a share of ~38%. The share of Pvt/JV companies in natural gas production is about ~8%.

**7.4.5.** North-eastern states contribute ~14% of on land Oil production in the country. Assam contributes ~99% of total oil production out of north-eastern states in the country (FY 2021-22) and 13% of country's Total Oil production (FY 2021-22). Arunachal Pradesh contributes ~1% of total oil production out of north-eastern states in the country (FY 2021-22) and 0.2% of country's Total Oil production (FY 2021-22). Tripura contributes ~0.1% of total oil production out of north-eastern states in the country (FY 2021-22) and 0.01% of country's Total Oil production (FY 2021-22).

## State Wise Oil Production (in MMT)

| State | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr - Dec 2022) |
|---|---|---|---|---|---|---|
| **Arunachal Pradesh** | 0.05 | 0.04 | 0.05 | 0.05 | 0.05 | 0.03 |
| **Assam** | 4.34 | 4.30 | 4.10 | 3.89 | 3.99 | 3.12 |
| **Tripura** | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.002 |
| **Total-NER** | 4.40 | 4.34 | 4.15 | 3.94 | 4.04 | 3.15 |
| **Total-Country** | 35.66 | 34.20 | 32.17 | 30.49 | 29.69 | 22.08 |
| **NER contribution** | 12.3 % | 12.7 % | 12.9 % | 12.9 % | 13.6 % | 14.3 % |

**7.4.6.** North-eastern states contribute ~15% of onland Gas production in the country. Assam contributes ~68% of total gas production from north-eastern states in the country and 9.9% of country's total Gas production. Arunachal Pradesh contributes ~1% of total Gas production from north-eastern states in the country and 0.2% of country's total Gas production. Tripura contributes ~31% of total Gas production from north-eastern states in the country and 4.5% of country's total Gas production.

## State Wise Gas Production (in BCM)

| State | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr - Dec 2022) |
|---|---|---|---|---|---|---|
| **Arunachal Pradesh** | 0.03 | 0.03 | 0.05 | 0.05 | 0.05 | 0.04 |
| **Assam** | 3.22 | 3.28 | 3.14 | 3.00 | 3.37 | 2.69 |
| **Tripura** | 1.44 | 1.55 | 1.47 | 1.63 | 1.53 | 1.24 |
| **Total-NER** | 4.69 | 4.86 | 4.66 | 4.68 | 4.95 | 3.97 |
| **Total-Country** | 32.64 | 32.87 | 31.18 | 28.67 | 34.02 | 25.87 |
| **NER contribution** | 14.4% | 14.8% | 14.9% | 16.3% | 14.6% | 15.3% |

## Company Wise Oil and Gas Production from North-East States for 2021-22:

| Company Name | % of total Oil Production | % of total Gas Production | % of total Oil + Gas Production |
|---|---|---|---|
| OIL (Nomination) | ~74% | ~54% | ~63% |
| ONGC (Nomination) | ~25% | ~38% | ~32% |
| Pvt. & JV Companies under Contract Regime | ~2% | ~8% | ~5% |

## 7.5 Discovered Small Field Policy:

In order to accelerate exploration and production activities in North-East, Government of India has awarded 18 discovered fields under first, second and third round of discovered Small Field Policy in NE. The details of these blocks are as under:

| Status | Basin | DSF Bid Round | State / Location | Contract Area | Operator |
|---|---|---|---|---|---|
| Active | Assam-Arakan fold belt | DSF-II | Tripura | AA/ONDSF/ Tulamara/2018 | Oil India Limited |
| | Assam Shelf | AA/ ONDSF/ DSF-I | Assam | AA/ONDSF/ BARSILLA/2016 | Ramyana Ispat Pvt. Ltd. & Mahendra Infratech Pvt. Ltd. |
| | | | | AA/ONDSF/CHARAIDEO/2016 | Oilmax Energy Private Limited |
| | | | | Ramyana Ispat Pvt. Ltd. & DIPLING/2016 | Mahendra Infratech Pvt. Ltd. |
| | | | | AA/ONDSF/DUARMARA/2016 | Antelopus Energy Private Limited |
| | | | | AA/ONDSF/ LAXMIJAN/2016 | Megha Engineering and Infrastructures Ltd. |
| | | DSF-II | Assam | AA/ONDSF/Disaijan/2018 | Invenire Energy Private Limited |
| | | | | AA/ONDSF/Hazarigaon/2018 | Vedanta Limited |
| | | | | AA/ONDSF/Umatara/2018 | Indian Oil Corporation Ltd. |
| PML not granted | Assam-Arakan fold belt | DSF-III | Assam | AA/ONDSF/ PATHARIA/2021 | Vedanta Limited |
| | | | | AA/ONDSF/TUKBAI/2021 | Vedanta Limited |
| | Assam Shelf | DSF-I | Arunanchal Pradesh | AA/ONDSF/ KHEREM/2016 | HOEC Ltd., Prize Petroleum |
| | | DSF-III | Assam | AA/ONDSF/TIPHUK/2021 | Oilmax Energy Private Limited |
| Relinquished | Assam Shelf | DSF-I | Assam | AA/ONDSF/JERAIPATHAR/2016 | Indian Oil Corporation Limited |
| Terminated | Assam-Arakan fold belt | DSF-I | Assam | AA/ONDSF/ HILARA/2016 | Prize Petroleum Company Limited |
| | | | | AA/ONDSF/PATHARIA/2016 | Vijayasri Bhaskar Industries Pvt. Ltd. |
| | Assam Shelf | DSF-II | Assam | AA/ONDSF/ Madhakali/2018 | Arsh Corporate Services Pvt. Ltd (Duganta) |
| | | | | AA/ONDSF/ Tiphuk/2018 | Shanti G.D. Ispat and Power Pvt. Ltd. |

## 7.6 Alternate Hydrocarbon sources in North-East:

**7.6.1. Shale Gas:** Based on the data available from conventional oil/gas exploration it appears that few sedimentary basins, including Assam Arakan Basin may be prospective from Shale gas point of view. In October 2013, Government has issued guidelines for exploration and exploitation of Shale Oil & Gas by NOCs in the nomination acreages under which ONGC and OIL have identified 50 blocks and 6 blocks respectively. Out of 55 blocks, 3 blocks operated by ONGC and 4 blocks operated by OIL are in the state of Assam. So far ONGC has drilled 2 wells (GKBO in Namti ML Block and LDG in Lakwa). OIL has acquired conventional four cores from Jaisalmer PML in Rajasthan, Dibrugarh, Dumduma and Chabua PML of Assam. The evaluation results show poor prospectivity at these locations as the shales are entered into early oil generation window. In Arunachal Pradesh, OIL has identified two locations for acquiring the conventional cores viz., Jairampur Extn. PEL and Deomali PEL for acquiring extensive amount of conventional cores against the target shale of Upper Tikak Partbat and Disang shales respectively for establishment of Shale Gas/Oil potential.

In Arunachal Pradesh, OIL has identified two locations viz., Jairampur Extn. PEL and Deomali PEL for acquiring extensive amount of conventional cores against the target shale of Upper Tikak Partbat and Disang shales respectively for establishment of Shale Gas/Oil potential.

## 7.7 North-East Vision 2030

**7.7.1.** The North-East Vision Document has been a focussed and consultative exercise to develop a common and shared aspiration for benefiting people of the North-Eastern region. With involvement and inputs of various stakeholders, industry players and state governments, the Vision document not only includes the ambition for the region but also an actionable roadmap.

**7.7.2.** The objectives of the plan are to leverage the region's hydrocarbon potential, enhance access to clean fuels, improve availability of petroleum products, facilitate economic development and to link common people to the economic activities in this sector. The states covered include Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. The Ministry also undertook series of consultations with the state Governments while drafting the vision document.

**7.7.3.** The Vision rests on five pillars People, Policy, Partnership, Projects and Production. For People, it foresees clean fuel access to households alongside fostering skill development and involvement of the local community. The Policy focus areas include moderation in light of specific terrain and weather conditions of the region coupled with ensuring fund planning for new projects. As for Partnership, the stress is on greater involvement of state governments in planning and implementation, and on boosting trade with neighbouring nations. In Projects, the focus is on pipeline connectivity for carrying liquefied petroleum gas (LPG), natural gas, and petroleum products, oil and lubricants (POL); building refineries and import links; and development of compressed natural gas (CNG) highways and city gas distribution network. The Production side emphases include production enhancement contracts, technology deployment and fast-track clearance, and development of service provider hubs.

**7.7.4.** Beyond production, the focus areas include exploring hydrocarbon linkages and trade opportunities with Bangladesh, Myanmar, Nepal & Bhutan; implementation of 'Make In India' in the region; development of health & medical facilities; industrial policy & infrastructure related action points; focus on skill development; and employment generation requirement in the region. The vision statement lays out a detailed roadmap for the entire hydrocarbons value chain, covering upstream, midstream and downstream segments. This report includes an action plan-of immediate, medium-term and long-term initiatives-to help achieve the objectives.

**7.7.5.** The Vision aims at doubling Oil & Gas production by 2030, making clean fuels accessible, fast tracking projects, generating employment opportunities and promoting cooperation with neighbouring countries.

To fulfill one of the major goal envisaged under Vision 2030, Government has allowed special dispensation of 2 year extension in exploration period and 1 year in Appraisal period for operational blocks in North-Eastern region. Government has also provided marketing and pricing freedom for natural gas

produced in future in North-Eastern region. This is likely to result in increased investment in development of oil & gas resources.

**7.7.6.** Under the North East Vision 2030, ONGC has envisioned an exploration plan for seismic data acquisition and drilling of exploratory wells in Assam Shelf and Fold belt areas in the north east region. Recently, considering the exploratory priorities of different basins, a three year Action plan for the period from 2022-23 to 2024-25 has been prepared. Under this plan, the exploratory inputs proposed to be expended in the north East sector during the commensurate period are tabulated below:

| Particulars | | 2022-23 | 2023-24 | 2024-25 | Total |
|---|---|---|---|---|---|
| Assam & Assam Arakan | 2D (LKM) | 254 | 377 | 200 | 831 |
| | 3D (SKM) | 320 | 455 | 470 | 1245 |
| | Exploratory wells (no.) | 21 | 23 | 24 | 68 |

**7.7.7.** In the current year (2022-23), ONGC has planned to acquire 339 LKM of 2D & 300 SKM of 3D seismic data in Assam-Arakan Fold Belt and 10 LKM of 2D & 75 SKM of 3D seismic data in Assam Shelf. It has also planned to drill 12 and 14 exploratory wells in Assam Shelf and Assam-Arakan Fold Belt respectively. As on 01.01.2023, ONGC has completed the acquisition of 34.54 LKM of 2D, 53.93 SKM of 3D seismic data and drilled 9 exploratory wells in the region.

## 7.8 New Exploration blocks in North-Eastern Region under Hydrocarbon Exploration & Licencing Policy (HELP)

Oil E&P Companies are showing keen interest in the North-Eastern region. Details of exploration blocks awarded in the North-eastern region till 31st Dec 2022, along with status is as under.

| S. No. | OALP Round | Block Name | Name of Company (Operator) | Basin Name | State | Block Status (Active/ Not Active) | Original Contract Area (sq. km) |
|---|---|---|---|---|---|---|---|
| 1 | OALP-I | AA-ONHP-2017/1 | Vedanta Limited | Assam Shelf | Assam | Active | 714.71 |
| 2 | OALP-I | AA-ONHP-2017/10 | Oil India Limited | Assam Shelf | Assam | Active | 543.28 |
| 3 | OALP-I | AA-ONHP-2017/11 | Vedanta Limited | Assam Shelf | Assam | Active | 784.55 |
| 4 | OALP-I | AA-ONHP-2017/12 | Oil India Limited | Assam Shelf | Assam | Active | 489.06 |
| 5 | OALP-I | AA-ONHP-2017/13 | Oil India Limited | Assam Shelf | Assam | Active | 840.69 |
| 6 | OALP-I | AA-ONHP-2017/14 | Vedanta Limited | Assam Arakan Fold Belt | Assam | Active | 1719.17 |
| 7 | OALP-I | AA-ONHP-2017/15 | Vedanta Limited | Assam Shelf | Assam | Active | 1367.38 |
| 8 | OALP-I | AA-ONHP-2017/16 | Oil India Limited | Assam Shelf | Arunachal Pradesh | Active | 361.49 |
| 9 | OALP-I | AA-ONHP-2017/17 | Oil India Limited | Assam Shelf | Assam | Active | 309.07 |
| 10 | OALP-I | AA-ONHP-2017/18 | Oil India Limited | Assam Shelf | Assam | Active | 1711.1 |

| S. No. | OALP Round | Block Name | Name of Company (Operator) | Basin Name | State | Block Status (Active/ Not Active) | Original Contract Area (sq. km) |
|---|---|---|---|---|---|---|---|
| 11 | OALP-I | AA-ONHP-2017/19 | HOEC | Assam Arakan Fold Belt | Assam | Active | 79.21 |
| 12 | OALP-I | AA-ONHP-2017/2 | Vedanta Limited | Assam Arakan Fold Belt | Arunachal Pradesh | Active | 73.19 |
| 13 | OALP-I | AA-ONHP-2017/20 | Oil India Limited | Assam Arakan Fold Belt | Assam | Active | 125.08 |
| 14 | OALP-I | AA-ONHP-2017/3 | Vedanta Limited | Assam Arakan Fold Belt | Assam | Active | 267.94 |
| 15 | OALP-I | AA-ONHP-2017/4 | Vedanta Limited | Assam Shelf | Assam | Active | 839.33 |
| 16 | OALP-I | AA-ONHP-2017/5 | Vedanta Limited | Assam Shelf | Assam | Active | 758.23 |
| 17 | OALP-I | AA-ONHP-2017/6 | Vedanta Limited | Assam Arakan Fold Belt | Tripura | Active | 278.79 |
| 18 | OALP-I | AA-ONHP-2017/8 | Vedanta Limited | Assam Shelf | Assam | Active | 610.54 |
| 19 | OALP-I | AA-ONHP-2017/9 | Vedanta Limited | Assam Shelf | Assam | Active | 18.32 |
| 20 | OALP-III | AA-ONHP-2018/1 | Vedanta Limited | Assam Shelf | Assam | Active | 248.87 |
| 21 | OALP-III | AA-ONHP-2018/2 | Oil India Limited | Assam Arakan Fold Belt | Nagaland | Not Active | 2526.74 |
| 22 | OALP-III | AA-ONHP-2018/3 | Oil India Limited | Assam Shelf | Assam | Active | 1234.42 |
| 23 | OALP-III | AA-ONHP-2018/4 | ONGC Limited | Assam Arakan Fold Belt | Tripura | Active | 44.01 |
| 24 | OALP-III | AA-ONHP-2018/5 | Oil India Limited | Assam Arakan Fold Belt | Tripura | Active | 207.74 |
| 25 | OALP-V | AA-ONHP-2019/1 | Oil India Limited | Assam Shelf | Assam | Active | 1278.27 |
| 26 | OALP-V | AA-ONHP-2019/2 | Oil India Limited | Assam Shelf | Assam | Active | 2405.12 |
| 27 | OALP-VI | AA-ONHP-2020/1 | Oil India Limited | Assam Arakan Fold Belt | Tripura | Active | 557.33 |
| 28 | OALP-VI | AA-ONHP-2020/2 | ONGC Limited | Assam Arakan Fold Belt | Tripura | Active | 50.41 |
| 29 | OALP-VI | AA-ONHP-2020/3 | Oil India Limited | Assam Arakan Fold Belt | Tripura | Active | 219.37 |
| 30 | OALP-VI | AA-ONHP-2021/1 | ONGC Limited | Assam Arakan Fold Belt | Tripura | Active | 37.68 |
| 31 | OALP-VI | AS-ONHP-2021/1 | ONGC Limited | Assam Shelf | Assam | Not Active | 24.64 |
| 32 | OALP-VII | AA-ONHP-2021/2 | ONGC Limited | Assam Arakan Fold Belt | Tripura | Active | 382.05 |
| 33 | OALP-VII | AS-ONHP-2021/2 | Oil India Limited | Assam Shelf | Assam | Not Active | 2445.03 |
| 34 | OALP-VII | AS-ONHP-2021/3 | Oil India Limited | Assam Shelf | Assam | Not Active | 1840.87 |

## 7.9. National Seismic Programme:

In order to give impetus to hydrocarbon activities, Government formulated a plan to conduct 2D seismic Data Acquisition, Processing and Interpretation (API) of 48,243 LKM in un-appraised areas of all sedimentary basins of India under National Seismic Programme (NSP). NSP is being funded by Central Budget to carry out the said jobs in all the sedimentary basins of India where no/scanty data is available. Under NSP, OIL has been assigned to carry out 2D seismic API of 7408 LKM, which later on revised to 6032 LKM (5162 LKM of seismic data and 870 LKM of Airborne Geophysical Survey (AGS)) as Govt. of Nagaland denied permission for undertaking seismic survey in the State. The areas where seismic survey couldn't be carried out due to inaccessible terrain and hostile environment, are currently being taken up for appraisal by undertaking Airborne Geophysical Survey. OIL completed the Seismic API of 5245.80 LKM (101.62 % of the revised target of 5162 LKM) by May' 2022. The Sector wise/state wise achievement and data submitted to NDR as on 31.12.2022 is as below:

| Area/Sector | Name | Target (LKM) | Achievement (LKM) |
|---|---|---|---|
| A1S1 | Assam-Arunachal | 2414 | 2416.20 |
| A1S2 | Arunachal -Assam | 738 | 743.70 |
| A2S2 | Manipur | 0 | 4.74 |
| A2S3 | Karbi-Anglong & North Cachar Hills | 885 | 719.10 |
| A2S4 | Mizoram-Tripura | 1125 | 1143.48 |
| | **Total (OIL)** | **5,162** | **5,245.80** |

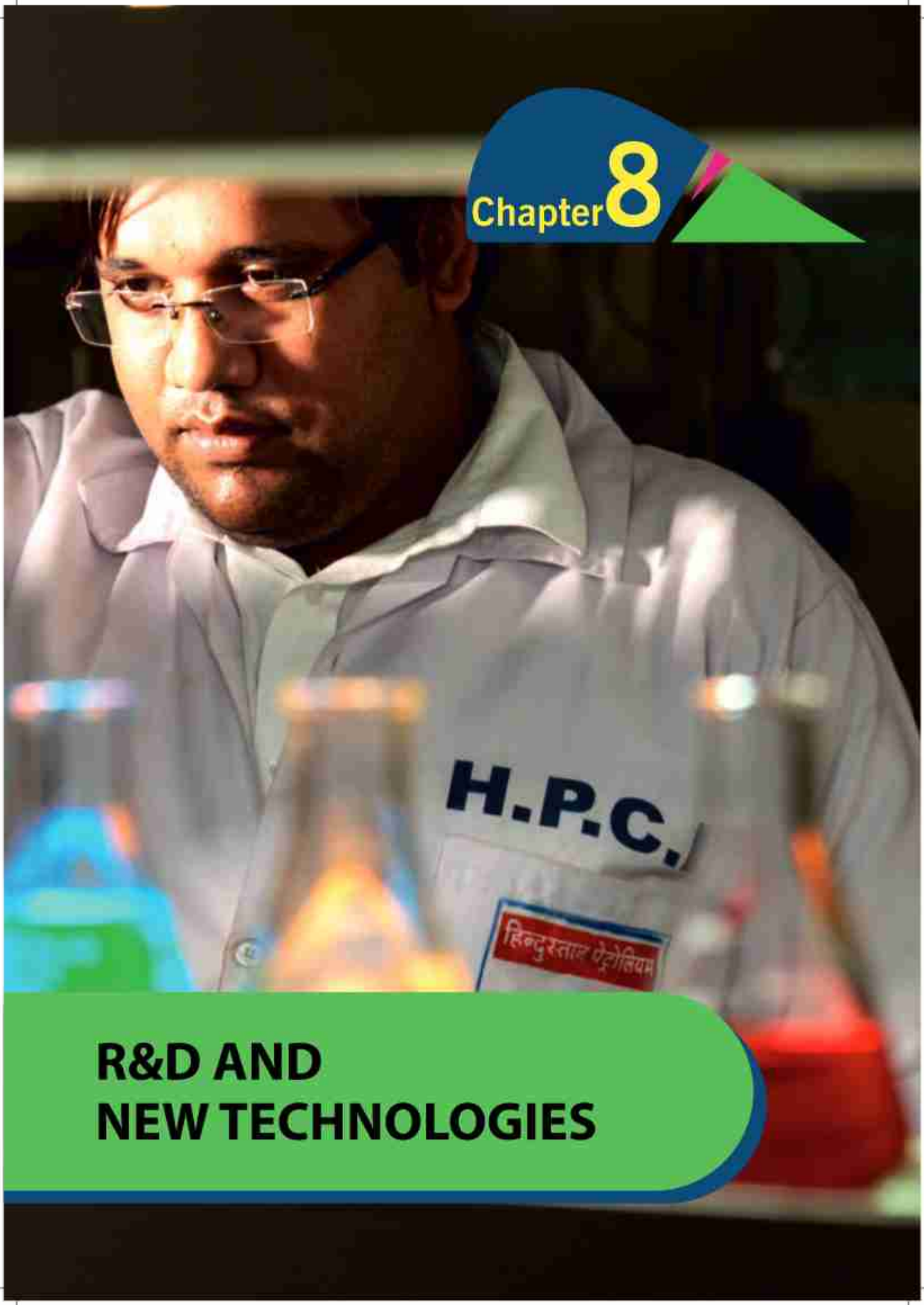
API- Acquisition, Processing, and Interpretation.



View of NRL's Numaligarh Refinery






Chapter 8
H.P.C.
R&D AND
NEW TECHNOLOGIES

# 8 R&D and New Technologies

## 8.1. Bharat Petroleum Corporation Limited (BPCL)

**8.1.1.** Bharat Petroleum's R&D plays an important role in developing novel technologies and providing innovative technological solutions to customers and stakeholders. Corporate Research & Development Centre (CRDC) at Greater Noida, Uttar Pradesh and Product & Application Development Centre (P&AD) at, Mumbai are proactively involved in adding value to the businesses through research activities. As a part of "Aatmanirbhar Bharat", CRDC has developed various novel and niche products/processes and is aggressively working to commercialize the same. In this context, following activities were performed during April-December 2022:

- With the continuous zeal for innovation and to foster "Aatmanirbhar Bharat" initiative, the R&D team at BPCL has mastered the process chemistry of Superabsorbent Polymer (SAP), using the in-house acrylic acid as feedstock, which is used in various hygiene products like diapers and other incontinence products owing to its excellent ability to absorb water many times its own weight. Today, SAP demand in India is met through 100% import. In view of this, based on in-house process know-how, BPCL has commissioned 200 Tons/annum (dry basis) continuous mode pilot plant at Kochi Refinery. The product developed by BPCL meets all the critical parameters of international benchmarks and is now marketed in India. Based on the experience gained, it is now targeted to set up commercial plant at Kochi Refinery.
- To reduce the country's dependency on imports through optimizing fuel consumption, the BPCL R&D team has developed LPG Burner with improved efficiency. The new energy efficient LPG cooking stove-'Bharat Hi-Star®' has thermal efficiency up to 74+1% (BEE 'Star 2' rating), which is 6-7% more than that of stoves available in the market. It is estimated to save about one cylinder per family every year. The technology has been licensed to 15 LPG stove manufacturers. More than 70,000 units are already sold in the market through BPCL LPG stove distributors across India. Bharat Hi-Star has won several prestigious awards including CII National Award for Excellence in Energy Management 2022, Economic Times Ascent National Award for Excellence 2022.
- Bharat HiGee Deaeration Technology was developed for efficient deaeration of Boiler Feed Water (BFW). After pilot scale (50 TPD) demonstration at R&D Centre, a commercial unit of capacity 150 TPD was commissioned at CDU 4 plant of Mumbai Refinery. Dissolved oxygen (DO) content of less than 5 PPB was recorded in the HiGee outlet water stream without the addition of oxygen scavenger leading to saving of about 10-15% of total inlet steam to steam deaerator. Considering this fact, typically, for a 2,500 TPD (BFW capacity) deaerator, it is estimated that 16-24 TPD steam can be saved. This can result into a $CO_2$ saving of 5,000 ton/ annum.
- Valorisation of bio-refinery by-product stream: *Precipitated silica from Boiler Ash for Tyre Industry application:* To valorize boiler ash that will be produced from BPCL's under-commissioning Bargarh 2G plant, an in-house process has been developed for precipitated silica production from rice husk ash with an efficiency of ~70% at laboratory scale. Currently, performance of produced silica for tyre manufacturing application is being evaluated.
- Clean fuel: Ethanol blended diesel is formulated using in-house developed additives and evaluated as per the test protocols. Based on the detailed characterisation and successful engine trials at Ashok Leyland engine testing facility, the product (ED5) has been

launched. In consultation with Army HQ, Sena Bhavan, field performance assessment has been planned with Army trucks.

- Digital tools: K Model is a web-based software patented technology developed by BPCL R&D for quick and accurate prediction of crude compatibility and optimization of numerous crudes within minutes as compared to weeks' time required by experiments for different crudes. The software has been made available over internet and predicts results rapidly (https://www.bpcl.kmodel.in). K Model enables to arrive at an optimum blend based on economics, availability and processing feasibility on real time basis, thereby promoting simultaneous evaluation of multiple crude mix options in quick time and take more informed decisions. This also facilitates feeding compatible crude oil mixture to refinery to maintain equipment health, smooth operation, energy saving and reduce carbon footprint.

- Real time optimization of refinery operation using BPMARRK® (An intelligent software tool) was carried out to prevent product quality giveaway, maximize margins, safety and compliance.

- To achieve corporate vision of Net-zero emission, BPCL R&D has collaborated with BARC to scale up indigenous alkaline water electrolysis technology for green hydrogen production. Based on the know-how, BPCL R&D is involved in development of manufacturing ecosystem required for electrolysers. A technology demonstration plant is also being designed. Furthermore, requisite infrastructure for benchmarking & evaluation of commercial electrolyser technologies (namely Alkaline & PEM) is being set up at BPCL-R&D.

**8.1.2. Likewise, R&D wing of P&AD-Sewree has developed unique lubricant products such as:**

- Engine oil for ultra-low emission BS-VI compatible heavy duty trucks & buses with the potential to extend engine oil drain interval and save fuel consumption.

- Premium high performance engine oil for higher CC scooters to provide superior engine protection and challenging performance requirements.

- Premium heavy duty Final Drive Axle Oil (FDAO) designed for Off-highway trucks and equipment's final drives, axles, bevel gears, and differentials, especially those operating under high loads and extreme temperatures.

- Ultra Long Drain Axle Oil with improved fuel efficiency. The product is meant for use in Rear Axles and Live Front Axles of commercial vehicles.

- High performance Mobile gas engine oil with extended drain interval for Buses & On-highway light and heavy-duty trucks running on Compressed Natural Gas (CNG).

- Premium quality anti-wear hydraulic oil eco-designed with Re-refined base oil, for use in all types of hydraulic systems, to reduce carbon footprint and contribute towards circular economy.

- Premium coolant for indirect cooling for Battery Electrical Vehicles (BEVs) and Internal Combustion Engines (ICE).

## 8.2. Engineers India Limited (EIL)

### 8.2.1. R&D by Engineers India Limited

**The Research & Development Division of EIL has been functioning since 1970.** Initially the Division was engaged in in-house capacity building for process engineering services through desk-top research, process modelling and simulation. The R&D Centre at Gurgaon was set upon the recommendation of MoP&NG and the Scientific Advisory Committee and started functioning in 1988-89. The R&D center has been a national facility for equipment oriented research and to facilitate absorption and adaptation of technologies. In addition, to carry out collaborative research, to develop scale up methodology and to provide hardware testing and diagnostic services were also key intents.

These efforts have resulted in development of more than 40 process technologies along with important hardware designs. R&D center

aligns well with the Government of India initiatives such as Make In India and Aatmanirbhar Bharat with the aim of propelling the nation towards becoming a technological hub. EIL-R&D has always been in the front line when it comes to making India self-reliantin the area of Oil, Gas and Energy through the development of technologies at its Gurugram R&D Centre. In this age of energy transition, EIL R&D has taken initiatives to pursue renewable & sustainable energy areas and chart out a path for transiting the nation towards Net-Zero by 2070 while at the same time ensuring new business avenues for the Company.

### 8.2.2. Technology Commercialization efforts during current year up to Dec'2022

Considerable efforts are being made for Commercialization of various in-house developed technologies/technologies developed in collaboration. Some of these include

- BEDP, DFR and pre-project activities for demo-scale Bio ATF plant at MRPL.
- DPR for 10 TPD ethanol production unit using captured $CO_2$ and $H_2$ produced from electrolyzer with NTPC.
- Revamp of CDU-3 desalter system at BPCL-Kochi Refinery using EIL-BPCL Desalter Technology.
- Supply of Basic Engineering Design Package (BEDP) for LPGTU under DCU revamp at NRL.
- Consultancy services for performance improvement of CDU heater through ENGRT-HTR™ software for HMEL.

### 8.2.3. Initiatives taken for strengthening technology tie ups

EIL has always explored synergistic potential with research organizations, educational institutes and research wings of other corporate. The collaborative efforts have resulted in development of many technologies and successful implementations of the same.

Following fresh tie-ups were formalized:

- Memorandum of Agreement (MoA) inked with Numaligarh Refinery Limited (NRL) for Development and demonstration technology for the Production of aqueous ammonia from ammonia rich sour gases at NRL.
- Memorandum of Understanding (MoU) inked with UOP LLC, USA for the potential deployment of EIL's TGTU technology offerings to customers globally.
- Activities initiated for signing of MoU with IIT-Kanpur for collaborative development of various technologies.
- Activities initiated for signing of MoU with CSIR-IIP and OECT for Joint technology development for Helium recovery from Natural Gas.
- Activities in advanced stages for signing of MoU with Permionics Membrane Pvt. Ltd. (PMPL) for joint development of technologies in the areas of membrane technologies.

**EIL also pursues participation in prestigious global consortia:**

- Process Science Technology Center (PSTC), an industry-academia collaborative research program initiated by University of Texas, USA.
- Fractionation Research Incorporated (FRI), a non-profit cooperative research organization based at Oklahoma, USA.
- Process Integration Research Consortium (PIRC), University of Manchester UK.

### 8.2.4. Technology development projects initiated

R&D Division is constantly monitoring the emerging technology contours and undertaking new initiatives in the area of technology development.

Some of the new projects initiated and ongoing projects are as below:

- Joint technology development for Helium recovery from Natural gas with CSIR-IIP and OECT.

- Development of solvent for recovering $CO_2$ from flue gases in presence of impurities.
- Development of technology for SAP (Super Absorbent Polymer) production in collaboration with BPCL.
- Development of Helical baffles in Heat Exchangers.
- Activities related to BEDP preparation for Production of Aqueous ammonia from Refinery Sour gases at Numaligarh Refinery limited.
- DPR Preparation for Coal to Methanol.

### 8.2.5. EIL has created IPR in both patents and trademarks form

As on Dec'22, 32 Live Patents and 35 applications pending grant are there. The highlight of patent portfolio is that almost 60% of filed patents have been commercialized. In addition, 21 granted trademarks along with 4 pending grant add to the IR strength.

The following Patents filed earlier were granted this year:

- Cross flow reactor
- Design of Desalter System
- A process for production of hot water, chilled water and electricity using solar energy.

**The following new patents have been filed during the year till December'22:**

- Apparatus and method for purifying and deodorizing industrial waste gases.
- A Conduit Support Structure of a Process Fired Heater.
- Method for Optimizing Fired Heater using a system.
- An improved configuration of vacuum distillation unit and process for separating components of reduced crude oil.

### 8.2.6. Start-up Initiatives

EIL R&D also remains fully committed to GoI's Flagship program for nurturing the Start-up Eco System within India by steering EIL's Start-up initiative "EngSUI". Under EngSUI, EIL is providing intellectual, infrastructural and financial support to the Start-ups. EIL funds the Start-up projects working in the field of Hydrocarbon, IT & IIOT, Renewable Energy & Storage, Nano-Materials, Waste to Energy, Health Safety and Environment. 7 IITs and 4 NITs have registered with EIL's Startup India Initiative. A total of 29 Nos. projects have been funded till date over 5 Rounds. Recently the sixth round of call of proposals has been launched.

## 8.3. GAIL (India) Limited

### 8.3.1. R&D & New Technologies

Oil and Gas PSU's face a challenging role that requires them to provide secure, affordable energy to consumers and customers worldwide while emphasising on critical need to address emerging climate change through net-zero initiatives. To meet these challenges, all oil and gas PSU's are investing in renewable energy projects to transition to cleaner energy sources and waste minimization. This includes decarbonizing their operations without interfering with core operations and waste valorizations towards circular economy etc. R&D plays a vital role in leveraging these energy transition and resource conservation opportunities for providing a wider, more sustainable mix of energy sources for the country's economic growth. In this direction, GAIL continuously emphasis on collaborative R&D works and accordingly pursue research works in the following research themes focusing on Waste valorization & Waste water recycling, $CO_2$ separation, pipeline integrity management Indigenous catalyst development and Hydrogen Initiatives etc.

- **Waste valorization & Waste water recycling:**

  Under this initiative, GAIL is developing hydro thermal co-gasification process in which biomass with effluent water from petrochemical plant is co-gasified for targeted production of hydrogen rich methane and nanometal incorporated carbon hydrides. The resultant nanometal hydride byproduct can be used in fuel cell,

battery applications as electrocatalyst. The outcome may provide a viable solution for treatment of industrial waste water while recovering valuables. This project is being pursued in association with IIT-Roorkee.

Further, GAIL has in association with IIT-M developed a lab scale process for purification of effluent water for its reuse/recycle in the plant using gas hydrate forming process which is considered "green process" as it produces minimum sludge and also energy-efficient. The lab scale process has shown nearly 75-90% separation efficiency and now the process is being tested in continuous bench scale mode.

- **$CO_2$ Separation:**

  GAIL is developing a novel high-performance $CO_2$ separation membrane based on mixed matrix membranes containing metal organic framework materials and graphene oxide in polyethersuphone support with high selectivity and permeability towards $CO_2$. Development of efficient membranes with high $CO_2$ separation efficiency that is thermally, chemically, and mechanically stable can enable easy enrichment of natural gas/biogas. This project is being pursued in collaboration with IIT-Guwahati.

- **Pipeline Integrity Management:**

  In pipeline integrity management, GAIL is developing an indigenous fiber optic-based intrusion and leak detection system by integrating the Distributed Acoustic and Temperature Sensing system in the existing OFC system. This system is being developed in association with IIT-Madras and shall use big data analytics, machine learning techniques to provide highly reliable, meaningful information about actual intrusions incidents and early detection of gas leakages.

- **Indigenous Catalyst development:**

  GAIL is pursuing a research project in collaboration with CSIR-NCL on indigenous development of post-metallocene based single site catalyst for polymer (HDPE) production. Under this initiative a Cromium-complex with imine ligands with high catalytic activity are synthesized in the initial phase. Further, research works focus on heterogenization of above homogeneous catalyst and modification of organic linkers for the improving its thermal stability.

- **Hydrogen Initiatives:**

  To support the GoI initiative in "National Hydrogen Energy Mission" for promotion of usage of green hydrogen, GAIL is also carrying out a pilot project on injection of green hydrogen in CGD network and evaluation of its impact in Natural gas pipeline in association with EIL and IIT-Kanpur. The hydrogen blended natural gas will be supplied to Avantika Gas Ltd, one of GAIL's joint venture with HPCL, for retailing of CNG to automobiles and supplying piped natural gas (PNG) to households. Currently, 2% of hydrogen is being blended and soon it will be increased to 3%. Further, GAIL is also in process of setting up 10 MW green hydrogen plant based on PEM water electrolyser (largest in India) in Guna, Madhya Pradesh. On commissioning, this plant shall produce nearly 4.3 metric tons of green hydrogen per day.

- **Centre of Excellence in Oil, Gas and Energy (CoE-OGE):**

  GAIL along with other Oil & Gas PSUs has setup a Centre of Excellence in Oil, Gas and Energy (CoE-OGE) at IIT-Bombay to carry out Industry relevant R&D works. In this aspect , for enhancing R&D efforts GAIL is participating in 5 no's mission mode projects in association with other oil and Gas PSUs in the area of; Structural Health Monitoring of P/L System, Development of Li-ion battery, Life Cycle Assessment of Petroleum Refineries/Petrochemical units considering Decarbonization and Tool Chain for Oil and Gas Pipeline Monitoring.

- **Patents:**

  In FY 2022-23, GAIL has filed 5 nos. of provisional Indian patents applications and so far, GAIL has been granted 19 nos. of patents (16 Indian+3 foreign) for innovative products, process and concepts.

## 8.4. Hindustan Petroleum Corporation Limited (HPCL)

**8.4.1.** HPCL has set-up its prestigious HP Green R&D Centre (HPGRDC) at Bengaluru in 2016, with a core purpose to make energy and chemicals accessible to everyone through innovation. HPGRDC is equipped with the state of art laboratories with all the advanced equipment, pilot plants and facilities to carry out cutting-edge research. The focus areas of research include developing refining technologies, products and catalysts, petrochemicals & polymers, lubricants & additives, upgradation of low value streams, novel separation technologies, process intensification, carbon capture, renewable energy and alternate energy. HPGRDC also provide advanced technical support to different refineries in India and abroad through trouble shooting services for refinery units, crude evaluation, catalyst testing and selection, Sulphur speciation, catalyst time on stream studies, etc. Additionally, HPGRDC is setting-up 5 new labs (namely, Hydrogen, Solar Energy, Bitumen, Water and Combustion Research) and a Global Technology Center.

The centre has filed so far a cumulative of 416 patents in India and Abroad and has obtained grant of 152 patents. During the year 2022-23 so far, 63 patents have been filed and 28 patents have been granted.

During the same period, HPGRDC has commercially demonstrated 11 new products/Technologies (taking its tally of Technologies & Products demonstrated to 47), the details of which are given below:

- **HP Therm-α:** HPGRDC developed HP Therm-α, thermic fluid which ideally suits for high-temperature heat recovery applications up to the temperatures 370°C (698°F) in liquid phase heat transfer systems. The heat transfer fluid, HP Therm-α, offers outstanding high-temperature performance up to 370°C (698°F), including excellent thermal and oxidation stabilities and superior corrosion properties.
- **HP Therm-γ:** HPGRDC developed HP Therm-γ, thermic fluid for high temperature heat transfer applications which possesses low viscosity and high thermal stability for consistent performance due to its ability to operate in vapor and liquid phases. It is ideally suited for heat recovery applications up to 380°C (720°F) in liquid phase heat transfer systems. The advantage of this thermic fluid is that it offers outstanding high-temperature performance up to 380°C (720°F), including excellent thermal and oxidation stabilities and superior corrosion properties.
- **HP FilmMax HT:** HPGRDC has developed filming corrosion inhibitor for hydrotreating units. Typically, Corrosion in the hydrotreating unit is caused by $H_2S$ and HCl formed during the hydrodesulphurization and dehydrohalogenation. The major desirable characteristics of any film forming amine formulations includes, corrosion mitigation and strong film formation. Filming Corrosion Inhibitor for hydro processing units DHT and DHDS was developed based on this concept. The performance of HP-FlimMax in VR was found to be satisfactory in terms of dosage and Iron content in the boot water.
- **HP HyTherm-ω:** HPGRDC developed HP Therm-ω, a high-performance synthetic heat transfer fluid designed to meet the demands of liquid or vapor phase systems, and indirect heat transfer. With an operating temperature of 20 °C to 240 °C (59 to 464 °F) in liquid phase systems and an operating temperature of 241 to 300 °C (465 to 572°F) in vapor phase systems with low freeze point 15 °C (68 °F), HP HYTherm-ω is excellent for use in heat transfer fluid systems, which require precise temperature control, due to its ability to operate in vapor phase.

- **HP BCA:** HP-Bottoms cracking Additive (HP-BCA) is designed for enhanced bottoms conversion in FCCU. Additive was designed based on fine tuning acidity, accessibility and attrition of the raw materials. No raw materials were imported for the additive. The developed additive is scaled up to 25 tons and demonstrated at VR-FCC unit. HP-BCA has reduced ~0.6% bottoms conversions when compared to base case and its activity is at par with benchmark additives.
- **HP Shine Pro:** A premium high-gloss thinner that provides a premium superior finish. It has excellent paint solubility, is fast drying and can be used with any oil soluble paint.
- **HP EGIN:** HP-EGIN (Ethanol storage & Gasohol corrosion INhibitor) is a cost-effective corrosion inhibitor with superior performance used to mitigate corrosion issues during the storage, blending, and transportation of neat ethanol and ethanol-blended fuels. The performance evaluation studies using NACE TM-01-72 show B++ rating for the carbon steel metallurgy. HP-EGIN does not alter any of the properties of gasoline and can be used in various marketing and distribution areas.
- **PoWer 95:** An additive to boost RON of MS to 95. PoWer 95 can withstand higher compression ratios during the combustion cycle extracting better performance from the engine. PoWer-95 is an eco-friendly non-metallic additive that reduces engine knocking & improves emission, thrust power output. It further improves engine efficiency, reduces fuel consumption and adheres to IS 2796:2017 specifications for BS-VI grade gasoline.
- **HP DAK:** De-aromatized Kerosene (HP-DAK) produces de-aromatized hydrocarbon solvents from kerosene range hydrocarbon feed stocks. These de-aromatized hydrocarbon solvents are useful in numerous applications such as production of drilling fluids, adhesives, aerosols, cleansing agents, detergents, cleaning metal articles etc. Presently HPCL is setting up of HP-DAK demonstration unit of capacity 52 KTPA at Mumbai Refinery.
- **HP-THERMOPRO (W):** Fouling of refinery process equipment is a common problem resulting in severe economic penalties. Antifoulant is required to mitigate fouling by keeping them in dispersed state and stopping deposition on the preheat exchanger surfaces. HP THERMOPRO-W is a cost effective antifoul ant formulation, especially for mitigating fouling in Waxy crude processing units. Field trials were completed successfully at HPCL Mumbai refinery and product is in continuous usage after that.
- **HP Laundry Sanitizer:** HPGRDC has developed disinfecting solution for hygienically clean laundry. It is environmental friendly, aesthetically pleasing and cost effective. HP-Laundry Sanitizer exhibited better anti-microbial performance (99.95%) compared to well-known commercial product (99.7%) in the Market. The product was distributed to R&D personnel and feedback was positive.

**8.4.2.** Also, during the year 2022-23 till now, 14 lube products have been launched & commercialized viz HP Neosynth S 5W30, HP Neosynth S 10W30, HP SYNGEAR 75W 70 (T), HP Gear Oil XP 80W-90, HP Gear Oil XP 140, HP Enklo EE Hydarulic Oil, HP Enklo HVI Plus 32, HP Enklo FRPS 46, HP Cruise Premium S 20W50, Rakshak Engine Oil CI4 10W30, HP Enklo HLP 32, HP Enklo HLP 46, HP Enklo HLP 68 & Novel Synthetic Copper Drawing Oil.

## 8.5. INDIAN OIL CORPORATION LIMITED (IOCL)

**8.5.1.** IndianOil R&D over its illustrious history of last 50 years of untiring work toward creating self-reliance is working towards following key challenges as replacing imports of technologies/ products for Atmanirbhar Bharat through in-house research and development, preparing for energy transition by optimizing, localizing and replacing carbon-based energy options through commercially and

environmentally sustainable business solutions, meeting market pull challenges by expediting developmental cycle through collaboration with reputes research/ academic institutes, creating USP through product differentiation to protect margins and give first mover advantage to the Corporation and protection and commercialization of knowledge through aggressing patenting and licensing.

Cutting edge research is carried out in its core areas of expertise like fuels & lubricants, refining technologies & catalysts, petrochemical & polymers. The R&D efforts in sunrise areas like Nano technology, Solar, Bioenergy, Hydrogen, Fuel Cell, and energy storage provide the much-neededfuture direction. Presently, with a massive portfolio of **1,615 filed patents with 1,514 effective patents** as of January 2023, IndianOil R&D Centre has been able to **double its granted patent portfolio in last 5 years.** During the year 22-23, major highlights of the work by IndianOil R&D Centre is as follows:

**8.5.2.** IndianOil R&D Centre's work for development of catalysts and process technologies has made a significant impact towards **"Atmanirbhar Bharat"** especially in competitive and licensor-controlled areas dominated by MNCs. Major developments in 2022-23 till Jan'23 are:

- Successful commissioning of 400 kTA grass-root **indJet®** unit at Barauni Refinery for production of ATF meeting IS specifications and 80 kTA grass-root **indSelectG®** unit for cracked gasoline desulfurization at Guwahati Refinery using in-house catalysts.
- In-house developed **Ind-CokerAT** technology selected for revamp of DCU at Digboi Refinery from 170 to 220 kTA to handle additional heavy VR during the capacity expansion project.
- 2,395 MT of in-house catalysts & additives and adsorbent supplied to various Indian refineries with royalty earning of ₹ 13.77 crore in 22-23 till Jan'23.
- A novel catalyst Residual Life Assessment Model developed for DHDT unit using Statistical Machine Learning algorithm to track catalyst life with changing process and feed variables to help refiners decide on operational adjustments to extend catalyst life.

**8.5.3.** IOCL R&D's continuous efforts have not only helped to achieve self-sufficiency in domestic requirements but during 2022-23 the Centre has focused on the development of long life, energy efficient lubricants & greases to meet customers' needs and provide import substitution. From April'22 till Jan'23, 112 no. lubricant formulations were issued.

**8.5.4.** IOCL R&D, working towards self-reliance has taken an extraordinary step in line with the vision of Hon'ble PM, by developing **AVGAS 100 LL** formulation leading to manufacture in India at Gujarat Refinery to meet domestic demand of aviation gasoline for use in turbocharged aircraft reciprocating piston engines.




AVG 100 LL Launch

Field trial of in-house developed **Army Winter Grade Diesel** for high altitude areas by Army in Kargil completed in 22-23 to establish excellent cold flow properties while meeting both the BS-VI HSD and JSS specifications. IOC R&D supported with extensive studies on fuel quality, stability and additive formulations for launch of **M15 trial** by Union Minister of State for Petroleum and Natural Gas at Tinsukia, Assam. Successful field trials at Army location in Sikkim & Leh using in-house formulated **Low Sulfur Low Aromatics (LSLA) Kerosene completed** to give advantages of lesser pungent smell, low smoke & 60% less carbon deposits. **Green Combo solutions** for Heavy duty vehicles i.e Xtragreen diesel with innovative lubricant solution of axle, gear and

engine oils certified to provide ~9-10% fuel economy improvement by leading STU, Tata and Govt fisheries department. **Dual fuel (DME & Diesel) Dost** vehicle developed in collaboration with IIT Delhi and M/s Ashok Leyland with partial funding from DST.



M15 Launch

**8.5.5.** Working towards import substitution Successful design and fabrication of the largest and smallest ever **IPIG tools of 28" and 8" diameters.** IOCL now has 9 sizes of indigenous tools in its kitty catering to more than 95% of captive demand for inline inspection of crude and product pipelines. The indigenously developed **INDScan®** IPIG tools used for ~1,000 KM inspection since inception in July'2022. Developed an in-house design for "Vapor Recovery System" with dual advantage of enhanced absorption efficiency with improved recovery of upto 95% and higher cycle life of activated charcoal bed.

**8.5.6.** With eye on changing market needs and shift towards non-fossil fuel energy options, IndianOil R&D Centre is working to develop technological solutions to increase **petrochemical intensity of refineries.** For this, R&D Centre is working on many fronts like development of niche products, improving quality and range of existing product basket and in-house development of production catalysts. As part of development of **ZN catalyst,** R&D Centre has developed in-house **PP catalyst** and the same is successfully scaled up to 100 kg level in 22-23. Commercial trial completed at Panipat Naphtha Cracker wherein higher activity than incumbent commercial catalyst was observed with IOCL's catalyst. Using the advantage of in-house developed and patented **Drag Reducing Additive (DRA)** technology that was licensed to M/s Dorf Ketal Chemicals last year, >1,700 KL DRA worth ~10 million US$ has been manufactured and supplied for IOCL, HPCL, BPCL and HPCL-Mittal pipelines. In 22-23, MOU is signed with M/s Ion Exchange India Limited for scale-up and commercialization of in-house developed **Octamax catalyst.** The catalyst has been successfully scaled up to a pre-commercial scale of 2,000L.

**8.5.7.** IndianOil R&D Centre is untiringly working in alternative energy areas to provide renewable energy solutions like 2G Ethanol from agri-waste, fuel cell technology for automobiles, bio-diesel production from $CO_2$, solar power, and energy storage devices etc.

- In domain of biofuels, **10 TPD demonstration plant** at Panipat for in-house developed 2G ethanol technology with onsite enzyme production is under advance stages of completion. 100 TPD Biomethanation plant commissioned at Jaipur for CBG production meeting specification using in-house developed **"IBG-Max"** technology.
- The **Agri-Elite technology** for producing premium quality manure/ Bio-fertilizer production, from CBG plant, successful validated with in-house trial & at GB Pant Agriculture University, Pantnagar on rice with 22% increment in yield using 25% replacement of inorganic fertilizer with organic FOM. Also, the bio-assisted crop residue decomposer, **StubVorous,** is successfully demonstrated at 10-acre fields in Haryana and Punjab during paddy harvest season of 2022. Developed novel scheme **"eBioAT"** for sustained and uninterrupted operation of biological section of refinery ETP for implementation at IOCL refineries. **"ASP Kit-Microbiological"** for detection and quantification of microbes specific to aeration tank of refinery effluent treatment plant (ETP) developed and validated at two IOCL refineries for monitoring of biological health of ETP.
- SuryaNutan, an indoor solar cooking system developed by IOC R&D Centre, is a stationary, rechargeable, and always kitchen connected indoor cooking solution capable catering cooking needs of Indian households. It is a revolutionary cooking solution that works on both solar and auxiliary energy sources simultaneously, making it a reliable cooking solution for India.



Commercial Launch of Indoor Solar cooking system by Hon'ble Prime Minister

Recently, Hon'ble Prime Minister dedicated the twin-cooktop model of the IndianOil's Indoor Solar Cooking System and also flagged-off its commercial roll-out as part of India Energy Week 23 at Bengaluru.

Last year, Sh. H.S. Puri, Union Minister of Petroleum & Natural Gas and Housing & Urban Affairs, launched the pilot launch of SuryaNutan as part of the IndianOil R&D Golden Jubilee Function. Field performance data collected through 50 Nos. of SuryanNutan Pilot trial deployed in 5 different cities (i.e. Leh, Lakshadweep, Gwalior, Udaipur and Delhi-NCR) of India with varying solar radiation intensity and cooking habits. Based on the feedback received, a twin-cooktop Indoor Solar Cooking system is designed offering more flexibility and ease to the users.



Pilot Launch by Hon'ble Minister of MoPNG & HUA

For wide scale commercialization, IndianOil has now empaneled 10 Indian vendors for manufacturing, marketing, installation & providing after sales service for commercial launch of the product.

- Around the project to assess multiple hydrogen production pathways based on indigenously available resources through pathways as solar electrolysis, biomass gasification and bio-methanation the work is in full swing to establish a Green Total Hydrogen Production capacity =~1 ton per day to be used for demo in 15 fuel cell buses for establishing the efficacy, efficiency and sustainability of the processes and the fuel cell technology. The first set of buses are expected to arrive before Mar'23 end. IndianOil has also commissioned India's first fuel cell grade hydrogen dispensing station at Gujarat Refinery. Two prototypes fuel cell buses provided by Tata Motors are being refueled at new commissioned facility at Gujarat Refinery and running on MoRTH approved routes in Vadodara City.



Secretary, MoPNG using H, Bike

- During the year, **Aluminium Air Battery** integrated with 4W (TATA Tiago) and 3W (Mahndra Trio) and e-rickshaw. Pilot test completed on Mahindra e-Auto while the trials further planned in TATA Tiago & e-rickshaw.

**8.5.8.** **Readymade Bituminous Mix for Pothole Patchwork** developed for use in any season and with shelf life of >6 month using package of Cationic Bitumen Emulsion and customized Bitumen Emulsion. Trial successfully conducted on roads in Lucknow & Mumbai. Successfully developed 2G residue-based **Bio-CRMB** with performance characteristics at par with conventional products. Trial road planned within R&D centre to demonstrate the product.

**8.5.9.** IndianOil R&D Centre is working in the **Nano Technology** area on different product platforms to achieve superior performance characteristics through development and commercial launch inpast of products as **Xtra-Tej and Indane Nanocut.** During 22-23, industrial trial of nano additized Indane **Xtra-Tej at M/s Raja Udyog Pvt. Ltd, Kolkata** has reported substantial savings in consumption to the tune of 7-8%. IndianOil R&D Centre has supported for testing the compatibility of elastomers with DME/ LPG blend as part of work towards **5% DME blending in LPG** for pilot launch.

**8.5.10.** IndianOil R&D Centre spearheads the **Start-up funding scheme** which has seen incubation of 24 start-ups in first 2 rounds of funding. IndianOil is closely involved in mentoring the Start-ups thru hand holding by internal Process Owners till achievement of Proof of Concept. In round 3 concluded in 22-23, 12 nos. of startups further selected for funding and incubation under with committed fund value of ₹ 17.98 crore. Total 50+ IPRs (45 patents, 6 copyrights, 6 trademarks & 3 Design) generated under IOSUS till date. The combined valuation of IndianOil incubated startups (Round 1 & 2) is ₹ 2,565 crore as per 3rd party valuation.




## 8.6. Numaligarh Refinery Limited (NRL)

### 8.6.1. R&D Activities

Specialty Chemical division of the Company has been actively playing an essential role on strengthening research and development capability of the organization through partnership with academia and research organizations. R&D activities presently pursued by NRL are as follows:

- **Research Collaboration with Engineers India Limited**

  As per Govt. of India guidelines on collaborative research and development (R&D) among PSUs, NRL and EIL have entered into a Memorandum of Understanding ("MoU") dated 31.03.2022 to exchange scientific knowledge, encourage joint research in the field of hydrocarbon, petrochemicals, energy technology, and commercialize such jointly developed technologies. Both the parties have already identified a list of projects for joint development of its technology with separate Memorandum of Agreement having defined objectives, scope of work, roles of parties, deliverables, cost and royalty sharing etc.

- **R&D Collaboration with CSIR: NEIST**

  NRL entered into a framework collaboration with CSIR: NEIST for Identification of critical research areas pertinent to microbial remediation, soil chemistry, functionalization of low grade / weight hydrocarbons and subsequent upgradation, training of scientists, technologists and officials in specialized areas. As part of this collaboration, a project "Removal of Phenol from sour & strip water, it's re-use and value addition" has been taken up with the aim to reduce water foot print and to produce value added chemicals.

- **NRL Centre of Excellence for Sustainable Material at IIT-Guwahati**

  NRL had set up 'NRL Centre of Excellence for Sustainable Material' at IIT Guwahati to take up R&D activities for development of environmentally sustainable materials from various refinery and bio refinery streams. Presently the centre is carrying out research activities on "Development of Biodegradable Plastics from Oil and Bio-Refinery Streams".

The objective of the project is pilot-scale development and production of blown-film grade biodegradable plastic (poly ε-caprolactone) from both oil and bamboo based bio-refinery streams like oily sludge, wax and furfural, through an efficient and environment-friendly approach.

- **R&D Collaboration with CSIR IIP Dehradun**

  A project titled "Studies for Efficient Utilisation of UCO stream generated from upcoming Ebullated Bed (EB) Resid Hydrocracker under Numaligarh Refinery Expansion Project" has been taken up to carry out studies to convert un-converted oil (UCO) into value added products or speciality products like Bitumen.

- **Research Project at St. Edmund's College, Shillong**

  NRL has engaged St. Edmund's College, Shillong for research study on Utilization of cyanobacteria in the bioremediation of crude oil, hydrocarbon storage tank bottom sludge, and ETP hydrocarbon sludge and its environmental biotechnology implications.

### 8.6.2. Benefits derived/expected as a result of above R&D activities

1. Joint Technology Development on Overground Sulphur Seal: NRL and EIL are entering into a Memorandum of Agreement (MoA) for joint development and commercialization of Above Ground Sulphur Seal technology.

2. Technology for removal of phenol from sour water and stripped water: Development of indigenous technology to remove phenol from sour and strip water will reduce water foot print and produce value added chemicals. Under this project, lab scale demonstration for phenol removal is successfully completed and design and fabrication of pilot plant is ready for demonstration at NRL site.

3. Production of bio-degradable plastic: Development of indigenous technology for production of biodegradable plastic will help in replacing non-biodegradable polythylene based packaging and contribute towards reduction of pollution from solid waste. Bio-degradable plastic will be a value added stream for the Bio Refinery. The aim of the project is to convert "Furfural", one of the by-products of the ABRPL, to biodegradable polymer "Polycaprolactone (PCL)". Under this project, a pilot plant for research study on polymer material has been installed at NRL-CoE, IITG.

4. Technology for conversion of Unconverted Oil (UCO) into value added products: Development of indigenous technology to produce value added speciality products from UCO. The extensive R&D study to formulate desirable VG grade Bitumen by employing maximum UCO, so far did not yield a positive result. Further new Experiments are being envisaged to achieve requisite characteristics of VG bitumen from Vacuum Tower Bottom L-398, (UCO); using highly aromatic cutter, such as FCC residue or any other aromatic rich stream likely to be available at NRL post expansion.

5. Bio-remediation through Cyanobacterial Culture: The aim of this project is Utilization of cyanobacteria in the bioremediation of crude oil, hydrocarbon storage tank bottom sludge, and ETP hydrocarbon sludge. Under this project, significant development on culture of cyanobacteria samples collected from NRL have been achieved and bio-accumulation study with the cultured bacteria on hydrocarbon sludge is being investigated.

## 8.7 Oil and Natural Gas Corporation (ONGC)

### 8.7.1 R&D BY ONGC

ONGC has established separate R&D institutions to undertake specific activities in key areas of Exploration, Drilling, Reservoir Management Production Technology, Ocean Engineering and Health, Safety and Environment (HSE) Management. Regional laboratories have also been established at various Assets and Basins of ONGC to support these Institutes. ONGC through its R&D Institutes is pursuing adaptation/ customization and applied research. Gas Hydrate Research & Technology Centre (GHRTC) at Panvel, Navi Mumbai caters to fundamentals of gas hydrates, research for exploration and potential exploitation of gas hydrates, techno-economics and

commercialization of gas hydrates in a safe and environment friendly manner are being carried out.

In the year 2022-23 too, ONGC carried out several R&D studies for conventional and Non-conventional Hydrocarbons at its different Institutes.

### 8.7.2. Industry-Academia Participation

ONGC has entered into a Memorandum of Collaboration (MoC) with Pan IIT in 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. Pan IIT is a consortium of seven premier Indian Institutes of Technology namely, IIT-Kharagpur, IIT-Kanpur, IIT-Madras, IIT-Mumbai, IIT-Delhi, IIT-Guwahati and IIT-Roorkee. This is a long-term initiative for sustained research, development and capacity building. Under this program, ONGC Institutes/R&D centres have taken up 40 R&D Projects in 4 phases under memorandum of collaboration signed between ONGC and IIT-Kharagpur (On behalf of seven IITs). The R&D Programme has a definite objective for developing indigenous technologies to enhance exploration & exploitation of hydrocarbons. As on 31.12.2022, 35 projects have been completed and 5 projects are in progress.

8.7.3. **R&D Initiatives by ONGC in the field of IOR/EOR activities:** ONGC puts efforts on continuous basis for performance analysis of fields and suitable corrective measures are taken for improvement in the field performance and recovery. In fact, improving recovery factor to 40% is one of the strategic goals of ONGC. The extraction efficiency or recovery factor of fields operated by ONGC is comparable with the International standards; however, efforts are further being made for its improvement. The salient R&D measures to enhance recovery factor are as under:

- **Low Salinity Water Flood (LSWF) Pilot in Mumbai High South field:** The project has been approved by the board under MHSRD Phase-IV. Further, LSWF screening report was approved by DGH in June-2019. The pilot is under implementation. The injection started in May, 2022. It envisages to improve incremental recovery by 0.8% by 2035.
- **Commercialization of ASP project in K-IV pay of Jhalora Field:** The implementation of the ASP project is considered from Mar-22. The project envisages CAPEX of ₹ 125.24 crores. Implementation of project will envisages an incremental oil of 0.774 MMT by 2036-37.
- **Immiscible gas injection in Borholla field:** The plan envisages incremental oil of 0.30 MMT with recovery of 37% and CAPEX of ₹ 64 crore. The process initiated though two wells in December 2016 on pilot scale. This is the first time EOR has been implemented successfully in Assam. Project started from Aug-2022.
- **Gas Assisted Gravity Drainage in Kasomarigaon field:** The plan envisages incremental oil of 0.31 MMT with recovery of 33% and CAPEX of ₹ 75 crore. FR approved and project is under implementation. Likely completion by Q4 2022-23.
- **Gravity Assisted Immiscible Gas Injection (EOR) in Khoraghat Field:** The plan envisages incremental oil of 0.15 MMT with recovery of 23% and CAPEX of ₹ 157 crore. FR approved and project is under implementation. Likely completion by Q4 2022-23.
- **Down dip air injection in Santhal:** 2 patterns with 6 Air injectors and 3 new producers have been approved and under implementation. Envisaged incremental oil is 0.222 MMT.
- **Full field Polymer Flood in Bechraji field:** Full field polymer flood study carried out before pilot results to reduce field implementation time. The incremental gain is 5,057 $m^3$ in 13 Months against FR envisaged 4,960 $m^3$. The full filed application of the scheme has been approved and is under implementation. The scheme envisages drilling of 63 new Development Locations (Oil Producers: 35 & Polymer Injectors: 28) with an incremental oil of ~1.8 MMT by 2045-46.
- **Santhal Field:** Simulation study carried out to optimise the existing ISC scheme and target the down dip oil below 940m MSL

contour by pattern air injection. Inputs 15 Additional air injectors considered from FR (Air injection to increase from 7 to 13 LCMD). It envisages incremental oil gain of 2.6. MMt (~5 % over BAU) and recovery 43% by 2035. The down dip air injection is approved and under implementation.

- **ASP Pilot in Sanand:** Approved by ER Committee. Envisaged incremental oil 6,450 $m^3$ (cubic meter).
- **High Pressure Air Injection Pilot in Nawagam:** Approved by ER Committee. First time Air injection in light oil shall be tested. Envisaged incremental oil 37,000 $m^3$.
- **$CO_2$ EOR as Carbon Capture, Utilisation and Storage (CCUS) in Gandhar Field:** This shall be first $CO_2$ EOR for CCUS in India. Feasibility study of $CO_2$-EOR as CCUS in Gandhar field was carried out. The study envisages $CO_2$ injection from 2025-26 and production from 2026-27. The project envisages drilling of 75 new wells and $CO_2$ injection @ 1500 tpd for 20 years. Incremental production is envisaged to be ~4.2 MMT of O+OEG by 2045-46 (Oil ~3.2 MMT+Gas ~1 BCM). Around 6.5 MMT of $CO_2$ is expected to be sequestered during the project life.

### 8.7.4. R&D Patents Registered by ONGC

R&D is one of the key driver of productivity and economic growth of any country. ONGC too has always encouraged creativity and innovation through its extensive R&D programme with an aim to contribute to the social, cultural and economic development of India. Intellectual property (IP) generation in ONGC is mostly a result of R&D carried out at its numerous institutes and work centres, each dedicated to its specializations in the exploration & production value chain. During the current year 2022-23 upto December, 2022, ONGC has obtained 10 patents, filed 8 patents. Besides, it has registered 1 copyright and filed 1 copyright application.

The details are given below.

**a. Patents obtained by ONGC:**

- Microbiological Method of prospecting for Hydrocarbon Exploration.
- Composition and Method for preparation of a fracturing fluid.
- Novel Equipment for the dissociation of gas
- A process for removing hydrogen sulphide and gainfully recovering carbon dioxide from waste gas.
- Cement composition with improved properties for Oil and Gas wells.
- Method for producing gas hydrates using cyclopentyl methyl ether.
- Innovative low temperature breaker system suitable for fracturing ultra low temperature indian reservoirs.
- Strategic enhancement of Lignite Biomethanation by Fungal Pretreatment.
- Recovery of Heater Treater Gas For Fuel Gas Purpose.
- A method for the dissociation of gas hydrates.

**b. Patents filed by ONGC:**

- A system and method for quantitative estimation of thermal maturity of crude oil (PCT Application).
- A method for identifying Hydrocarbon Bearing Zones in Basement Reservoirs.
- Catalyst for $CO_2$ Methanation Reaction having high activity and long term stability and process thereof (Filed in 04 countries-UK, Japan, Germany, US).
- Composition for Completion fluid for use in ultra high pressure and high temperature applications.
- Method of evaluating Physio-Chemical Conditions and Events During Diagenesis of Sedimentary Rocks.

**c. Copyright registered by ONGC:**

- SAS (System Analysis of Sucker rod pump).

**d. Copyright filed by ONGC:**

- "Oil Field Analyser (OFA)" Software for Data Analysis for Oil Field.

### 8.7.5. New Technologies inducted in ONGC

Concerted efforts to upgrade and induct technology are being continuously made in ONGC as per the industry requirement. Salient features of the technologies evaluated/ inducted during the year 2022-23 are given below:

- **Gamma Detector System (GDS):** This new system will be used for measurement of gamma activity of irradiated samples for recently established Ar-Ar dating facility. With this, the Lab is fully equipped to take Ar-Ar dating work.
- **SPECTRALL:** Yet another cutting-edge research facility has been added as part of Remote Sensing & Geomatics domain in the form of a field portable spectroradiometer. The facility will help undertake multiple new initiatives and leverage the interpretive confidence of spectral classification being undertaken presently with the help of standard library spectra.
- **New modules in EXPLORE-Integrated Data Platform:** EXPLORE (copyright© 2018) is an innovative, integrated and unified Exploration data management platform serving the entire Exploration value chain since 2016. During the year, two new powerful modules such as **Explore-GeoMap** and **Explore-Insights** were published to enrich the experience of stakeholders based at Corporate, Basin and Forward Base levels.
  - ✓ **Explore-GeoMap** aims at visualizing each and every entity pertaining to polygon data such as Acreage in terms of Shape or GeoJSON formats, point data such as Locations & Wells, Geo-referenced images etc. available in EXPLORE ecosystem on a Map layer. This will facilitate users, an interactive, fast and state of the art Mapping service right on their Desktop web Browser in an integrated environment wherein information pertaining to different entities are available with just a few clicks.
  - ✓ **Explore-Insights** provisions interactive, intuitive, powerful & drill-through dashboards built on top of data available in EXPLORE platform with an objective of Exploration data analysis to have a single source and a single version of truth. The dashboards for entities such as ACREAGE, LOCATION, WELL (DGR & EWIP), DISCOVERIES, ACQUISITION comprises of interactive charts which are supplemented by tabulated data. Presently data is being visualized at Basin and ONGC levels and are built so that powerful insights and learning can be derived to assist in informed decision making.
- **Reserves Ultima (PRMS):** Automated preparation of a highly complex and sought after report namely **Accretion Pattern report** for Basins & Field levels was achieved and integrated with the in-house software to allow REC group to generate the same with just a single click. Field level REC data since 1995 for all fields of ONGC has been successfully migrated to the new PRMS compliant database model. Successfully incorporated Business intelligence BI visualizations in the in-house developed software. Furthermore, a number of interactive, intuitive and drill through visualizations have been build such as Field Growth in terms of Inplace and EUR, Field wise positions etc to have a bird's eye view.

### 8.7.6. Benefits achieved through R&D studies

All the R&D projects undertaken by ONGC facilitated speedier and effective E&P activities of ONGC. R&D activities carried out by the Institutes have helped in enhancing the growth of the company by ensuring high success-ratio including enhancement of Reserves through finding new oil in existing petroleum provinces using state of the art technology available in the company. R&D activities have also facilitated in improving recovery factor, incremental oil gain, mitigating complex challenges of exploration in Frontier basins, deep-water blocks and to tap un-conventional energy resources.





Chapter 9

# BIO-FUELS

# 9 Bio-Fuels

## 9.1. Non-Conventional Energy

India is one of the fastest growing economies in the world. The development objectives focus on economic growth, equity and human well being. Energy is a critical input for socio-economic development. The energy strategy of a country aims at efficiency and security and to provide access which is environment friendly and of an optimum mix of primary resources for energy generation. Fossil fuels will continue to play a dominant role in the energy scenario in our country in the next few decades. However, conventional or fossil fuel resources are limited, non-renewable, polluting and, therefore, need to be used prudently. On the other hand, renewable energy resources are indigenous, non-polluting and virtually inexhaustible. India is endowed with abundant renewable energy resources. Therefore, their use should be encouraged in every possible way. Biofuels are derived from renewable biomass resources and, therefore, provide a strategic advantage to promote sustainable development and to supplement conventional energy sources in meeting the rapidly increasing requirements for transportation fuels associated with high economic growth, as well as in meeting the energy needs of India's vast rural population.

## 9.2. Ethanol Blended Petrol (EBP) Programme

The Government through Oil Marketing Companies (OMCs), is implementing Ethanol Blended Petrol (EBP) Programme under which, OMCs sell ethanol blended petrol with percentage of ethanol up to 10%. In 2001, Government of India launched three pilot projects, two in Maharashtra and one in Uttar Pradesh for supplying ethanol blended petrol only to the retail outlets under their respective supply areas. Apart from the above field trials through pilot projects, R&D studies were also undertaken simultaneously. Both pilot projects and R&D studies were successful and established blending of ethanol up to 5% with petrol and usage of ethanol blended petrol in vehicles. Accordingly, Government of India, with effect from 01.01.2003 resolved to supply ethanol blended petrol in nine States and four Union Territories for sale of 5% ethanol blended Petrol.

This Programme is aimed at achieving multiple outcomes such as:

- Addressing environmental concerns,
- Reducing import dependency, and
- Providing boost to agriculture sector,

In order to augment the supply of ethanol, the Government on 10th December, 2014, decided to procure ethanol produced from other non-food feedstocks besides molasses, like cellulosic and ligno-cellulosic materials including petrochemical route. It was also decided to administer the price of ethanol under EBP Programme.

In ESY 2018-19 sugar and sugar syrup were allowed for the first time for ethanol production to support the industry in liquidating their excess stocks. Further, in ESY 2020-21, surplus rice available with the Food Corporation of India (FCI) and maize have also been allowed for the production of ethanol.

With these decisions, the availability of ethanol for the EBP Programme is expected to increase significantly.

During Ethanol Supply Year (ESY) 2021-22, (01.12.2021-30.11.2022) 433.6 crore litres of ethanol was blended in petrol resulting in a blending percentage of 10.02% by PSU OMCs, which is the highest ever under the EBP Programme. The Public Sector OMCs achieved the target of 10% blending of ethanol in petrol in June, 2022 much ahead of the target date of November 2022.

With the approval of the Cabinet, the Ethanol Supply Year (ESY) from 01st November 2023 onwards has been redefined as ethanol supply period from 01st November of a year to 31st October of the following year.

For ESY 2022-23, the Government has fixed an enhanced remunerative price for ethanol procurement based on raw material utilized as under:

| Raw Material Ethanol | Ex-mill price in ₹/litre |
|---|---|
| C heavy molasses | 49.41 |
| B heavy molasses | 60.73 |
| Sugarcane juice/sugar/ sugar syrup | 65.61 |

For ESY 2022-23, the Public Sector OMCs have fixed an enhanced remunerative price for ethanol procurement based on raw material utilized as under:

| Raw Material | Ex-mill price in ₹/litre |
|---|---|
| Damaged Food Grains | 55.54 |
| Surplus rice issued by FCI | 58.50 |
| Maize | 56.35 |

* GST & transportation charges are to be paid over and above these prices.

**9.2.1.** For increasing the use of biofuels, a roadmap for Ethanol Blending in India 2020-25 was prepared by an inter-Ministerial Committee and placed in public domain on World Environment Day i.e. on 5th June, 2021. This roadmap provides guidance to achieve the target of 20% ethanol blending in petrol by bringing all stakeholders together. Further, the National Policy on Biofuels-2018 was amended in June, 2022 which inter-alia includes:

i) allowing more feedstocks for production of biofuels,

ii) advancing the ethanol blending target of 20% blending of ethanol in petrol to ESY 2025-26 from 2030,

iii) promotion of the production of biofuels in the country, under the Make in India program, by units located in Special Economic Zones (SEZ)/ Export Oriented Units (EoUs), and

iv) grant of permission for export of biofuels in specific cases.

**9.2.2.** The estimated requirement of ethanol to achieve 20% blending will be around 1016 crore litres during ESY 2025-26 for which the distillation capacity needs to be doubled from existing 722 crore litres per annum to 1500 crore litres per annum (1,016 crore litres per annum is required for EBP). Accordingly, OMCs published an Expression of Interest (EoI) to sign agreements with potential project proponents willing to establish new ethanol plants in ethanol deficit states. Against this EoI, Public Sector OMCs have signed Long Term Off-take Agreements (LTOA) with 131 project proponents for setting up dedicated ethanol plants with a production capacity of 431 crore litres per annum.

## 9.3. Biodiesel Programme & Biodiesel from Used Cooking Oil (UCO)

During the period from April to December, 2022, OMCs have procured nearly six crore litres of Biodiesel for blending with Diesel.

OMCs are regularly floating Expression of Interest (EoI) for procurement of Biodiesel produced from UCO.

## 9.4. Bio-Jet (ATF)

Government had constituted a Committee in June 2021 to take forward the Sustainable Aviation Fuel (SAF)/Bio-Aviation Turbine fuel (Bio-ATF) program in the country. The Committee looked into various aspects of the Bio-ATF program in the country inter-alia including raw materials availability, demand for ATF, technologies for SAF Production, Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), Bureau of Indian Standards (BIS), effects of SAF on engine performance, blending percentages, best international practices, etc. in a comprehensive manner so as to take ahead the SAF/Bio-ATF program in India. The Committee submitted the report to the Government. Discussions on the report of the Committee with stakeholders have been initiated. The use/adoption of SAF helps in reduction of Green House Gas (GHG) emission.

## 9.5. Second Generation (2G) Ethanol

The National Policy on Biofuels announced in 2018 is aimed at accelerated promotion of Biofuels with indicative targets of achieving 20% blending of ethanol in Petrol by 2025-26 and 5% blending of biodiesel in Diesel by 2030. Therefore, to maximize the production of ethanol in the country for the purpose of blending with petrol, other options/routes for enhancing ethanol production need to be explored. Government has already allowed procurement of ethanol produced from other non-food feedstock besides molasses, like cellulosic and ligno-cellulosic materials including petrochemical route.

Ligno-cellulosic biomass is being considered as a prospective source of Second Generation (2G) ethanol for supplementing the rising demand of ethanol for EBP Programme. As per the report of Technology Information, Forecasting & Assessment Council (TIFAC), an autonomous organization under Department of Science & Technology, there is an availability of surplus bio-mass across the country which is generally being burnt by the farmers as a waste disposal activity which is also contributing towards the environment pollution.

Subsequent to opening up of alternate route i.e. Second Generation (2G) route for ethanol production, Public Sector Oil Marketing Companies under the administrative control of Ministry of Petroleum and Natural Gas are setting up 2G bio-refineries in different parts of the country. Projects Bathinda (Punjab) by HPCL, Bargarh (Odisha) by BPCL and Numaligarh (Assam) by NRL are in advanced stage of construction. The 2G ethanol bio-refinery at Panipat has already been dedicated to the Nation by the Hon'ble Prime Minister.

In order to encourage setting up of 2G bio-refineries, Government has launched a scheme namely "Pradhan Mantri JI-VAN (Jaiv Indhan-Vatavaran Anukool fasal awashesh Nivaran) Yojana" for providing financial support to integrated bio-ethanol projects, using ligno-cellulosic bio-mass and other renewable feedstock. In this scheme, financial support to twelve integrated bio-ethanol projects using ligno-cellulosic biomass & other renewable feedstock with a total financial outlay of 1,969.50 crore for the period 2018-19 to 2023-24 will be provided along with support to ten demo projects.

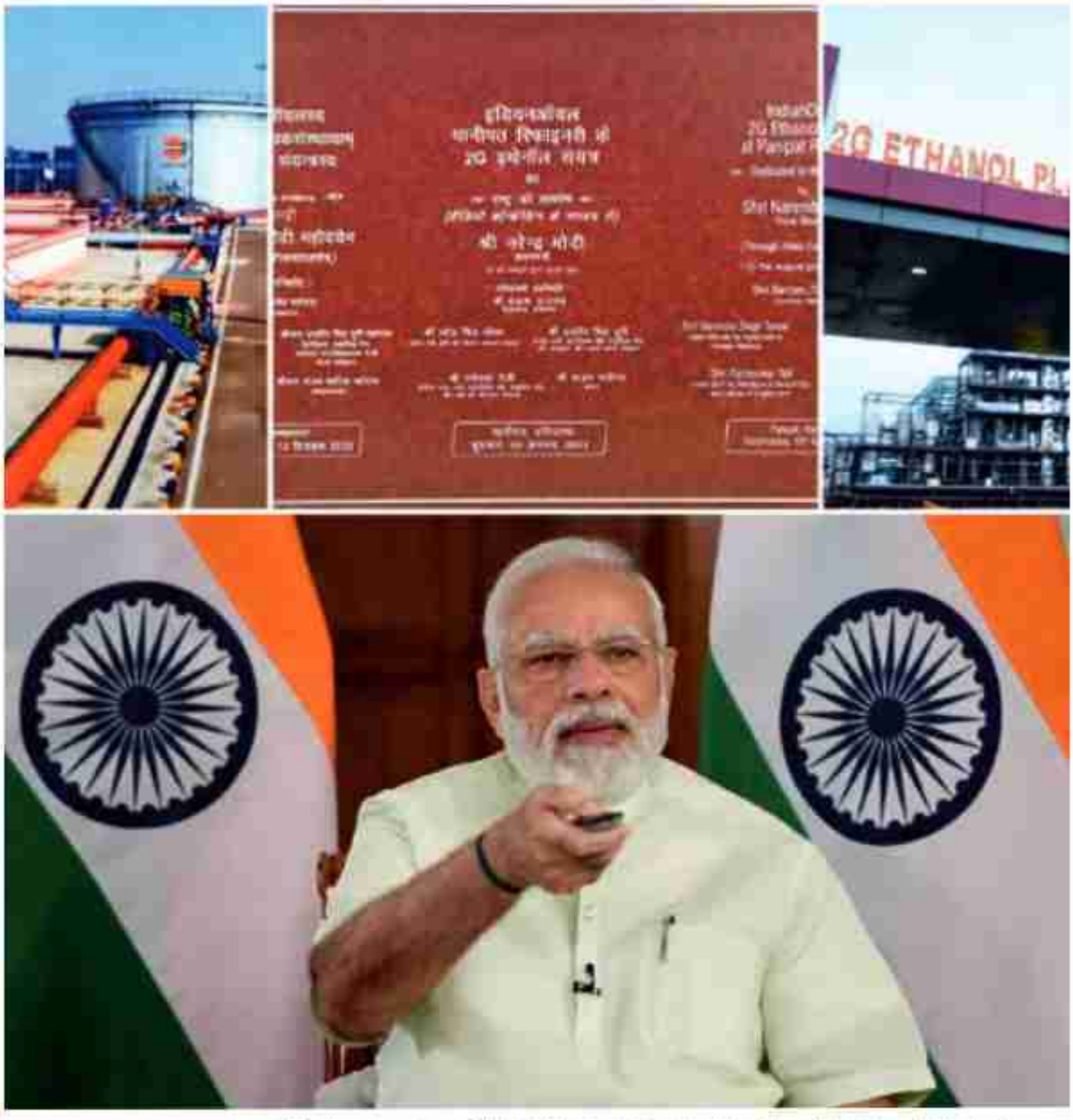
Financial Assistance under PM JI-VAN Yojana has been approved for six commercial projects of IOCL, BPCL, HPCL, NRL, MRPL and Shell India Market Pvt. Ltd. and three demonstration projects of IOCL, HPCL and Chempolis India Pvt. Ltd.

## 9.6. World Biofuel Day

World Biofuel Day is observed every year on 10th of August to create awareness about the importance of non-fossil fuels as an alternative to conventional fossil fuels and to highlight the various efforts made by the Government in the Biofuel sector.

The theme for the World Biofuel Day-2022 was "Biofuels towards a Carbon Neutral World". On the occasion of World Biofuel Day, MoP&NG organized a Webinar to discuss promotion & propagation of biofuels. On this day, the 2G Ethanol bio-refinery at Panipat was dedicated to the Nation by the Hon'ble Prime Minister.

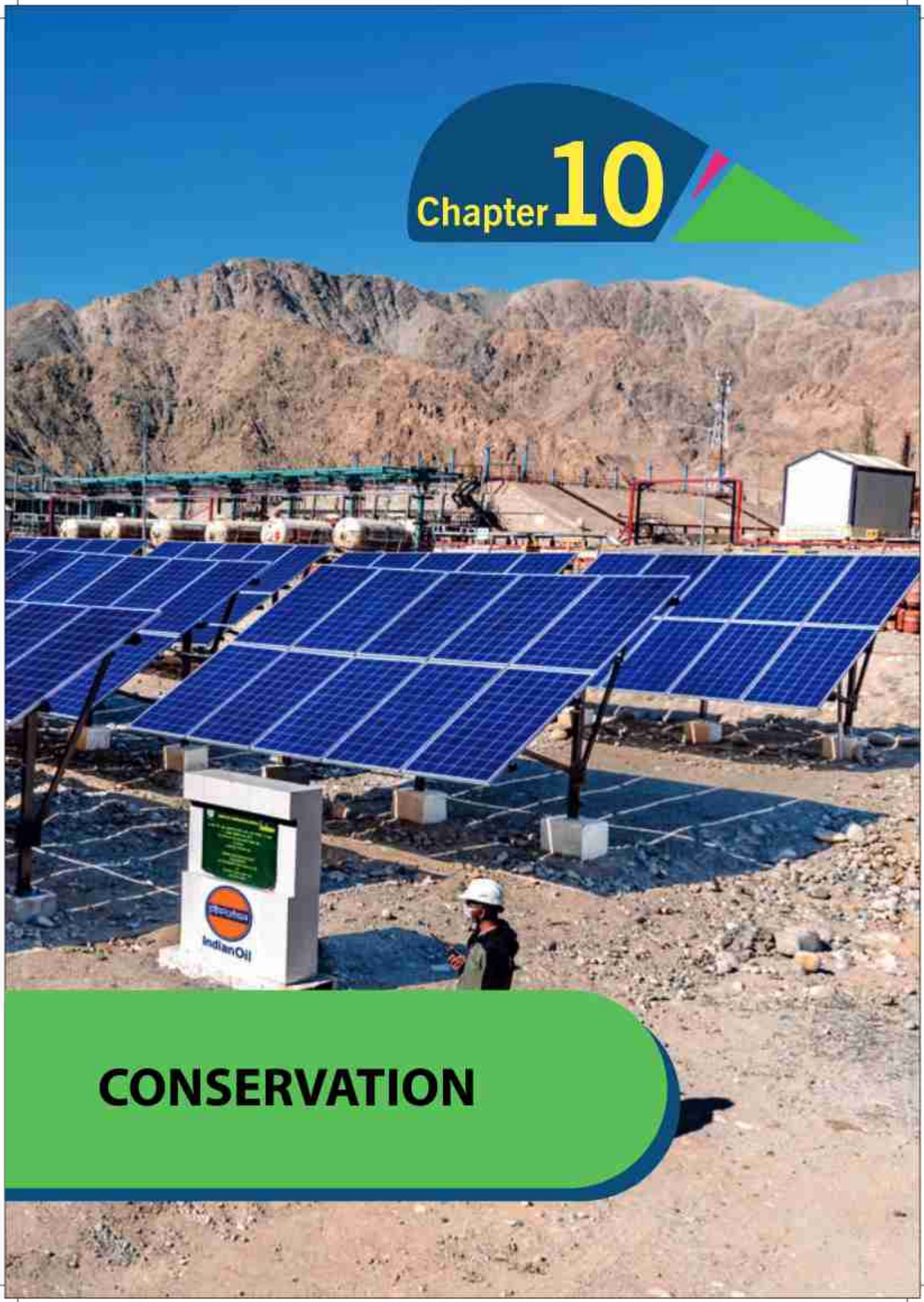





On the occasion of World Bio Fuel Day Hon'ble Prime Minister dedicated 2nd Generation (2G) Ethanol Plant in Panipat, Haryana



Chapter 10




# CONSERVATION

# 10 Conservation

**10.1.** The Petroleum Conservation Research Association (PCRA) is a registered society under the Ministry of Petroleum and Natural Gas, Government of the India. PCRA is a non-profit national government agency that campaigns for energy efficiency in various sectors of the economy. It assists the government in formulating policies and proposals for petroleum conservation, with the goal of reducing the country's excessive reliance on oil. It funds R&D activities for the development of fuel-efficient equipment and devices and supports endeavours for adoption of fuel efficient technologies. Through multi-pronged field activities, it also raises public awareness about the need for conservation of petroleum products. PCRA also leverages the power of the social media to maximize the reach of its conservation message to its target audience. Apart from different fuel-saving recommendations and updates on PCRA's conservation efforts, a variety of people connect activities are held from time to time to engage the audience. PCRA has developed a number of films, radio jingles and printed literature in various languages for promoting oil conservation and fuel efficiency.

## 10.2. Sectoral Activities

PCRA has a well-defined set of field pursuits aimed at propagating the philosophy for conservation of fuels across different sectors e.g. Domestic, Industrial, Transport and Agriculture. Under this PCRA conducts activities like Energy Audit, PAT (MEA and M&V) and Compliance Audits, Driver Training Programme, Fuel Efficiency Improvement Programme for STU depots, Agriculture Workshops and Kisan Melas for farmers, Workshop for LPG Users, Awareness campaign for students, Youth Programmes etc. Besides this, energy advocacy and competency building exercises are carried out though Technical Seminars and Workshops and Training Programmes for Industry Personnel.

### 10.2.1 Industrial Sector

**(i) Energy Audit:**

PCRA provides assistance to Energy intensive industries by conducting Mandatory Energy Audits and Monitoring & Verification audits in PAT (Perform, Achieve & Trade) regime. PAT (Perform, Achieve & Trade) is part of the National Mission on Enhanced Energy Efficiency (NMEEE) under the National Action Plan on Climate Change (NAPCC), which intends to enhance energy efficiency in large energy-intensive industries in India.

**(ii) Technical Meet/Seminar/Institutional Training Programme:**

PCRA has been conducting Institutional Training Programmes, Industry Workshops, Seminars/Technical Meets for spreading awareness and technical knowhow for increasing energy efficiency in Industrial Sector.

### 10.2.2. Transport Sector

Transport sector has a huge energy savings potential. In order to tap this, PCRA conducts a variety of programmes for State Transport Undertakings (STUs), Private fleet operators, organizations in the private and public sector to promote efficient use of petrol, diesel, lubricants and greases through better maintenance practices, better driving habits, emission awareness programmes.

(i) **Driver Training Programme (DTP) and Fuel Efficiency Improvement Programme (FEIP)**

Drivers from STUs, Army, Air Force, Para Military Forces, Oil Companies & Private Fleet Operators are imparted training to improve their driving skills. PCRA's Driver Training Program has emerged as one of the most effective and important tools to improve KMPL.

Fuel Efficiency Improvement Programmes (FEIP) is an integrated program to train the targeted driver and maintenance of targeted buses. Based on detailed monthly data analysis of depots, low performing drivers and buses are selected and their performance evaluated over 3 stages.

### 10.2.3. Agriculture Sector

All the stakeholders in Agriculture sector play a pivotal role in conservation of the petroleum products. PCRA participates in Agriculture Workshops and Kisan Melas wherein the farmers are educated about the ways and means on conserving diesel through proper selection, operation and maintenance of tractors, lift irrigation pumps, engine drives, foot valves, pipes and fittings.

## 10.3. Sanrakshan Kshamta Mahotsav (SAKSHAM)-2022

Every year, PCRA, in collaboration with PSU Oil & Gas Companies, conducts a countrywide people-centric mass awareness campaign named "SAKSHAM" of one month duration to provide fillip and wide-scale visibility to its fuel conservation activities.

SAKSHAM-2022 was held during 11th-30th April 2022 with the theme

**हरित और स्वच्छ ऊर्जा अपनाएं, आजादी का अमृत महोत्सव मनाए**
**Azadi Ka Amrit Mahotsav through Green & Clean Energy**



Secy. MoP&NG flagging off PCRA publicity vans across northern India at Inaugural function of Saksham-2022



E-Vehicle Rally at New Delhi during Saksham-2022






Graffiti and Wall Painting Competition during SAKSHAM-2022

## 10.4. Celebration of Azadi Ka Amrit Mahotsav

A series of activities have been launched by PCRA to commemorate Azadi Ka Amrit Mahotsav.

i. **PCRA Conservation Quiz:** Conservation Quizzes were conducted online at www.mygov.in from 05th June 2021 up to 5th Septemer 2022. Under this, continuous series of quiz were run. Each quiz series continued for 3 weeks and one winner was declared every week with a cash prize of ₹5,000/-.

ii. **Cyclothon:** In continuation to the series of commemorative cyclothons held in 2021-22, five cyclothons were held at Bengaluru, Chandigarh, Jhansi, Surat, Gurugram in 2022-23 with the enthusiastic participation of citizen including children in each event spreading the message of "Azadi Ka Amrit Mahotsav" and stressing the importance of pollution free modes of transport to the masses.

## 10.5. R&D projects

PCRA, through its R&D Department, strives to promote Research, Development and Deployment efforts aimed at petroleum conservation and environment protection and encourages and supports efforts for adoption and dissemination of fuel efficient technologies. In this connection it invites and sponsors R&D projects from prestigious Research Institutions, Technical Institutions, CSIR Laboratories etc. PCRA is also working as a national body to check veracity of vendors' claim on fuel additives.

PCRA has created a web portal-based transparent system for examination and certification of fuel additives. PCRA issues necessary certification to interested vendors based on test report from certified testing institutes. The PCRA accreditation is valid for 5 years subject to no change in product's technical and fuel specifications of the product.

**Details of ongoing projects:**

| Sl. No. | Ongoing Project Title | Research Organization |
|---|---|---|
| 1. | Development of a New Energy Efficient porous burner (Stove) for Domestic Cooking with Pipe Natural Gas (PNG) as Fuel | IIT-Kharagpur |
| 2. | Design and development of a fuel-flexible burner for domestic and community cooking applications | IIT-Hyderabad |
| 3. | Design and Development of Integrated Spouted Bed Roaster | CSIR-CFTRI, Mysore |
| 4. | Identification of the most critical locations having the highest impact on traffic in case of vehicular breakdown | CSIR-CRRI Delhi |
| 5. | Design and Development of Inline Bio-methane Enrichment and $CO_2$ Separation System | CSIR-CMERI-CoEFM, Ludhiana |
| 6. | Interventions to Improve Performance of Combustion Systems in MSMEs | IIT Delhi |
| 7. | Performance evaluation of a bio gas Integrated Semi-Transparent Photovoltaic Thermal (SPVT) collectors (Bi-SPVT) | RGIPT, Amethi, |
| 8. | Development of Encapsulated Asphalt-rubber Pavement (EARPAVE) Product for Road Applications | IIT Tirupati |
| 9. | Design and development of a micro turbine combustor working on biogas | IIT Jodhpur & IIP Dehradun |

## 10.6. Policy Measures

Number of policy initiatives with respect to fuel efficiency and conservation have been carried out/initiated including fuel efficiency norms for heavy, medium and light duty vehicles, standard & labelling programme for tractors and tyres, development of high thermal efficiency Piped Natural Gas (PNG) burner, mandatory BIS certification for LPG stoves etc. Some of them are listed as follows:

a) Fuel Efficiency (FE) Norms for Heavy Duty Vehicles (HDV)

b) Fuel Efficiency (FE) Norms for Light & Medium Commercial Vehicles

c) Standards & Labelling of Tyres

d) Star labelling of Agricultural Tractors

e) Development of high thermal efficiency PNG burner

f) Standard & Labelling (S&L) Programme for Domestic LPG Stove

g) Development of Bharat Energy Efficient Tool (BEET) similar to VECTO (Vehicle Energy Consumption Calculation Tool) type simulation tool

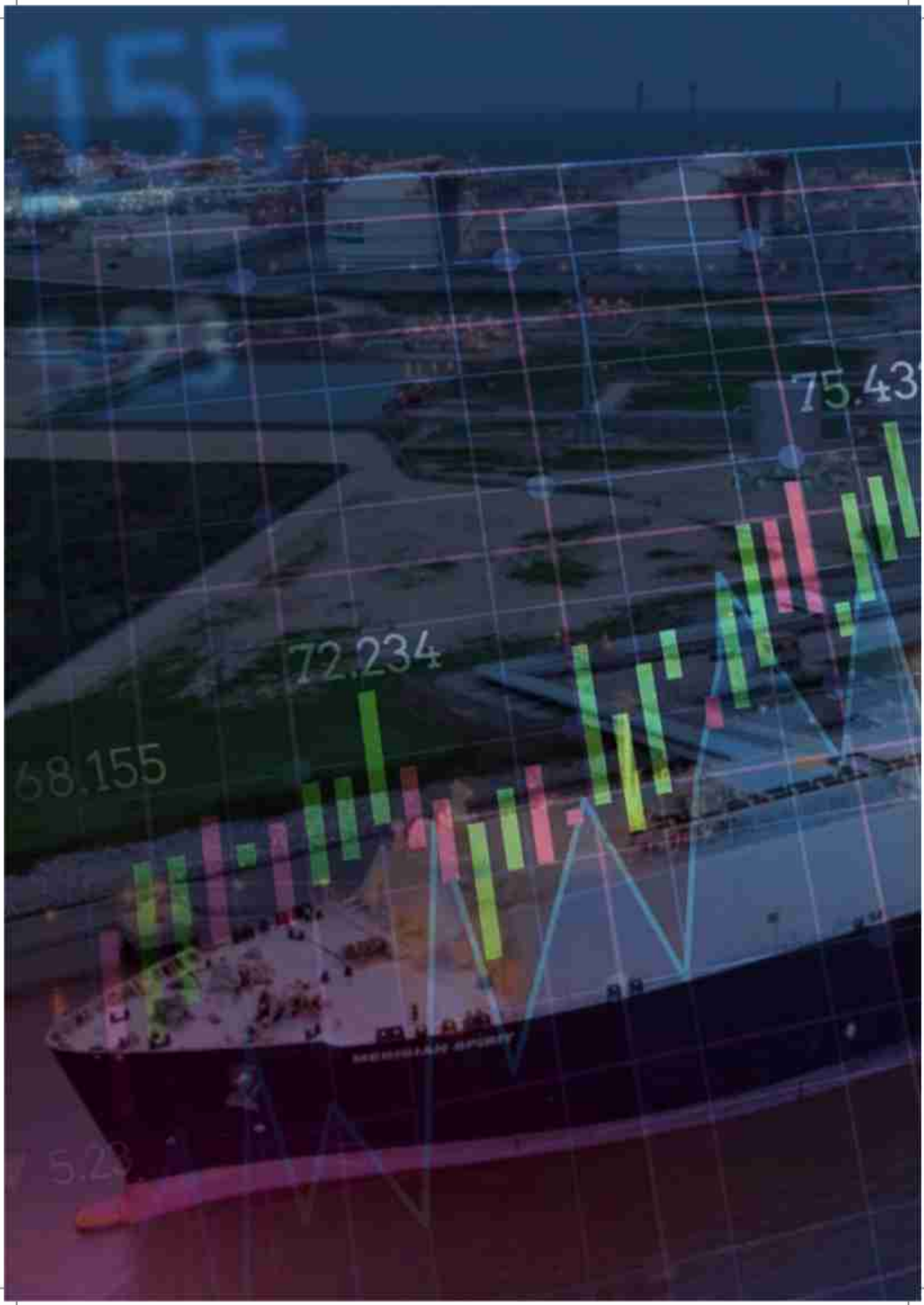
## 10.7. Domestic Sector

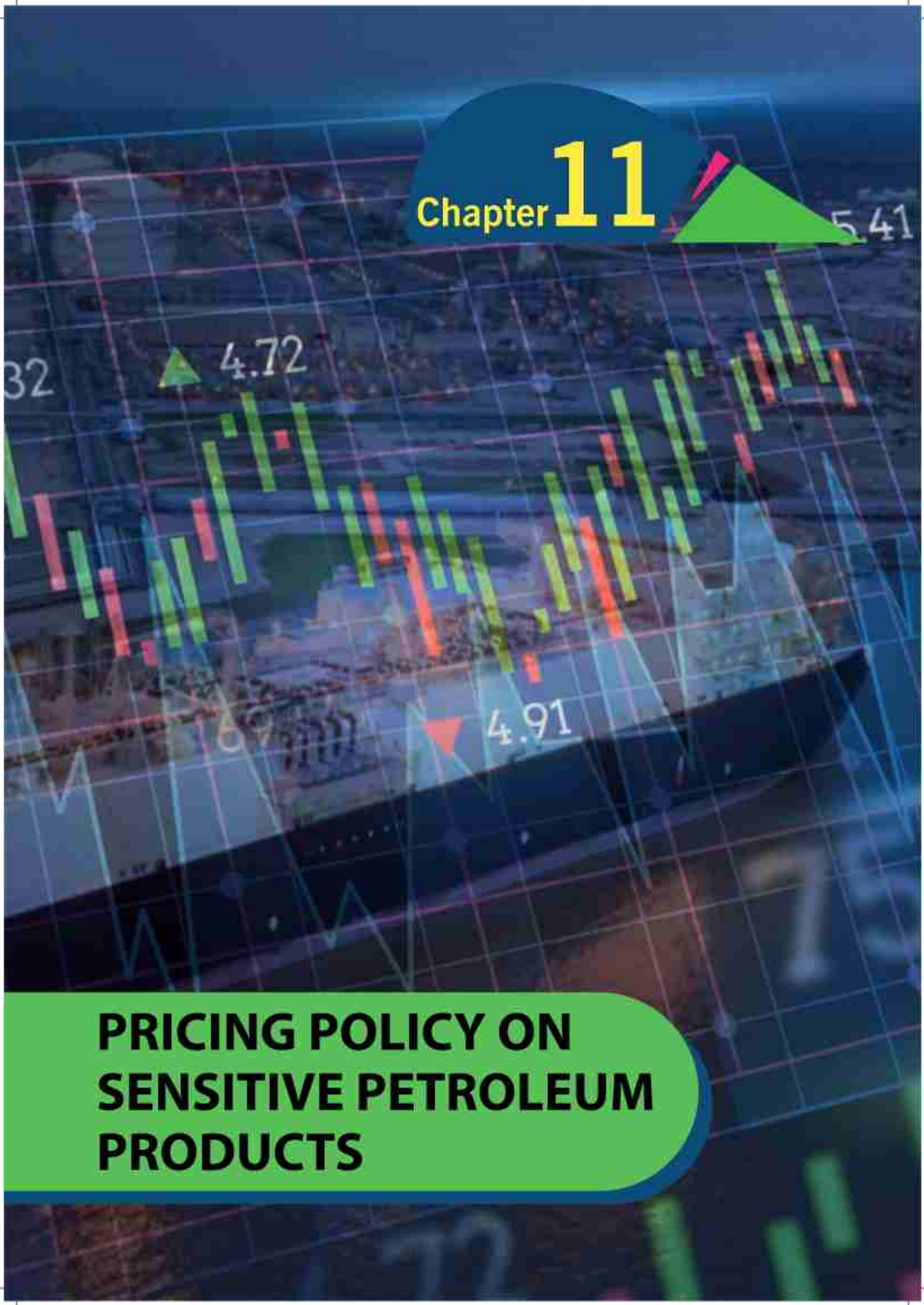
PCRA conducts Domestic Workshop & Youth Programme in Domestic Sector covering Housewives, students and youths. The target audience is educated on various aspects on fuel and energy conservation like Fuel Efficient cooking habits, the cost benefits of using ISI-marked products & star rated LPG stoves and Energy Conservation tips on household items like Refrigerators, Air Conditioners, Microwave ovens, Lighting etc. PCRA also encourages the use of alternate sources of energy such as CNG, Biogas, Solar energy etc.

PCRA also imparts Education awareness programmes on Energy Conservation through Eco Clubs. The students from 9th to 12th standards are targeted for an education awareness programme on energy conservation. The programmes are held through State Nodal Agencies (SNA) across the country.

Above activities on fuel conservation and fuel efficiency have contributed towards Government's goal towards reduction of oil import and helped in our journey towards Atmanirbhar Bharat.




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68.155




# PRICING POLICY ON SENSITIVE PETROLEUM PRODUCTS

# 11 Pricing Policy on Sensitive Petroleum Products

## Background

**11.1.** The pricing of petroleum products was brought under the Administered Price Mechanism (APM) effective July 1975 when the pricing of petroleum products was shifted from import parity principles to cost plus principles. Under APM (1975 to 2002) various oil pool accounts were maintained with the objective to i) ensure stability in selling price; ii) insulate consumers against international price fluctuations; and iii) subsidization of consumer price of certain products like kerosene for public distribution and domestic LPG by cross subsidization from other products like petrol, Aviation Turbine Fuel (ATF) etc.

**11.2.** Effective 01.04.2002, the APM was dismantled and the Government decided to provide subsidy on sale of PDS kerosene and domestic LPG at specified flat rates. To administer these budgetary subsidies, the Government formulated a 'PDS Kerosene and Domestic LPG Subsidy Scheme, 2002'. Under this scheme, it was decided that these subsidies will be phased out in 3-5 years.

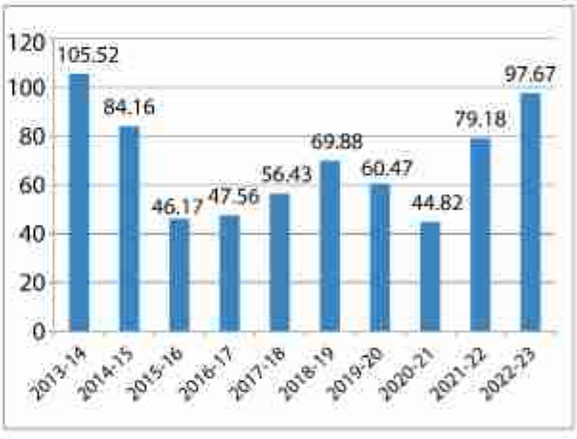
**11.3.** The sharp rise and volatility of prices of oil and petroleum products in the international markets since 2004 became a matter of global concern. The Indian basket of crude oil, which averaged about $23/bbl at the time of dismantling of APM in March 2002 and $36/bbl in May 2004, went up to an average of $85.09 per barrel during 2010-11. The average price of Indian basket of crude oil further increased to $111.89/bbl during 2011-12.

**11.4.** After continuously being above $100/bbl for over three years, Crude prices started falling sharply during the second half of the year 2014. As a result, the average price of Indian crude oil basket during 2015-16, 2016-17 and 2017-18 was recorded at $46.17/bbl, $47.56/bbl and $56.43/bbl respectively. The price increased to $69.88/bbl during 2018-19 and fell to $60.47/bbl in 2019-20 and fell further to $44.82/bbl during 2020-21 due to the impact of Covid-19. The prices recovered from the impact of Covid-19 and increased to $79.18/ bbl in 2021-22.

**11.5.** Oil prices rose significantly after Russia's military operation in Ukraine in the last week of February 2022 and supply concerns weighing on the global oil market. The average price of Indian basket of crude oil during the current financial year 2022-23 (up to 28th December, 2022) increased to $97.67/bbl. The trend of Indian basket of crude oil during 2002-03 to 2022-23 till 28.12.2022 is given below:

### Trend of Crude Oil : Indian Basket

$/bbl




Note: 2022-23 prices are up to 28/12/2022

## Pricing of Crude Oil

Indian basket of crude oil represents the average of crude oil processed by Indian refineries in the ratio of actual processing of sweet crude and sour crude in the immediate preceding year. For sweet crude oil price, the daily Platts assessments for benchmark crude oil "Brent" is considered. For sour crude oil, the average of Platts assessment for benchmark crude oil "Dubai" and "Oman" is considered. During 2020-21, Indian refineries processed 75.62% sour crude and 24.38% sweet crude. Therefore, for 2021-22, Indian basket of crude oil represented the daily price assessment by Platts for benchmark under average of "Dubai" and "Oman" (sour crude) and "Brent" (sweet crude) in the ratio of 75.62:24.38

Domestic crude oil producing companies are also offered international crude oil prices benchmarked to international crude that corresponds to their crude assay. Import of crude oil takes place at international prices.

## Petrol and Diesel

1. The prices of petrol and diesel are market determined effective from 26th June, 2010 and 19th October, 2014 respectively and since then their prices are being decided by the Public Sector Oil Marketing Companies (OMCs) namely, Indian Oil Corporation Limited, Hindustan Petroleum Corporation Limited and Bharat Petroleum Corporation Limited, in line with the changes in the international market prices and other market conditions.
2. The Public Sector Oil Marketing Companies (OMCs) implemented daily revision of retail selling price of petrol and diesel in the entire country with effect from 16th June, 2017. Daily price revisions of petrol and diesel make the retail prices more reflective of the current market conditions, minimizing the volatility in the retail selling price of petrol and diesel. Also, it leads to increased transparency in the system and enables smoother flow of products from refinery/depots to Retail Outlets.

## Domestic LPG

1. In order to insulate the common man from the impact of rise in international oil prices, the Government continues to modulate the effective price to consumer of Domestic LPG (up to cap of 12 cylinders per annum to each household). The prices of non- subsidized Domestic LPG are however determined by the OMCs in line with changes in the international markets.
2. Effective 1st January 2015, the 'PAHAL (DBTL) Scheme 2014' has been implemented in the entire country wherein the subsidy on Domestic LPG is being transferred to the eligible consumers directly to their bank accounts. In addition, w.e.f. 21st May, 2022, the Government has announced a targeted subsidy of ₹ 200 per 14.2 Kg cylinder for Pradhan Mantri Ujjwala Yojana (PMUY) beneficiaries for upto 12 refills a year for year 2022-23.

## PDS Kerosene

Effective 1st March, 2020 the retail selling price of PDS Kerosene is being maintained at Nil under-recovery level on pan India basis.

## Subsidy

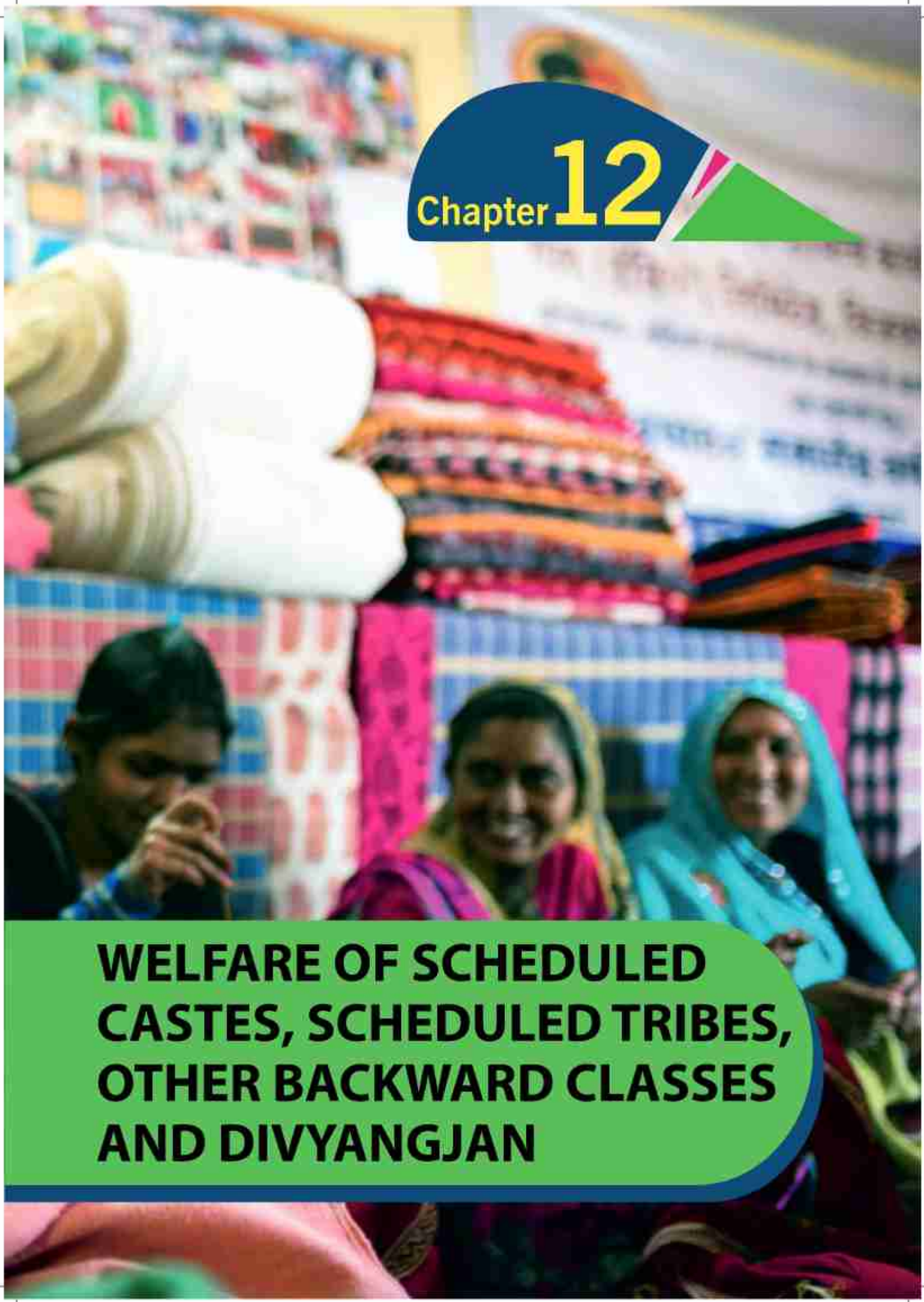
The total subsidy/under-recovery on petroleum products and natural gas during the last 5 years and the current year is as under:

₹ in Crores

| Particulars | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|---|
| **Kerosene** | | | | | |
| Total Under-recoveries on PDS Kerosene | 4,672 | 5,950 | 1,833 | - | - |
| **LPG** | | | | | |
| Direct Benefit Transfer for LPG (DBTL) subsidy (A) | 20,905 | 31,539 | 22,726 | 3,658 | 242 |
| Pradhan Mantri Ujjwala Yojana (PMUY) subsidy (B) | 2,559 | 5,670 | 1,446 | 76 | 1,569 |
| Pradhan Mantri Garib Kalyan Package (PMGKP) subsidy (C) | - | - | - | 8,162 | - |
| **Total Subsidy on Domestic LPG (A+B+C)** | **23,464** | **37,209** | **24,172** | **11,896** | **1,811** |

Public Sector Oil Marketing Companies have suffered huge losses on sale of domestic LPG. To compensate these losses, the Government has recently approved a one-time compensation of ₹ 22,000 crore to OMCs. The prices of non-subsidized Domestic LPG are however determined by the OMCs in line with changes in the international markets.





Chapter 12

# WELFARE OF SCHEDULED CASTES, SCHEDULED TRIBES, OTHER BACKWARD CLASSES AND DIVYANGJAN

# 12 Welfare of Scheduled Castes, Scheduled Tribes, other Backward Classes and Divyangjan

**12.1.** The guidelines in respect of reservation for the Scheduled Castes, Scheduled Tribes, Other Backward Classes and Divyangjan issued from time to time by Department of Personnel & Training, Department of Public Enterprises, Ministry of Social Justice & Empowerment and Ministry of Tribal Affairs are being implemented in the Ministry of Petroleum & Natural Gas and the Public Sector Undertakings (PSUs) under the administrative control of this Ministry. The SCT Cell of this Ministry monitors the implementation of reservation policies in the Ministry as well as PSUs and other organizations under the administrative Jurisdiction of this Ministry. The PSUs have also constituted Implementation Cells under the supervision of their Chief Liaison Officers / Liaison Officers to safeguard the interests of SCs, STs, OBCs, EWS, ESM and Persons with the Disability (PWD) employees and to redress their grievances. The Liaison Officers of the PSUs are responsible for ensuring implementation of the Presidential Directives as well as the various orders of the Government of India issued from time to time on the subject. Remedial action on the grievances of the SCs, STs, OBCs, EWS, ESM and PWD employees of PSUs received through Members of Parliament, National Commission for SCs & STs and National Commission for OBCs are taken. The status of appointment of SCs, STs, OBCs, EWS, ESM and PWDs are monitored by the Ministry through report furnished by PSUs.

**12.2.** In pursuance of the observations of Parliamentary Committee on the Welfare of SCs/STs/OBCs and the Presidential Directives on Reservations for SCs/STs in service, a team lead by the Chief Liaison Officer of this Ministry inspects the Reservation Rosters maintained by the Units of PSUs, annually.

**12.3.** Various activities have been undertaken by oil and gas PSUs under the Ministry with specific focus on SC/ST/OBC/PwD employees CSR initiatives/schemes have been effectively targeting SC/ST/OBC Community.

**12.4.** Special Recruitment Drive for Persons with Disabilities (PWDs).

Hon'ble Supreme Court on 28.4.2015 in the Contempt Petition No. 499/2014 in CA No. 9096 /2013 filed by National Federation of Blind ordered for filling up of posts with Persons with Disabilities. This matter is being monitored by DoPT. 359 posts were identified in Ministry of Petroleum & Natural Gas and PSUs under the administrative control of this Ministry. As on 31.12.2022 the position for the filling up of vacancies for Persons with Disabilities is as under:

| S.No. | Step-Wise Details | Posts |
|---|---|---|
| 1 | No. of posts in the Ministry and Oil PSUs reported to Hon'ble Supreme Court | 359 |
| 2. | No. of Posts already filled in | 320 |
| 3. | Remaining posts to be filled up by 31.12.2022 | 39 |

## BACKLOG OF SC/ST/OBC/PWD IN OIL COMPANIES UNDER THE ADMINISTRATIVE CONTROL OF THE MINISTRY AS ON 31.12.2022.

| | Number of backlog Vacancies in respect of SC, ST, OBC and PWD (Direct Recruitment) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PSU** | **Group A** | | | | **Group B** | | | | **Group C*** | | | | **Group D*** | | | |
| | **SC** | **ST** | **OBC** | **PWD** | **SC** | **ST** | **OBC** | **PWD** | **SC** | **ST** | **OBC** | **PWD** | **SC** | **ST** | **OBC** | **PWD** |
| MoPNG | Not maintained by this Ministry | | | | NIL | NIL | NIL | NIL | 0 | 2 | 0 | 0 | Not Applicable | | | |
| CPCL | NIL | NIL | NIL | NIL | NIL | 1$ | NIL | NIL | 1 | NIL | 2 | 6 | NIL | NIL | NIL | NIL |
| MRPL | - | 1 | 4 | 4 | * | * | * | * | 3 | 2 | - | 8 | * | * | * | * |
| HPCL | 0 | 0 | 0 | 28 | - | - | - | - | 0 | 0 | 0 | 0 | - | - | - | - |
| BPCL | -10 | -8 | NIL | -11 | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |
| EIL | 6 | 5 | 6 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| OIL | 1 | - | 2 | 2 | - | - | - | 1 | 12 | 07 | 11 | 24 | 01 | 06 | 03 | NIL |
| IOCL | 12 | 19 | 23 | 32 | No recruitment undertaken in group 'B' | | | | 3 | 4 | 14 | 7 | 3 | 2 | 3 | 28 |
| RGIPT*** | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | NA | NA | NA | NA |
| OIDB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRL | -3 | -3 | -5 | -7 | - | - | - | - | -2 | 3 | 9 | -2 | 1 | 4 | 1 | 1 |
| ONGC* | 166 | 71 | 273 | 174 | - | - | - | - | 77 | 101 | 210 | 175 | 6 | 2 | 14 | 11 |
| GAIL | 31 | 19 | 33 | 31 | 0 | 3 | 5 | 6 | 24 | 18 | 26 | 14 | - | - | - | - |
| IIPE | Presently, no backlog vacancies are existed IIPE for Direct Recruitment | | | | | | | | | | | | | | | |
| BLL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL |

Notes:

ONGC:*: (i) There are no backlog vacancies in ONGC. The vacancies remained unfilled in the previous recruitment exercise are carried forward in the subsequent recruitment exercise.

(ii) The vacancies numerated above are carry forward vacancies and fresh vacancies of 2022, which are notified and recruitment is under process.

(iii) 63 & 11 vacancies of Group C & D respectively are of Andhra Pradesh which have been held up due to court case since 2014-15.

CPCL: $ -Also reserved for PWBD. (Recruitment completed and candidates are likely to join Shortly).

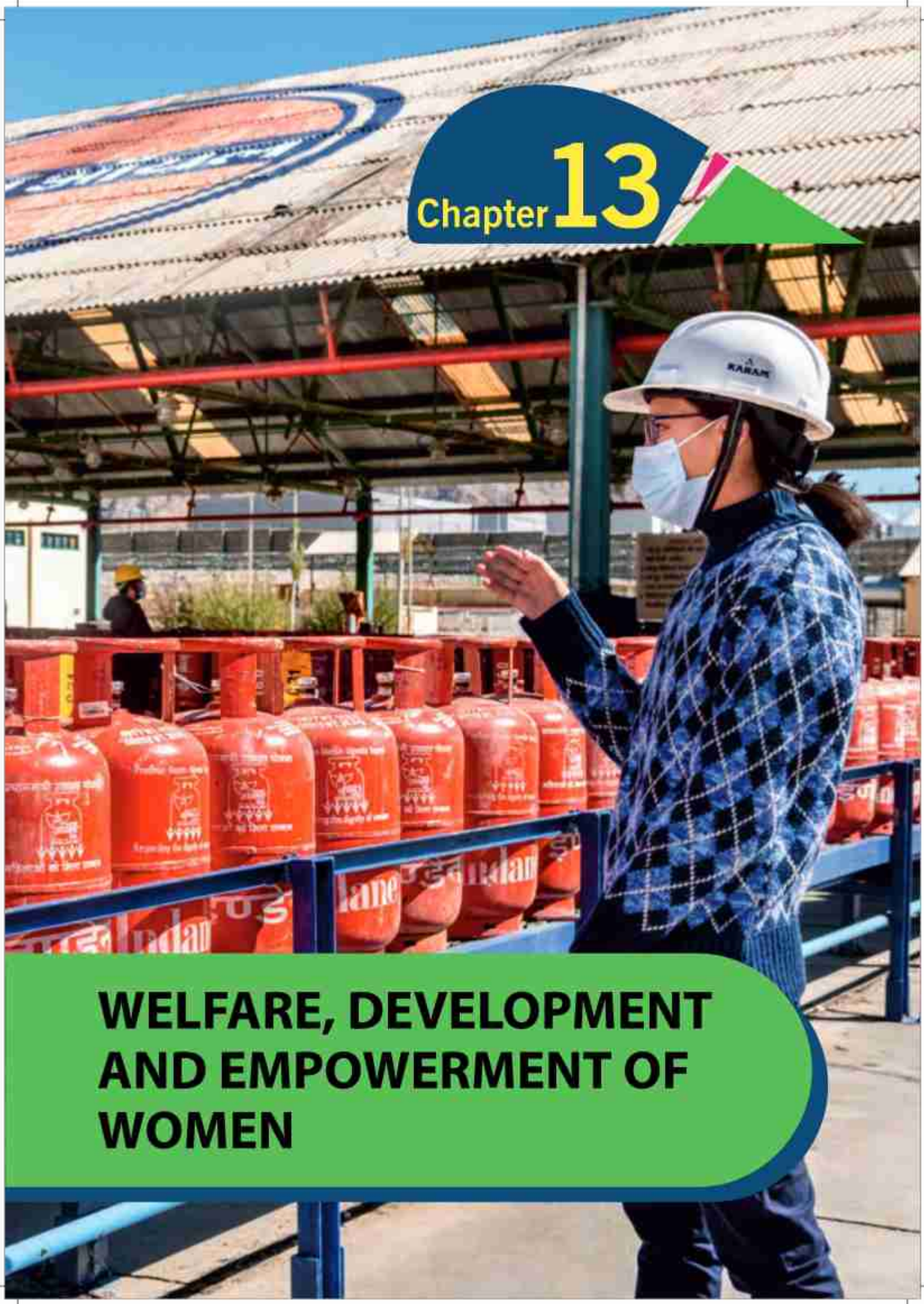
BPCL: Minimal recruitment carried out in Group A from 2019-2021.Separation at an average rate of 17% for SCs and 6% for STs for the last 3 years (2019-2021) without any significant recruitment. BPCL endeavor to clear the backlog in 2023.

EIL: The vacancies shown above are shortfall in reserved categories in direct recruitment.

RGIPT: *** Only admin staff cadre.

HPCL: has no posts classified under Group 'B' & 'D' as the entry in Non-Management grades have been reclassified in Group 'C'.


प्रधानमंत्री उज्ज्वला योजना
महिलाओं को मिला सम्मान
Indan



Chapter 13

# WELFARE, DEVELOPMENT AND EMPOWERMENT OF WOMEN

# 13 Welfare, Development and Empowerment of Women

**13.1.** Ministry of Petroleum & Natural Gas and Public Sector Undertakings/Organizations under the administrative control of this Ministry have been taking numerous initiatives towards welfare and empowerment of women employees. With a view to deal with gender sensitization and to promote the cause of women empowerment, special programmes are organized focusing on their professional development and welfare activities. These include external and in-house training, programmes on women health, sponsoring them to attend the National Meet of the Forum of Women in Public Sector, etc.

Women Forum has been formed in the PSUs to look after the interest of the women employees. List of Do's and Don'ts prepared by the National Commission for Women circulated for attention of all employees. Committees have been set up for redressal of complaints on 'Sexual harassment at work places.'

**The number of women employees vis-à-vis total number of employees as on 31.12.2022 in the oil PSUs:**

| Sl. No. | Name of PSU | Total No. of Employees | Total No. of Women Employees |
|---|---|---|---|
| 1 | MoPNG | 212 | 46 |
| 2. | IIPE | 49 | 6 |
| 3. | CPCL | 1455 | 76 |
| 4. | MRPL | 2572 | 228 |
| 5. | HPCL | 8643 | 890 |
| 6. | BPCL | 8815 | 648 |
| 7. | EIL | 2653 | 312 |
| 8. | OIL | 6807 | 488 |
| 9. | IOCL | 31225 | 2731 |
| 10. | RGIPT | 43 | 6 |
| 11. | OIDB | 12 | 4 |
| 12. | NRL | 974 | 68 |
| 13. | ONGC | 26413 | 2043 |
| 14. | GAIL | 4862 | 312 |
| 15. | Balmer Lawrie | 889 | 97 |

**13.2.** In line with the guidelines laid down by Hon'ble Supreme Court in the Case of Vishakha v/s State of Rajasthan and orders issued by Department of Personnel & Training / Ministry of Women & Child Development, an Internal Complaint Committee (Women Cell) is constituted in the Ministry for prevention and redressal of complaints of sexual harassment of working women. Presently Smt. Sujata Sharma, Joint Secretary, MoPNG is the chairperson of the committee with four other members, including one member from NGO. The Committee holds its meetings on regular intervals.





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ONGC

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IndianOil

Bharat Petroleum
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ऑयल इंडिया लिमिटेड
(भारत सरकार का उद्यम)
Oil India Limited
(A Government of India Enterprise)

EIL
A Navratna Company

ONGC
एमआरपीएल
MRPL

Bharat PetroResources

CPCL

बीएल
SINCE 1867

Chapter 14







GAIL (India) Limited







# UNDERTAKINGS/ ORGANIZATIONS

# 14 Undertakings/Organizations

## 14.1. MAHARATNA COMPANY

### 14.1.1. Indian Oil Corporation Limited (IOCL)



IndianOil, the Energy of India, is a diversified, integrated energy major with a presence in almost all the streams of oil, gas, petrochemicals and alternative energy sources. The brand IndianOil leverages high calibre people and state-of-the-art technologies to tap all forms of energy most responsibly and delivering them to the consumers most affordably. It is India's highest rank Energy PSU in Fortune Global 500 - 2022 list (Rank 142).

IndianOil's business interests encompass the entire hydrocarbon value chain-from refining, pipeline transportation & marketing to exploration & production of crude oil & gas, petrochemicals, gas marketing, alternative energy sources and globalisation of downstream operations. The brand's global aspirations are fulfilled through IndianOil's business forays in Sri Lanka, Mauritius, the UAE, and other countries.

#### 14.1.1.1. Financial Performance:

IndianOil's turnover (Revenue from Operations) increased by 35.7% (₹ 1,86,473 crore) to ₹ 7,08,461 crore during Apr'22-Dec'22 from ₹ 5,21,988 crore during Apr'21-Dec'21. During Apr'22-Dec'22, IndianOil registered a Net Loss (Profit After Tax) of ₹ 1,817 crore as compared to Net Profit of ₹ 18,162 crore during Apr'21-Dec'21. GRM stood at US$ 21.08/bbl during Apr'22-Dec'22 as against US$ 8.52/bbl during Apr'21-Dec'21.

#### 14.1.1.2. Contribution to Exchequer:

Over the years, IndianOil has been the largest contributor to the Government exchequer in the form of duties, taxes, and dividend. During Apr'22-Dec'22, ₹ 1,72,208 crore was paid to the exchequer as against ₹ 1,89,460 crore paid during Apr'21-Dec'21. An amount of ₹ 81,246 crore was paid to the Central Exchequer and ₹ 90,962 crore to the States Exchequer during Apr'22-Dec'22 compared to ₹ 1,10,586 crore and ₹ 78,874 crore paid during Apr'21-Dec'21, respectively.

#### 14.1.1.3. Refinery Performance:

For the current fiscal year during Apr-Dec'22, IOCL refineries have cumulatively processed 53.2 MMT of Crude and 1.4 MMT of Naphtha. Crude processing is higher than the last year (49.4 MMT for the same period). Distillate yield of IOCL refineries achieved 78.7%, lower than the last year 79.5% due to increased demand of Marpol from refineries as well as higher NG prices leading to higher internal consumption of Naphtha and distillate.

With respect to OA (Operational Availability), IOCL stand at 98.3% (last year 96.9%) and as regards MBN (Specific energy consumption-lower MBN indicates higher energy efficiency), IOCL refineries have achieved 69.0 MBN (last year 75.2) during the period, Apr-Dec'22.

IndianOil commissioned a new Wet Sulphuric Acid Plant at Haldia Refinery, Indjet unit at Barauni Refinery, IndSelectG unit at Guwahati Refinery and a new Sulphur Recovery unit at Bongaigaon Refinery. LAB revamp at Gujarat Refinery and NCU phase-1 revamp at Panipat Naphtha Cracker have been successfully completed.

A landmark occasion and a red-letter day in the history of IndianOil and India's green journey when Hon'ble Prime Minister dedicated IndianOil's 2nd Generation Ethanol

Plant in Panipat Refinery & Petrochemicals Complex to the nation on World Biofuel Day, 10th Aug'22. One-of-a-kind and first in Asia, this new bio energy plant is based on a state-of-the-art indigenous technology shall be a game-changer in India's waste-to-wealth initiatives. Utilising 2 lakh tonnes of rice straw, the plant will generate 3 crore litres of Ethanol annually which will be blended with MS (petrol) for meeting Govt. of India's target of 20% Ethanol blending.

IndianOil launched first batch of AVGAS 100 LL produced by Gujarat refinery on 21st Sep'22 for consumption at Hindan and Fursatganj AFS. Production of Avgas 100 LL is the first of its kind in India and a step towards realizing the Prime Minister's vision of Aatmanirbhar Bharat.

In line with the National Vision of Energy Security and the Paris Agreement, IndianOil has been working on potential opportunities for developing Carbon Capture, Utilisation and Storage (CCUS) projects from its various refineries as an emissions mitigation tool for combating climate change.

**14.1.1.4. Natural Gas Integration:**

Regassified LNG will be used as fuel at all Refineries in a phased manner. Natural Gas from Dhamra terminal via Jagdishpur-Haldia and Bokaro-Dhamra Pipeline (JHBDPL) will be utilized at Barauni, Paradip, Haldia, Bongaigaon and Guwahati refineries. NG infrastructure development projects are in various stages of implementation and are expected to be commissioned by FY 2024-25. For Mathura, Panipat & Gujarat Refinery, NG integration was already completed earlier and is in use.

**14.1.1.5. Green Energy:**

The signing of Term Sheets between IndianOil and NTPC for the formation of a joint venture company took place on July 18, 2022 at IndianOil's Corporate Office, New Delhi, leveraging the strength of both the organisations to strengthen India's resolve towards the net-zero commitments. IndianOil plans to meet the additional power requirement of its refineries using round-the-clock renewable energy to the tune of 650 MW through this JV, paving the way forward for both the companies for setting up renewable power plants by incorporating a Joint Venture Company/Special Purpose Vehicle and also to explore suitable economical solutions to meet the power requirement of refineries.

India's first and World's third Green Cooling Tower (GCT) was commissioned at Barauni Refinery on May 20, 2022. This is an Energy-efficient & environment-friendly alternative to conventional cooling tower. This eliminates electric motor with introduction of hydro-turbine for running cooling tower fans. Significant reduction in maintenance costs by elimination of motors, switchgear and other electrical infrastructure compared to conventional cooling tower.

IndianOil has been leading India's foray under the Government of India's National Green Hydrogen Mission. As a commitment to use Green $H_2$, 7 KTPA plant with 60 MW Electrolyzer capacity is planned at Panipat refinery.

**14.1.1.6. Pipeline Performance:**

IndianOil continued to expand its pipeline network during the year and crossed yet another milestone of 17,047 km with a combined throughput capacity of 108.0 Million Tonnes per annum for crude oil & product pipelines and 48.73 MMSCMD for gas pipelines.

During the year Apri'22-Dec'22, the crude oil pipelines achieved a throughput of 39.5 MMT as against 35.8 MMT Apri'21-Dec'21, and product pipelines achieved a throughput of 30.8 MMT as against 25.4 MMT during Apri'21-Dec'21. Further, gas pipelines achieved throughput of 2,293 MMSCM as against 2,330 MMSCM during Apri'21-Dec'21.

**14.1.1.7. Marketing Performance:**

Domestic POL sale of 64.19 MMT (Including CNG) was registered during the year 2022-23 (Apr-Dec) as against 54.81 MMT registered in the previous year 2021-22 for the same period.

IndianOil served around 2.88 crore customers daily at its retail outlets and delivered around 26.0 lakhs domestic LPG cylinders per day during Apr-Dec'22 period to fulfil the energy requirement of India's citizens. During the period Apr-Dec'22,

IndianOil commissioned 1,071 retail outlets (ROs), which is the highest among any OMCs. To promote new age fuelling trends, IndianOil has also commissioned 90 Door-to-door delivery mobile dispensers for diesel during the period taking total numbers to 1,131.

As on 31st Dec 2022, XtraGreen diesel product being sold through 4,256 ROs Pan India. The XtraGreen diesel improves fuel economy, reduces carbon dioxide and carbon monoxide emissions, reduces NOx emissions, increases Cetane Number, improves lubricity, reduces engine noise and has excellent corrosion protection (NACE rating A).

India's first super premium petrol XP100, with an octane value of 100 is being sold through 178 ROs across 89 cities as on 31st Dec 2022. Also, XP95 (95 Octane Premium Petrol) is being sold through 9,163 ROs Pan India.

To promote alternative fuels, IndianOil added 212 new CNG, 13 Compressed Biogas (CBG), 1,505 electric vehicle (EV) charging and 23 battery swapping stations during the period Apr-Dec'22. IndianOil was operating 1,697 CNG, 39 CBG, 3,647 EV charging and 55 battery swapping stations in the country.

IndianOil achieved the total LPG sale of 10.17 MMT during the period Apr-Dec'22 and released more than 44 lakhs new LPG connections including 30 lakhs under UJJWALA 2.0 scheme. To improve customer reach and customer satisfaction in services, IndianOil commissioned 44 new LPG distributorships, taking their total number to 12,841 as on 31.12.2022. "Chhotu" [5 KG Free Trade LPG (FTL) Cylinder], has registered a growth of 33% during Apr-Dec'22 period with a sale of more than 11.0 TMT. Further, till Dec'22, more than 2 lakh Indane composite cylinders were also marketed to customers which were launched in 5 kg and 10 kg units to offer a new-age and lightweight LPG cylinder to customers.

In the aviation sector too, IndianOil maintained its leadership position with a market share of 61.6% during the period Apr-Dec 2022. Three new Aviation Fuel Stations (AFS) were commissioned at Hollongi (Arunachal Pradesh), Deoghar (Jharkhand) and Ramnad (Tamilnadu) during the year, taking the total number of AFS set up in the country by IndianOil to 130 as on 31.12.2022.

#### 14.1.1.8. Research and Development (R&D)

Cutting edge research is carried out in IndianOil core areas of expertise like fuels & lubricants, refining technologies & catalysts, petrochemical & polymers. The R&D efforts in sunrise areas like Nano technology, Solar, Bioenergy, Hydrogen, Fuel Cell and energy storage provide the much-needed future direction. Presently, with a massive portfolio of 1,615 filed patents with 1,514 effective patents as of January 2023, IndianOil R&D Centre has been able to double its granted patent portfolio in last 5 years. Hon'ble Prime Minister dedicated the twin-cooktop model of the IndianOil's Indoor Solar Cooking System and also flagged-off its commercial roll-out as part of India Energy Week 23 at Bengaluru. During the year, Aluminium Air Battery has been integrated with 4W (TATA Tiago) and 3W (Mahindra Trio) and e-rickshaw, for undertaking pilot test. Pilot test was completed on Mahindra e-Auto while the trials further planned in TATA Tiago & e-rickshaw.

#### 14.1.1.9. Petrochemical Performance:

IndianOil is the second largest petrochemicals player in the country offering polymers, Linear Alkyl Benzene (LAB), Purified Terephthalic Acid (PTA), glycols and butadiene. The brand, PROPEL, is a leading brand in the Indian petrochemicals market.

During the year 2022-23 (Apr'22-Dec'22), Petrochemical sales, including exports, was 1.465 MMT as against 2.14 MMT in 2020-21 (Apr'21-Dec'21). IndianOil witnessed a slump in petrochemicals business due to production loss owing to various planned maintenance shutdowns.

**'Cycloplast'-** a brand of recycled polymers from IndianOil was launched on the auspicious occasion of IndianOil day on 01.09.2022.

With an objective of establishing global presence for petrochemicals brand "PROPEL", IOCL has been exporting products to several countries including Nepal, Bangladesh, Sri Lanka & Vietnam etc. On 6th October' 22, the group dispatched Indian Oil's first ever Petrochemical consignment to Mauritius.

**14.1.1.10. Natural Gas:**

IndianOil clocked sales (Including internal consumption) of 3.3 MMT in Apr'22-Dec'22 as against 3.8 in Apr'21-Dec'21. The drop in sale is due to abnormal high import LNG prices during the period. IndianOil has added 7 new industrial customers as on 31st December'22. Sale through IndianOil 'LNG at Doorstep' during Apr-Dec'22 dropped to 50.7 TMT from the sale of 83.0 TMT during Apr-Dec'21. During the year 2022-23 as on 24.02.2023, 18 LNG cargoes were imported, out of which 5 were spot cargoes, while 13 were against long term contracts.

**14.1.1.11. City Gas Distribution (CGD)**

IndianOil has significant contribution in moving towards gas-based economy. Along with JVCs, IndianOil has authorization of total of 49 GAs comprising of 105 districts establishing itself as one of the largest CGD company of the country with highest number of GAs among OMCs.

**14.1.1.12. Exploration & Production (E&P)**

IndianOil continues to explore opportunities in the E&P sphere through Participating Interests (PI), joint ventures and wholly-owned subsidiaries. IndianOil's upstream portfolio at present consists of 16 domestic and 11 overseas assets, which are in various stages, viz. 8 producing, 6 under development, 4 blocks with discovery, 1 under appraisal and 8 under exploration with active (PI) ranging from 3.5% to 100%.

During the period Apr-Dec'2022, IndianOil's share of production from its producing assets has been 3.214 MMT of oil equivalent (MMToe) as compared to 3.207 MMToe during the same period in 2021. Accordingly, IndianOil's share of dividend/ revenue from its projects rose an impressive 25% from US$ 358.3 million during Apr-Dec (2021-22) to US$ 448.3 million in Apr-Dec (2022-23).

In IndianOil's domestic producing asset, Block AAP-ON-94/1, Assam revenue earnings from Dirok gas sale shot to US$ 25.27 million during Apr-Dec (2022-23) from US$ 12.28 million during the same period last year.

During the period, the Russian assets, Taas & Vankor, reported the highest ever dividend earnings of US$ 188 million (~₹ 1,513 crores).

Under a very competitive Discovered Small Fields Round-III (DSF) bid round, consortium of IndianOil-ONGC emerged winners in two Blocks each in Mumbai (offshore) & Krishna-Godavari (offshore). IndianOil has 30 % PI in both the Blocks and Revenue Sharing Contracts for both the Blocks were executed on 09.09.2022.

With a view to bridge the gap in the country's energy demand & supply and accelerate Indigenous production, IndianOil, during the current year, farmed-in into five OALP blocks awarded to OIL in OALP Bid Rounds-III & V. Consequently, Farm-Out Agreements were entered between OIL and IndianOil for transfer of 30% PI to IndianOil in these Blocks on 20.07.2022. These blocks are located in Rajasthan, Assam & Tripura.

As a first, IndianOil has also entered into a Farm-in Farm-out agreement with the country's largest private upstream oil & gas player, Vedanta (Cairn Energy) Ltd., on 27.12.2022, for transfer of 30% stake to IndianOil for two OALP-I exploration blocks located in Assam.

During the current year, IndianOil also successfully completed exploration drilling campaign of three wells in its first overseas operated asset, Block Onshore-1 in Abu Dhabi (IndianOil: 50%; joint operatorship with BPRL), with encouraging results while drilling of fourth well is in progress.

**14.1.1.13. Alternative Energy:**

IndianOil is steadily progressing towards harnessing renewable energy to minimize carbon emissions for a green economy. IndianOil has an installed capacity of 238.40 MW of renewable energy, comprising 167.60 MW wind power capacity and 70.80 MW solar energy capacity as on 31.12.2022. These projects generated 288.78 GWh during Apr'22 to Dec'22, resulting in emission mitigation of 235.3 thousand Metric Tonnes of carbon dioxide equivalent ('00000 $MTCO_2$-eq). During Apr'22- Dec'22, IndianOil solarized 855 retail outlets (ROs). As on 31.12.2022, 20,357 IndianOil's ROs were powered by solar power systems with a cumulative installed capacity of ~118.5 MW. This led to a generation of approx. 114.53 GWh during Apr'22-Dec'22 resulting in

emission mitigation of 93.34 thousand metric tonnes of carbon-dioxide equivalent ($TMTCO_2e$).

IndianOil is selling CBG through 39 ROs across 9 states under the 'IndiGreen' brand. IndianOil has issued a Letter of Intent to over 3,000 plants for production and supply of approximately 7.8 MMTPA of CBG under the Sustainable Alternative Towards Affordable Transportation (SATAT) initiative. The cumulative sale of CBG from September 2019-Dec'22 was 9,472 tons.

**14.1.1.14. Sustainable Development:**

IndianOil is replacing all conventional lights with LED, across its installations. During Apr'22-Dec'22, around 30,000 LED lights were installed. Paper recycling is another focus area for IndianOil. During the year, ~196 Tonnes of wastepaper were recycled through designated recyclers.

During Apr'22-Dec'22, a total of approx 3.84 lakhs saplings were planted across the country, as a part tree plantation campaign.

**14.1.1.15. Corporate Social Responsibility (CSR):**

Since its inception in 1964, IndianOil has been supporting innumerable social welfare and community development programs nationwide. IndianOil has successfully combined its CSR agenda with its business offerings. The CSR projects of IndianOil are undertaken mostly for improving the quality of life in various communities, which invariably include marginalized/ underprivileged sections of the society. Since last 5 consecutive financial years, IndianOil has spent entire CSR budget allocation, thereby achieving 100% budget utilization. In the last 5 years, IndianOil has invested a huge chunk of its CSR Budget in healthcare, education, skill development & environmental sustainability and has touched more than 75 lakh beneficiaries every year.

IndianOil has been running various flagship projects viz. Skill Development Institute (since 2016) and Institute of Chemical Technology-IOCL campus (since 2018) at Bhubaneswar, Assam Oil Division Hospital (since 1906) & Assam Oil School of Nursing (since 1986) at Digboi, Swam Jayanti Samudayik Hospital (since 1999) at Mathura, IndianOil Arogyam (healthcare scheme) & IndianOil Gyanodya (scholarship scheme) (since 2018) near Refinery locations etc.

**14.1.1.16. Some of the Major Awards & Recognitions**

- Rashtriya Khel Protsahan Puraskar for the year 2021 was conferred to IndianOil Corporation Ltd. for encouraging sports through Corporate Social Responsibility.
- Mr. S. M. Vaidya, Chairman, IndianOil was conferred CMD Leadership Award at the Governance Now 8th PSU Awards.
- IndianOil bagged the prestigious Asian Oil and Gas Award for Covid Management and New Product of the Year.
- IndianOil won the Best PSU for the Promotion of Sports Award at Sportstar Aces 2022.
- IndianOil received the Asia Corporate Excellence & Sustainability (ACES) Award 2022.
- IndianOil was adjudged the Best PSU 2021 by Dun and Bradstreet.
- IndianOil won the Global Healthy Workplace Award-2021 under large employer category. This award was instituted by Global Centre for Healthy Workplaces (GCHW) based on 'WHO Healthy Workplace Model'.
- IndianOil bagged the 7th CII Industrial Intellectual Property Award 2021.
- Mathura Refinery was recognised as Excellent Energy Efficient Unit for its Energy performance during the year 2020-21 by the Confederation of Indian Industry (CII). Mathura Refinery won this award in 2019-20 also.
- IndianOil Panipat Naphtha Cracker won the Best Energy Efficient case study' conducted by CHT.
- Paradip Refinery was adjudged winner in Gold Category for the prestigious Kalinga Safety Excellence Award-2020 in the National Safety Conclave, Bhubaneswar.
- IndianOil bagged 19th FICCI CSR Award for 'Madhur Muskaan' initiative.
- IndianOil was adjudged the winner in Excellence in Learning & Development; Excellence in Developing Leaders of Tomorrow categories at the SHRM HR

Excellence Awards 2021, and Special Mention for Excellence in Community Impact.

- IndianOil was in the list of top 20 winners globally in the 2022 BEST Awards by the Association for Talent Development (ATD) for demonstrating employee talent development.
- IndianOil's ePIC project won Govt of India's 24th National Awards for e-Governance under "Excellence in Adopting Emerging Technologies".

### 14.1.2. Oil & Natural Gas Corporation Limited (ONGC)



Oil & Natural Gas Corporation Limited (ONGC) was incorporated on 23.06.1993 with the objective to transform the statutory commission namely Oil & Natural Gas Commission into a Public Sector Company, through an Act of Parliament and to take over the business of the commission w.e.f. 01.02.1994. ONGC is a global Energy company integrated in the entire energy value-chain. ONGC is a Schedule – 'A' listed Maharatna CPSE in E&P sector under the administrative control of Ministry of Petroleum & Natural Gas, which holds 58.91% of its shareholding.

#### 14.1.2.1. Major highlights/initiatives for the year 2022-23 upto December, 2022

a) Facilities of two major projects dedicated to the Nation: Hon'ble Minister of Petroleum & Natural Gas and Housing & Urban Affairs dedicated Facilities of following two major projects worth ~₹ 6,000 crore to the nation at Western Offshore on 23.04.2022.

1. NWIS-R Platform of MHSRDP-IV Project: Total Capex of ₹ 3,740 crores with incremental gain of 3.20 MMT of oil & 0.571 BCM of gas over profile period.
2. Cluster-8 Marginal Field Development Project: Total Capex of ₹ 2,292.46 crores with incremental production of 4.38 MMT of oil & 0.464 BCM of gas over profile period.

b) Sagar Samrat, the legendary oil drilling platform at Mumbai High, has been put back to service, once again, this time as a Mobile Offshore Production Unit (MOPU). After the commissioning of MOPU on 23 December 2022, the first oil flowed at 13:00 hrs into the processing systems from Wells 4 & 5 of WO#16 WHP, ushering in a new era in its journey so far.

c) Hon'ble Prime Minister laid the foundation stone of ONGC's Parbatpur Gas Collecting Station: The Hon'ble Prime Minister laid the foundation stone of ONGC's Parbatpur Gas Collecting Station (GCS) under Jharia Block on 12th July 2022. Parbatpur GCS will help catalyse a 'gas-based economy' in Jharkhand and its neighbouring states. With an estimated investment of ₹ 224 crores, the project will be completed by early 2024.

d) ONGC started e-auctioning for domestic Gas: The gas marketing of ONGC has witnessed a paradigm shift as ONGC developed bidding portal in association with DGH empaneled agency, M/s mjunction services ltd., wherein gas is being sold through dynamic auction process. On 23rd February 2022, gas auction for sale of 0.1 MMSCMD gas from Khubal field of Tripura Asset with the availability date from 1st April 2024 has been completed.

e) Panna-Mukta has completed three years of operations and arrested the oil production decline after B&S Asset took over the Panna-Mukta Process platform and fields seamlessly from PMT-JV partners (M/s BGEPIL, M/s RIL & ONGC-JV

Group) in the midnight of 21st December 2019. The Govt. of India had assigned the Panna-Mukta Fields to B&S Asset, ONGC on a nomination basis on the expiry of the production sharing contract on 21 December 2019. Panna-Mukta field has produced 1.143 MMT of oil & 3.737 BCM of gas against LTGOP of 0.925 MMT of oil & 3.245 BCM of gas in the last three years since the takeover and has arrested production decline from a level of 19% (PMT-JV) to 10% (post takeover by ONGC).

f) Development of marginal field discoveries under Cluster-8 scheme increased Mumbai High Asset Production: Fast track drilling and completion of wells increased production of Cluster-7 & 8 fields from 5,700 bopd on 1st April 2021 to 16,800 bopd on 28th January 2022. Actual production realized from these wells (Cluster-8) is more than Feasibility Report envisaged profile.

g) ONGC inked MoU with Norway's Equinor to collaborate on E&P, clean energy: Oil and Natural Gas Corporation Limited (ONGC) signed a Memorandum of Understanding (MoU) with Equinor ASA, the Norwegian state-owned multinational energy company on 26th April 2022 at New Delhi for collaboration and partnership in areas of upstream exploration & production, midstream, downstream and clean energy options, including Carbon Capture Utilization & Sequestration (CCUS). The MoU was signed during the visit of a high-level delegation led by Norwegian Foreign Minister Anniken Huitfeldt to India in the presence of Hon'ble Minister of Petroleum & Natural Gas and Housing & Urban Affairs, Shri Hardeep Singh Puri.

h) ONGC to intensify its Exploration Program: ONGC has drawn up a comprehensive roadmap to further intensify its exploration campaign, allocating a capital expenditure of about ₹ 31,000 crore during fiscal years FY 2022-23, FY 2023-24 & FY 2024-25. This is 150% of its exploration expenditure of ₹ 20,670 crore in the last three fiscal years. ONGC is leveraging international collaborations with reputed global majors.

i) ONGC commenced trading of domestic gas at IGX: ONGC has started trading of domestically produced gas at Indian Gas Exchange (IGX). ONGC owns 5% equity share in IGX and also have a proprietary membership for trading of gas.

j) ONGC, HOEC signed T&P agreement for first Offshore DSF field: The first offshore DSF field of HOEC, B-80 has been put into production after HOEC signed the Tolling & Processing (T&P) agreement with ONGC on 3rd June 2022 at NBP Green Heights in Mumbai.

k) ONGC, OTBL signed contract for bio-remediation addressing on-land oil spillage: ONGC and ONGC Teri Biotech Limited (OTBL) entered into a centralized rate contract on 1st June, 2022 for the restoration of oil spillage areas and ex-situ bio-remediation of oil-contaminated soil for a period of three years.

l) ONGC Videsh announced new discovery in Colombia: ONGC Videsh Limited (OVL), the wholly-owned subsidiary and overseas arm of ONGC, has made an oil discovery in the Well Urraca-IX, located in Block CPO-5, Llanos basin in Colombia. During the initial testing, fluid flowed at approximately 600 bbl/day with around 40-50% water cut and oil of 16 degree API. Oil discovery in the lower Mirador opens up new areas for further exploration in the northern part of the Block.

m) Minister of Petroleum & Natural Gas visited offshore rig Platinum Explorer: The Hon'ble Union Minister of Petroleum and Natural Gas Shri Hardeep Singh Puri paid a visit to the Platinum Explorer rig working on the wells in

the KG-DWN-98/2 Cluster-II fields on 12th June 2022. While appreciating the efforts of ONGCians, Hon'ble Minister enquired about the Rig availability in the market and advised to take necessary steps to increase the domestic Oil & Gas production.

n) ONGC to make Green Hydrogen; inks MoU with India's leading renewable energy Company Greenko ZeroC: Energy major ONGC has signed a Memorandum of Understanding (MoU) with M/s Greenko Zero C Private Limited (Greenko), to jointly pursue opportunities in Renewables, Green Hydrogen, Green Ammonia and other derivatives of green hydrogen.

o) ONGC inks Heads of Agreement with ExxonMobil for Deepwater exploration in Indian East and West coasts: ONGC has signed a Heads of Agreement (HoA) with ExxonMobil for Deepwater exploration in East and West coasts of India on 17th August 2022 in the presence of Secretary, Ministry of Petroleum & Natural Gas. The collaboration areas focus on the Krishna Godavari and Cauvery Basins in the Eastern offshore and the Kutch-Mumbai region in the Western offshore. Collaboration between ONGC and ExxonMobil will be a strategic fit where ONGC's knowledge and past experience in these areas will be coupled with ExxonMobil's global insights.

p) Hazira Plant commences processing & marketing of natural gas from private players: In its endeavor to maximize VAP production & sales in tandem with gas processing, B&S Asset and Hazira Plant have provided services for the first time to a private player-Hindustan Oil Exploration Company (HOEC)-for tolling and processing of B-80 natural gas routed through 42" trunk line to Hazira plant.

q) ONGC has signed an MoU with UK-based global petroleum giant Shell on 7th December 2022. The collaboration will focus on a joint carbon dioxide ($CO_2$) storage study and Enhanced oil recovery (EOR) screening assessment for key basins in India, including depleted oil and gas fields and saline aquifers.

r) Joint Operating Agreement (JOA) signed between ONGC and Indian Oil Corporation Limited (IOCL) for augmenting domestic energy production.

**14.1.2.2. Exploration:**

- ONGC acquired 383 LKM of 2D, 9,392 SKM of 3D seismic data and drilled 52 exploratory wells till 01.01.2023.
- ONGC has declared total 6 discoveries (4 in onland and 2 in offshore) during FY 2022-23 in its operated acreages. Out of these, 1 is prospect (onland) and 5 (3 in onland and 2 in offshore) are pools. Out of six discoveries notified till date during FY 2022-23, two discoveries viz. Mandapeta-60 and Kesanapalli West Deep-7 have already been monetized by ONGC.
- ONGC signs 6 contracts for Discovered Small Fields in Offshore during DSF-III, 2 contracts under CBM bid round-2021: ONGC has signed 6 contracts for Discovered Small Fields (DSF) in the Offshore under DSF-III bid round, with 3 each for fields in the Arabian Sea and Bay of Bengal. The Energy Maharatna also signed 2 contracts for Fields under Special CBM Bid round-2021 blocks in Jharkhand and Madhya Pradesh.
- Success of well NG-08 in the North Geleki Field gives a new lead for exploration and realization of YTF potential in Barail sands Location NGAE was proposed in the C corridor of Geleki Main Structure with an objective of BMS (Primary) and BCS-I & BCS-III (Secondary). After drilling the well NG-8, a new northern extension of Barails sand in Geleki area has been encountered.

- Simultaneous Exploration in side-track well IP#5y, real-time monitoring operational skills lead to oil establishment in L-IIB reservoir: Simultaneous Exploration (SIMEX) in Side-track well IP#5y and real time monitoring operational skills lead to establishment of oil in d-sub layer of L-IIB reservoir beyond REC limit in Mumbai High.
- ONGC signed a Memorandum of Understanding (MoU) with Chevron New Ventures PTE Limited, a subsidiary of California-based energy major Chevron Corporation on 19th September 2022, to assess exploration potential in India. The strategic collaboration is a part of ONGC's international outreach program of inviting global E&P companies for a suitable partnership to explore the frontier areas and geologically challenging and difficult plays of Indian sedimentary basins.
- Logging Group, KDMIPE, publishes Atlas of core-derived acoustic and geo-mechanical parameters of Indian Sedimentary Basins. The atlas will serve as an important reference document for E&P geoscientists and drilling engineers.
- Accelerated exploration in Padra field leads to significant production jump: Padra Field is the highest oil producer in Cambay Asset and accounts for nearly half of its production. Currently the field is producing oil @ 440-450 $m^3$/day.

**14.1.2.3. Production initiatives:**

- Rajahmundry Asset executes hydro-fracturing campaign to unlock potential of Malleswaram Field: It proved to be a landmark for the Rajahmundry Asset, particularly after the unlocking of tight reserves of a key oil field in the KG basin and setting up a benchmark for exploiting such tight reservoirs.
- Gojalia GCS accomplishes target: Tripura Asset of ONGC took up the key projects of establishing Gojalia GCS and laying of a 58 km pipeline from Gojalia GCS to Palatana GMS.
- Revival of Mukta pay in B-55 Field of B&S Asset yields significant gains in gas production: B-55 field, discovered in 1978, is one of the initial marginal fields of ONGC, located at about 110 Km NW of Mumbai. With the deployment of rig DS Fossil, well B-55A#4 was taken up for revival & it was decided to isolate the existing intervals in Bassein Pay and perforate 27m additionally in Mukta Pay. Presently, the well is flowing gas @ 0.117 MMSCMD through 48/64" choke with FTHP of 41 ksc.
- Hazira Plant commissions India's first Water Mist Turbine Generator Fire Suppression System is known to be the future of firefighting system due to its wide range of suitability and superiority over other firefighting media. In water mist system, water droplet size is considerably reduced to microns thus increasing the surface area of droplets. The water droplets after absorption of heat from fire converts into steam and expands 1,700 times, thereby displacing the oxygen in the air.
- WSS Ahmedabad bags patent for developing innovative low temperature Breaker System for Hydraulic Fracturing: This has ensued the innovation of Techno-economical breaker system enabling WSS Ahmedabad to carry out Hydraulic Fracturing Operations of Low/ Ultra low temperature wells (having BHT of 24-40 °C) with in-house technology upgradation, indigenous chemicals & equipment already in place, which may have incurred a huge amount of expenditure to International service providers for such type of wells.

**14.1.2.4. Drilling Initiatives:**

- Liner While Drilling-First in Asia, Successful implementation of Technology in depleted L-III Reservoir of Mumbai Offshore: Drilling Services

created history by successfully drilling the 1st in Asia Liner While Drilling (LwD) job in 8 ½" phase of Well SN#8Y.

- Cambay Asset inducted a new state-of-the-art AC-VFD, Category-2 Drilling Rig, the first of its kind in ONGC. New Rig NG-1500-1 induction opens a new chapter in the progress of Cambay Asset that makes the rig operation efficient and safer for the rig personnel.

**14.1.2.5. Technical Services initiatives:**

- ONGC's transition to SAP S/4 HANA (Intelligent Enterprise Platform) goes live on 11th December 2022, ensuring an improved performance, accelerated digitization, reduced transaction processing and develop better insights This makes ONGC rank amongst the first few organizations in the country to be running on the latest SAP software S/4 HANA version 2021.
- Cambay Asset organized the first-ever Business Partners' Meet on 30th September 2022 with an objective to strengthen the relationship between ONGC and its business partners by making them aware about the policies adopted by the Energy Maharatna in recent years.

**14.1.2.6. Renewable Energy and Sustainable Management initiatives by ONGC**

ONGC has introduced clean technologies for emission control including design and construction facilities for different gaseous, liquid and solid effluent generated due to drilling, production and processing facilities from onshore and offshore operations which is illustrated as under:

- Clean Development Mechanism (CDM) Projects: ONGC started Clean Development Mechanism (CDM) in 2006 and so far, ONGC has registered 15 CDM projects with the United Nations Framework Convention on Climate Change (UNFCCC) like Waste Heat Recovery Project (Mumbai High South), Gas Flaring reduction Project at Uran and Hazira Gas Plant, 51 MW Wind power project at Bhuj, Green Building at Mumbai, Delhi, Dehradun, Kolkata, 102 MW Wind power project at Jaisalmer Rajasthan etc. The combined CER generation capacity from 15 CDM projects is around 21,02,769 CERs (1 CER = 1 tonne of $CO_2e$)
- Green House Gas (GHG) Accounting & mitigation: ONGC aims to reduce GHG emissions by focusing on improved energy efficiency. The scope-1 and scope-2 emissions during FY'22 were 9.136 $MMTCO_2e$, a reduction of about 3% from the previous year.
- The Green Methane Initiatives (GMI) is an action-oriented initiative from United States Environment Protection Agency (USEPA) to reduce global fugitive methane emissions to enhance economic growth, promote energy security, improve the environment, and reduce greenhouse gases emission. During FY'22 survey was conducted at Ankleshwar Asset and C2-C3 Plant.
- Solar and Wind energy initiatives: The total installed capacity of renewable energy as on 31st March 2022 was about 184.3 MW (Solar: 31.3 MW and Wind: 153 MW) ONGC has also signed an MoU with SECI for Renewable Energy Projects in Solar, Wind (onshore), Solar Parks, EV Value Chain, Green Hydrogen, Storage etc.
- Replacement of conventional lights with LED lighting: In line with the government of India's call for promoting efficient energy use (Ujala Scheme), ONGC entered in to an MoU with Energy Efficiency Services Limited (EESL for replacement of all conventional lights in ONGC in a phased manner. However, incandescent lamps, tube lights and CFLs were immediately replaced. During FY'22, ONGC installed 41,000 LED lights making a total of around 3,51,000 LED lights installed so far by ONGC. This has enabled ONGC to save around 75.9 million electricity units annually, realizing annual savings of ₹ 531 million.

- Micro Turbines and Dynamic Gas Blending system: As part of sustainability initiative, 05 Micro Turbines of aggregate capacity 460 KW and 02 Dynamic Gas Blending systems (in diesel engines of drilling rig) were taken up in different locations of ONGC taking the total to 7 Micro Turbines and 6 DGB's.
- Wind and Solar Energy Projects: ONGC has set up its first wind power project of 51 MW capacity in Gujarat (Bhuj district) and another wind power project of 102 MW capacity at Jaisalmer, Rajasthan. Solar power plants are also installed at work centres. The total installed capacity of renewable energy as on date is about 184 MW. ONGC's "Energy Strategy 2040" envisages to build a 5-10 GW capacity portfolio with focus on offshore wind; towards de-risking of portfolio against long term disruptions and reducing carbon footprint of the company.
- Carbon Capture, Utilisation and Storage (CCUS): Carbon Capture, Utilization and Storage (CCUS) is a critical $CO_2$ emission abatement technology that can prevent large quantities of $CO_2$ from being released into the atmosphere. Considering its benefits, ONGC entered into an MoU with Indian Oil Corporation Limited (IOCL) for $CO_2$ based Enhanced Oil Recovery (EOR). Under this initiative, the $CO_2$ captured from the IOCL's Koyali refinery will be utilized for EOR from the depleting oil fields of ONGC in Gandhar field, near Vadodara. The project has the potential for sequestrating 5 to 6 million $TCO_2$ by the year 2040.
- Sustainable Water Management: ONGC adopted the policy of Sustainable Water Management (SWM) in its water management practices and also modified its policy on Rainwater Harvesting (RWH) for smooth implementation, monitoring and regular maintenance of RWH projects. Uran Plant is in the process of setting up a 10 MLD sea water desalination plant that can be scaled up to 20 MLD in future.

**14.1.2.7. Major Awards & Recognitions:**

- Forbes 2000 list 2022: Forbes has ranked the Companyas 5th largest in India and 229th worldwide in Global 2000 list based on sales, profit, assets and market value.
- ONGC ranked 190th in Fortune Global 500.
- ONGC ranked 25th in Platt's top 250 Global Energy Company.
- **ONGC conferred with the Golden Peacock Award for Risk Management:** In recognition of its commitment to Risk Mitigation in its business and operations, ONGC received the Golden Peacock Award for Risk Management at the 2022 London Global Convention on Corporate Governance & Sustainability organized by Institute Of Directors (IOD), India at House of Lords, Parliament of the United Kingdom on 09 November 2022.
- ONGC won the WCDM-DRR Award: ONGC conferred with WCDM-DRR Award for excelling in the field of Disaster Management. Director (Onshore) also won the "Individual Award of Excellence" for his "outstanding contribution in the field of Disaster Preparedness for Effective and Efficient Disaster Risk Management (DRM)."
- ONGC features in Great Place to Work list of India's Best Employers among Nation-Builders: ONGC has been recognized as one of the best employers in India among other nation-builders by the Great Place to Work (GPTW) on 14th June 2022. The Energy Maharatna has been featured on the GPTW's 'Wall of Fame' for its commitment to maintain the energy security of the nation.
- ONGC has been conferred with Global safety Awards 2022: Corporate HSE has been accorded the coveted Global

Safety Awards 2022 in Platinum Category for its outstanding performance in practicing excellent work culture.

- ONGC Videsh Limited Sucursal Colombiana has been recognized for completing two years with 'Zero Labor Accidents' in CPO-5 block of Llanos Basin in Colombia.

### 14.1.3. GAIL (India) Limited



GAIL (India) Ltd. was incorporated in August, 1984 as a Central Public Sector Undertaking (PSU) under the Ministry of Petroleum & Natural Gas (MoP&NG), with the mission of "accelerating and optimizing the effective and economic use of Natural Gas and its fractions for the benefit of the national economy". Government of India now holds 51.52% shares of the company. GAIL became a Navratna in 1997 and is now one of the twelve Maharatna Public Sector Undertaking, the highest status conferred to any PSU.

GAIL started as a Gas Transmission Company during the late eighties and has grown organically by setting up a large network of Natural Gas pipelines of ~14,600 Km; two LPG Pipeline systems of ~2,030 Km; five Gas Processing plants for production of LPG and other liquid hydrocarbons with a combined production capacity of around 1.4 MMTPA and a gas based integrated petrochemical plant of capacity 810 KTPA of polymer. GAIL is co-promoter of two other petrochemical projects including 280 KTPA Brahmaputra Cracker and Polymer Limited (BCPL) Complex in Assam and 1.4 MMTPA ONGC Petro-additions Limited (OPaL) project in Gujarat. Petronet LNG (a JV of GAIL) operates two LNG regasification terminals at Dahej & Kochi. GAIL is also the promoter of Konkan LNG Private Limited which operates LNG regasification terminal at Dhabol with design capacity of 5 MMTPA. Further GAIL has 14.72% equity stake in Ramagundam Fertilizer and Chemicals Ltd. (RFCL) incorporated by NFL, EIL & FCIL for producing 2200 MTPD Ammonia and 3,850 MTPD Urea. GAIL is also in the process of setting up of a Coal Gasification based Fertilizer plant through a JV-Talcher Fertilizer Ltd. (TFL) formed with Coal India Ltd. (CIL), Rashtriya Chemicals & Fertilizers Ltd. (RCF) each having 31.85% equity share and Fertilizer Corporation of India Ltd. (FCI) which has 4.45% equity.

GAIL is a pioneer in city gas distribution (CGD) business in India. It has presence in 67 Geographical Areas across India.

GAIL has 8 JVs and three wholly owned subsidiaries in India for its CGD business. Further, GAIL has overseas presence in USA, Singapore, Myanmar, China, and Egypt. It has opened offices in Singapore, Yangon, Houston and Moscow (Bharat Energy Office). It has a wholly owned subsidiary, GAIL Global (USA) Inc. (GGUI) in USA. GGUI has formed subsidiary, GAIL Global (USA) LNG LLC (GGULL) which has booked 2.3 MMTPA capacity in Dominion Cove Point LNG liquefaction project. GAIL has another wholly-owned subsidiary company viz. GAIL Global (Singapore) Pte. Ltd., for trading in LNG and for undertaking overseas investments. GAIL's total LNG sourcing portfolio is about 14 MTPA.

GAIL has participating interest in 13 blocks of which 10 blocks are in India, 2 in Myanmar and 1 Shale Gas JV in Eagle Ford Basin, Texas, USA. Besides, GAIL has 4.17% equity partnership in South East Asia Gas Pipeline Company (SEAGP) which is transporting gas from Myanmar to China. GAIL has made investments in three companies in downstream business at Egypt and China.

GAIL has renewable portfolio of ~132 MW including ~118 MW of wind and ~14 MW of solar energy. In addition, GAIL is exploring various business opportunities in the Production and Marketing of Compressed

Bio Gas (CBG) from organic waste. Emerging areas including ethanol, hydrogen, etc. are also being explored for new business opportunities. GAIL has started hydrogen blending as a pilot project to establish the techno-commercial feasibility of blending hydrogen in the CGD network. Further, GAILis setting up a 10 MW green hydrogen plant which will be one of the largest green hydrogen plants in the world.

During the financial year 2021-2022, GAIL registered highest ever Turnover & Profit of ₹91,426 crore & ₹10,364 crore.

The manpower of GAIL as on 31st March, 2022 was 4,754 Nos.

**14.1.3.1. Physical and Financial performance: -**

**Physical**

| Parameters | Units | Performance in 2021-22 | Performance in 2022-23 (till Dec, 2022) |
|---|---|---|---|
| Gas Transportation | MMSCMD | 110.98 | 106.97 |
| Gas Marketing | MMSCMD | 96.24 | 94.42 |
| Liquid Hydrocarbon Production | TMT | 1,002 | 701 |
| Petrochemical Production | TMT | 777 | 295 |
| LPG Transportation | TMT | 4,199 | 3,256 |

**Financial**

| Description | Units | Performance in 2021-22 | Performance in 2022-23 (till Dec, 2022) |
|---|---|---|---|
| Revenue from Operations | ₹ Crore | 91,646 | 1,11,443 |
| Gross Margin (EBDITA) | ₹ Crore | 15,876 | 8,059 |
| Profit Before Tax | ₹ Crore | 13,590 | 5,993 |
| Profit After Tax | ₹ Crore | 10,364 | 4,698 |

**14.1.3.2. Major Projects/ pipelines under execution by GAIL**

**A. Jagdishpur Haldia and Bokaro-Dhamra Pipeline (JHBDPL)**

With an aim to ensure cleaner and quality energy in Eastern India at an affordable Price, GAIL is executing Jagdishpur-Haldia & Bokaro-Dhamra Natural Gas Pipeline (JHBDPL) Project (2,655 Km), popularly known as the Pradhan Mantri Urja Ganga of Eastern India. Further, the pipeline is also being extended from Barauni to Guwahati (via Siliguri & Bongaigaon) (729 Km), as an integral part of JHBDPL, to connect North East Region (NER) with the National Gas Grid. Total integrated JHBDPL is 3,384 Kms.

The entire JHBDPL including BGPL is being executed at an investment of ₹ 15,520 crores & scheduled to be completed progressively by June'2023. It will pass through Uttar Pradesh (335 Km.), Bihar (711 Km.), Jharkhand (539 Km.), West Bengal (755 Km.), Odisha (782 Km.) & Assam (262 Km.). JHBDPL will revive fertilizers plant of HURL Gorakhpur, HURL Sindri, HURL Barauni & will also meet the demands of M/s Matix Fertilizers in Durgapur. Further, the network will enable supply of cleaner fuel for domestic & industrial customers in eastern part of India enroute the pipeline.

**1,976 Km. of JHBDPL, including connectivity to HURL Gorakhpur, HURL Sindri, HURL Barauni & Matix Fertilizers has been commissioned.**

**B. Mumbai Nagpur Jharsuguda Pipeline (MNJPL)**

Mumbai-Nagpur-Jharsuguda pipeline (1,755 Km.) MNJPL, part of National Gas Grid (NGG), will pass through 25 districts inthe states of Maharashtra, Madhya

Pradesh, Chhattisgarh & Odisha. It will originate from Thane (Maharashtra) & willconnect to JHBDPL in Jharsuguda (Odisha). Also, spur line will extend from Nagpur (Maharashtra) to Jabalpur (Madhya Pradesh). The pipeline shall ensure availability of clean fuel and cater the demand of CGD industries and anchor load customers.

Construction work is in full swing for Mumbai-Nagpur & Nagpur-Jabalpur section and RoU acquisition is under progress in Nagpur-Jabalpur section. 517 Km. lowering was achieved till January 2023.

**C. Srikakulam Angul Pipeline (SAPL)**

The pipeline from Angul to Srikakulam (744 Km.), part of National Gas Grid (NGG), will pass through 12 districts of Odisha & Andhra Pradesh. The pipeline shall ensure availability of clean fuel and cater the demand of CGD industries and anchor load customers. Construction work is in full swing & 209 Km. lowering was achieved till January 2023.

**D. Kochi-Koottanad-Bangalore-Mangalore Pipeline (KKBMPL) Project Phase-II (891 Km.):**

Kochi to Mangalore pipeline (KMPL-450 Km.) passing through Kerala & Karnataka was commissioned & anchor customers Mangalore Chemicals and Fertilizers Limited, ONGC Mangalore Petrochemicals Limited & Mangalore Refinery and Petrochemicals Limited were also connected.

129 K.m. section of Koottanad to Bangalore Pipeline has also been commissioned. For Tamil Nadu section of ~310 Km., pre-construction activities are in progress, post Go-ahead from Government of Tamil Nadu.

**E. North-East Natural Gas Grid (Indradhanush Gas Grid Ltd (IGGL)**

Indradhanush Gas Grid Limited (IGGL), a Joint Vnture Company of IOCL (20%), ONGC (20%), GAIL (20%), OIL (20%), and NRL (20%) has been entrusted by the Govt. of India for the implementation of the prestigious North East Gas Grid (NEGG) project, conceived in line with the Hydrocarbon Vision 2030 for North East India. The NEGG is being implemented to supply Natural gas to all the eight North Eastern states i.e., Assam, Arunachal Pradesh, Meghalaya, Tripura, Mizoram, Nagaland, Manipur & Sikkim, at an estimated cost of ₹ 9,265 crores. The 1,656 Km long natural gas pipeline grid having a capacity of 4.75 MMSCMD traverses through challenging terrains of North East India and would connect.

Guwahati to capital/major cities of the region like Itanagar, Dimapur, Kohima, Imphal, Aizawl, Agartala, Shillong, Silchar, Gangtok and Numaligarh. Various activities are going on in a phased manner and project will be commissioned by March, 2024.

Apart from above pipelines, Construction work is in progress for **Dhamra-Haldia Pipeline (253 Km.), Haridwar-Rishikesh-Dehradun Pipeline (50 Km.) & Sultanpur-Jhajjar-Hisar pipeline (135 Km.)** to provide natural gas connectivity to cities en-route the pipeline.

**F. Coal Gasification**

GAIL is in the process of setting up a coal gasification-based Urea project through a JV-Talcher Fertilizers Limited (TFL) formed with Coal India Limited (CIL), Rashtriya Chemicals and Fertilizers Limited (RCF), each having 31.85% stake and Fertilizer Corporation of India Limited (FCIL) having 4.45% equity. The project with an estimated cost of around ₹ 13,277 crores is envisaged to produce 2,200 MTPD Ammonia and 3,850 MTPD Urea.

Cabinet Committee on Economic Affairs (CCEA) has approved the exclusive subsidy policy for Urea to be produced by TFL on 20th April, 2021. The financial closure of the project has been successfully concluded in June, 2021 with debt tie up of ₹ 9,560 crore (approx.). Contract of approx. value of ₹ 11,600 (approx.) crore has already been awarded and project achieved overall 39.18% progress.

**G. Petrochemicals**

GAIL is in the process of setting up a 500 KTA Propane dehydrogenation and Polypropylene (PDH-PP) Plant at Usar, Maharashtra, which is expected to be commissioned in 2025. This would be the first plant in India using Propane Dehydrogenation technology for the production of Propylene. For this project, M/s Lummus Technology LLC, USA has been selected as technology Licensor for the PDH unit & M/s Grace Technologies Inc. has been selected as Technology Licensor for PP Unit. Various project related activities are in full swing.

GAIL is also setting up a 60 KTA Polypropylene (PP) plant at Pata. Environment Clearance for the Project has been granted by the Ministry of Environment, Forest & Climate Change. M/S Grace Technologies Inc, USA has been selected as the technology Licensor for the PP unit at Pata. Various project activities are in full swing and it is expected to be commissioned in 2024.

**Achievements:-**

During the FY 2022-23, ~455 Km. of gas pipeline is operationally ready. Further, around 4,860 Km. of pipeline as a part of National Gas Grid & other small connectivities is under different stages of project execution.

- GAIL registered highest ever Turnover & Profit of ₹ 91,426 crore & ₹ 10,364 crore respectively in FY 2021-22.
- Vijaipur to Auraiya pipeline (~350 Km.), part of National gas Grid, successfully commissioned in the year 2022.
- Bokaro Angul Mainline (533 Km.) dedicated to the nation by Hon'ble Prime Minister on 12.07.2022.
- Srikakulam-Angul (744 Km.) Foundation stone laid by Hon'ble Prime Minister on 12.11.2022.
- Dharma-Angul Mainline (206 Km) commissioned on 16.02.2023
- GeM Procurement of ₹ 2,593 crores has been made against the MoU Target of ₹1,335 crore.
- In line with the National Hydrogen Energy Mission, GAIL has successfully commissioned India's First Project for blending of Hydrogen in City Gas Station, at Indore.
- GAIL is setting up an electrolyser unit of 10 MW capacity to produce 4.3 Tons per day of Green Hydrogenat Vijaipur in the state of Madhya Pradesh.
- GAIL has achieved zero reportable incident, at Pan India installations.
- "NIL" comments received from CAG on accounts for FY 2021-22 (13th year in a row)

**Major Accolades/Awards received during the year:-**

- GAIL has received the coveted "Platts Global Energy Award" in the "Energy Transition-Midstream" category for year in 2022.
- GAIL has won the Bronze Shield in "SAFA Best Presented Annual Report Awards, Integrated Reporting Awards & SAARC Anniversary Awards for Corporate Governance Disclosure, 2021 in Power and Energy Category on 18.12.2022.
- GAIL Pata bags the 'Certificate of Merit' in Petrochemical Sector in National Energy Conservation Energy Awards (NECA)-2022.
- GAIL Pata wins "Gold Award" in 9th National Award for Manufacturing Competitiveness IGMC by International Research Institute of Manufacturing.
- GAIL has emerged winner for the following FIPI Award:
  - Sustainably Growing Corporate of the Year (GAIL is joint winner along with BPCL).
  - Special Award for Urja Gas Pipeline & Associated CGD Networks.

- Excellence in Human Resource Management- Company of the year.
- GAIL has been awarded with the Gold Shield in the category XI- Public Sector Entities of ICAI Awards of Excellence in Financial Reporting for the year 2020-21.
- GAIL emerged as the winner in 'Sectoral Performance in Gas Processing, Transmission & Marketing' category by Dun & Bradstreet Corporate awards 2021.
- GAIL awarded for making highest procurement among CPSEs through GeM portal for the year 2021-22.

### 14.1.4. Bharat Petroleum Corporation Limited (BPCL)



Bharat Petroleum Corporation Limited (BPCL) is an Indian government-owned Oil and Gas Maharatna Company in the downstream sector engaged in exploration & production, refining and marketing of petroleum products and headquartered in Mumbai, Maharashtra.

BPCL operates three large refineries, one each in Kochi, Mumbai, and Bina. The operations are conducted across the country via seven of its Business Units (BU) and a pipeline network stretching over 3,706 Km. The business units include Refinery, Retail, Lubricants, Liquefied Petroleum Gas, Industrial & Commercial, Aviation and Gas. Two new BUs viz. Renewables and New Businesses has been created in 2021-22 to create additional sustainable revenue streams to support BPCL core business. BPCL has continuously focused on enhancing its product portfolio.

The product portfolio of BPCL encompasses motor sprit (MS), high speed diesel (HSD), industrial & commercial lubricants, Aviation fuel, Bitumen, LPG, Solvents, Food Grade Quality Hexane (FGQH), Polymer grade Propylene etc. BPCL, in addition to its vast infrastructure network across the country has also ventured into the alternate and renewable energy space with initiatives in Biofuels, Solar, EV charging etc. BPCL is ranked 295 in Fortune's 'Global 500' 2022 listing.

#### 14.1.4.1. Financial Performance:

BPCL's Revenue from Operations rose by 29% to ₹ 4,00,054 crore in Apr-Dec 22 from ₹ 3,09,040 crore in Apr-Dec 21. During the period Apr-Dec 22, BPCL registered an after-tax Loss of ₹ 4,608 crores as against a Profit after tax of ₹ 8,862 crore in Apr-Dec 21. Gross Refining Margin stood at US$ 20.08/bbl in Apr-Dec 22 as against US$ 6.98/bbl in Apr-Dec 21. However, the suppressed marketing margins of major petroleum products have more than offset the benefit of higher GRM.

#### 14.1.4.2. Contribution to Exchequer:

Over the years, BPCL has contributed to the Government exchequer in the form of duties, taxes, and dividend. During the period Apr-Dec'22, ₹ 98,914 crore was paid to the exchequer. An amount of ₹ 47,815 crore was paid to the Central Exchequer and ₹ 51,099 crore was paid to the States Exchequer during Apr-Dec'22.

#### 14.1.4.3. Refinery Performance:

**Mumbai Refinery**

The present installed capacity of the Mumbai Refinery is 12.00 MMTPA. Mumbai Refinery achieved throughput of 10.5 MMT during 2022-23 (up to Dec'2022). For FY 2021-22, crude throughput of 14.44 MMT was achieved, and crude refining capacity utilization was 120.33%.

**Kochi Refinery**

The present installed capacity of Kochi Refinery Ltd. is 15.5 MMTPA. Kochi Refinery processed 11.54 MMT of crude in Apr-Dec'22. In FY 2021-22, KR processed 15.4 MMT of crude with crude refining capacity utilization of 99.4%.

Following major projects were commissioned:

- BS-VI Motor spirit Block Project (MSBP) at an approved cost ₹ 3,288.96 crores to maximize BS-VI grade Motor spirit production by upgrading Naphtha was completed in March 2021 and fully commissioned by June 2021.
- Propylene Derivative Petrochemical Plant (PDPP) at an approved cost of ₹ 5,575 crores (net capital cost) for producing niche petrochemicals were fully commissioned in September 2021.
- **2022-23:** Extension of 20" Pipeline from North Jetty Reclamation Pit to Jetty at Cochin Port Authority area is in progress.

**Bina Refinery**

Bharat Oman Refineries Limited (BORL), Bina Refinery was incorporated as a joint venture of Bharat Petroleum Corporation Limited BPCL) and OQ SAOC (earlier known as Oman Oil Company SAOC) to establish Bina Refinery in Bina, Madhya Pradesh. Refinery started its commercial production in May 2011. Effective July 2022, Bharat Oman Refineries Limited (BORL) has merged with its parent company, Bharat Petroleum Corporation Limited (BPCL). The present installed capacity of Bina Refinery is 7.8 MMTPA. Bina Refinery achieved throughput of 5.769 MMT during 2022-23 (up to Dec'2022) against the installed capacity of 7.8 MMTPA. For FY 2021-22, Crude throughput of 7.410 MMT was achieved, and crude capacity utilization was 95%.

**14.1.4.4. Pipeline Performance:**

BPCL owns a network of 3,536 Km. of multi-product and crude pipelines, with design capacity of 29 MMTPA. During the year 2022-23 (till Dec'22), pipeline throughput was 14.092 MMT as against 12.055 MMT during corresponding period of 2021-22. Bharat Petroleum continued to operate pipelines in an efficient way and achieved a reduction of 2.93 % in 2022-23 (till Dec'22) in Specific Energy Consumption (SEC) vis-a-vis corresponding period of last year.

**14.1.4.5. Marketing Infrastructure and performance:**

BPCL has a robust distribution network comprising of 43 POL depots, 16 major Installations, 23 TOPs, 20,729 Retail Outlets, 927 SKO Agencies, 54 LPG bottling plants, 6,235 LPG Distributorships, 62 Aviation Service Stations, 4 lubricant blending/ filling plants and Pipeline Network of 3,706 Kms. (including crude oil & LPG pipeline) as on 31.12.2022. The market sales of BPCL in FY 2022-23 (up to Dec 2022) was 36.05 MMT. During FY 2021-22, the market sales was 42.60 MMT.

**14.1.4.6. Research & Development:**

Bharat Petroleum's R&D plays an important role in developing novel technologies and providing innovative technological solutions to customers and stakeholders. Corporate Research & Development Centre (CRDC) at Greater Noida, Uttar Pradesh and Product & Application Development Centre (P&AD) at, Mumbai are proactively involved in adding value to the businesses through research activities. As a part of "Aatmanirbhar Bharat", CRDC has developed various novel and niche products/processes and is aggressively working to commercialize the same. Further details are available at Chapter-8.

**14.1.4.7. Petrochemical Performance:**

Propylene Derivative Petrochemical Project (PDPP), which marks foray of BPCL into petrochemical sector has been progressively commissioned during the year 2021-22. Feedstock for the project is Polymer Grade Propylene. Product portfolio covers niche petrochemicals viz. Acrylic Acid, Oxo Alcohols and Acrylates. These products are currently imported into the Country and hence PDPP is a 'Make in India' initiative.

Upon commissioning of PDPP units, BPCL has become the first Indian refinery to produce niche petrochemicals like Acrylates (Butyl Acrylate & 2 Ethyl Hexyl Acrylate), Acrylic acid and Oxo-alcohols (Normal Butanol, 2 Ethyl Hexanol and Iso Butanol), which are being predominantly imported

into the country and is expected to save approximately ₹ 4,000 crore of valuable foreign exchange. Subsequent to commissioning and stabilization of the units, production of Niche Petrochemicals during the year 2021-22 was 92,300 MT and in the current financial year (till Dec-22) it has reached 1,30,000 MT.

Aligned with national priorities and pursuing diversification opportunities for growth and risk mitigation, BPCL has been closely monitoring the developments in petrochemical space and developing business case for future investments.

**14.1.4.8. Natural Gas:**

BPCL continued to expand its natural gas business during the year 2022-23 and clocked sales (including internal consumption) of 1.08 MMT (Apr-Dec) as against 1.32 MMT in 2021-22(Apr-Dec). BPCL now has a customer base of 59 patrons with the addition of 4 new customers during the year, besides supplies to its own refineries at Mumbai (Maharashtra) and Kochi (Kerala).

**14.1.4.9. City Gas Distribution:**

BPCL has authorization for development of City Gas Distribution (CGD) Networks by Petroleum and Natural Gas Regulatory Board (PNGRB) for 25 Geographical Areas comprising 62 Districts. CGD projects are progressing in full swing to ensure supply of Natural Gas at the earliest. Till January 2023, 265 CNG stations have been established, 1.2 lakhs PNG customers are connected, CGD network laid with 1,051 Km. of steel pipeline and 2,604 Km. of MDPE pipeline, and one L-CNG station is operational in Aurangabad (Maharashtra).

**14.1.4.10. Exploration & Production:**

Bharat Petro Resources Limited (BPRL) has participating interest (PI) in seventeen blocks of which eight are in India and nine overseas. Additionally, BPRL has equity stake in two Russian entities holding the license to four producing blocks in Russia.

Five of the eight blocks in India were acquired under different rounds of New Exploration Licensing Policy (NELP), one block was awarded under Discovered Small Fields (DSF) Bid Round-I and two blocks were awarded under the Open Acreage Licensing Policy (OALP) Bid Round-I.

Out of nine overseas blocks, five are in Brazil, two in United Arab Emirates and one each in Mozambique and Indonesia. The blocks of BPRL are in various stages of exploration, appraisal, development, and production. The total acreage held by BPRL, and its subsidiaries is around 21,360 Sq. Km. of which approximately 50% is offshore.

Indian consortium (IC) comprising of BPRL, Indian Oil Corporation Limited (IOCL) and Oil India Limited (OIL), through wholly owned subsidiaries and Special Purpose Vehicles (SPV) incorporated in Singapore, had acquired 29.9% equity stake in LLC Taas-Yuryakh Neftegazdobyacha (TYNGD) and 23.9% in JSC Vankorneft from M/s Rosneft, a National Oil Company of Russia, in October 2016. The SPVs which are the shareholders of the Russian entities are only entitled to dividends. BPRL's effective share of oil production from the Russian entities is approx. 10 kbopd from TYNGD and 15 kbopd from Vankorneft.

In 2018, Bharat Petro Resources Limited (BPRL), along with ONGC Videsh and Indian Oil Corporation Limited acting jointly as the Indian Consortium were awarded 10% Stake in Lower Zakum Concession, Offshore Abu Dhabi. This was the first time that Indian oil and gas companies were given a stake in the development of Abu Dhabi's hydrocarbon resources. BPRL through its subsidiary has 30% stake in the SPV of the Indian Consortium that holds 10% stake in the Lower Zakum Concession. The Concession, which has a term of 40 years with an effective date of 9 March 2018, was signed on 10 February 2018. The current oil production of this field is about 400 kbopd and Indian Consortium annual share shall be about 1.5 MMT. BPRL's share of the equity crude has been lifted by BPCL group refineries.

In Mozambique, following the discovery of vast quantities of natural gas in the Rovuma

Offshore Area 1 off the coast of northern Mozambique, Area 1 consortium partners announced Final Investment Decision (FID) on 18 June 2019 to develop a 2-Train (2x6.56 MMTPA) onshore initial LNG Project for monetization of gas discovered from offshore Golfinho-Atum discovery area. With the announcement of the FID, the Golfinho-Atum Field Development Plan has become effective, and Development and Production Period of 30 years has commenced. After FID, while the project was on schedule and within budget till March 2021, due to the security incidents around the Afungi Project Site during end March 2021, the Operator has declared FM under JOA, EPCC and all other contracts as they are unable to meet their obligations to conduct safe Petroleum Operations. The Government of Mozambique is working towards the reestablishment of peace and resolving the security situation. Mozambican military along with Joint forces from Rwanda and Southern African Development Community (SADC) continue their operations in the region. The Area 1 Project is assisting in the development of local social and economic infrastructure and the Project is currently implementing various projects in the areas of agriculture, water and sanitation, health, education & capacity building, fisheries, solarization and small business development. While the Project remains in Force Majeure, the relationship with Contractors remains constructive with specific care taken to review the situation with local Mozambican companies given sensitivity of local content, employment, and training etc. Operator has informed that the equipment and infrastructure at the site is in good condition.

The Sergipe Alagoas (BM-SEAL-11) concession in Brazil consists of two blocks SEAL-M-426 and SEAL-M-349 and Petrobras is the Operator with 60% PI while BPRL's JV viz., IBV holds the remaining 40% PI. The Operator, on behalf of the Concessionaires, has submitted the Field Development Plan (FDP) to ANP (Brazilian Regulator) in November 2022 for two discoveries.

During the year 2019, a consortium of BPRL and IOCL was awarded the Onshore Block-1 concession in Abu Dhabi after emerging as the winning bidder in the Abu Dhabi 2018 Block Licensing Round. The award marks entry of BPRL as an Operator of overseas assets for the first time in the prospective UAE region. The Concession granted by the SPC, on behalf of the Abu Dhabi government, has an effective concession period of 35 years and in the Exploration Phase is operated by Urja Bharat Pte Limited (UBPL), a 50:50 SPV incorporated for the purpose by the Indian consortium in Singapore. The drilling and testing of appraisal wells in Ruwais Discovery have been completed which has established presence of hydrocarbons and further studies are in progress for the development of the discovery. The Indian Consortium will have equity rights for the oil. Further, exploration wells have also been drilled in the concession.

The Madanam discovery in the block CY-ONN-2002/2 in Cauvery basin, India where ONGC is the Operator and BPRL has a PI of 40% as non-operator is currently under development and further to the commercial oil production from 2016, Gas Monetization has commenced from May 2021.

**14.1.4.11. Alternative Energy:**

BPCL has a total installed renewable energy capacity of 46.24 MW. The total installed solar capacity is 34.44 MW and wind capacity is 11.8 MW. BPCL has installed and commissioned new solar plants at 36 marketing locations of total capacity 2.85MW in this year. Currently 4 ground mounted solar projects and 2 floating solar projects are under various stages of implementation. The total capacity of these new projects is 53.7 MW DC/40.34 MW AC. There are other solar projects which are at various stages of feasibility study. BPCL has taken targets to install 1 GW solar plant by 2025 and 10 GW by 2040.

The total number of retail outlets solarized are 2471 whereas Retail BU has taken a target to solarise 2,000 ROs in the year 21-22. BPCL plans to build green hydrogen plant and has floated a tender for a 20 MW electrolyser to

be set up at its refinery in Bina, Madhya Pradesh. This tender is under technical evaluation.

BPCL has partnered with Bhabha Atomic Research Centre (BARC) to scale up Alkaline Electrolyser technology for the generation of green hydrogen production. This is a first of its kind initiative to support India's commitment to achieve renewable energy targets and reduce greenhouse gas emissions. Electrolyser plants are presently imported, and the collaboration is to "scale-up Alkaline Electrolyser technology for Green Hydrogen production". Technology for Hydrogen recovery: Demonstration unit for in-house developed Membrane assisted hydrogen recovery process viz. BharatH2Sep has been set up for Hydrogen enrichment from refinery off gas at Kochi Refinery (KR). The performance of BharatH2Sep was established at 60-80 kg/hr scale in KR VGO-HDS Unit. The purity of $H_2$ enriched from 86 mol% to more than 95 mol%. The successful demonstration has paved way to commercialize technology to OMCs refineries.

**Bio-Fuel**

BPCL is setting up setup a 2G Bio Ethanol Refinery of 100 KLPD capacity at Bargarh, Odisha using 400 MT/D of lignocellulosic biomass as feed stock (rice straw/maize stalk) and an integrated 1G Bio Ethanol plant of 100KLPD capacity in same premises. Oil Marketing Companies are selling up to 20% Ethanol blended in MS in 28 states and 6 Union Territories, as per the availability of ethanol. During ESY21-22 i.e., from Dec' 21 till Nov-22, 433.6 crore ltrs. was blended thereby achieving 10.02 % of Ethanol blending. On Industry basis 302 crore ltrs. was blended during ESY20-21 i.e., Dec'20 to Nov' 21 thereby achieving 8.10% of Ethanol blending.

BPCL has procured 8,208 KL Bio-Diesel for blending with HSD in FY 22-23. Total sale on Bio-Diesel blended HSD in 2022-23 as on 31.01.2023 is 1,11,980 KL. Overall Bio-Diesel blending percentage for 2022-23 as on 31.01.2023 is 0.04%.

**SATAT**

Under SATAT (Sustainable Alternative Towards Affordable Transportation) initiative was launched on 1.10.2018. It envisages target production of 15 Million Metric Ton (MMT) of CBG by 2023-24, from 5,000 CBG Plants. BPCL has issued LoIs for 318 nos. of plants having total installed capacity of 0.49MMTPA. Out of 318, 8 nos. plants have started producing bio gas/CBG. BPCL initiated CBG sales from 38 Retails Outlets.

**14.1.4.12. Sustainable Development:**

As a responsible Business, BPCL has taken a number of initiatives for Sustainable Development across its locations related to energy conservation, energy efficiency, renewable energy, carbon sequestration, water management through effluent treatment, rainwater harvesting, water balance study, and waste management etc. following the ideology of 3 R's i.e., Reduce, Reuse and Recycle. There has been an increase of 3.9 % in the catchment area of Rainwater Harvesting (RWH) which will make a total of 10.6 lakh Sq.m. of RWH area across BPCL. The total water harvested is approx. 3,85,000 KL in the year 2021-22 by BPCL. Mumbai Refinery has conducted adequacy study and potential to increase rainwater harvesting in Mumbai Refinery. As per the study, Mumbai Refinery shall increase 29 new clusters of RWH system and target to harvest 1 lakh KL of water this year. Mumbai, Kochi, and Bina Refineries have conducted water balance study and are now implementing various initiatives suggested to reduce water consumption. Water balance study is also under process in all Retail Marketing Locations and LPG plants and initiatives are under implementation to save water and make location water neutral.

BPCL has declared to become Net-Zero by 2040 for scope 1 and scope 2 GHG emissions and in the process of making road map for the same. BPCL current renewable energy installation is 38 MW of Solar and 11.8 MW of wind which it will increase to 1 GW by 2025 and 10 GW by 2040. BPCL is going in a big

way to implement use of green hydrogen in its refineries and setting up one 20 MW plant Bina refinery using Alkaline Electrolyser technology. BPCL is also by setting up charging stations at retail outlets to increase E-Mobility, increased use of Bio-CNG, Bio-Diesel and Battery swapping initiatives for energy transition in a big way.

The present status of Energy Efficient Lights (EEL) installed in BPCL is approx. 63 MW with an increase of 4.75 % as compared to March 22. It is pertinent to note that all retail operating locations have transitioned to 100 % EEL besides MR, Pipelines and approx. 70 % of other marketing locations. KR has done replacement of 19,000 nos. of conventional lights to EEL inside refinery. A target has been set to convert KR, BR and balance marketing locations into 100 % EEL in a phased manner in next two years. The saving with EEL is to the tune of approx. 250 crores and reduction in GHG emissions by 2.5 lakh $MTCO_2e$.

Seed Bombing: BPCL has planted 5 lakh seed bombs in Maharashtra region which includes retail locations, LPG plants and MMBPL Pipeline and carried out study on the rate of survival and carbon sequestration. The survival rate assessed was approx. 22 % which is far more than the general method of seed bombing which is only 10 %. BPCL has engaged the services of Environment Institute M/s SIES, NGOs, NCC cadets and Govt. bodies and the process of seed bombing completed.

Miyawaki technique was also utilized in big way to increase green cover across BPCL marketing locations. The plantation is carried out with this methodology in 25 locations and shall be replicated in balance also wherever space is available. BPCL is also trying to take the services of Railways and other govt agencies for provision of place so that more green cover can be added. The total carbon sequestered through plantation drive is approx. 14,000 $MTCo_2e$ in this year.

To ensure that operations in the operating locations does not spoil soil, BPCL has started campaign to take Certification of Zero Waste to Land Fill Landfill across all its refinery and marketing locations. Mumbai Refinery, Retail and LPG operating locations have already taken certificates and other business units like Aviation, Lubricants and pipelines are in the process of getting the same by March'23. Besides, the target for Kochi and Bina Refinery is March'24. This will confirm BPCL commitment as a responsible Corporate which does not spoil land due to its operations.

BPCL Lubricant department has procured licence under EPR as brand owner and disposed approx. 804 Tons of waste plastic in the year 2021-22 and approx. 2,100 by Jan'23 meeting EPR requirements. Corporate R & D of BPCL has devised a novel technology of using waste plastic in making road and till now used approx. 250 Tons of waste plastic reducing GHG emissions of 750 $MTCO_2e$. BPCL has also trying to use the same technology in its own retail outlets which can lead to circular economy.

### 14.1.5. Hindustan Petroleum Corporation Limited (HPCL)



Hindustan Petroleum Corporation Limited (HPCL) is a Maharatna Public Sector Enterprise (CPSE) and S&P Global Platts top 250 Global energy company with annual gross sales of ₹ 3,72,642 crore during FY 2021-22. HPCL has a strong presence in refining & marketing in India with about 21% market share in the PSU category.

HPCL owns and operates Refineries at Mumbai & Visakhapatnam with designed capacities of 9.5 MMTPA & 8.3 MMTPA respectively. HPCL also owns the largest

Lube refinery in the country at Mumbai for producing Lube Oil Base Stock with a capacity of 428 TMTPA (installed capacity).

In addition, HPCL holds 48.99% equity stake in JV Company, HPCL-Mittal Energy Limited (HMEL) which operates 11.25 MMTPA capacity refinery at Bathinda in the state of Punjab and also has 16.96% equity stake in Mangalore Refinery and Petrochemicals Limited (MRPL) which operates 15 MMTPA capacity refinery at Mangalore in the state of Karnataka.

HPCL has the second largest network of petroleum product pipelines in India with network length of about 4,435 Km. HPCL has a vast marketing network consisting of 14 zonal offices in major cities and 140 regional offices facilitated by a supply & distribution infrastructure comprising 43 terminals/installations/tap off points, 52 aviation service facilities, 53 LPG bottling plants, 6 Lube blending plants, 70 depots including lube depots. The customer touch points constitute of 20,791 retail outlets, 1,638 SKO/LDO dealers, 297 lube distributors, 123 carrying & forwarding agents, 1,288 CNG facilities at retail outlets, 727 door-to-door delivery dispersers and 1,198 EV charging stations and 6,265 LPG distributorships with a customer base of above 9.3 crore LPG consumers as of December'22.

HPCL has its Research & Development Centre named 'HP Green R&D Centre' in Bengaluru. The Centre provides advanced technical support to the Refineries and Marketing SBUs for operational improvement, absorb new technologies, develop innovative & path breaking technologies, license technologies and become a knowledge hub. HPCL also conducts business through 19 JV and Subsidiary companies operating across oil & gas value chain.

**14.1.5.1. Financial Performance:**

Gross sales of HPCL in Apr'22-Dec'22 period was ₹ 3,50,630 crore as compared to ₹ 2,67,699 crore in Apr'21-Dec'21 period. HPCL has incurred Net Loss (PAT) of ₹ 12,197 crore during Apr'22-Dec'22 period as compared to Profit after tax (PAT) of ₹ 4,587 crore in Apr'21-Dec'21 period. The Refining Margin (Gross of Export duty) for HPCL averaged at US$ 11.40 per barrel for Apr'22-Dec'22 period as against US$ 4.50 per barrel for Apr'21-Dec'21 period.

**14.1.5.2. Contribution to Exchequer:**

During Apr'22-Dec'22 period, HPCL has contributed a sum of ₹ 65,627 crore to the exchequer which includes ₹ 21,891 to Central Exchequer and ₹ 43,736 to State Exchequer.

**14.1.5.3. Refinery Performance:**

During Apr'22-Dec'22 period, refineries have delivered yet another sound physical performance, recording refining thruput of 14.13 Million Metric Tonnes (MMT) which is HPCL's highest ever refining thruput for the April-Dec'22 period.

HPCL Visakh Refinery is in the process of implementing Visakh Refinery Modernization Project (VRMP) for capacity augmentation. Visakh Refinery Modernization Project (VRMP), with an aim to enhance the refining capacity from 8.3 to 15 MMTPA is in an advanced stage of commissioning. The execution of Residue Upgradation Facilities, as part of VRMP is also in progress.

To further enhance refining capacity, HPCL is setting up a new 9 MMTPA Greenfield Refinery cum Petrochemical Complex at Pachpadra in Barmer District of Rajasthan through its joint venture company, HPCL Rajasthan Refinery Limited (HRRL).

**14.1.5.4. Pipeline Performance:**

HPCL is currently operating a petroleum product pipeline network of 4,435 Km. with mainline capacity of 35.2 MMTPA, which includes branch line capacity of 19 MMTPA. During Apr'22-Dec'22 period, total pipeline thruput of 17.49 MMT was achieved.

650 Kms. long Hassan Cherałapalli LPG pipeline project costing ₹ 2,160 crores is commissioned in 2022 and pipeline projects costing ₹ 3,950 crores are mechanically completed. Upon commissioning of these projects, operating pipeline network of

HPCL will increase to 5,348 Kms. Dharmapuri Terminal has been commissioned in August, 2022.

To further expand the pipeline network and capacities for enhanced logistic efficiencies and the associated environmental benefits, Bathinda Sangrur Pipeline Project and Haldia Panagarh LPG Pipeline Project are under execution with an estimated investment of about ₹ 1,400 crore. These pipeline projects are expected to strengthen HPCL's position in key markets. HPCL has also teamed up with IOCL and BPCL in development of India's longest LPG pipeline from Kandla to Gorakhpur (2,809 Km.) through joint venture route.

**14.1.5.5. Marketing Performance:**

During Apr-Dec'22 period, HPCL has achieved a sales volume of 32.34 MMT including exports.

In Domestic Sales segment, HPCL has recorded a sales volume of 31.27 MMT and achieved a market share of about 20.97% amongst public sector Oil Marketing Companies (OMCs).

In the motor-fuel segment, HPCL achieved sales volume of 20.50 MMT in Apr-Dec'22 period with market share of 25% on Total Motor Fuels basis (amongst PSUs). The Apr-Dec'22 period witnessed commissioning of 766 new Retail outlets (taking the number of total retail outlets to 20,791) and commissioning of CNG facilities at 201 Retail outlets (such outlets aggregating to 1,288 Nos). As of Dec' 22, 727 Nos of door-to-door Mobile Dispensers and 1,198 Nos of EV Charging Stations are operational. During Apr-Dec'22, solarization done at 1,575 outlets taking the total to 7,986 outlets.

During Apr-Dec'22, LPG business vertical of HPCL recorded sales of 6.03 MMT with a growth of 6.4% over the previous year and market share of 27.14%. HPCL achieved Market Share gain in Domestic LPG for the 7th Consecutive year. During Apr-Dec'22, HPCL enrolled 22.38 lakhs new customers and commissioned 25 new regular LPG distributorships (taking the total number of distributors to 6,265). During Apr-Dec'22, HPCL enrolled 14.82 lakhs PMUY customers taking the total to 255.1 lakhs PMUY customers. As of Dec'22, HPCL has customer base of 9.34 crore LPG consumers. HPCL has commissioned LPG Plant at Barhi, Jharkhand with a capacity of 120 TMTPA during Apr'22.

HPCL is continuing to be a leading Lube marketer in the country with a sales volume of 432 TMT ('000 Metric Tonne), with export of 4.10 TMT of lubricants to 10 countries during the period April-Dec'22.

In Industrial & Consumer (I&C) business line, HPCL recorded overall sales volume of about 3. 06 MMT. HP Petchem Brand- HP Durapol was launched by Hon'ble Secretary, MOP & NG, Shri Pankaj Jain in presence of HPCL C&MD, CFD and Senior officers on 20th Dec'22.

In Aviation business line, HPCL achieved a Sales volume of 501 TMT of aviation turbine fuel. Aviation Service Facility (ASF) network was augmented with taking over of 5 locations of Indian Air Force, taking the total number of ASFs to 52.

In Biofuels & Renewables, HPCL generated Renewable energy of 15.05 crore kWh with revenue of ₹ 53.86 crore from 100.9 MW windfarm during Apr-Dec'22.

The Supply, Operations & Distribution Department of HPCL achieved thruput of 39.6 MMT during Apr-Dec'22 period and maintained uninterrupted supplies of petroleum products across the entire supply chain from refineries to the end customers. As of Dec'22, HPCL has installed 'SMART' terminals with automation and seamless integration of various processes at 62 locations. HPCL has commissioned Sitarganj Depot (Uttarakhand) during August 2022.

**14.1.5.6. Research and Development (R&D):**

Hindustan Petroleum Green Research & Development Centre (HPGRDC) has been set up with an objective to provide advanced technological support to Marketing SBUs and Refineries. HPGRDC aims to provide

operational excellence, develop and adopt innovative, path breaking technologies and to become a knowledge hub. The research centre is provided with state of the art infrastructure facilities comprising energy efficient green buildings with built-up area of 5.6 lakh square feet. The Phase-I of R&D centre has nine laboratories in the areas of Fluidised Catalytic Cracking/Resid Fluidised Catalytic Cracking, Hydro-processing, Catalysis, Bio-processes, Crude Evaluation & Fuels Research, Standard Testing, Analytical, Process Modeling & Simulation and Nano Technology. Phase-II has seven laboratories in the areas of Petrochemicals & polymers, Centre of Excellence Lubes, Corrosion studies, Novel Separations, Resid Upgradation, Engine and Battery research.

During Apr'22-Dec'22 period, 11 products/ technologies were developed and launched. During Apr'22-Dec'22 period, HPGRDC filed 53 patents taking the cumulative Indian and International Patent applications to 406. During the year, 24 patents were granted to HPGRDC taking the cumulative patents granted to 148 as on 31st December, 2022. As of Dec'22, 62 Nos of papers (cumulatively) were published by HPGRDC in various international journals.

**14.1.5.7. Natural Gas:**

HPCL is participating in the entire value chain of Natural Gas Business.

HPCL is building a 5 MMTPA LNG regasification terminal at Chhara port (Gir Somnath District) in Gujarat through a subsidiary company, HPCL LNG Ltd (HLL). Terminal is expected to be commissioned in FY 2023-24.

HPCL is also participating in development of three cross-country natural gas pipelines (Mehsana to Bathinda, Bathinda to Srinagar and Mallavaram to Bhilwara) through Joint Venture companies viz. GSPL India Gasnet Limited (GIGL) and GSPL India Transco Limited (GITL).

As of Dec'22, CNG facilities is provided at 1,290 retail outlets.

**14.1.5.8. City Gas Distribution:**

In order to increase HPCL's presence in City Gas Distribution (CGD), HPCL is setting up CGD networks in 13 GAs in the states of Haryana, Uttar Pradesh, Uttarakhand, West Bengal, Rajasthan, Bihar and Jharkhand on a standalone basis. HPCL is also operating CNG network in Ahmedabad on a standalone basis.

In addition, HPCL is setting up CGD networks in GAs of Ambala-Kurukshetra (Haryana) and Kolhapur (Maharashtra) districts through joint venture company HPOIL Gas Pvt Ltd (HOGPL).

HPCL is also operating City Gas Distribution (CGD) networks in 8 Geographical Areas (GAs) in the states of Andhra Pradesh, Telangana and Madhya Pradesh through Joint Venture companies Aavantika Gas Limited (AGL), Bhagyanagar Gas Limited (BGL) and Godavari Gas Pvt. Limited (GGPL).

**14.1.5.9. Exploration and Production:**

HPCL undertakes Exploration & Production (E&P) of hydrocarbons through its wholly owned subsidiary company Prize Petroleum Company Limited (PPCL). HPCL has 15% participating interest (PI) in one producing field namely, CB-ONN-2002/3 in Gujarat in India and has achieved HPCL's share of production of 2,605 barrels of crude oil from the block during April to December 2022.

PPCL has a wholly owned subsidiary namely Prize Petroleum International Pte Ltd. (PPIPL), incorporated in Singapore. PPIPL has 11.25% and 9.75% participating interests in two E&P Blocks, T/L1 and T/18P respectively in Australia. During Apr-Dec'22, PPiPL has achieved its share of production of 83,358 BoE (Barrels of Oil Equivalent) from Yolla producing field (T/L1) in Australia.

**14.1.5.10. Alternative Energy:**

**Renewable Energy**

HPCL is leveraging Renewable energy sources to reduce the carbon footprints and electricity cost across the value chain and is continuously expanding the wind and solar power generation capacities.

As on Dec'22, HPCL has total solar installed power plant capacity of about 73.8 MWP. These solar plants are installed in various marketing/operating locations of the company spread across the country.

Additionally, HPCL also has 100.90 MW wind power plant in Maharashtra and Rajasthan. These wind power projects sell generated electricity to Discom of Rajasthan and also for captive locations for Mundra-Delhi Pipeline & LPG locations in Rajasthan and for Mumbai Pune Solapur Pipeline location in Maharashtra. Electricity generation from these wind plants was 15.675 crore KWH for FY 22-23.

**Bio Fuels**

During Apr'22-Dec'22 period, HPCL achieved Ethanol blending of 10.11 % by blending 92.76 crore litres of Ethanol in Motor Spirit (MS).

To have a footprint in alternate fuels in transportation sector, HPCL is actively participating in Government of India's SATAT (Sustainable Alternative Towards Affordable Transportation) initiative for promotion of Compressed Bio Gas (CBG). HPCL has been inviting Expression of Interest (EoI) from potential investors and entrepreneurs for setting up CBG plants and offering CBG to HPCL for marketing through the Retail Network. As of Dec'22, HPCL released Letters of Intent (LoIs) for setting up of 474 CBG plants with estimated production capacity of 940 TMTPA and 4 CBG plants with total CBG production capacity of 17 TPD (Tonnes per Day) have been commissioned.

HPCL is constructing a Second-Generation Ethanol bio refinery at Bathinda, Punjab with 100 KL per day ethanol production capacity from biomass. HPCL is also setting up a Compressed Biogas (CBG) plant of 14 MT/day capacity at Badaun, Uttar Pradesh. CBG produced from the Plant shall be sold through HPCL retail outlets. Both these projects are under implementation.

In line with Govt of India vision for "Waste to Energy in Rural India-Gobardhan", HPCL is setting up a cow dung based CBG Plant at Pathmeda, Sanchore Rajasthan of 1.5-2 MT of CBG per day capacity through CSR route.

**14.1.5.11. Sustainable Development:**

HPCL is committed to being a responsible provider of energy solutions in order to meet the needs of the people and the economy, while striving to develop resources in a cleaner and environment friendly manner. The refineries and major marketing locations have implemented internationally accepted 'Environmental Management Systems' based on ISO-14001 Standards. With a focus on reducing resource intensity, both refineries and marketing locations are focused on implementation of sustainability initiatives leading to energy efficiency, water conservation, rainwater harvesting, reuse and recycling of effluents, monitoring and mitigation of GHG emissions etc. All capability building initiatives towards sustainability such as training programs, awareness sessions, sustainability quizzes, newsletters and technical bulletins are conducted on a continuous basis to enhance awareness on sustainability.

HPCL believes that the future will be multi energy and low carbon. The company in alignment with country's aim on becoming carbon neutral by 2070 is undertaking several decarbonisation initiatives. The company has announced its aim to achieve Net-Zero Scope-1 and 2 emissions by 2040.

HPCL is undertaking research for demonstrating technologies for GHG reduction such as Advanced biofuels, H-CNG, Novel adsorbents for $CO^2$ capture. The company is using Green Hydrogen for operating hydro processing pilot plants and batch reactors at its R&D Centre and installing electrolysers for producing Green Hydrogen in refineries.

Energy Efficiency is a critical aspect for the operating performance of refineries which distil crude to petroleum and petrochemical products. HPCL is deploying technologies for energy efficiency at its refineries such as Flare Gas Recovery/Staged Flare; Parallel

Reformers; HPRTs; Integration of VDUs; Helical/Packinox Heat Exchangers; Vacuum pumps in VDUs; Membrane $H_2$ recovery; Online heat exchangers cleaning; HydroCom capacity control.

For reaching the petroleum products to distant locations, safely with minimal carbon footprint, the product pipeline network is continuously being expanded and technological solutions for logistics planning and network optimisation are being leveraged. The company operates over 5,000 Km. of Cross-Country Petroleum Product Pipelines network for transportation of MS, HSD, SKO, LPG and ATF. Pipeline Intrusion Detection System (PIDS) based on OFC (Optical Fibre Cable) is being leveraged for improved productivity and safety in pipeline operations.

HPCL has also undertaken modernisation and automation of its terminals, LPG plants and retail outlets to increase effectiveness of the overall infrastructure. The company has pioneered the technology 'Smart knob'-an LPG stove with a flame fail device that cuts off gas leakage in the event when the stove knob is inadvertently left On or when the flame gets Off while cooking. This will drastically improve safety. The company has also launched models of LPG stoves that have a thermal efficiency upto 73% as against 68% of the current models. HPCL is using recyclable tin packaging for marketing lubricants instead of plastic packaging and also using re-refined oils as an ingredient in the lube oils to promote circular economy.

Emerging digital technologies are being leveraged to meet the business needs in dynamic business scenarios. Some of the key initiatives viz. Video analytics, Data & Analytics based Demand Forecasting Solution, Customer Engagement & Experience Platform, Virtual employee engagement are under implementation.

HPCL is also promoting environmental sustainability through startups through funding, mentoring and guidance. Apart from this, these startups are being provided an opportunity to work in field through the company's SBUs to understand the viability of the projects and practical considerations before launching on a mass scale; Some of the examples in this direction are:

1. Compact thermal storage-based solution named as Solar Stove, which aims to satisfy all the energy needs for household cooking with superior experience and performance than gas and electric cooktops.
2. Reconstruction of the agriculture supply chain for assured and efficient aggregation & supply of surplus biomass.
3. Providing an alternative to plastic straws in the form of Leafy Straws that are 100% organic, biodegradable drinking straws made out of fallen dried palm leaves.
4. Development of 2G bioethanol from agricultural biomass like corn cobs, rice husk, duckweed etc.

**14.1.5.13. Projects:**

HPCL along with its JVs are executing various projects towards the strengthening & expansion of refineries and marketing infrastructure.

**Projects Completed**

HPCL's Green R & D Centre (HPGRDC) at Bengaluru expanded the capacities with acquisition of additional land and adding 7 new laboratories for leveraging the R&D capabilities.

Towards strengthening of the supply infrastructure, three cross-country pipeline projects i.e. Vijayawada-Dharmapuri Pipeline, Hassan-Cherlapalli LPG Pipeline and Barmer Palanpur pipeline have been completed. With the addition of these two cross-country pipelines, HPCLs' petroleum product pipeline network will be increased by 1,563 Kms. taking the product pipeline network to 5,348 Kms. The enhanced pipeline network will further strengthen

HPCL logistic efficiencies and contribute positively to improving the environment by mitigating the higher carbon footprints associated with other modes of product movement.

To cater to the growing demand of Petroleum Products, a Greenfield Marketing Terminal at Dharmapuri, Tamilnadu (Connected with Vijayawada-Dharmapuri Pipeline) and a POL depot at Sitarganj, Uttarakhand were commissioned.

Towards meeting the growing demand of LPG in the country, HPCL has strengthened its LPG supply infrastructure with commissioning of new 180 TMTPA LPG Plant at Patalganga in the state of Maharashtra and 120 TMTPA LPG plant at Barhi in the state of Jharkhand.

With completion of additional Mounded Storage Vessels (MSVs) at Jatni, Jabalpur, Manglia, Hazira, Gandhinagar, Aurangabad, and Madurai LPG plants, the overall LPG storage capacity of HPCL has been enhanced by 7,700 MT.

**On-Going Projects**

**Refinery Projects**

Visakh Refinery Modernization Project (VRMP) for enhancing the refining capacity from 8.3 MMT to 15.0 MMT is in advanced stage of completion. Once commissioned, the additional capacity will further align HPCL Refining and Marketing portfolio. Execution of Residue Upgradation Facilities (RUF) as part of VRMP is also progressing well.

In addition, HPCL is setting up a new 9 MMTPA capacity greenfield refinery-cum-petrochemical complex at Barmer District of Rajasthan through a joint venture company, HPCL Rajasthan Refinery Ltd (HRRL) which is progressing well.

HPCL is also participating in setting up of 60 MMTPA Integrated greenfield refinery-cum-petrochemical complex at Ratnagiri district of Maharashtra through a Joint venture company, Ratnagiri Refinery and Petrochemicals Ltd. (RRPCL).

**Marketing Projects**

To cater to the growing demand of petroleum products in country in a cost effective and environment friendly manner, HPCL has undertaken a number of pipeline projects. The major ongoing pipeline infrastructure projects of HPCL include:

(i) Bathinda Sangrur Pipeline

(ii) Haldia Panagarh LPG Pipeline

To meet the growing requirement of LPG in the country and for enhancing the import capacities, construction of 80 TMT LPG cavern at Mangalore is in progress. New LPG plants are being set up at Sitarganj (Uttarakhand), Abu Road (Rajasthan) and Varanasi (Uttar Pradesh). Revamp/ augmentation of the POL depots/terminal at Raipur (Chhattisgarh), Vashi (Maharashtra), Indore (Madhya Pradesh), Elathur (Kerala) are in progress towards further strengthening of the marketing infrastructure.

**14.1.5.14. Major Awards & Recognitions:**

During the year 2022-23, HPCL was conferred with a number of awards and recognitions at various forums. The following is the list of awards received by HPCL during 2022-23:

1. **'Rajbhasha Shield Pratham Puraskar'** for exceptional contribution in the field of Hindi from Ministry of Petroleum & Natural Gas (MoP&NG).
2. **'Swachhta Pakhwada 2022 Award'** instituted by Ministry of Petroleum & Natural Gas (MoP&NG).
3. **'PSU Awards 2022'** in Digital Transformation Category during Dun & Bradstreet PSU and Government Summit 2022.
4. **CII Digital Transformation (DX) Award 2022** in the categories:

a. Most Innovative Best Practice in **'Digitize Maximize: Digital All Along'**

b. Innovative Best Practice in 'AI/ML based demand forecasting solutions'

5. **Three Prestigious Awards at the CPSE Conclave on Public Procurement Policy**:

a. Highest Procurement in terms of procurement value amongst Maharatna CPSEs from SC-ST MSEs during FY 2021-22.

b. Highest Procurement in terms of % of total procurement amongst Maharatna CPSEs from SC-ST MSEs during FY 2021-22.

c. Highest Procurement in terms of procurement value amongst Maharatna CPSEs from Women Entrepreneurs during FY 2021-22.

6. **HP Green R&D Centre bags prestigious Innovation Award instituted by IESA.**

7. **'Zee National Achievers Awards'** to HP Lubricants from ZeeDigital.

8. **Golden Peacock Award 2022** to HP Gas in **'Innovative Product & Service Award'** category for HP VITRAN App.

9. **'PRSI National Awards 2022'** by Public Relations Society of India for (i) CSR communication campaign (ii) Internal Communications Campaign, (iii) Annual Report, (iv) House Journal (English), (v) House Journal (Hindi), (vi) Sustainability Report.

10. **"Best Aviation Fuel Provider"** award by ASSOCHAM at their 14th International Conference for Civil Aviation.

## 14.2. NAVRATNA PSUs

### 14.2.1. Oil India limited (OIL)

#### 14.2.1.1. Preamble

Oil India Limited (OIL), a Government of India Enterprise, and a Navaratna Company under the administrative set-up of Ministry of Petroleum and Natural Gas, is engaged in the business of exploration, production and transportation of crude oil & natural gas both in-country and overseas. The authorized capital of OIL is ₹ 2,000 crore and the paid up capital is ₹ 1,084.41 crores. As on 31.12.2022, Government of India's shareholding is 56.66% of the paid-up equity share capital of OIL.

#### 14.2.1.2. Domestic Portfolio:

The domestic operations of the Company are spread over areas under onshore Petroleum Exploration License (PEL) and Petroleum Mining Lease (PML) in the states of Assam, Arunachal Pradesh and Rajasthan. OIL's domestic acreage includes 2 (two) Petroleum Exploration Licenses (PELs) covering an area of about 136.75 Sq. Km. granted on nomination basis and 25 (twenty-five) Petroleum Mining Leases (PMLs) spread over an area of about 4,810 Sq. Km. situated in the states of Assam (21 nos.), Arunachal Pradesh (2 nos.) and Rajasthan (2 nos.).

The Company has acreage under NELP as Operator comprising of 4 (four) onshore blocks with an area of 3,909 Sq. Km. in the states of Assam, Mizoram and Andhra Pradesh / Puducherry. OIL has 2 (two) blocks under NELP as non-operator with 5,301 Sq. Km. in Gujarat-Kutch (Shallow Offshore), West Bengal (Onshore). OIL has 2 (two) blocks with 85.88 Sq. Km. in Assam & Arunachal Pradesh under Pre-NELP JVs as non-operator viz Kharsang PSC (PI-40%) & Block AAP-ON-94/1 (Dirok-PI-44.086%). The company also holds non-operating participating interest (40%) in AA/ONDSF/Kherem/2016 awarded under DSF-I Bid round.

The Company also has acreages under OALP-I to VII Bid Rounds as Operator comprising of 29 (twenty-nine) blocks with an area of 53,859 Sq. Km. in the states of Assam, Arunachal Pradesh, Tripura, Nagaland, Odisha, Rajasthan and shallow offshore parts of Andaman and Kerala-Konkan. OIL has also been awarded 3 (three) blocks as an Operator, 1 (one) each in Tripura onshore and Krishna-Godavari Offshore through DSF Round-II and 1 (one) in Rajasthan through DSF Round-III covering an area of 208 Sq. Km.

#### 14.2.1.3. Exploration Activities:

OIL is engaged in exploration activities in the 28 (twenty-eight) OALP blocks in onshore areas in Assam, Arunachal Pradesh, Tripura, Odisha and Rajasthan and in shallow offshore in Andaman and Kerela-Konkan

basins. It is also working in 3 (three) DSF blocks in Tripura & Rajasthan onshore and KG offshore. Additionally, OIL was allotted a revised total of 6,032 LKM (5,162 LKM of seismic data and 870 LKM of Airborne Geophysical Survey (AGS) for Acquisition, Processing and Interpretation (API) of 2D seismic data under the National Seismic Programme (NSP) campaign of DGH. OIL completed the Seismic API of 5,245.80 LKM (101.62 % of the revised target of 5,162 LKM) by May' 2022. The sector wise/state-wise break-up of 2D seismic API targets and achievements are tabulated below.

| Area / Sector | Name of the Area | Revised Target in LKM | Achievement in LKM |
|---|---|---|---|
| Area-1, Sector-I | Assam-Arunachal Pradesh | 2,414 | 2,416.20 |
| Area-1, Sector-II | Assam-Arunachal Pradesh | 738 | 743.70 |
| Area-2, Sector-IV | Mizoram-Tripura | 0 | 1,143.48 |
| Area-2, Sector-II | Manipur* | 885 | 4.74 |
| Area-2, Sector-III | NC Hills | 1,125 | 937.68 |
| **Total** | | **5,162** | **5,245.80** |

*Manipur assigned target will be acquired by AGG & GM survey.

**14.2.1.4. Physical Performance**

| Parameter | Unit | 2021-22 (Actual) | 2022-23 | |
|---|---|---|---|---|
| | | | Target (BE) | Actual (Upto Dec'22) |
| **Seismic survey** | | | | |
| 2D | GLKM | 2,105.21 | 1,389 | 1047.44 |
| 3D | SQKM | 1,097.59 | 680.13 | 525.37 |
| **Drilling** | | | | |
| Exploratory | '000Mtr | 50,253 | 1,16,923 | 43,234 |
| | Wells | 7 | 35 | 13 |
| Development | '000Mtr | 94,452 | 1,08,019 | 63,301 |
| | Wells | 31 | 38 | 19 |
| Total (Exp+Dev) | '000Mtr | 1,44,705 | 2,24,942 | 106,535 |
| | Wells | 38 | 73 | 32 |
| **Crude Oil Production *** | | | | |
| Assam | MMT | 2.957 | 3.498 | 2.333 |
| Arunachal Pradesh | | 0.021 | 0.061 | 0.016 |
| Rajasthan (Heavy Oil) | | 0.009 | 0.012 | 0.011 |
| **Total** | | **2.987** | **3.571** | **2.360** |
| **Natural Gas Production*** | | | | |
| Assam | MMSCM | 2620 | 3388 | 2,120.33 |
| Arunachal Pradesh | | 53 | 90 | 37.261 |
| Rajasthan | | 219 | 240 | 137.056 |
| **Total** | | **2893** | **3718** | **2,294.644** |
| **LPG Production** | **'000T** | **30.487** | **30.000** | **23.631** |

* Excluding JV shares

**14.2.1.5. Reserves Position (2P) as on 01.04.2022:**

As a result of exploration and development activities, as on 01.04.2022 OIL has established 2P/BE in-place volume of 806.67 MMT (oil) & 407.26 BCM (Gas) (1161.82 MMTOE O+OEG) in the domestic sector. The 2P/BE remaining producible oil & gas volume of the company stand at 70.86 MMT and 138.31 BCM respectively (191.31 MMTOE O+OEG).

**14.2.1.6. Crude Oil Transportation:**

OIL operates a total network of 1,243 Km. of Crude Oil Pipeline which run through the states of Assam, West Bengal and Bihar. The capacity of OIL's crude oil pipeline is 6.0 MMTPA. The pipeline is utilized for transporting OIL's crude oil produced in Assam and Arunachal Pradesh to refineries in Assam. The pipeline also transports crude oil produced by ONGC. The Barauni-Bongaigaon section of the pipeline transports imported crude oil of IOCL from Barauni to IOC Bongaigaon refinery. The total thru'put of the pipeline during FY 2020-21 was 6.02 MMT and 6.184 MMT during current FY 2021-22 and 5.05 MMT up to 31st December 2022 in FY 2022-23.

OIL also operates a 654.3 Km. long pipeline for evacuation of total 1.72 MMTPA of products from Numaligarh Refinery (NRL) to Siliguri Terminal in West Bengal. In the FY 2020-21, OIL transported 1.699 MMT of finished petroleum products through Numaligarh-Siliguri Product Pipeline (NSPL) and 1.516 MMT during FY 2021-22 and 1.112 during the current FY-2022-23 (up to December, 2022).The natural gas produced in Assam is sold to different customers, viz. BVFCL, BCPL, AGCL, APGCL, NEEPCO, IOC (AOD), and APL and nearby Tea gardens. Since March, 2011 OIL is supplying gas to Numaligarh Refinery. The non-associated gas produced by OIL in Rajasthan is sold to Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL). OIL also produces Liquefied Petroleum Gas (LPG) in its plant at Duliajan, Assam.

**14.2.1.7. Renewable Energy Portfolio:**

OIL, as part of its strategic intent, has, over the last few years diversified into the Renewable (Alternate) Energy Domain, specifically into the Wind and Solar segments and has established Commercial nature Renewable Energy (RE) projects of 188.10 MW comprising of 174.10 MW of Wind Energy Projects and 14 MW of Solar Energy Projects.

While the operational Wind Energy Power Projects are spread over the states of Rajasthan, Madhya Pradesh & Gujarat, the operational Solar Energy Power Projects are installed in Rajasthan & Assam.

**14.2.1.8. Diversification:**

OIL has undertaken selective diversification of its portfolio, mainly by acquiring stakes in downstream business. OIL holds 69.63% stake in Numaligarh Refinery Limited, 10% stake in Brahmaputra Cracker and Polymer limited and 23% stake in DNPL (Duliajan Numaligarh Pipeline Limited). OIL acquired 49% equity stake in 500 TPD Methanol and 200 TPD Formaldehyde project of Assam Petrochemical Limited.

OIL has also ventured into the arena of City Gas Distribution (CGD) in consortium with M/s HPCL. Based on the bids submitted under 8th round of CGD bidding, PNGRB issued letter for grant of authorization to the Consortium of HPCL & OIL for development of CGD network in the Geographical Area of Ambala-Kurukshetra and Kolhapur. A Joint Venture Company (JVC), namely HPOIL Gas Private Limited (HOGPL), has been incorporated and on field execution is in progress at both the GAs. The JVC has commissioned 10 numbers of CNG stations in each GA. Steel pipelines of 483 inch-km in Ambala-Kurukshetra GA and 431 inch-km in Kolhapur GA is completed. DPNG connections of 1,227 and 128 numbers provided in Ambala-Kurukshetra GA and Kolhapur GA respectively.

The Consortium of Assam Gas Company Ltd. (AGCL), Oil India Ltd. (OIL), and GAIL Gas Ltd.

(GAIL Gas) won the bids for development of CGD network in Kamrup & Kamrup Metropolitan Districts GA and Cachar, Hailakandi and Karimganj Districts GA under 9th round of CGD bidding. The participating interests of AGCL, OIL and GAIL Gas are 48%:26%:26% respectively. Letter for grant of authorization from PNGRB received in September, 2018. Joint Venture Agreement signed in July, 2019. A Joint Venture Company (JVC), namely Purba Bharati Gas Private Limited (PBGPL), has been incorporated and on field execution has already been started at both the GAs. DPNG connections to 290 household have been already provided in Cachar GA.

**14.2.1.9. Overseas Portfolios:**

The Company's overseas E&P portfolio as on 31st March 2022 is spread over 07 countries covering Russia, Venezuela, Mozambique, Nigeria, Bangladesh, Libya and Gabon. The portfolio includes 4 (four) producing assets spread across Russia (3) and Venezuela (1), 2 (two) discovered and development assets in Mozambique and Nigeria and 4 (four) exploratory assets in Libya, Gabon, and Bangladesh (2). The shale oil and gas asset in USA has been divested during the year 2021-22.

As on 31.03.2022, 2P oil & gas reserves position corresponding to OIL's stake in 5 overseas producing and discovered assets namely, License-61, Vankorneft & Taasyurah in Russia, Carabobo in Venezuela and Rovuma Area1 in Mozambique stood at 50.6421 MMTOE. During 2021-22, production from overseas assets corresponding to OIL's Participating Interest was 2.204 MMTOE. During the current financial year for the period covering April–December 2022, OIL's share of cumulative production from overseas assets stood at 1.595 MMTOE. The status of the major developments in the blocks is as under:-

**14.2.1.9.1. Producing Assets:**

**i. JSC Vankorneft, Russia (Rosneft: 50.1%, OIL/IOCL/BPRL: 23.9%, OVL: 26%)**

The Company, along with IOCL and BPRL acquired 23.9% stake in JSC Vankorneft, Russia w.e.f 5th October 2016. The asset is held through an SPV Vankor India Pte. Ltd. (VIPL) incorporated jointly by wholly owned subsidiaries of the Company, IOCL and BPRL in Singapore.

As on 31.03.2022, the 2P reserve position corresponding to Company's Participating Interest in this asset has been estimated at 13.27 MMT of oil and 3.77 MMTOE of natural gas. During 2021-22, Company's share of production in the asset is 1.28 MMTOE. During April-December 2022, Company's share of production in asset stood at 0.893 MMTOE. Cumulatively till 31.03.2022, an amount equivalent to US$ 391.16 million has been received at the VIPL level as dividend corresponding to OIL's stake in the project.

**ii. LLC Taas-YuryakhNeftegazodobycha (TYNGD): Russia (Rosneft: 50.1%, OIL/IOCL/BPRL: 29.9%, British Petroleum: 20%)**

The Company along with IOCL and BPRL acquired 29.9% stake in LLC Taas-Yuryakh Neftegazodobycha (TYNGD), Russia w.e.f 5th October 2016. The asset is held through an SPV Taas India Pte. Ltd (TIPL), incorporated jointly by wholly owned subsidiaries of the Company, IOCL and BPRL in Singapore.

As on 31.03.2022, the 2P reserve position corresponding to Company's participating interest in this asset has been estimated at 10.53 MMT of oil. During 2021-22, Company's share of production in the asset is 0.86 MMTOE. During April-December 2022, Company's share of production in asset stood at 0.669 MMTOE. Cumulatively till 31.03.2022, an amount equivalent to US$ 271.86 million has been received at TIPL level as dividend and surplus capital repayment corresponding to OIL's stake in the project.

**iii. Russia: License 61 [OIL-50% and PetroNeft Resources Limited-50% (Operator)]**

The Company acquired 50% share in License 61, Russia (Area: 4,991 Sq. Km.) on 3rd July 2014 from PetroNeft Resources Plc (PR). Till date, Lineynoye, West Lineynoye, Arbuzovskoye and Tungolskoye fields have been developed.

As on 31.03.2022, Company's share of 2P hydrocarbon reserve position in the asset is 6.20 MMT. During 2021-22, the Company's share of production in the asset is 0.038 MMT. During April-November 2022, Company's share of production in asset stood at 0.018 MMTOE.

**iv. USA: Liquid rich Shale Asset [Verdad Resources Acquisitions LLC-60%; OIL-20%, IOCL-10%, Haimo Oil & Gas LLC-10%]**

The Company acquired twenty percent (20%) stake in Carrizo Oil & Gas Inc's ("Carrizo") shale assets in the Denver-Julesburg (D-J) Basin in Colorado, USA on 1st October 2012. The Company formed a wholly owned subsidiary in Texas, USA in the name of Oil India (USA), Inc. to hold and manage the asset.

As part of the strategy to rationalise the overseas portfolio of the Company, Oil India (USA), Inc. divested the entire stake in the shale asset to Verdad Resources LLC. on 14th January, 2022.

**v. Venezuela: Project Carabobo [Corporation Venezuelan del Petroleo (CVP)-71%, INDOIL Netherland BV 7% (IOCL-3 .5%, OIL-3.5%), OVL-11%, Repsol YPF (Spain)- 11%]**

The consortium of Repsol (11%), OVL (11%) and INDOIL (7%) (together termed as Minority Shareholders (MSHs)) hold 29% share, and CVP (PdVSA's Subsidiary) hold remaining 71% share, in a Mixed Company called M/s Petrocarabobo SA (PCB). PCB is the operator of project Carabobo. The INDOIL's share of 7% comprises of OIL (3.5%) and IOCL (3.5%). OIL and IOCL formed a 50:50 JV company at Netherlands named INDOIL Netherlands B.V. (INDOIL) to invest in the project. The mixed company contract was signed on 12th May 2010 for a period of 25 years.

As on date, 76 wells have been drilled in the block. The Project owns and operates 30 KBD crude treatment plant. Currently, the project activities are delayed due to economic and political crisis in Venezuela.

As on 31.03.2022, the 2P reserve position corresponding to Company's Participating Interest in Project Carabobo has been estimated at 0.21 MMT. During 2021-22, Company's share of production in the asset stood at 0.019 MMT. During April-December 2022, Company's share of production in asset stood at 0.015 MMTOE.

**14.2.1.9.2. Development Assets:**

**i. Mozambique: Rovuma Area1 (TOTAL (Operator-26.5%), Mitsui-20%, ENH-15% (Carried), BPRL-10%, BREM-10%, OVL- 10%, PTTEP - 8.5%)**

The Company along with OVL acquired 10% participating interest in Area 1 Mozambique on 7th January 2014, through acquisition of 100% shares in Videocon Mozambique Rovuma 1 Limited [since renamed as Beas Rovuma Energy Mozambique Limited (BREML)-OVL-60%, OIL-40%]. The onshore LNG development initially consisted of two (2) LNG trains with total nameplate capacity of 13.12 million tonnes per annum (MMTPA). The Joint venture partners of Area 1 Mozambique Project have announced Final Investment Decision (FID) for the two train Golfinho-Atum Mozambique LNG Project on 18th June 2019. The Joint venture has successfully secured 11.13 MMTPA of long-term LNG sales with key LNG buyers in Asia and Europe including India. The project is being developed through limited recourse project financing which

has achieved financial closure on 24th March 2021. The onshore and offshore construction contracts were awarded and construction works at site was started.

Due to deterioration of the security situation in Cabo Delgado province of Mozambique, the Operator declared Force Majeure on 22nd April 2021. The project is currently under Force Majeure with discussions continuing between the Operator and Government of Mozambique for restoring the normalcy in the region.

As on 31.03.2022, the 2P reserve position corresponding to Company's Participating Interest in Rovuma, Area1 has been estimated at 16.21 MMTOE of natural gas and 0.46 MMT of condensate.

**ii. Nigeria: Block OML 142 (Formerly OPL 205) [OIL-17.5%, IOCL-17.5%, and Suntera Resources-35% in JV Suntera Nigeria 205 (70% interest in block), Summit Petroleum - 30% (Operator)**

The project is in the northernmost part of the Niger delta onshore. Hydrocarbon discovery (gas and condensate) in the block dates back to 1991-92 (Otien #1 well). Suntera Nigeria 205 Ltd. (SN-205), a company incorporated in Nigeria, acquired 40% Participating Interest (PI) and 40% Economic Interest (EI) from Summit Oil International in May 2006. Subsequently, OIL, together with IOCL, acquired 25% (each) shareholding of Suntera Nigeria 205 Ltd.(SN-205), in which Suntera Resources Ltd. holds the remaining 50%. Summit Oil is the operator of the block with 30% working interest, the remaining 70% being held by SN-205. The Oil Prospecting License (OPL-205) was converted into Oil Mining Lease (OML-142 ) w.e.f. 12.06.2009 for 20 years. 3D seismic data acquisition of approximately 125 Sq. Km. area was completed in 2014, and its processing and interpretation were completed in 2016. Thereafter, the consortium conducted re-entry operations in the discovery well Otien #1. Extended Well Test (EWT) production from a single zone (zone #8) and re-workover operation of Otien #1 well have been completed. Upon completion of re-workover, the Well Deliverability Test (WDT) was undertaken from 3 zones of Otien #1 well from 12th August 2020 to 5th April 2021.

An Energy Park is coming close to the Otien field and discussions are in progress for gas monetization. A field development plan (FDP) is also being prepared for submission to NUPRC, the Upstream Petroleum Regulatory Commission of Nigeria.

**14.2.1.9.3. Exploratory Assets:**

**i. Bangladesh: Blocks SS-04 and SS-09 [OIL-45%; OVL-45%; Bapex:10% (Carried)]**

The Company was awarded the shallow offshore Blocks SS-04 and SS-09 in Bangladesh Bid Round-2012. OIL is non-operator in both the blocks. The total area of the two blocks is 14,295 Sq. Km. with Block SS-04 spread over 7,269 Sq. Km. and Block SS-09 spread over 7,026 Sq. Km. The Production Sharing Contracts for both blocks were signed on 17th February, 2014 in Dhaka, Bangladesh for an initial exploration period of five (05) years. The consortium has completed the mandatory seismic survey and drilling of 1 (one) onshore well (in block SS-04). Preparation for drilling of two offshore wells, 1 (one) each in Blocks SS-04 and SS-09 is under progress.

**ii. Libya: Area 95/96 ~4 Blocks [SIPEX (Operator) - 50%, IOCL-25%, OIL-25%]**

The consortium has completed drilling of five wells against MWP of commitment of drilling 08 (Eight) wells. All the drilled wells struck oil and gas. Drilling of sixth well was in progress when the unrest began and all operations in Area-95/96 were suspended since May, 2014. The consortium signed an Interim Arrangement Agreement to continue in the block till May 2018. Further extension of the Interim Arrangement Agreement beyond May 2018 has been agreed upon by all parties concerned. The block is currently under Force Majeure due to hostile law and order situation in Libya.

**iii. Gabon: Block Shakthi-II [OIL (Operator)-50%, IOCL-50%)**

An oil discovery was made in the third well (Lassa-1) in the block during the old PSC (G4-220). Two appraisal wells (Lassa-2 & 3) were also drilled as per the MWP of Phase-I of New PSC (G4-245). The consortium completed 2D Seismic API of 1213.04 LKM in Phase-I to assess the prospectivity in the remaining part of the block. Based on the integrated interpretation and prospect evaluations, the Consortium has entered into Phase-II exploration period in the block which was extended upto 15.04.2023 due to statutory delays and COVID-19 pandemic. Meanwhile, significant progress has been made in drilling preparatory activities during the year.

**iv. Block 32, Israel (OIL: 25%; IOCL:25%; BPRL: 25%, ONGC Videsh Ltd: 25%-Operator)**

The Company as part of a consortium of Indian Public Sector companies, viz., ONGC Videsh Ltd. (OVL), Bharat Petro Resources Ltd. (BPRL) and Indian Oil Corporation Limited (IOCL) was awarded an offshore exploratory Block - License 412/32. The license has been granted w.e.f 27th March 2018 and was valid till 26th March 2021. The Block has been relinquished w.e.f January 23, 2022.

**14.2.1.9.4.Pipeline:**

**Sudan: Product Pipeline [OIL-10% PI and OVL-90% PI]**

The Project involved construction of 12" X 741 Km. long Cross country Multi Product Pipeline from Al-Rawyan to Port Sudan. The Pipeline has been built on Build, Operate, Lease and Transfer basis. The consortium engaged M/s. Dodsal Pte Ltd. as EPC contractor for the project. Project was completed in record time of 15 months (target was of 16 months). The pipeline got commissioned in 2005.

**14.2.1.10.Financial Performance:**

₹/Crores

| | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Sept., 2022) |
|---|---|---|---|---|---|
| Total Income | 15,170.00 | 13,648.71 | 10,561.45 | 16,427.65 | 12,700.67 |
| Net Profit/Loss | 2,590.14 | 2,584.06 | 1,741.59 | 3,887.31 | 3,276.02 |
| Plan Outlay-Actual | 3,180.81 | 4,247.21 | 13,331.93* | 4,366.52 | 2,001.55 |
| Plan Target | 4,299.99 | 4,105.20 | 3,877.00 | 4,108.00 | 4,302.00 |

Note *: Includes Strategic Investment in Numaligarh Refinery Limited (NRL) ₹ 8,677.27 crore.

**14.2.1.11. Corporate Social Responsibility:**

Oil India Limited is a Responsible Corporate Citizen with full commitment to the principles of Corporate Social Responsibility (CSR) towards achieving inclusive and holistic development of its areas of operation and the society as a whole.

Corporate Social Responsibility (CSR) of Oil India Limited (OIL) is governed by its Vision "OIL is a Responsible Corporate Citizen deeply committed to socio-economic development in its areas of operation" and OIL's CSR & Sustainability Policy guided by Section 135 of Companies Act 2013 and Companies (Corporate Social Responsibility Policy) Amendment Rules 2021. These are the strong guiding forces behind OIL CSR initiatives, all with the larger purpose of making a difference to the lives of the people and local communities in meaningful ways.

As specified under Schedule VII of the Companies Act 2013, the company has embarked upon various CSR projects under key thrust areas as follows:

**a) Healthcare and Sanitation**

- **Project OIL Arogya** on reduction of Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR).
- **Project OIL Sparsha** on mobile healthcare services through village health camps.
- Augmentation of Healthcare infrastructure.

**b) Swachh Bharat Abhiyaan (Drinking Water & Sanitation)**

- Swachh Iconic place initiative: Adoption of Kamakhya Temple for cleanliness, maintenance and upkeep.
- Construction of School Toilets, Community Toilets and Individual Household Latrines in OIL's Operational areas and in Aspirational Districts (Dhubri & Goalpara in Assam and Namsai in Arunachal Pradesh).
- Supply of clean drinking water to rural pockets in OIL's operational areas and to schools in Aspirational Districts (Dhubri & Goalpara in Assam and Namsai in Arunachal Pradesh).
- Integrated Solid Waste Management projects in OIL's operational areas in Tinsukia in Assam.
- Other activities include organizing seminars, walkathons, competitions and Shramdaans by OIL employees across OIL spheres under Swachh Bharat Pakhwada for awareness.

**c) Education**

- **OIL Super 30 project**-11 months free residential coaching for JEE and NEET with centres at Guwahati, Jorhat, Dibrugarh and Nagaon in Assam, Jodhpur in Rajasthan and Itanagar in Arunachal Pradesh.
- Project **OIL Dikhya**-To Promote computer literacy among school students in OIL's operational areas.
- Project **OIL Dikhya**-Adult Literacy Campaign in OIL's operational areas.
- Project **Sakshyam** on rehabilitation for Divyangjans.
- Assistance towards augmentation of educational infrastructure.

**d) Sustainable Livelihood Generation**

- Project **Rupantar** for self-employment generation with a target of supporting SHGs/JLGs.
- Project **Jeevika**-a cluster based livelihood project for sustainable income generation.
- **Agriculture Project** under Oil India Rural Development Society (OIRDS).

**e) Skill/Capacity Building**

- Project **OIL Swabalamban** on Skill/ Capacity Building Project under which placement-linked skill training is provided to unemployed youth/women of OIL operational areas to enhance their employability.
- OIL has set up **Skill Development Institute, Guwahati** with support from other Oil & Gas PSUs to cater the skilling need of the youth of the North East region to enhance their employability in hydrocarbon and other sectors.

**f) Projects on Women Empowerment**

- OIL Nursing School conducts three years course in General Nursing & Mid Winery (GNM).
- Centre of Excellence for Handloom, Handicraft & Entrepreneurship training women in sewing, cutting, tailoring etc besides market-driven skill trades like creative textiles, bamboo and water hyacinth.

**g) Environment and Sustainability**

- Carbon sequestration and Conservation of Biodiversity through mass tree plantation and setting up of a Bamboosetum in Digboi, Assam.
- Other projects include cleaning & rejuvenation of ponds/lakes, tree plantation and Bio Diversity conservation.

**h) Promotion of Art, Culture and Heritage**

- Renovation of John Berry White Medical College.
- Projects for the promotion and preservation of Art, Cultural & other Heritage.

**i) Development of Sports**

- Coaching programmes for capacity building of coaches and organising sports events to find new talent in sports like volleyball and football.

**j) Augmentation of Rural Infrastructure**

- Construction of Roads, bridges, community halls and waiting sheds and other community infrastructure etc.

**k) Fight against COVID**

- OIL contributed towards the Government's efforts in effective management of COVID-19 pandemic through various projects for the augmentation of healthcare infrastructure including the installation & commissioning of PSA Oxygen Plants in Uttar Pradesh, Bihar, Arunachal Pradesh & Nagaland, distribution of Oxygen cylinders and Oxygen concentrators, installation of Oil-free oxygen compressor for refilling oxygen cylinders, support towards setting up of COVID care facilities etc were undertaken by the company.

## 14.2.2. Engineers India Limited (EIL)

### 14.2.2.1. Introduction

Engineers India Limited (EIL) was established in 1965 with its head office in New Delhi to provide engineering and related technical services for petroleum refineries and related projects. Over the years, it has augmented its span of services and excelled in various fields to emerge as a leading Project, Design, Engineering and Turnkey contracting company in the fields of:

- Petroleum Refining
- Petrochemicals, Chemicals & Fertilizers
- Crude, Petroleum products & Gas Pipelines
- Offshore/ Onshore Oil & Gas
- Terminals & Storage
- Sub Surface Strategic Storage
- Mining & Metallurgy
- Infrastructure & Urban Development

Since its foray in infrastructure sector, EIL has secured several noteworthy and significant assignments related to modernization/development of international airports, intelligent buildings and water management.

An ISO 9001:2015 certified company, EIL has regional offices in Chennai, Vadodara and Kolkata; branch office in Mumbai, overseas engineering/marketing office in Abu Dhabi, which is a hub of the company's activities in Middle East. There are Inspection/Procurement offices at various locations all over India and also in London, Milan and Shanghai with construction offices at different project sites both in India and abroad. Besides, EIL has a wholly owned subsidiary, Certification Engineers International Ltd. for providing certification and inspection services. EIL has joint venture company-Ramagundam Fertilizers and Chemicals Limited (RFCL) with National Fertilizer Limited (NFL) and Fertilizer Corporation of India (FCIL) with a shareholding of 26%. The commercial operation of the RFCL plant has been achieved on March 22, 2021. EIL also holds 4.37% stake in Numaligarh Refinery Limited.

EIL provides a comprehensive range of project related technology and engineering services spanning from project conceptualizing to project commissioning which includes revamp, capacity expansion and modernization of plants. The portfolio of services offered by the company includes:

**Pre-Project Services**

- Feasibility Studies

- Environment Impact Assessment Technology & Process Licensor selection
- Cost Estimation

**Project Implementation Services**

- Project Management
- Process Design and Front-End Engineering
- Basic and Detailed Engineering
- Procurement
- Inspection and Third-Party Certification
- Construction Management
- Commissioning and plant start-up Assistance

**Specialist Services**

- Heat and Mass Transfer Equipment Design
- Environment Engineering
- Information Technology
- Specialist Materials and Maintenance
- Plant Operations & Safety including HAZOPS & Risk Analysis
- Corrosion Protection, Plant Integrity and Residual Life Assessment
- Refinery Optimization Studies
- Yield & Energy Optimization Studies

**Turnkey Contracting**

- EPC (Engineering, Procurement & Construction)
- OBE (Open Book Estimate)

EIL has a multi-disciplinary engineering workforce and the company's employee strength at headquarters and in field offices including foreign offices was 2,656 as on 31.12.2022.

In addition to pursuing excellence in engineering, EIL is a responsible Corporate Citizen and is committed to good Corporate Governance practices. The Right to Information Act, 2005 has been implemented in the company with a Public Information Officer and an Appellate Authority nominated to address issues under the Act. Information as per provision of the Act is posted in the company's website www.engineersindia.com. Besides, a web-based complaint management system has been implemented for handling complaints/grievances from public, contractors, vendors, suppliers etc. Further, the Women's Forum of the company has a designated committee for dealing with complaints relating to sexual harassment.

**14.2.2.2. PERFORMANCE HIGHLIGHTS of 2022-23:**

**A. Business Secured**

During the current financial year (up to December 31, 2022), EIL secured new business worth ₹ 795.99 crores which includes business worth ₹ 553.23 crore in Consultancy segment (₹ 527 crore from domestic clients and ₹ 25.31 crore from overseas clients), and ₹ 242.76 crore in LSTK segment.

Details of few major jobs secured by the company are given below:

**B. Domestic Jobs**

**PMC**

- Consultancy Services for New Bitumen Plant at Gujarat Refinery for IOCL, Gujarat.
- Consultancy services for proposed underground mined rock LPG cavern at Vadodara for HPCL.
- Consultancy Services for Overall Project Management, BDEP Preparation & other related Engineering services for Barauni Refinery of Indian Oil Corporation Limited, India for IOCL, Barauni.
- Principal Consultant Firm (PCF) for setting up RBI's Greenfield Data Centre-II, EMC Park, Khurda, Odisha for IFTAS Odisha.
- PMC for Anjar Palanpur Pipeline of GSPL, Gujarat.
- Project Management Consultancy (PMC) for Pre-award activities for Lignite to Methanol Project at Neyveli, NLC. Kochi.
- PMC Consultancy Services for Styrene Project at Panipat Refinery & Petrochemical Complex of Indian Oil Corporation Limited, India for IOCL, Panipat.

- PMC Services for setting up of 4.3 TPD PEM Electrolyser at GAIL Vijaypur for GAIL, Noida.
- PMC services for replacement of existing pipe line at three locations in Jhagadia-Kantyajal Section, NCT, Gujarat.
- Consultancy Services for Study and Assessment of Pipeline defects and Recommendation of mitigation measures (Part-II, III, IV) for DNP, Assam.
- PMC and FEED Services for DCU Revamp for Nayara Energy Limited, Gujarat.
- PMC Services for Haryana Horticulture Marketing.
- Consultancy Services for preparation of Detailed Project Report for Development of Greenfield International Airport at Chingen in Great Nicobar Island for AAI.
- Collaborative 10 TPD Ethanol Project for NTPC, Noida.
- Owner's Engineer Services for 30,000 MTPA Polysilicon & 500 MTPA Monosilane Manufacturing Project for AEL, Gujarat.
- Detail engineering consultant services for new turbine generator set related system, new FBC boiler and interconnecting piping for DTCL, Vadodara.
- RBI Data Centre and Training Institute for IFTAS, Noida.

**EPCM**

- EPCM Services for Implementation the Project of Upgradation of Pump Stations/Terminals of Naharkatiya-Barauni Crude Oil P/L of OIL, Barauni.
- EPCM services for MR-II project at HPCL Mumbai Refinery for HPCL, Mumbai.
- EPCM services for MIBC, MIBK and U&O for DCTL, Vadodara.
- EPCM Services for Dahej Regasification Expansion Project (20 to 22.5 MMTPA) at PETRONET, Dahej.
- BDEP and EPCM Services for Revamp of 2 Stage CDU-3 Desalter including Assistance for Site Works-Phase 1 for BPCL, Kochi.
- Consultancy Services for overall Project Management & EPCM Services for OHCU Revamp, CDWU and related Off-site facilities for Group-II LOBS Project at Manali Refinery of CPCL, Chennai.
- Phase-II EPCM Service for retrofit of steam driven CCR Net Gas Compressor (CRC-2) for BPCL, Kochi.

**DFR**

- Detailed project report (DPR) for Capacity Enhancement of Daitari Iron Ore Mines in Keonjhar, Odisha upto 6 MTPA for OMC, Odisha.
- Licensor Selection, Cost Estimation and Preparation of Detailed Feasibility Report (DFR) for Poly Propylene (PP) Unit Project at BPCL Kochi Refinery for BPCL.
- Preparation of DFR, BDEP and RRA of Propylene Recovery Unit (PRU) 140 KTPA at Mumbai Refinery, HPCL, Mumbai.
- Feasibility Study for Developing Crude Oil Storage Facility at Trincomalee, Sri Lanka at IOCL, Mumbai.
- DFR and Licensor selection for PDH PP plant with Ethane Propane Import facility at Dahej at PETRONET, Dahej.
- Energy Optimization Study at BPCL Mumbai Refinery at BPCL, Mumbai.
- TEFR for Cracker along with other downstream products for GNFC, Gujarat.
- PCF Services for Enterprise level Training Institute for RBI in continuation to the data centre job awarded on 15th June 2022 for IFTAS, Odisha.
- DFR for Jafrabad to Dahej Pipeline of GAIL, Delhi.
- DFR for Installation of Bitumen Pipeline from Paradip Refinery to Paradip port North Oil Jetty for IOCL, Paradip.
- Feasibility Study for CDU-2 Revamp for Nayara Energy Limited, Gujarat.
- Licensing, BEDP, DFR and Pre-Project Activities of BIO-ATF plant, MRPL, Mangalore.

**Others**

- Restoration of Gas Terminal Phase-1 Part A at ONGC Hazira Plant at ONGC, Hazira.
- Third Party Agency Services for Mukhyamantri Digital Sewa Yojana for RISL, Rajasthan.

- Technical Assessment And Transaction Advisory Services for Setting up large scale Bio-Methanation and Waste to Energy Projects in selected 25 cities, having million plus population for MoHUA, Delhi.

**C. Overseas Jobs**

**PMC**

- Consultancy Services for Concept Study for Grass Root Refinery cum Integrated Petrochemical Complex at Nigeria for PADAHLNG, Nigeria.
- PMC Services on Call-Off-Basis under contract no. 429493 for SATAH/UAD Project and USSU Projects for ADNOC Offshore, UAE.
- Engineering Services for Site Survey and Stress Analysis regarding Supports, Bellows and PDS Valves PIC, Kuwait.

**EPCM**

- 6,50,000 BPSD Refinery and 6,00,000 TPA Polypropylene Plant at Lekki Free Trade Zone, Nigeria (Variation Order No. 13 & 14) for DANGOTE, Nigeria.

**DFR**

- E1150-FEED Engineering related to Debottlenecking the existing produced Water Treatment Plant Capacity from 200 Mbd To 300 Mbd For 1 MMBD Phase-1 Project for ADNOC Offshore, UAE.

**Others**

- Upper Zakum Facilities - Plant Modification Requests (PMRs) and Engineering Work Requests (EWRs) (Package-07) for ADNOC Offshore, UAE.
- Cooling Water Network Hydraulic Analysis and Thermal Design of Heat Exchangers for Dangote Fertilizers, Nigeria.
- TSSA/PDC/OHX/049/2021 - Safeguarding Memorandum for all Habshan 5 Plant Areas and Revalidation Hazop for Area 3 for ADNOC GP, UAE.

**14.2.2.3. Financial Performance:**

The turnover and profit before tax of the company for FY 2022-23 (up to September 2022) was ₹ 1,587 crore and ₹ 169 crore, respectively. The details of the financial performance of the company for 2022-23 (up to September, 2022) are attached in **Annexure-I** and **Annexure-II.**

**14.2.2.4. Policy Initiatives Undertaken(up to December, 2022)**

The significant policy initiatives taken during the current financial year include the following:

**A. HR Development**

Besides, the various ongoing HR interventions/measures, the following initiatives were pursued during the year 2022-23 (till December 2022):

i) Enhanced opportunities for virtual learning and employee engagement.

ii) Leadership development program-AAROHAN, a six month long journey inaugurated and some sessions conducted. The programme aims at building best in class leaders, across levels (business leaders, functional leaders & young leaders).

iii) Continuous up gradation of HR Software for seamless integration and HR service delivery.

iv) Revisit & Review of HR policies to bring in better Work life Balance and Employee Engagement.

v) HR Audit conducted to build robust systems and processes.

vi) Structured and robust mechanism of Competency Assessment through Assessment Development Centres.

vii) Creation of a Learning Culture through regular Knowledge Sharing Sessions and Expert Lecture Series-'सुविज्ञ' व्याख्यान' श्रृंखला

viii) Employee Engagement activities organised for Millennials under the 'Youphoria' platform such as Darpan-In-house Photography Competition, Urjaalekh: Industry wide Technical Paper Writing Competition etc.

ix) Recognition of employees by presentation of Awards during Annual Award Ceremony.

x) Extensive efforts undertaken during Covid-19 pandemic to ensure employee welfare and smooth

functioning of operations. Various provisions of existing policies reviewed and new provisions created to enable continued productivity despite disruptions.

xi) Enhanced safety regulations and Hygiene protocols put in place at workplace.

xii) Mentorship interventions undertaken for Management Trainees and new joinees.

xiii) Mother to Mother (M2M) new mother mentoring programme build to address the concerns of new mothers.

**B. Technology Development**

**1.1 Technology development projects initiated up to December 2022**

i) Development of solvent for recovering $CO_2$ from flue gases in presence of impurities.

ii) DPR Preparation for Coal to Methanol.

**1.2 Technology commercialization efforts made up to December 2022**

i) BEDP, DFR and pre-project activities for demo Bio ATF plant at MRPL.

ii) DPR for 10 TPD ethanol demo unit from captured $CO_2$ and $H_2$ from electrolyzer with NTPC.

iii) Revamp of CDU-3 desalter system at BPCL-KR using EIL-BPCL Desalter Technology.

iv) Supply of Basic Engineering Design Package (BEDP) for LPGTU under DCU revamp at NRL.

v) Consultancy services for performance improvement of CDU heater through ENGRT-HTRTM software for HMEL.

**1.3. R&D activities likely to be initiated in the remaining three months of FY2022-23**

i) Development of technology for SAP (Super Absorbent Polymer) production.

ii) Joint technology development for Helium recovery from Natural gas with CSIR-IIP and OECT.

iii) Development of Helical baffles in Heat Exchangers.

iv) Development of technology for recovery of $H_2$ by ammonia cracking.

v) Activities related to BEDP preparation for Production of Aqueous ammonia from Refinery Sour gases at Numaligarh Refinery Limited.

**1.4 Initiatives taken for strengthening technology tie ups**

i) Memorandum of Agreement (MoA) inked with Numaligarh Refinery Limited (NRL) for Development and demonstration technology for the Production of aqueous ammonia from ammonia rich sour gases at NRL.

ii) Memorandum of Understanding (MoU) inked with UOP LLC, USA for enabling UOP to explore the potential deployment of EIL's TGTU technology along with UOP's offerings to customers globally.

iii) Activities initiated for signing of MoU with IIT-Kanpur for collaborative development of various technologies.

iv) Activities initiated for signing of MoU with CSIR-IIP and OECT for Joint technology development for Helium recovery from Natural gas.

v) Activities for signing of MoU with Permionics Membrane Pvt. Ltd. (PMPL) for joint development of technologies in the areas of membrane technologies.

vi) Renewal of membership for FY2022-23 for:

- Process Science Technology Center (PSTC), an industry-academia collaborative research program initiated by University of Texas, USA.
- Fractionation Research Incorporated (FRI), a non-profit cooperative research organization based at Oklahoma, USA.
- Process Integration Research Consortium (PIRC), University of Manchester UK.

**1.5 Patents filed /granted up to December 2022**

i. The following Patent filed earlier were granted this year:

a) Cross flow reactor

b) Design of Desalter System

c) A process for production of hot water,

chilled water and electricity using solar energy.

ii. The following new patents have been filed till December 2022:

a) Apparatus and method for purifying and deodorizing industrial waste gases.

b) A Conduit Support Structure of a Process Fired Heater.

c) Method for Optimizing Fired Heater using a system.

d) An improved configuration of vacuum distillation unit and process for separating components of reduced crude oil.

**14.2.2.5. CSR Activities:**

EIL is committed to operate in an economically, socially and environmentally responsible manner to enhance the company's overall contribution to society. The company's CSR policy aims to enrich the lives of people through the process of social upliftment, by promoting inclusive growth and recharge the environment through sustainable process.

CSR activities are undertaken in compliance with Schedule-VII of The Companies Act and circulars/amendments/guidelines/ directives/rules and notifications issued by various ministries/departments of Govt. of India. However, the main focus areas of EIL's CSR are:

- Education/Skill Development
- Healthcare & Nutrition
- Drinking Water/Sanitation
- Rural Development
- Environment Protection/ Sustainability
- Upliftment of underprivileged
- Women Empowerment
- Supplement specific government programmes / schemes

The CSR activities are directed towards supplementing/supporting the ongoing and planned initiatives of the local, state or central government, with a focus on backward areas and underprivileged at various locations across the country including our project sites/offices and Head Office. The activities undertaken are in consonance and consultation with State Governments, district administration, local administration as well as Central Government Departments/Agencies, Self Help Groups, etc. to avoid duplication.

As per Companies Act 2013, the budgetary allocation of at least 2% of the average net profits made during the three immediately preceding financial years has been made in the financial year 2022-23 for CSR activities.

Various thrust areas of our CSR activities with brief detail on type of projects/ activities in FY 2022-23 (up to 31st December, 2022) in each thrust area are mentioned below:-

Education/Skill Development-Projects completed under this thrust area include Residential Skill Development Training Programme of 600 candidates from backward classes, construction of six classrooms and a toilet at LBJ Pathshala in Tilhar district, Shahjahanpur, Uttar Pradesh and contribution towards operational funding of Skill Development Institutes in Raebareli (Uttar Pradesh) and Guwahati (Assam).



Residential Skill Development Training of candidates from backward classes




Constructed six classroom in a school in Tilhar district, Uttar Pradesh

Projects under implementation in this area include Construction of Government School Building in Kabennur, Dharwad, Karnataka; Maintenance of school toilets constructed by EIL in state of Assam, Tamil Nadu and Odisha as part of Swachh Vidyalaya Abhiyan; Construction of 21 nos. additional classrooms in Govt Schools of Darrang district, Assam; Contribution towards operational funding of Skill Development Institute (SDI), Ahmedabad; and Construction of additional classrooms in 2 Govt schools of Karaikal, district Puducherry.



Constructed school building in Dharwad, Karnataka



Construction of classrooms in Govt. schools in Darrang, Assam

Healthcare & Nutrition-Projects under implementation under this thrust area include Procurement of medical equipment for Department of Anesthesiology, Ear Nose Throat, Radio Diagnosis & Urology at Indira Gandhi Medical College & Research Institute, Puducherry; Establishment of 140 nos. of Model Anganwadi Centres in aspirational district Dhubri, Assam; Support for Eye check- up camps with 600 cataract surgeries and distribution of spectacles & medicines in aspirational district of Haridwar, Uttarakhand; conducting eye and health check-up camps in four aspirational districts



Model Anganwadi Centres in Dhubri, Assam




Eye check-up camps in Haridwar, Uttarakhand

viz. Baksa, Udalgiri, Barpeta and Hailakandi in Assam; and support for treatment of 5 under-privileged Cancer Patients in General Ward Category of Rajiv Gandhi Cancer Institute and Research Centre, New Delhi.

Environment Protection-Project under implementation under this thrust area includes installation of 40KW Rooftop Solar Grid at Arogya Sandhan Residential Care Home for differently abled persons in West Bengal.

#### 14.2.2.6. Welfare of SC/ST/OBC/PWD

Details relating to Welfare of SC/ST/OBC/ PWD are attached as Annexure-III. A brief note on the scheme under Special Component Plan (SCP)/Tribal Sub Plan (TSP) is attached as Annexure-IV.

#### 14.2.2.7. Women Employees

EIL had 312 women employees in a total strength of employees as on December 31, 2022.

The level-wise women employees in 2022-23 (upto December, 2022) is given in Annexure-V.

**14.2.2.8. Compliance of Official Language Policy of the Government**

Detailed note is attached as Annexure VI.

**14.2.2.9. Control of Pollution and other Environmental Initiatives**

Detailed note is attached as Annexure VII.

## Annexure-I

### PLAN ALLOCATION AND EXPENDITURE

| DESCRIPTION | ACTUALS | B.E. | R.E. | ACTUALS (PROVISIONAL |
|---|---|---|---|---|
| | 2021-22 | 2022-23 | 2022-23 | 04.2022 TO 09.2022 |
| Engineers India Ltd. being an Engineering Consultancy organization, it does not have any PLAN (Capital) expenditure | | | | |

## Annexure II

### FINANCIAL RESULTS OF THE UNDERTAKING

(₹ in Crores)

| DESCRIPTION | ACTUALS | B.E. | R.E. | ACTUALS (PROVISIONAL |
|---|---|---|---|---|
| | 2021-22 | 2022-23 | 2022-23 | 04.2022 TO 09.2022 |
| TURNOVER | 2,870.40 | 3,669.22 | 3,261.31 | 1,586.99 |
| OTHER INCOME | 136.73 | 123.43 | 150.90 | 94.12 |
| PROFIT BEFORE TAX | 447.83 | 376.66 | 357.24 | 169.32 |
| PROFIT AFTER TAX | 344.40 | 281.86 | 281.21 | 135.64 |

## Annexure-III

### Welfare of SC/ST/OBC/PWD

Details relating to SC/ST/OBC/PWD welfare activities, SC/ST/OBC/PWD recruitment, shortfall of SC/ST/OBC/PWD, efforts for minimization of SC/ST/OBC/PWD shortfall, position of recruitment of Persons with Disabilities and minorities for the year 2022-2023 (up to December 31, 2022) are given below:-

**(I) Recruitment status:**

20 candidates in Group "A" post and 7 candidates in Group "C" have been inducted during the period 1.4.2022 to 31.12.2022.

**(II) Shortfall of SC/ST/OBCs as on 31.12.2022:**

| Category of posts | SC | ST | OBCs |
|---|---|---|---|
| Group-A | 6 | 5 | 6 |
| Group-B | - | - | - |
| Group-C | - | - | - |
| Group-D | - | - | - |
| **Total** | **6** | **5** | **6** |

**(III) Shortfall of Persons with Disabilities as on 31.12.2022:**

| Category of posts | Blindness and low vision | Deaf and hard of hearing | Locomotors disability | Autism, intellectual disability, Multiple Disabilities, etc. |
|---|---|---|---|---|
| Group-A | 2 | 1 | - | 1 |
| Group-B | - | - | - | - |
| Group-C | - | - | - | - |
| Group-D | - | - | - | - |
| **Total** | **2** | **1** | **-** | **1** |

**(IV) Efforts for minimization for SC/ST/OBC/PWD shortfall:**

The company makes all out efforts for minimizing the shortfall, as and when recruitment takes place.

**(V) Recruitment of Persons with Disabilities:**

1 person with Disabilities has been recruited during the year.

**(VI) Recruitment of Minority Community persons:**

2 persons belonging to minority community have been recruited during the year.

**(VII) Status of implementation of Rights to Persons with Disabilities Act, 2016:**

Reservation of Persons with Disability is being complied by EIL as per RPWD Act.

## Annexure-IV

## BRIEF NOTE ON THE SCHEME UNDER

### SPECIAL COMPONENT PLAN (SCP)/TRIBAL SUB PLAN (TSP)

Under the SCP/TSP, the Company undertakes following programs:

**Scholarships for SC/ST Undergraduates Engineering Students**

Students pursuing full-time Undergraduate Engineering Programmes in Civil, Mechanical, Electrical, Electronics, Computer Science, Industrial, Chemical or Instrumentation Engineering disciplines are eligible for scholarships from 1st year of study of Engineering qualification. The scheme is continued during 2nd, 3rd and 4th year of study. During the FY 2022-23 (upto 31st Dec, 2022) scholarship amount of ₹ 11.16 lakh for SC students & ₹ 4.86 lakh for ST students has been released.

**Annexure-V**

## WOMEN EMPLOYEES

**The level-wise women employees in 2022-23 (as on December 31, 2022) is given below:**

| Level | Total strength inclusive of contract employees as on 31.12.2022 | No. of Women as on 31.12.2022 |
|---|---|---|
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 4 | 0 |
| 5 | 16 | 1 |
| 6 | 10 | 1 |
| 7 | 41 | 6 |
| 8 | 23 | 3 |
| 9 | 30 | 10 |
| 10 | 12 | 0 |
| 12 | 189 | 47 |
| 13 | 259 | 31 |
| 14 | 294 | 52 |
| 15 | 875 | 72 |
| 16 | 364 | 41 |
| 17 | 234 | 20 |
| 18 | 220 | 22 |
| 19 | 61 | 4 |
| 20 | 18 | 1 |
| Directors | 5 | 0 |
| C&MD | 1 | 1 |
| **Total** | **2,656** | **312** |

**Annexure-VI**

## Compliance of Official Language Policy in EIL (2022-23)

**(Upto December, 2022)**

**1. Implementation of official language policy & New Initiatives:**

i. Quarterly meetings were held regularly where in the progress of progressive use of Hindi was reviewed. The meetings of different OLICs of Regional/Field/ Procurement Offices were also organized as per schedule and the targets of four meetings as per schedule would be achieved in the financial year in all offices.

ii. Provisions of the Section 3(3) of the Official Language Actand the Official Language Rules have been complied with.

iii. Senior Officers of the Company participated in the meetings of the Town Official Language Implementation Committee (TOLIC).

iv. Employees are nominated for all the competitions organized by other undertakings under the aegis of TOLIC.

v. The initiatives taken in the field of IT includes activating Unicode facilities in all computers, Providing Indic IME, booklet for Standard Noting, PDF of Email Signature in Hindi and Google voice typing & other software on the computers and training of above softwares were given during Hindi Workshops. Necessary Hindi softwares, Glossary and other material are installed in the Company Portal for spontaneous use of employees.

vi. For better implementation of Official Language inspections have been conducted in the offices and departments.

**2. Hindi Teaching & Training:**

In pursuance of the Official Language Policy of the Government of India, newly joined employees, not knowing Hindi language, are nominated in correspondence course of Ministry of Home Affairs. Cent-percent target has been achieved in respect of stenographers and typists.

**3. Hindi Workshops:**

12 physical workshops in different Offices have been organized till quarter end on December 2022. Target of remaining workshops will be achieved before end of financial year.

**4. Hindi Fortnight Celebration:**

The Hindi Fortnight was celebratedduring14-29 September, 2022 in the Company. Various competitions were organized to encourage the progressive use of Hindi wherein winners were awarded. On this occasion such HODs/Head of office and their Hindi Coordinators were awarded who have done maximum work in Hindi during the year.

**5. Official Language Award**

1) Official Language Incentive Award for the year 2019-2020 has been awarded to EIL by the Ministry of Petroleum and Natural Gas.

2) EIL, R&D has been awarded "Narakas Rajbhasha Puraskar Year 2021-22" by the Town Official Language Implementation Committee, Gurugram. Similarly, EIL Branch Office Mumbai, has secured the second position for the excellent home magazine "PAHAL" from Navi Mumbai Narakas.

3) Branch Office Mumbai's half-yearly magazine 'PAHAL' has been awarded by NARAKAS first Prize for excellent home magazine for the year 2022-2023 and third prize for the year 2021-2022 under Navi Mumbai Narakas in the category of Public Undertakings home magazine initiative.

## Annexure-VII

# CONTROL OF POLLUTION AND OTHER ENVIRONMENTAL INITIATIVES

EIL has been providing solutions for water resources management in India and abroad while protecting and restoring major water ecosystems. EIL has helped in enabling the adoption of innovative & integrated water and wastewater management for industries & municipalities. ETP modernization/updation requirements, reduction in fresh water intake of industries by reducing consumption in process units, and maximizing the recycle & reuse of treated effluent has been an integral part of our design. EIL is committed to ensure compliance to all health, safety and environment requirements during delivery of products/services to customers. EIL has executed several hundred projects in diversified fields of Environmental Engineering, including water & wastewater treatment; Effluent Recycle & Reuse; Environmental Impact Assessment Studies; Air Quality Assessment, Modelling & Control; Environmental Management Plans, Sustainability Development initiatives, Environmental Feasibility Studies; etc.

Some of the major projects carried out by the company during this financial year in Environmental field include the following:

- Ministry of Housing and Urban Affairs (MoHUA) has awarded a Transaction Advisory Services to EIL for converting municipal solid waste to valuable resources (Electricity/BioCNG) for 25 Nos. of cities with Million Plus population across Pan India.
- Project Management Consultancy (PMC) Services for Deepak Phenolics Limited Project including water & wastewater treatment and effluent recycle facilities.
- Project Management Consultancy (PMC) Services for IOCL's Panipat Refinery P-25 Project including water & wastewater treatment, effluent recycle and Zero Liquid Discharge facilities.
- Project Management Consultancy (PMC) Services for CPCL's Nagapattnam Refinery Project including water & wastewater treatment and effluent recycle facilities.
- Project Management Consultancy (PMC) Services for GAIL Usar Complex Project including water & wastewater treatment, effluent recycle and Zero Liquid Discharge facilities.
- Project Management Consultancy (PMC) Services for a Crude Oil Refinery in Mongolia including water & wastewater treatment and effluent recycle facilities.
- Water & wastewater treatment facilities including effluent recycle & reuse to meet zero liquid discharge concept to minimize the fresh water consumption is being implemented for HRRL Rajasthan Refinery Project.
- Environmental Clearances from Ministry of Environment, Forest and Climate Change (MoEFCC) were successfully obtained by EIL for MRPL's Refinery Expansion Project at Mangalore and Bharat Petroleum Corporation Limited (BPCL)'s Refinery Expansion Project at Bina.
- EIL is already accredited by Quality Council of India (QCI) for carrying out Environmental Impact Assessment Study projects and the accreditation is valid upto 22.11.2023.

## 14.3. MINIRATNA PSUs

### 14.3.1. Balmer Lawrie & Co. Limited (BL):

Balmer Lawrie & Co. Limited (BL) is a multi-technology, multi-locational Company headquartered at Kolkata with operations spread through India. The company has significant transnational business interest with joint ventures in Dubai and Indonesia. The Company also has one subsidiary and several joint ventures in India. The Company's business interest spans both Manufacturing and Services. The authorized and paid up capital of the Company were ₹ 300 crores and ₹ 171 crores respectively as on 31st March, 2022. Balmer Lawrie Investments Ltd., a Government Company, holds 10,56,79,350 equity shares of ₹ 10 each (totaling to about 61.80% of paid-up equity capital) of the Company. The Company achieved Net Turnover of ₹ 2,104.85 crores during 2021-22 as against ₹ 1,592.77 crores in 2020-21, registering an increase of approximately 32% over the previous year. The Profit before Tax of ₹ 170.14 crores in 2021-22 as against ₹ 156.65 crores in 2020-21, the increase of approximately 9% over the previous year being primarily attributable to the increase in turnover and profitability of the manufacturing businesses.

### 14.3.2. CHENNAI PETROLEUM CORPORATION LIMITED

**1. Chennai Petroleum Corporation Limited (CPCL) Refineries**

Chennai Petroleum Corporation Limited (CPCL), formerly known as Madras Refineries Limited (MRL) was formed as a joint venture in 1965 between the Government of India (GoI), AMOCO and National Iranian Oil Company (NIOC). AMOCO disinvested CPCL equity in favour of the Government of India in 1985. Later Government of India transferred its equity to IOCL and CPCL became a subsidiary of IOCL in 2001. The present capacity of Manali refinery is 10.5 MMTPA.

CPCL Manali Refinery is one of the most complex refineries in India with Fuel, Lube, Wax and Petrochemical feedstock production facilities. The 5.8 MGD Sea Water Desalination Project to augment the water requirements of its refinery was first of its kind in the industry.

CPCL has a Wax Plant of 30,000 metric tonnes (MT) capacity per annum, to produce paraffin wax for manufacture of candle wax, waterproof formulations and match wax. A Propylene Plant was commissioned in 1988 with an initial capacity of 17000 MT per annum to supply petrochemical feedstock to neighbouring downstream industries. The unit was revamped to enhance the propylene production capacity to 30,000 MT per annum in 2004.

The main products of the Company are LPG, Motor Spirit, Superior Kerosene, Aviation Turbine Fuel, High Speed Diesel, Naphtha, Bitumen, Lube Base Stocks, Paraffin Wax, Fuel Oil, Hexane, Petrochemical feed stocks and Petroleum Coke. CPCL also supplies Linear Alkyl Benzene Feedstock (LABFS) to a downstream unit for manufacture of Linear Alkyl Benzene.

CPCL's second refinery, located at Nagapattinam was commissioned in 1993. This Cauvery Basin Refinery (CBR) was a small well-head refinery processing crudes from nearby ONGC fields, Rawa crude and KG-D6 crude. CBR has been decommissioned with effect from 01.04.2019 due to limitations in meeting product specifications with the existing configuration. Construction of a new refinery of 9.0 MMTPA capacity along with a Petrochemical facility is in progress.

**2. Shareholding pattern:**

| CPCL's SHAREHOLDING PATTERN AS ON 31.12.2022 | |
|---|---|
| **DESCRIPTION** | **% SHARES** |
| Indian Oil Corporation Limited | 51.89 |
| Naftiran Inter-trade Co. Ltd. | 15.40 |
| Public (including Employees) | 22.02 |
| NBFC | 0.00 |
| Bodies Corporate | 0.91 |
| Banks | 0.00 |
| Mutual Funds and UTI | 1.28 |
| Foreign Institutional Investors | 0.00 |
| Qualified Institutional Buyer | 1.90 |
| Alternative Investment Fund | 0.07 |
| IEPF | 0.34 |
| Non-Resident Indians/OCBs/Foreign Portfolio-Corp/Non-Resident Indians (Non Repatriable)/Foreign Nationals | 6.19 |
| **Total** | **100.00** |

**3. Details of Backlog Vacancies in respect of SC, ST, OBC, PwBD in PSUs/Organizations under this Ministry as on 31st December, 2022:**

| | Group A | | | | Group B | | | | Group C | | | | Group D | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CPCL | SC | ST | OBC | PwBD | SC | ST | OBC | PwBD | SC | ST | OBC | PwBD | SC | ST | OBC | PwBD |
| | Nil | Nil | Nil | Nil | Nil | 1$ | Nil | Nil | 1 | Nil | 2 | 6 | Nil | Nil | Nil | Nil |

$ - Also reserved for PwBD (Recruitment completed, candidate likely to join shortly)

**4. Women Employees:**

The number of women employees' vis-à-vis total number of employees as on 31st December, 2022 in CPCL is tabulated as below:

| Total no. of Employees | Total no. of Women Employees |
|---|---|
| 1,455 | 76 |

**5. Performance data**

**i) Physical Performance**

The company had processed 9,040 TMT (Thousand Metric Tonnes) of crude oil in the year 2021-22 and processed 8,364 TMT of crude oil for the period April to December, 2022.

CPCL has achieved the Total Distillates of 75.93% in 2022-23 (Up to December, 2022).

CPCL has achieved the Total Distillates of 75.93% in 2022-23 (Up to December, 2022).

| Parameter | 2021-22 Actuals | 2022-23 (Upto Dec '22) |
|---|---|---|
| **Crude Throughput (MMT)** | 9.040 | 8.364 |
| **Distillate Yield (%)** | 74.93 | 75.93 |

**ii) Financial Performance**

During the FY 2021-22, CPCL achieved a turnover of ₹ 60,402 crore for the current FY 2022-23, the turnover upto December 2022 is ₹ 69,464 crore. The details of financial performance are given below:

(₹ in Crores)

| Parameter | 2021-22 Actuals | 2022-23 (up to Dec '22) |
|---|---|---|
| Turnover | 60,402 | 69,464 |
| Profit Before Tax | 1,832 | 3,421 |
| Profit After Tax | 1,342 | 2,530 |

**iii) Projects**

**A. Major Projects Completed**

**a) RLNG Project:**

This project aims at utilization of RLNG as feed (in place of Naphtha) in HGUs, as fuel in Hydrogen Reformer, GTs, Utility Boilers and Process Heaters.

- RLNG conversion in Hydrogen Generation Unit - HGU-214 completed in March 2019.
- RLNG conversion in Hydrogen Generation Unit - HGU-205 completed in Oct 2021.
- All five GTs and five out of six Boilers RLNG Conversion have been completed progressively till Aug 2021.
- RLNG conversion in Utility Boiler-Boiler-5 was completed in Jan 2022.

The approved cost of RLNG Projects is ₹ 421 crore. The financial progress as of December 2021 with respect to the anticipated project cost of ₹ 315 crore is about 95%.

**B. Major Projects under Implementation**

**a) Refinery Expansion at CBR:**

Chennai Petroleum Corporation Limited (CPCL), along with IndianOil is implementing a 9.0 MMTPA Cauvery Basin Refinery & Petrochemicals Project (CBRPL) at Nagapattinam at an estimated cost of ₹ 31,580 crores. The project will be implemented in Joint Venture (JV) mode with CPCL & IOCL having equity contribution of 25% each and remaining 50% by Strategic/Financial partners.

The refinery complex will produce LPG, Petrol, Diesel and ATF meeting BS-VI specifications and Polypropylene as a value added product. This project utilises many indigenous technologies like INDMAX, OCTAMAX, etc. in line with nation's vision of AatmaNirbhar Bharat.

The foundation stone for the project was laid by Hon'ble Prime Minister on 17-Feb-21. The project will not only add to India's energy security, but will also generate employment opportunities (12,000/day of manpower with 25,000 at peak during Project Construction phase, 600 numbers of Direct employment + 2,000 numbers of Indirect employment during operation phase of the project) and promote economic development of the region.

Engineering, Procurement, Construction and Management (EPCM) consultants (Engineers India Limited, McDermott & Tata Consulting Engineers) have been lined up and Detailed engineering, Tendering & Procurement activities are in progress. Dismantling of the existing refinery was completed & Site enabling works viz., Site grading, Construction power & Construction water works are gathering momentum at site. Architecture works for township design is also in progress.

At present, enquiries have been floated for all major Equipment, Works Contracts (including

LSTK & BOO), Packages and they are in different stages of tendering, evaluation & award. Acquisition of additional land by TN-Govt. for the project is in advanced stage. The project is scheduled to be completed by mid-2026 after the completion of land acquisition.

Certificate of incorporation of JV company was received from Ministry of Corporate Affairs on 06-Jan-23 & first Board meeting of the JV was held on 16-Jan-23.

**C. Future Projects**

CPCL is planning to implement a project for production of Group-II Lube Oil Base Stocks for improved LOBS production. First stage approval has been received from CPCL/IOCL Boards and pre-project activities like BDEP preparation are in progress.

**6. Corporate Social Responsibility & Sustainable Development:**

**1. Health Care**

**a) Community Health Centre:** Operation and Maintenance of Community Health Centre at Manali, Chennai, by CPCL through an external agency M/s. WockHardt Foundation, to provide the free health care services relating to Eye, dental, physiotherapy & Hematology analysis to the public in around our Refinery.

**b) Mobile Medical Unit (MMU) :** Mobile Medical Unit (MMU) at Manali and Ramanathapuram (Aspirational District) in Tamil Nadu run by CPCL through an external agency M/s. Helpage India to provide general health care services in and around 10 villages.

**2. Support during Covid Pandemic**

a) Setting up of PSA oxygen plant at Kerala and Karnataka at a cost of ₹ 500.19 lakhs.

b) Setting up of make shift Covid care centre with 60 beds facility at R&D center in Manali Refinery premises with continuous supply of medical oxygen from CPCL oxygen plant.

**3. Swachh Bharat**

a) Construction of Public utilities in Government Hospitals, Government Institutions, Colleges, etc.,

b) Construction of Toilets in Schools through Sarva Shiksha Department.

c) Provision of drinking water facilities to the villages.

**4. Education & Skill Development**

a) Established and running an education trust for the benefit of poor and needy surrounding the Manali refinery.

b) Contributed to graphic skills development of youth, tailoring skills for needy girls/women and computer skills for the visually challenged.

## 14.3.3. Mangalore Refinery and Petrochemicals Limited (MRPL)

### 14.3.3.1. A brief of the Company:

Mangalore Refinery and Petrochemicals Limited (MRPL) is a Category-1 Miniratna, "Schedule-A" CPSE and a subsidiary of Oil and Natural Gas Corporation Limited (ONGC).

The Refinery has a versatile design with high flexibility to process Crude with 24 to 46 API gravity and has high degree of Automation. MRPL is the only Refinery in India to have 2 Hydrocrackers producing Premium Diesel (High Cetane) and to have 2 CCRs producing Unleaded Petrol of High Octane.

The present capacity of the Refinery is 15 MMTPA. MRPL achieved the highest ever crude throughput of 14.87 MMT during the year 2021-22 against 11.47 MMT during the previous year 2020-21 registering an increase of 29.64%. MRPL earned a Profit After Tax (PAT) of ₹ 2,955.27 Crore during the financial year 2021-22 against loss of ₹ 761.17 crore incurred during the financial year 2020-21.

MRPL continues to maintain major share of the direct sales segment of petroleum products market in Karnataka and adjoining states. MRPL maintained leadership position in its marketing zone for direct sales products such as Bitumen, Fuel Oil, Diesel, Sulphur, Petcoke, Xylol (Xylenes) etc. MRPL has commenced Diesel supplies directly to new Railway Consumer Depots during the

period and has also expanded its retail network. The total domestic sales volume of all products during the FY 2021-22 has been 1,988 TMT with a sales value of ₹ 11,033 crores which is about 53.08% higher than previous year sales value of ₹ 7,207 crores.

MRPL continues to enhance its market share for Polypropylene with introduction of new and niche grades. Highest PP production of 43.267 TMT achieved for the month of October, 2021 against Previous highest 43.111 TMT during July, 2021. Ever Highest Polypropylene production of 460 TMT achieved for FY 2021-22 against nameplate Capacity of 440 TMT.

MRPL has also successfully marketed its entire production of Petcoke on consistent basis with a sales volumes of 828 TMT. Company also sold about 191 TMT Sulphur in its marketing zone and the surplus Sulphur is being exported in larger parcel sizes.

MRPL is continuously focusing on its retail expansion in the States of Karnataka & Kerala and so far has successfully commissioned 32 retail outlets with another 20 retail outlets under various stages of construction. Plans are in place for adding 50 new retail outlets every year for the next 5-10 years and for entering new geographical areas of Tamil Nadu, Andhra Pradesh and Telangana in near to medium term.

The amalgamation of ONGC Mangalore Petrochemicals Limited (OMPL) with Mangalore Refinery and Petrochemicals Limited (MRPL) was approved by the Ministry of Corporate Affairs, New Delhi vide its Final Order dated 14/04/2022 with 01/04/2021 as Appointed Date and the Effective Date for Scheme of Amalgamation of OMPL and MRPL is 01/05/2022.

Shell MRPL Aviation Fuel and Services Limited (Joint Venture of MRPL) has steadily acquired business for sale of Aviation Turbine Fuel (ATF) at Indian airports. The company achieved a turnover of ₹ 673.19 crore during FY 2021-22 against turnover of ₹ 260.50 crore in the previous FY 2020-21.

**14.3.3.2. PROJECTS**

**BS-VI upgradation**

As per Auto Fuel Policy and directives from Ministry of Petroleum and Natural Gas (MoPNG), the entire country has moved towards BS-VI quality specifications for MS and HSD. The project involved setting up of new units and additional facilities. M/s. Engineers India Limited was the Engineering, Procurement and Construction Management Consultant for the job. The main unit-FGTU was commissioned on 11.07.2021 resulting in additional 25 TMT/month BS-VI MS. The balance two units-Nitrogen plant and SRU-7 were commissioned on 16.03.2022 and 28.03.2022 respectively.

**Desalination Plant**

Desalination Plant of 30 MLD capacity (scalable to 70 MLD) is set up to ensure continuous operation of Refinery during summer / weak monsoons and to eliminate risk of Nethravathi river being the only source of fresh water. The plant is set up on the shore of the Arabian Sea at Thannirbhavi in Mangalore on land leased from New Mangalore Port Trust. M/s. Fichtner India was the Project Management Consultant and M/s VA Tech Wabag Limited was the LSTK contractor. The plant was commissioned on 30.12.2021 and is operating at designed load consistently while the permeate (Desalinated water) is as per the required specifications.

**Marketing Terminal at Devangonthi**

Marketing Terminal at Devangonthi, Bengaluru is being constructed to cater to business primarily in the state of Karnataka. The terminal would receive finished petroleum products (MS, HSD and ATF) through the existing PMHB pipeline from MRPL. The supplies of petroleum products to the retail outlets/customer/aviation stations would be met through road tankers. M/s. Nauvata Engineering Private Limited is the Consultant for the project. LSTK

tender for Tankages and associated civil, mechanical, piping, electrical, instrumentation and fire-fighting is placed on M/s. Vishal Structurals Private Limited and for Civil and Structural works on M/s. SRR Projects Private Limited. Construction activities have commenced and the Terminal is scheduled to be completed by third quarter of FY 2023-24.

**2G Ethanol**

MRPL has been informed by MoPNG to set up a 2G Ethanol Project in the state of Karnataka. Land for the same has been allotted by the Karnataka Industrial Areas Development Board (KIADB) at Harihara, Davanagere. Technology for the project has been selected and Detailed Feasibility Report has been prepared. MRPL has applied for the Viability Gap funding from GoI and Environmental clearance for the Project is awaited.

**Modification of Gas Turbines for Natural Gas firing**

MRPL has two Gas Turbines. Presently, GT-1 is fired using Light Cycle Oil and GT-2 by Refinery Fuel Gas. Both the Gas Turbines are designed to operate with Natural Gas. The project involved modifications to the Gas Turbines for Natural Gas firing. M/s. L&T-SL was the Project Management Consultant and M/s. BGGTS was awarded the contract for execution of the project. The project was commissioned on 24.12.2021.

**CCR-1 Revamp**

CCR-1 converts heavy naphtha feedstock into high octane reformate for gasoline blending and produces hydrogen for hydro-treating/hydrocracking. Revamp of Regenerator section of CCR-1 is being carried out to increase Regenerator Coke burn capacity thereby resulting in overall capacity increase to 80 m3/hr (from current 75 m3/hr). M/s. Triune Energy Services Private Limited is the Engineering, Procurement and Construction Management Consultant for the project. Major ordering is completed and equipment deliveries to site have commenced. Mechanical Completion of the project is scheduled in first quarter of FY 2023-24.

**PFCC Stack Wet Gas Scrubber System**

Petrochemical Fluidized Catalytic Cracking (PFCC) unit processes unconverted oil from Hydrocracker units, straight run low sulphur vacuum gas oil and hydro treated heavy coker gas oil and converts into value added products such as propylene, LPG and gasoline. During this process, carbon is deposited on the catalyst which reduces the ability of the catalyst to aid the cracking process. The carbon is then burnt off and the catalyst is regenerated. The regeneration process produces flue gas which passes through a system of cyclones and separators to remove catalyst fines. The project is conceived to reduce SPM limit in flue gas of PFCC as pollution control measure. M/s. Thyssenkrupp Industrial Solutions (India) Private Limited is the Project Management Consultant and M/s. Kalpataru Power Transmission Limited is the LSTK contractor for the project. Mechanical Completion of the project is scheduled in second quarter of FY 2023-24.

**PFCC LPG + Propylene Amine Scrubber**

While processing feed with high Sulphur content in Petrochemical Fluidized Catalytic Cracking (PFCC), higher Hydrogen Sulfide ($H_2S$) is expected in LPG and Propylene stream. Current system to meet $H_2S$ in LPG and Propylene product is caustic wash. Amine Scrubber System reduces dependency on caustic wash to a large extent. The system removes $H_2S$ in the LPG and Propylene streams and minimizes the spent caustic generation in existing Caustic Treatment System. M/s. Triune Energy Services Private Limited is the Engineering, Procurement and Construction Management Consultant for the project. Mechanical Completion of the project is scheduled in second quarter of FY 2023-24.

**New Bitumen Blowing Train as a part of extension of existing Bitumen Blowing Unit**

The project envisages setting up of additional Bitumen Blowing Train with a capacity of 144 KTPA as a part of extension of existing Bitumen Blowing Unit to cater to the simultaneous demand of VG-30 and VG-40 grades of bitumen to leverage market demand. M/s. Engineers India Limited is the Engineering, Procurement and Construction Management Consultant for the project. Mechanical Completion of the project is scheduled in third quarter of FY 2023-24.

**14.3.3.3. Human Resources:**

- During the financial year 2021-22, your Company continued to enjoy cordial and harmonious relations with all the employees and as evidence to the same not a single man-hour was lost on account of any industrial disturbance.
- The Long Term Settlement for the period upto 31st December 2026, with the MRPL Employees Union was reached in the current fiscal.
- Total employee strength was 2,100 including 146 women employees, 322 SC/ST employees and 37 Physically Challenged employees. 923 employees belong to Management cadre whereas 1,177 employees belong to Non-Management cadre.
- Total employee strength in Aromatic Complex as on 31/03/2022 was 472. Out of which, 179 employees belonged to Management cadre and 293 employees belonged to Non-Management cadre. It included 297 Project Displaced Family (PDFs) Candidates. 83 Women employees constituted over 18 percent of Aromatic Complex's workforce.

**14.3.3.4. Energy Conservation:**

Major Energy Conservation measures implemented during the year:

- Thermal Efficiency improvement of CDU1 heater (BA 1001 and VDU-heater (BA 1101) by stack temperature optimization through replacement of critical dampers.
- CDU-2/VDU-2 CAPH (Cast Iron Air Pre-heater) replacement.
- CDU-1/2 Kero-interconnection for heat recovery in the PHT (Pre-heat Train).
- Economizer performance improvement - (DRY ICE BLASTING UB-3 & 4).
- PFCC-NSU (Naphtha Splitter Unit) Stoppage.
- Replacing Naphtha in HGU-3 (Hydrogen Generation Unit-3) with RLNG.
- Reduction of Vacuum Column Top Pressure in VDU-III (Vacuum Distillation Unit-3).
- CHT Feed Charge pump GA 34101 A/B, replace pump with larger capacity with same head.
- Stopping of quench column bottom pump in TGTU.
- WGC ant surge controller tuning in DCU.
- Optimization of Excess $O_2$ based on TDLS Analyzer @ CDU-2 heater arch section.
- VDU-2 Heater coil MP steam reduction.
- By Reducing the MP steam in the VDU-2 heater coils, energy savings incurred: 297 MTOE which is equivalent to 2,970 Gcal/yr.
- Arresting $H_2$ flaring by internal recycle of hydrogen to compressor suction via Spill back in PPU By implementing the schemes, net energy savings obtained is 19,214 Metric Tons of Oil Equivalent (MTOE)/yearr which is equivalent to 1,92,140 Gcal/yr.

**14.3.3.5. Safety Performance:**

- MRPL successfully achieved ZERO RLTI in the FY 2021-22.
- MRPL achieved 2,120 & 638 days without Reportable Lost time injuries (RLTI) as on 31/03/2022, in case of employee & contract workers respectively.
- MRPL bagged 2 state level awards by Department of Factories, Boilers, Industrial Safety & Health, GoK, for the year 2021:

- Best Safe Industry award under Oil Industry Category.
- Safe Operation, Maintenance & reliable boiler under Cogen Boiler category.

➢ As on 31.03.2022, MRPL employees achieved 29.4 safe million man hours.

➢ Carried out OISD Pre-commissioning safety audit for SRU-7, offsite facility & HSD line to jetty.

**14.3.3.6. Environment Management:**

➢ Consent for Operation (CFO) granted by KSPCB for BS-VI Project namely FGTU, SRU-7 and Offsite facilities & commissioned.

➢ Consent for Operation (CFO) granted by KSPCB for 30MLD Desalination unit at Tannerbavi village & commissioned.

➢ Consent for Establishment (CFE) obtained for setting up Marketing Terminal at Devangonthi, Bangalore.

➢ Environmental Clearance was recommended by State Environment Impact Assessment Authority (SEIAA), GoK for proposed 2G-Ethanol project at Davangere. Wildlife Conservation plan authentication from PCCF-WL, Bangalore in progress.

➢ Baseline monitoring for Environment Impact Assessment study of proposed Petro Addition & Capacity Enhancement Project (PACE) completed.

➢ 81.43 MT of Oily Sludge, 208.99 MT of PFCC Spent catalyst and 183.8 MT of Spent clay have been Co-processed in SPCB authorized cement industries.

➢ 846.5 MT of Spent catalysts has been disposed through SPCB authorized Recyclers/ Reprocessors.

➢ 7.31 MT of Waste White Oil have been disposed to SPCB authorized Incineration Facility.

➢ 304.19 MT of Non-Recyclable/ Non-Reusable Hazardous waste handed over to secured landfill (TSDF).

➢ 65,87,079 $m^3$ of Tertiary Treated Municipal Sewage water from Mangalore city was utilized in MRPL during FY 21-22.

➢ MRPL hosted Activity Committee Meet (ACM) on Environment and Water Management in association with Centre for High Technology (CHT), MoPNG. The objective of the ACM is to share best operational practices, case studies, modifications and troubleshooting by Refineries.

➢ MRPL awarded Gold Medal by International Research Institute for Manufacturing (IRIM), for India Green Manufacturing Challenge 2020-21.

**14.3.3.7. Corporate Social Responsibility Initiatives:**

➢ The CSR objective is in line with Schedule-VII of the Companies Act, 2013 & DPE guidelines and is promoted under the name of SAMRAKSHAN. This captures the spirit and commitment to protect, preserve and promote the social, cultural and environmental heritage and wealth in and around the area of our business and to usher in sustainable development.

➢ Some of the CSR initiatives undertaken are: Operating Primary Health Centre in the Rehabilitation Colony, construction of overhead water tank, construction of Sheet roofing training barrack for Karnataka State Fire Service, Auditorium, Community Hall, Development of Public Park, construction of Anganwadis, additional class rooms, Ladies Rest room, Beach development, Infrastructure development, drilling of Borewell and submersible pump, pipeline, construction of OPD block, Scaling up of Technology enabled education in Government Schools, Organising Artificial Limb Camp at Mangalore, construction of Toilets also has been completed in Government Schools as per Prime Minister's Swatch Bharat Abhiyaan as part of the Samrakshan Activities, based on availability of CSR budget.

**14.3.3.8. Awards and Recognition:**

During the year, the Company has been conferred with following awards and recognitions:

- MRPL has been awarded Gold Medal by International Research Institute for Manufacturing (IRIM), for India Green Manufacturing Challenge 2020-21.
- MRPL has bagged 2 state level awards from Department of Factories, Boilers, Industrial Safety & Health, GoK, for the year 2021.
- MRPL has won best safety practices in Oil & Gas Industry award.

**14.3.3.9. Financial Performance Highlights**

| Period | | FY 2018-19 | FY 2019-20 | FY 2020-21 | FY 2021-22 |
|---|---|---|---|---|---|
| Throughput | MMT | 16.43 | 14.14 | 11.50 | 15.05 |
| Turnover (Gross) | ₹ Crore | 72,283 | 60,728 | 50,796 | 86,064 |
| EBITDA | ₹ Crore | 1,809 | (2,430) | 797 | 5,003 |
| PBT | ₹ Crore | 581 | (3,955) | (915) | 2,708 |
| PAT | ₹ Crore | 332 | (2,708) | (761) | 2,955 |
| GRM | $/Bbl | 4.06 | (0.23) | 3.90 | 8.73 |




MRPL HiQ - First Retail Dealers Meet



Medical Grade Oxygen Inauguration



Vigilance Awareness Week-2021

### 14.3.4. ONGC Videsh Ltd. (OVL)

ONGC Videsh Ltd., is a wholly owned subsidiary and overseas arm of Oil and Natural Gas Corporation Limited (ONGC), the flagship national oil company (NOC) of India. The primary business of the company is to prospect for oil and gas acreages abroad, which includes acquisition of oil and gas fields in foreign countries as well as exploration, production, transportation and sale of oil and gas. As on 1 April 2022, ONGC Videsh holds 494.865 MMToe of 2P Reserves and 120.049 MMToe of 2C Contingent Resources spread across the globe. In terms of reserves and production, ONGC Videsh is the second largest petroleum company of India, next only to its parent ONGC. ONGC Videsh produced about 27.3% of oil and 19.4% of oil and natural gas of India's domestic production in 2021-22. (Source: PPAC)

Presently, ONGC Videsh has stake in 32 oil and gas projects in 15 Countries, viz. Azerbaijan (2 projects), Bangladesh (2 Projects), Brazil (2 projects), Colombia (4 projects), Iran (1 project), Iraq (1 project), Libya (1 project), Mozambique (1 Project), Myanmar (6 projects), Russia (3 projects), South Sudan (2 projects), Syria (2 projects), UAE (1 project), Venezuela (2 projects), and Vietnam (2 projects).

ONGC Videsh adopts a balanced portfolio approach and maintains a combination of producing, discovered, exploration and pipeline assets. Currently, ONGC Videsh has oil and gas production from 14 assets, 4 assets where hydrocarbons have been discovered and are at various stages of development, 11 assets are under various stages of exploration and 3 projects are pipeline projects.

ONGC Videsh operates in highly competitive international oil and gas sector by competing with the best in the industry. Over the years, ONGC Videsh has built inherent capabilities and expertise in its areas of operations. ONGC Videsh has developed strong partnership alliance with a host of IOCs and NOCs including ExxonMobil, British Petroleum, Shell, ENI, TotalEnergies, Repsol, Equinor, MOL, Petrobras, Sodeco, AzACG, Rosneft, ADNOC, Posco International, Petro Vietnam, CNPC, Sinopec, PDVSA, Petronas and Ecopetrol.

ONGC Videsh has highly skilled human resource with excellent technical and management capabilities. The company has built facilities for evaluation, interpretation, economic modelling, FEED, design and execution of oil and gas projects and enjoys the technical and human resource support from ONGC. ONGC Videsh has developed core expertise in due diligence, techno-commercial evaluations, bid negotiations and transaction documentations.

ONGC Videsh's share in production of oil and oil equivalent gas (O+OEG), together with its wholly-owned subsidiaries, ONGC Nile Ganga B.V., ONGC Amazon Alaknanda Limited, Imperial Energy Limited, Carabobo One AB and ONGC Videsh Singapore Pte. Ltd. was 12.330 MMToe during FY'22. During the year 2022-23, the share of oil & gas production for ONGC Videsh from its projects is 4.951 MMToe till H1 FY'23.

### 14.3.5. Numaligarh Refinery Limited (NRL)

#### 14.3.5.1. Introduction

Numaligarh Refinery Limited (NRL) was incorporated on 22nd April, 1993. NRL's establishment is rooted in the "Assam Accord" signed by the Government of India on 15th August, 1985. NRL is a subsidiary of Oil India Limited (OIL) and operates a 3.0 MMTPA petroleum refinery at Numaligarh in Golaghat district of Assam. NRL is a Category-I Miniratna PSU. As on 31.03.2021, shareholding pattern of NRL was Oil India Limited (OIL)-80.16 %, Govt. of Assam (GoA)-15.47% and Engineers India Ltd (EIL)-4.37%. The Company's net worth as on 31.03.2021 was ₹5,596 crores.

NRL's refinery has a high complexity factor owing to advanced secondary processing technologies that has enabled achievement of high distillate yield. Product slate of NRL comprises LPG, Naphtha, Motor Spirit (MS), Aviation Turbine Fuel (ATF), Superior

Kerosene Oil (SKO), Mineral Turpentine Oil (MTO), High Speed Diesel(HSD), Raw/Calcined Petroleum Coke (RPC/CPC), Sulphur and Paraffin Wax.

NRL has an LPG Bottling Plant of 42 TMTPA capacity at Numaligarh. The company has two marketing terminals-one at Numaligarh, Assam and the other at Siliguri, Bengal from where products are despatched by road and rail Additional White Oil products, viz. MS, SKO and HSD are also transported from Numaligarh to Siliguri through the Numaligarh-Siliguri product pipeline (NSPL) owned and operated by Oil India Limited.

NRL is certified under ISO 9001 for Quality Management, ISO 14001 for Environment Management, OHSAS 18001 for Occupational Health & Safety, ISO 27001 for Information Security Management System and ISO 50001 for Energy Management.

**14.3.5.2. Performance**

NRL has been operating with sustained profitability every year. NRL has succeeded in achieving highest Distillate Yield among all PSU oil refineries in the Country. NRL's Specific Energy Consumption (SEC) and Gross Refining Margin (GRM) are among the best in the Industry.

Physical and financial performance indicators of NRL during last three years and Apr-Dec'22 of the current financial year are as follows:

**Physical Performance:**

| Parameter | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec) |
|---|---|---|---|---|
| **Crude Receipt (TMT)** | 2,409 | 2,612 | **2,661** | **2,187** |
| **Crude Throughput (TMT)** | 2,383 | 2,707 | **2,624** | **2,358** |
| **Capacity Utilisation (%)** | 79.00 | 90.24 | **87.47** | **104.8** |
| **Distillate Yield (%)** | 83.0 | 86.36 | **85.69** | **88.07** |
| **Specific Energy Consumption (MBN)*** | 65.0 | 64.37 | **63.51** | **61.66** |
| **Energy Intensity Index (EII)** | 86.3 | 86.99 | **84.68** | **82.61** |

**Financial Performance:**

| Parameter | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|
| **Sales Turnover (Rs./Crs)** | 18,511 | **14,072** | **18,543** | **23,546** |
| **PBT (Rs./Crs)** | 3,052 | **1,735** | **4,083** | **4,848** |
| **PAT (Rs./Crs)** | 1,968 | **1,381** | **3,036** | **3,562** |
| **GRM ($/bbl)** | 11.80 | **7.99** | **4.09** | **14.33** |
| **Net Worth** | 5,551 | **5,240** | **5,596** | **8,388** |

**14.3.5.3. Projects**

**Projects under Implementation**

**A) Refinery Expansion from 3 to 9 MMTPA:**

NRL is currently executing its expansion project with associated pipelines. M/s SBI Capital Markets Limited, Mumbai has been appointed for Debt syndication of ₹ 15,102 crore for Refinery Expansion Project.

The details of the integrated refinery expansion project are given below:

a) 6 MMTPA Refinery at Numaligarh, Golaghat, Assam:

- NRL has engaged PMC & EPCM consultants for execution of the project.
- Statutory Approvals:
  - Environmental Clearance of the refinery expansion from 3 to 9 MMTPA has been granted to NRL on 27.07.2020.

- Pre-project enabling activities are under progress at site.
- Licensor selection major process for SRU, DHDT, GDS, MSU, PFCC, RPTU and LPGTU have been completed.
- Physical progress:
  - Achievement : 23.8%
- Financial progress of the project:
  - Cum. Expenditure: ₹ 3,200 crore
  - Cum. Commitment Cost: ₹ 15,938 crore

b) Crude Oil Import terminal and Paradip-Numaligarh Crude Oil pipeline:

- EIL has been appointed as EPCM Consultant
- Length of the Pipeline: 1,630 Kms. from Paradip port in Odisha to Numaligarh at Golaghat, Assam.
- The crude oil pipeline will pass through the states of Odisha, West Bengal, Jharkhand, Bihar and Assam.
- 234 acre land taken on lease from Paradip Port Trust (PPT).
- Consent to establish for Crude Oil Import Terminal (COIT) has been received from SPCB (Odisha).
- CALA for Assam, Bihar, Jhakhand has been appointed by MoPNG.
- Engineering:
  - Process Design Basis (PDB) & Engineering Design Basis (EDB) completed
  - P&IDs have been finalized
- Physical progress:
  - Achievement: 33.7 %
- Financial progress of the project:
  - Cum. Expenditure: ₹ 4,317 crore
  - Cum. Commitment Cost: ₹ 6,665 crore

**B) Indo-Bangla Pipeline:**

NRL is constructing a 130 Km. long and 1 MMTPA capacity product pipeline from Siliguri in West Bengal to Parbatipur in Bangladesh. The total project cost for construction of the Indo-Bangla Friendship Pipeline from (IBFPL) from Siliguri to Parbatipur (Bangladesh) is ₹ 377.08 crores. Out of the above, NRL's investment in the project will be ₹ 91.84 crores for the India portion of the pipeline. The remaining amount of ₹ 285.24 crores for Bangladesh portion shall be funded by Govt. of India as grant-in-aid. Mechanical completion of the project is achieved on 19th December, 2022. The project is targeted to be commissioned by March, 2023.

**C) Bio-refinery project:**

NRL has formed a Joint Venture (JV) company to set up a bio-refinery at Numaligarh with equity partnership of 50:50 between NRL and M/s Chempolis Oy (22%) of Finland and M/s Fortum 3 B.V. (28%) of Netherland. The estimated cost of the project is ₹ 3,250 crores. The plant is targeted to be completed by Q3 of 2022-23. Financial grant of ₹ 150 crores to ABRPL has been recommended by the high powered committee of CHT. The project is targeted to be completed by October, 2023. As on 31.12.2022, overall physical progress is 78.3% and financial progress is 62.83%.

**D) North East Gas Grid:**

A Gas Grid connecting all State capitals in the North Eastern region is being constructed to supply PNG and CNG in the region. A trunk gas pipeline from Barauni to Guwahati will connect NE Gas Grid to the National Gas Grid. A JV Company has been incorporated as "Indradhanush Gas Grid Limited" with equal equity participation from IOCL, GAIL, ONGC, OIL and NRL. NRL's refinery expansion has been considered as an anchor customer, constituting around 50% of the total throughput of the pipeline grid. An amount of ₹ 5,559 crores which constitute 60% of the total project cost of ₹ 9,265 crores have been sanctioned by the Government as Viability Gap Funding to make the project viable. The project is scheduled to be completed by March, 2024.

#### 14.3.5.4. Policy Initiatives Undertaken by NRL

NRL has undertaken several policy initiatives for growth and sustenance of the Company. Such initiatives comprise expansion of the refineryupto 9.0 MMTPA, sustained product export to neighbouring countries, particularly Bangladesh and Nepal, establishment of a Bio Refinery.

#### 14.3.5.5. Welfare of SC/ST/OBC/PH

NRL's manpower strength as on 31st December, 2022 was 978 of which 435 were in unionized category and 543 in executive cadre. Of the total staff strength, 110 employees belonged to Scheduled Caste (SC), 102 to Scheduled Tribe (ST), 303 to Other Backward Class (OBC) and 20 were under physically challenged category.

#### 14.3.5.6. Women Employees

Grade-wise breakup of women employees as on 31.12.2022 is as follows:

| Group | No. of Women Employees | Total No. of Employees | Women Employees as % of Total |
|---|---|---|---|
| A | 53 | 543 | 9.76% |
| C | 14 | 435 | 3.22% |
| D | 0 | 0 | - |
| **TOTAL** | **67** | **978** | **6.85%** |

**Note:** NRL has no Group B employees.

#### 14.3.5.7. Implementation of Official Language

NRL continued its focused attention towards promoting and implementing 'Hindi' as official language as per the directives of Official Language Department, Govt. of India, Ministry of Home Affairs, New Delhi. To achieve the annual target set by Official Language Department, New Delhi, Hindi Workshop, OLIC meetings are being organized periodically. Hindi learning through "Aajka Shabd" & "Aajka Suvichar" for employees are being displayed on Display Boards daily. Under the incentive scheme, a sum of 5.61 Lakh was paid as a cash incentive to 317 employees for using Hindi in official work during the year 2021-22. "Hindi Fortnight" was celebrated from 14th September' 2021 to 28th September, 2021 with various competitions involving employees, their family members, school children & CISF personnel with strict maintaining of the COVID-19 guidelines with a view to increase interest in Hindi and its propagation. A special Hindi E-Bulletin was released by the Director (Tech) on 14 September, 2021 and an annual Hindi Magazine "Prayas" (11th edition) was released by Director (Finance) on 28th September, 2021. To increase Hindi correspondence through email, competition in every quarter has been organized amongst employees during the year.

Numaligarh Refinery has achieved 'Rajbhasha Chal Vaijayanti Shield' and Third Prize for best Implementation of official language by the TOLIC (PSUs), Guwahati on 07.12.2021 and also won the Second Prize for its publication of Hindi magazine "Prayas" (11th edition).

#### 14.3.5.8. R&D Activities

Specialty Chemical division of the Company has been actively playing an essential role on strengthening research and development capability of the organization through partnership with academia and research organizations. Further details are available at Chapter-8.

#### 14.3.5.9. Conservation of Energy

Numaligarh Refinery emphasizes utmost importance to maintain energy efficiency and energy conservation. Refinery closely monitor the key Energy performance

measurement indicators viz Specific Energy Consumption (SEC) and Energy Intensity Index (EII) out of several operations parameters. Unit performance is gauged on a continual basis and efforts are on incorporating best in class technology and global best practices. The SEC at 63.5 MBN and EII 84.68% against target of 64 MBN and 86.0 % respectively are an improvement of more than 1% over previous year.

Numaligarh Refinery has a portfolio of 1.05 MW of Solar photovoltaic capacity, which is 0.4% of the total captive power generation. The total generation from the project is 1,083 MWh in 2021-22 which translates to reduction of global warming potential at 10 lac lbs $CO_2$.

The energy savings out of the Encon schemes commissioned in 2021-22 are outcome of internal initiative as well as quick win recommendation from external audit. The total direct energy savings is 7,400 SRFT and monetary savings of ₹ 25 crore. Further, around 0.27 lakh ton $CO_2$ reduction by means of energy conservation projects and 20 ton of $CO_2$ emission reduction achieved through pipeline transportation.

**14.3.5.10. CSR Activities**

CSR and Sustainability activities of NRL are pursued in line with the activities specified under schedule VII of the Companies Act 2013. NRL formulated a 'CSR and Sustainability Policy' conforming to stipulations under Section 135 of the Companies Act 2013, the CSR Rules issued by the Ministry of Corporate Affairs and applicable Guidelines on CSR and Sustainability issued by the DPE. Further, NRL has involved itself closely with the district administration of Darrang district which is allotted as an Aspirational District to the Company by NITI Aayog.

NRL has put special emphasis on **a)** Health Care, **b)** Education and Skill Development, **c)** Swachhta Action Plan, **d)** Livelihood Generation, **e)** Infrastructure Development, **f)** Promotion of Arts, Sports, Literature and Culture in line with its CSR policy. Moreover, NRL CSR has also contributed in other areas such as Empowering women, Ensuring Environment Sustainability and Animal welfare etc. in line with the activities specified under schedule-VII of the Companies Act 2013.

**A. HEALTH CARE:**

As per notification issued by Ministry, on 'Health & Nutrition' being the thematic area of CSR activities for FY 2021-22, NRL had extensively focused on improving Community Healthcare in the region. Some of the noteworthy projects are as below:

- NRL has associated itself with Assam Cancer Care Foundation (ACCF) for a greater cause of setting up a Radiation Block coming up as an Annexe to Barpeta Medical College Hospital which was formally inaugurated by Hon'ble Prime Minister of India on 28th April'2022.
- As a flagship project under CSR, Numaligarh Refinery Ltd. set up a 120 bedded make shift Covid Hospital in Jorhat Medical College & Hospital (JMCH), Jorhat within a period of one month. The 120 bedded Hospital have 20 ICU beds having ventilators, cardiac monitor, Oxygen Concentrators, Oxygen cylinders and other ICU related equipment. Apart from the same, Five (5) bedded ICU ward also set up at Sri Sri Pitambar Dev Goswami Civil Hospital at Majuli. NRL also extended support for renovation of the block which includes civil and electrical job.
- Mobile medical health camps organized through VKNRL Hospital and Eye camps are continued in addition to providing subsidized treatment to people belonging to weaker section of the society through VKNRL hospital.
- NRL with its Medical Assistance Scheme for critical ailment such as cancer, lung and heart diseases, kidney problem etc. has been continuously supporting the needy and economically weaker section of the society in terms of healthcare.
- Seven numbers of ambulances were provided to different Medical Colleges, PHCs, MPHCs during the year to access healthcare facilities in remote areas.

## B. EDUCATION AND SKILL DEVELOPMENT:

Few projects that impacted the society during the year are:

- Construction and renovation of 25 numbers of schools completed during the Financial Year.
- Scholarship scheme "Gyandeep" for the students passing in Class X and XII and special scholarship "Prerona" has been continuing since last 12 years. Under the continuing "Gyandeep Scholarship" scheme, 230 nos. of students were benefitted based on their performance in Class X and XII. "Prerona scholarship" for promoting girl education has been provided to 288 nos. of top three girl students of class VII to X. 29 nos. of meritorious children of 'Contract workers' were provided scholarship for their good result in class X examination. Additionally 26 nos. of students were provided scholarship under "Pratibha" scheme to pursue higher education. Total expenditure against the scholarship schemes was ₹ 74.27 lakh.
- NRL continues to support Coaching Centre through Centre for Social Responsibility & Leadership, New Delhi for students of Class IX & X of nearby Schools. The coaching is for students to make themselves eligible to get enrolled in engineering and medical courses.
- NRL supported Vivekananda Kendra Rock Memorial & Vivekananda Kendra for construction of Classrooms at Vivekananda Kendra Vidyalaya, Mangaldoi.
- Skill development initiatives undertaken in Welding, Fitter and Hospitality sector are being continued through Golaghat ITI and presently there are 93 number of students in total Five Trades.
- VKNRL School of Nursing enrolled its 5th batch of 40 students to pursue GNM course from January, 2022. Presently, there are 118 number of Girls studying in the school and 2 batch of students passed out.
- Project on Disaster Management "Sakhi-Women movement for a Disaster Resilient Society" for developing the Asha Karmi and other socially active ladies to train them to rescue people during flood and other natural disaster is continuing under leadership of Deputy Commissioner of Golaghat district.

## C. SWACHHTA ACTION PLAN

Under this programme mandated by MoPNG, an amount of ₹ 5.91 crore was spent against target for ₹ 5.50 crore under different heads of expenditure.

- Under Project **'Parichhannata'**, construction of school toilets including maintenance for 5 years has been taken up. Moreover, NRL CSR has extended support for construction of public toilets in different locations.
- Project **'Jeevandhara'** focuses on providing clean drinking water to villages, schools and other community places. During the year, NRL has installed 14 nos. of Safe and Clean Drinking Water Purification Plants with ATM facility in near by Villages and community places under Golaghat District. All these plants were installed with a provision for 3 years Annual Maintenance Contract.
- NRL has provided 5 Mini Garbage Tipper vehicles to the following Municipalities/ Town Committees and NGO to equipped themselves for effective waste management and treatment.
- NRL has also extended financial support to Assam Tea Tribes Welfare Samity and Golaghat Sakha Sahitya Sabha towards renovation and construction of existing drinking water systems.

## D. LIVELYHOOD GENERATION

Project "Swanirbhar" is a prestigious project initiated for the livelihood generation of village people. This project encourages the villagers to take up small projects like piggery farms, goatary farms, fabrication units, grocery shops, rice mills, cloth shops, dairy farms etc. for their livelihood. The women of the villages were also motivated with such initiative and could find a scope to offer small contribution to their own family.

**F. INFRASTRUCTURE DEVELOPMENT**

Several developmental works were taken up in and around NRL during the Financial Year which included projects for Village Road construction and renovation, installation and commissioning of solar street lights as well as domestic lights, construction of bridges/culverts and other infrastructure development work in rural areas etc.

- Paver blocked roads were developed towards Phulanibari-Madhapur Road, Gutibari Link Road, NH-37 to Jyoti Academy School and Halua Gaon road, Barchapari (PWD pool to AWC) and Rajabari-Ouguri-Ahom Gaon Road. The road construction of Phulanibari-Madhapur Road and Barchapari (PWD pool to AWC) and Rajabari-Ouguri-Ahom Gaon Road has been completed and other two roads are under progress.
- As a measure to develop rural infrastructure and promote renewable source of energy, NRL has undertaken projects for installation and commissioning of 220 nos. of Solar Street lights in approach roads to the village of nearby locality including Ponka Model Village and some important community locations. 275 nos. of solar home lights were provided in Chinakan village which is a Flood effected village in Bokakhat.

**E. PROMOTION OF ARTS, SPORTS, LITERATURE AND CULTURE:**

- NRL is promoting sports and cultural activities fora long period of time and this year also few new projects were taken up apart from continuing with the continuing projects. By way of art and cultural activities, NRL CSR tried to preserve and carry forward the traditional art forms among the new generations.
- NRL has been running NRL Football Academy on continuous basis. After COVID pandemic, NRL has started operating the academy again from November, 2021. Presently, it has 69 Numbers of players playing under 13, under 15 and under 18 categories.

Details of CSR activities are uploaded and continuously updated in NRL's website www.nrl.co.in.

Amount spent by NRL on CSR activities during last three years and during Apr-Dec'22 is as follows:

(Amount in ₹ crores)

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec) |
|---|---|---|---|---|
| CSR Outlay | 62.25 | 52.80 | 59.13 | 71.11 |
| Actual Expenditure | 62.60 | 53.19 | 74.14 | 27.91 |

**14.3.5.11. Digital India**

NRL has taken a leap of faith, to migrate to S/4 HANA ERP from the reliable, mature and time proven SAP ECC 6.0 ERP. The project was completed successfully within the time and budget and go-livewas witnessed on 7th February, 2022. With this NRL become the first among the PSU in Oil & Gas and the first in the downstream sector. The project was completed with involvement of the implementing agency in full remote mode. Timely completion of the project has demonstrated the commitment of NRL which requires proper project monitoring and channelization of the resources to meet the milestones on time.

S/4 HANA, an ERP business suite based on the SAPHANA in-memory database allows companies to perform transactions and analyze business data on real time. With adoption of S4 HANA, NRL has enriched its wings of digital roadmap which will help in faster processing of transactions and report generation against ECC 6.0 and has the provision to develop analytical reporting to augment the decision support system.

Along with the S/4 HANA migration, to enhance the organization's functional capabilities and to keep up with the refinery expansion and foraying into new business, additional features were also implemented, viz. 'Financial Closing Cockpit' for centralizing and making month end closings seamless and faster and' Contract Lease Management' for full compliance within dAS 116 accounting standard requirements.

In pursuit of paperless drive, one step ahead, NRL has implemented an Integrated Electronic Data & Document Management System (IEDDMS) in cloud for NREP (Numaligarh Refinery Expansion Project), the massive solution is enabling secure collaborative environment among engineering consultants. It integrates the activities of different engineering consultants, enabling improved decision making in project work low with correct engineering master data, review and approvals. The Operations Management Solution (OMS) which was implemented to ensure safe, efficient, and compliant operations of its industrial sites was extended to all the core units of the refinery and marketing terminals, thereby eliminating the use of manual records for Company's log book, shift handover, work instructions activities etc. OMS, creates a digital shift logbook, digitalize shift operations which will improve shift-to-shift communication and help operation team to reduce the risk of hazardous incidents.

Following the roadmap of Ethanol Blended Motor Spirit (EBMS) of the Govt. of India, NRL has implemented the necessary configuration in SAP to handle EBMS loading from both the terminals (NRMT and SMT) with flexibility to handle blending percentage of Ethanol as per the need of the customers.

To bring better governance and control with transparency, the following functionalities have been implemented in various business functions.

- In the case of Contract Worker, we have been able to fully digitize the access control in the form of in-house developed application ("Saral Pravesh"), right from Worker's enrollment against work order, verification, safety training, daily attendance and exit of workers on completion of job. This system completely did away with the time consuming manual paper based process and ensured that no time is lost in the actual field work by the contractors/ workers. Also wage payments have become seamless based on readily available attendance records.
- In the case of new employees or on probation, workflow for confirmation process for HR has been implemented leading to timely issue of confirmation letter. Another workflow process, "Change of Reporting" in HR has been made online, which has provided the line managers the flexibility of organizing their resources optimally.
- For generating vehicle running expenses, of pooled vehicles running inside the refinery, contractors have been empowered to generate measurement sheet from web portal with backward integration with smart fleet management system thus ensuring transparency and accountability.
- "eNote" approval process-Workflow-based application developed in IBM Business Automation Workflow (BAW) platform to generate different kinds of Inter-departmental note and circulating it within the committee members to take approval on note related to different subjects. The workflow-based eNote approval process helps in eliminating different problem likes tracking and keeping eNote in physical form, getting approval on eNote from committee members sitting in different locations in the organisation.

- After digitization of inter-departmental eNote approval process, now user could track the eNote easily, could keep all the supporting documents of a note in digital form which helps in its quick retrieval and retention for longer time. The eNote approval process makes the note approval process faster which help in taking decision making process quicker, transparent, more effective, increase accountability, releasing employee energy and time from unproductive procedures.
- Billing for service rendered by NRL by lease/hire equipment's (thru' "Tools Power") to contractors is integrated with SAP, where the vendor billing happens against consumption of resources automatically, thus ensuring that asset utilization is accounted correctly.
- Cloud based "Online Board Meeting" service has enabled NRL for transition from paper and email based meeting system to digital and paperless meetings system right from scheduling, agenda preparation, distribution, collaboration and post meeting action item tracking.
- Online Approval System for CER (Corporate Environment Responsibility) has been implemented to monitor the compliance of project CER expenditures.
- COVID-19 vaccination tracking"VacTrack" was developed to track vaccination details of NRL employees and their dependents, to ensure compliance to COVID-19 protocols.
- Online application facility for engagement of Apprentice trainees, enabling broader and equal opportunity for participation.
- Eureka Intranet portal has also been redesigned with new look and feel with enhanced functionalities.
- Observance of National Cyber Security Awareness Month: October 2021, conducted slogan competition on Cyber Security in Assamese, Hindi, & English languages among the employees of NRL, CISF, DPS & VKNRL to increase awareness on Cyber Security threats.

**14.3.5.12. Right to Information (RTI) Act**

NRL continues to honour in letter and spirit the essence, transparency and accountability enshrined in the Right to Information Act 2005. A structured system has been put in place in order to ensure timely, judicious and factual replies to RTI petitions received by the Company from citizens of India in accordance with the Act. RTI queries are received both online and offline and information low from respective functions is collated through internal systems in place. For the Financial Year 2021-22, the status of RTI applications at NRL is provided below:

| | |
|---|---|
| Number of RTI applications received in FY 2021-22 | 259 |
| Number of RTI applications disposed off in FY 2021-22 | 255 |
| Number of pending RTI applications as on 31-03-22 | 04 |

NRL has nominated Nodal Officer/CPIO/ Appellate Authority for dealing with the provisions of the RTI Act. As a proactive measure in order to ensure transparency and accountability, all relevant information about the Company is regularly updated in the RTI link of the Company's official website www.nrl.co.in along with mandatory disclosures, ensuring information accessibility in public domain. Not only that, it has been the Company's endeavour to put more and more information in the public domain through the Company's website in order to minimise queries. RTI replies are uploaded to the official website on monthly basis, thereby preserving a repository of all such replies. In addition, Monthly Progress Reports are submitted to the Ministry of

Petroleum and Natural Gas while online quarterly returns are uploaded to RTI Annual Return Information System.

**14.3.5.13. Vigilance**

NRL Vigilance function is headed by Shri Amit Saran, IRSME, who is the Chief Vigilance Officer of NRL as well as OIL. The objective of vigilance function is to ensure maintenance of the highest level of integrity throughout the Company. Vigilance in NRL has been given importance to promote a culture of honesty Award for official language implementation and integrity, enhance ethical standards and good corporate governance that the Company strives to achieve, through effective preventive vigilance measures.

NRL Vigilance complied with all government guidelines with respect to furnishing information to CVC and to concerned Ministry. In order to comply with various government guidelines on e-governance, NRL Vigilance ensured the system-driven mechanism of business process like e-tendering, e-auction, e-payments, e-receipts, e-marketplace (GeM) etc. are in place.

With an objective to keep a check on the implementation of prescribed procedures and practices, technical inspections (4 nos.) viz., CTE, routine surprise inspections were carried out during this year at a few of the operative locations of Refinery. Further, the department undertook investigations on complaints with the purpose of safeguarding the interests of stakeholders and recommended suitable actions including systemic improvements to the management.

"Vigilance Awareness Week-2021" was observed at all locations of the Company from 26th October to 1st November, 2021 with the theme 'Independent India@75: Self Reliance with Integrity" in line with the directives from Central Vigilance Commission.

The functions and various activities of the week were conducted with great zeal and enthusiasm. Competitions like essay writing, slogan, debate etc. were organised for NRL employees and family, NRL CISF unit and students at nearby schools including DPS Numaligarh adhering to extant Covid-19 prevention guidelines issued from time to time by the competent authority. Regarding outreach activities, Walkathon at Golaghat, Vendor Meet among enlisted vendors of NRL and Gram Sabha at Napathar were arranged during the week.

During the year, the vigilance journal 'Chaitanya' (2021 edition) was released covering various kinds of vigilance initiatives undertaken during 2020-21 with a view to enhance mass awareness.

**14.3.5.14. NRL's Contribution to Development of the North East Region**

NRL was established by the Government under provisions of the "Assam Accord" with the objective of providing the required thrust for socio-economic development of the North East region. Over the years, the company has been able to sustain stakeholders' expectations and is today the biggest operating industrial unit in the Region. Contribution of NRL for development of the North East regions is broadly summarised below:

**Investment in Value Added Projects**

NRL's refinery project was implemented within the approved project cost of ₹ 3,461 crores. Since commissioning of the refinery, NRL has been implementing several value added projects for ensuring sustenance and growth. All such projects are within the North East region, barring establishment of a marketing terminal at Siliguri at the North East border. NRL's total investment on such projects is as per details below:

| Sl | Project | Investment (₹ in crore) | Remark |
|---|---|---|---|
| 1 | LPG Bottling Plant of 10 TMTPA capacity | 6 | Commissioned in 2002-03 |
| 2 | Coke Calcination Unit | 90 | Commissioned in 2004-05 |
| 3 | Motor Spirit Plant of 225 TMTPA capacity | 297 | Commissioned in 2006-07 |
| 4 | Siliguri Marketing Terminal | 186 | Commissioned in 2008-09 as linked project to the Numaligarh-Siliguri Product Pipeline of Oil India Limited |
| 5 | Diesel Quality Upgradation Project | 435 | Commissioned in 2010-11 for production of BS-III HSD at 100% capacity utilization |
| 6 | Naphtha Splitter Unit | 87 | Commissioned in 2013-14 for production upto 160 TMTPA Petrochemical Grade Naphtha |
| 7 | Wax Project | 676 | Commissioned in Mar'15. NRL has emerged as the largest Wax producing unit in the Country with production upto 50 TMTPA Wax |
| 8 | Investment in joint venture: Assam Gas Cracker project | 142 | 10% equity participation at Brahmaputra Cracker and Polymer Limited |
| 9 | Investment in joint venture: Natural gas pipeline from Duliajan to Numaligarh | 43 | 26% equity participation at DNP Limited. |
| 10 | Diesel Hydrotreater Unit (DHT) | 1,031 | |
| 11 | Mounded Bullet Project | 122 | Mechanical Completion declared on 29.10.18 |
| 12 | Investment in joint venture: Assam Bio Refinery Private Limited | 138 | Under implementation (50% equity participation) |
| 13 | Investment in joint venture: Indradhanush Gas Grid Limited | 198 | Under Implementation (20% equity participation) |
| 14 | Capacity augmentation of LPG Bottling plant from 10 to 42 TMTPA | 10 | Commissioned in 2017-18 |
| | **Total** | **3,461** | |

**Contribution to Exchequer**

Since start of commercial operations and upto 2021-22, NRL has contributed over ₹ 46,642 crores to the Central and State Exchequers. NRL's contributions to the Exchequers during the last three years and current year upto Dec'22 are as follows:

(Amount in ₹ crores)

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec) |
|---|---|---|---|---|
| Central Exchequer | 2,971 | 5,863 | 5,330 | 3,088 |
| State Exchequer | 389 | 605 | 480 | 472 |
| **Total** | **3,360** | **6,468** | **5,810** | **3,560** |

**Showcase of Industrial Success**

Over the years, NRL has emerged as the showcase of industrial success, in the North East, thereby acting as an enabler for drawing in further investments into the region.





## 14.4. OTHER CPSEs

### 14.4.1. Bharat Petro Resources Limited (BPRL)

Bharat Petro Resources Limited (BPRL) has participating interest (PI) in seventeen blocks of which eight are in India and nine overseas. Additionally, BPRL has equity stake in two Russian entities holding the license to four producing blocks in Russia.

Five of the eight blocks in India were acquired under different rounds of New Exploration Licensing Policy (NELP), one block was awarded under Discovered Small Fields (DSF) Bid Round 1 and two blocks were awarded under the Open Acreage Licensing Policy (OALP) Bid Round 1.

Out of nine overseas blocks, five are in Brazil, two in United Arab Emirates and one each in Mozambique and Indonesia. The blocks of BPRL are in various stages of exploration, appraisal, development and production. The total acreage held by BPRL, and its subsidiaries is around 21,360 Sq. Km. of which approximately 50% is offshore.

Indian consortium (IC) comprising of BPRL, Indian Oil Corporation Limited (IOCL) and Oil India Limited (OIL), through wholly owned subsidiaries and Special Purpose Vehicles incorporated in Singapore, had acquired 29.9% equity stake in LLC Taas-Yuryakh Neftegazdobyacha (TYNGD) and 23.9% in JSC Vankorneft from M/s. Rosneft, a National Oil Company of Russia, in October 2016. The SPVs which are the shareholders of the Russian entities are only entitled to dividends. BPRL's effective share of oil production from the Russian entities is approx. 10 kbopd from TYNGD and 15 kbopd from Vankorneft.

In 2018, Bharat Petro Resources Limited (BPRL), along with ONGC Videsh and Indian Oil Corporation Limited acting jointly as the Indian Consortium were awarded 10% Stake

in Lower Zakum Concession, Offshore Abu Dhabi. This was the first time that Indian oil and gas companies were given a stake in the development of Abu Dhabi's hydrocarbon resources. BPRL through its subsidiary has 30% stake in the SPV of the Indian Consortium that holds 10% stake in the Lower Zakum Concession. The Concession, which has a term of 40 years with an effective date of 9 March 2018, was signed on 10 February 2018. The current oil production of this field is about 400 kbopd and Indian Consortium annual share shall be about 1.5 MMT. BPRL's share of the equity crude has been lifted by BPCL group refineries.

In Mozambique, following the discovery of vast quantities of natural gas in the Rovuma Offshore Area 1 off the coast of northern Mozambique, Area 1 consortium partners announced Final Investment Decision (FID) on 18 June 2019 to develop a 2-Train (2x6.56 MMTPA) onshore initial LNG Project for monetization of gas discovered from offshore Golfinho-Atum discovery area. With the announcement of the FID, the Golfinho-Atum Field Development Plan has become effective and Development and Production Period of 30 years has commenced. After FID, while the project was on schedule and within budget till March 2021, due to the security incidents around the Afungi Project Site during end March 2021, the Operator has declared FM under JOA, EPCC and all other contracts as they are unable to meet their obligations to conduct safe Petroleum Operations. The Government of Mozambique is working towards the reestablishment of peace and resolving the security situation. Mozambican military along with Joint forces from Rwanda and Southern African Development Community (SADC) continue their operations in the region. The Area 1 Project is assisting in the development of local social and economic infrastructure and the Project is currently implementing various projects in the areas of agriculture, water and sanitation, health, education & capacity building, fisheries, solarization and small business development. While the Project remains in Force Majeure, the relationship with Contractors remains constructive with specific care taken to review the situation with local Mozambican companies given sensitivity of local content, employment, and training etc. Operator has informed that the equipment and infrastructure at the site is in good condition.

The Sergipe Alagoas (BM-SEAL-11) concession in Brazil consists of two blocks SEAL-M-426 and SEAL-M-349 and Petrobras is the Operator with 60% PI while BPRL's JV viz., IBV holds the remaining 40% PI. The Operator, on behalf of the Concessionaires, has submitted the Field Development Plan (FDP) to ANP (Brazilian Regulator) in November 2022 for two discoveries.

During the year 2019, a consortium of BPRL and IOCL was awarded the Onshore Block-1 concession in Abu Dhabi after emerging as the winning bidder in the Abu Dhabi 2018 Block Licensing Round. The award marks entry of BPRL as an Operator of overseas assets for the first time in the prospective UAE region. The Concession granted by the SPC, on behalf of the Abu Dhabi government, has an effective concession period of 35 years and in the Exploration Phase is operated by Urja Bharat Pte Limited (UBPL), a 50:50 SPV incorporated for the purpose by the Indian consortium in Singapore. The drilling and testing of appraisal wells in Ruwais Discovery have been completed which has established presence of hydrocarbons and further studies are in progress for the development of the discovery. The Indian Consortium will have equity rights for the oil. Further, exploration wells have also been drilled in the concession.

The Madanam discovery in the block CY-ONN-2002/2 in Cauvery basin, India where ONGC is the Operator and BPRL has a PI of 40% as non-operator is currently under development and further to the commercial oil production from 2016, Gas Monetization has commenced from May 2021.

BPRL has invested approx. ₹ 33,500 crores till December 2022. A list of BPRL overseas assets is as follows:

| Country | Assets | Partners |
|---|---|---|
| Brazil | BM-SEAL-11 (2 Blocks) | Petrobras-60% (Operator)<br>IBV[1]-40% |
| Brazil | BM-C-30 (1 Blocks) | Petro Rio-64.3% (Operator)<br>IBV-35.7% |
| Brazil | BM-POT-16 (2 Blocks) | Petrobras-30% (Operator)<br>BP-30%<br>Petrogal-20%<br>IBV-20% |
| Indonesia | Nunukan | BPRL Venture Indonesia BV-16.2%<br>Pertamina-83.8%[2] (Operator) |
| Mozambique | Area 1 Offshore | Total Energies-26.5% (Operator)<br>BPRL Ventures Mozambique BV-10%<br>BREML-10 %<br>OVRL-10%<br>PTTEP-8.5%<br>Mitsui-20%.<br>ENH-15% |
| Russia | Vankorneft (2 Licenses) | Vankor India[3]-23.9%<br>Vostok Oil-50.1% (Operator)<br>OVL-26% |
| Russia | TYNGD (2 Licenses) | Taas India[4]-29.9%<br>Rosneft-50.1% (Operator)<br>BP-20% |
| United Arab Emirates | Lower Zakum | ADNOC-60% (Operator)<br>Falcon[5]-10%<br>Inpex-10%<br>CNPC-0%<br>Total Energies-5%<br>ENI-5% |
| United Arab Emirates | Onshore Block 1 | UBPL[6]-100% |

[1]IBV Brasil is a joint venture (JV) company, incorporated in Brasil, which is equally held by BPRL & Videocon Industries Ltd through their overseas subsidiaries.

[2]Notice of withdrawal issued, PI being transferred to the partners in proportion in existing PI, BPRL share of addl. PI (over current PI of 12.5%) will be 3.7338%, Approval pending from SKK Migas.

[3]Vankor India Pte Ltd is a JV of BPRL, OIL & IOCL with BPRL share of 33%

[4]Taas India Pte Ltd is a JV of BPRL, OIL & IOCL with BPRL share of 33%

[5]Falcon is a JV of BPRL, OVL & IOCL with BPRL share of 30%

[6]Urja Bharat Pte Limited is a JV of BPRL & IOCL with BPRL share of 50%

### 14.4.2. Balmer Lawrie Investments Limited (BLIL)

The Government of India, in view of its planned deregulation of oil and globalization of the economy, decided to disinvest 33.58%, of its total equity holding of 59.58%, in IBP Company Limited (IBP) to a strategic partner with management control. Consequently, the shareholding of IBP, in its erstwhile subsidiary Balmer Lawrie & Company Limited (BL), was de-merged in favour of Balmer Lawrie Investments Limited (BLIL), which was incorporated on 20th September 2001 under the Companies Act, 1956. The President of India continues to hold 1,32,46,098 Equity shares of ₹ 10 each (aggregating 59.67% of the total paid-up Equity capital) in the Company. BLIL is under the administrative control of Ministry of Petroleum & Natural Gas having its registered office at Kolkata. The Company does not have any business activity, except to hold the Equity shares of its subsidiary, namely, Balmer Lawrie & Co. Ltd. (BL). The major source of income is dividend income received from BL. In addition to the dividend income, the Company earns interest out of

its surplus funds deployed in the fixed/term deposit schemes of the Scheduled Banks.
Joint Ventures and Subsidiaries of BLIL:

- BLIL does not have any joint venture with any corporate entity.
- BLIL has at present one subsidiary company and one step-down subsidiary company, namely,

i. Balmer Lawrie & Co. Ltd. [as per Section 2(87)(ii) of the Companies Act, 2013] [which is referred to herein as 'BL'] and BL, in turn, has one subsidiary company as enumerated in serial no. ii below.

ii. Visakhapatnam Port Logistics Park Ltd. [as per Section 2(87)(ii) of the Companies Act, 2013].

## 14.4.3. Oil Industry Development Board (OIDB)

### 14.4.3.1. Objectives and Functions of the Board

The Oil Industry Development Board (OIDB) was established on 13th January, 1975 under the Oil Industry (Development) Act, 1974 to provide financial and other assistance for development of Oil Industry. The functions of the Board, as defined in Section 6 of the Act, involve rendering financial assistance including loans and grants to the promotion of all such activities as are, in its opinion, conducive to the development of the Oil Industry.

### 14.4.3.2. Organisational Setup

Oil Industry Development Board comprises of Secretary, MOP&NG as Chairman and other member namely Secretary, Department of Chemical and Petrochemical, Additional Secretary and Financial Advisor, MOPNG, Additional Secretary, Department of Expenditure, Ministry of Finance, Additional Secretary (Exploration), MOPNG, Chairman, IOCL, Chairman & Managing Director, ONGC, GAIL, BPCL, EIL, Director General, Directorate General of Hydrocarbons, Director (R&D), IOCL and Secretary, Oil Industry Development Board as Member Secretary.

### 14.4.3.3. Resources of the Board

The funds required for various activities as envisaged under the Act, were made available by the Central Government after due appropriation by Parliament from the proceeds of cess levied and collected on indigenous crude oil. So far OIDB has received an amount of ₹ 902.40 crore from the Central Government till 1991-92, which has accumulated to ₹ 11,937.70 crore as on 31.03.2022 through internal generation.

### 14.4.3.4. Deployment of Funds

During the year 2022-23 (upto 09.12.2022), OIDB has released grants to institutions viz. Directorate General of Hydrocarbons (DGH), Petroleum Conservation Research Association (PCRA), Centre for High Technology (CHT), Oil Industry Safety Directorate (OISD), Petroleum Planning and Analysis Cell (PPAC) and for other R&D activities amounting to ₹ 292.78 crore. Loan amounting to ₹ 300 crore has been released to Indradhanush Gas Grid Ltd. Total loan sanctioned for the financial year 2022-23 (BE) is ₹ 4,866.17 crore to various Oil PSUs. However, the companies are yet to draw the loans. Indian Strategic Petroleum Reserves Ltd. (ISPRL), a wholly owned subsidiary of OIDB, has been entrusted with the construction of Strategic Storage for crude oil at three locations. OIDB has so far released an amount of ₹ 3,790.05 crore as equity investment in ISPRL and an amount of ₹ 19 crore as grant for pre-project activities for Phase-II SPRs.

## 14.4.4. Oil Industry Safety Directorate (OISD)

Oil Industry Safety Directorate (OISD), the technical directorate under the Ministry of Petroleum and Natural Gas, has been entrusted with the responsibility of formulating standards, overseeing its implementation through safety audits to enhance safety levels and reduce risk inherent with this industry. OISD standards

are implemented on self-regulatory basis by the oil & gas companies.

Petroleum & Natural Gas (Safety in Offshore Operations) Rules, 2008 were notified in the Gazette of India to regulate safety in offshore oil and gas exploration, drilling, production and related activities; and OISD is designated as Competent Authority to exercise the powers and functions as stipulated in these rules, 2008 vide Gazette notification issued in June' 2008. The Directorate, under the provisions of these Rules, accords consent for operation of offshore installations in line with goal setting approach at par with international practices.

#### 14.4.4.1. Safety Audits by OISD in FY 22-23:

OISD carries out External Safety Audit (ESA) for onshore & offshore E&P installations, refinery, gas processing plant, central tank farm, LNG terminal, petrochemical plant, cross country pipeline, LPG bottling plant, LPG import facility, depot, terminal, aviation fuelling station & lube blending plant on periodic basisto monitor their compliance level with the OISD standards and statutory regulations. OISD safety audit performance for the year 2022-23 (Apr-Dec) is as detailed below:

| Actions | Unit | 2022-23 | | Projection Jan-Mar'23 | Total expected Safety Audit |
|---|---|---|---|---|---|
| | | Plan | Actual (31.12.22) | | |
| Refinery/Petrochemical/GPP/CTF/LNG Terminal | No. | 23 | 22 | 3 | 25 |
| Mktg. Installation (POL) | No. | 78 | 63 | 15 | 78 |
| Mktg. Installation(LPG) | No. | 42 | 42 | 3 | 45 |
| E&P Onshore | No. | 100 | 97 | 13 | 110 |
| E&P Offshore | No. | 20 | 21 | 4 | 25 |
| Safety Audit at Corporate/SBU level | No. | 5 | 5 | 1 | 6 |
| Major Port Audit | No. | 2 | 5 | 1 | 6 |
| **Grand Total** | No. | **270** | **255** | **40** | **295** |
| Cross country Pipeline | Km. | 10,000 | 9,416 | 1,584 | 11,000 |

#### 14.4.4.2. Pre-Commissioning Safety Audits

OISD carries out pre-commissioning safety audits for green-field developments and for major additional facilities at existing locations, to ensure compliance to the statutory requirement and OISD standards at the construction stage itself. Status of PCSA carried out during 2022-23 as on 31st Dec'22 is as follows:

| Pre-Commissioning Safety Audits (PCSA) | Unit | Actual 2021-22 | Actual 2022-23 (Apr-Dec) |
|---|---|---|---|
| Refinery/Petrochemical/GPP/CTF/LNG Terminal | No. | 31 | 24 |
| Mktg. Installation (POL) | No. | 34 | 27 |
| Mktg. Installation(LPG) | No. | 20 | 13 |
| E&P Sector | No. | 0 | 1 |
| Pipeline Locations (pipeline length covered in km) | No. (Km.) | 14 (1984.6) | 22 (3058.5) |
| **Total** | No. | **99** | **87** |

#### 14.4.4.3. 'Consent to Operate' for Offshore installations

OISD, as the competent authority to oversee implementation of the Petroleum & Natural Gas (Safety in Offshore Operations) Rules, 2008 accords 'consent to operate' to offshore installations. The status for 2022-23 (Apr-Dec) is as under:

| Grant of Consent to Operate (CTO)-Offshore | Unit | Actual 2021-22 | Actual 2022-23 (Apr-Dec) |
|---|---|---|---|
| Fixed offshore Installation | No. | 07 | 09 |
| Mobile offshore Installation | No. | 04 | 04 |
| **Total** | No. | **11** | **13** |

#### 14.4.4.4. Revision of OISD Safety Standards:

OISD develops Standards for the oil and gas industry through a participative process involving all the stakeholders by leveraging the experience of the committee members and referring to international standards. These standards cover inbuilt design safety, asset integrity and best operating practices in the various facets of oil & gas industry. OISD standards are reviewed periodically to ascertain needs of developing new standards, updating/amending existing standards to incorporate the latest technological developments as well as current experiences on the ground.

As on date, OISD has developed 120 technical safety standards for the oil & gas Industry. 23 of these standards are included in the statutory provisions of the Petroleum Rules, 2002, the Gas Cylinder Rules, 2016, the Static & Mobile Pressure Vessels (Unfired), Rules, 2016, Oil Miners regulations (OMR), 2017 and PNGRB Regulations.

At present, 02 new standards are under development and 47 existing standards are under various stages of revision.

#### 14.4.4.5. Technical Seminars/Conferences/ Workshops:

Technical Seminars/Conferences/ Workshops for the oil & gas industry are conducted by OISD to discuss the latest technological developments, case studies etc.

During the year 2022-23 (Apr-Dec), OISD organized six 'Suraksha Samwad' covering 1,365 participants on various topics including AI and digitisation in marketing operations, environmental aspects, pipeline leakage, safety management in construction, safety management system during major shutdown in refinery, electrical safety and Swachhta se suraksha addressing good housekeeping in industry. Domain experts of industry shared experiences to learn from mistakes.

5 no. of trainings/workshops were conducted by OISD technical experts for dissemination of knowledge during 2022-23 including international webinar on safety aspect of Green Hydrogen for its entire value chain. Training on "Basic safety and awareness at onshore drilling and production installations" was organised by OISD & DGH for small and medium E&P operators. Summer training was given to RGIPT students.

#### 14.4.4.6. The Safety Council:

Safety Council, the Apex body on safety, reviewed the safety performance in 39th meeting of the Council, through hybrid mode on 6th May 2022. Key issues approved and/or deliberated during the meeting are as under:

- Major activities of OISD undertaken in 2021-22 & activity plan for 2022-23.
- Review of compliance status of OISD safety audit recommendation spending for more than two years and area of concern thereof.

- Compliance to the recommendations of HLC related to Baghjan blowout incident in Assam.
- Compliance to the recommendations of HLC related to cyclone Tauktae incident.
- Approval of Actual Expenditure of OISD in FY 2021-22 and Budget Estimate for FY 2022-23.

**14.4.4.7. Incident investigation & Analysis:**

OISD investigates major incidents to analyse root cause(s) of the incident. A databank of major incidents of the oil & gas industry is maintained and analysed to assess trends, areas of concern and required corrective action. These are then disseminated to the industry through periodical bulletins 'Suraksha Chetna'; Safety Alerts and Case Studies; Seminars and Workshops.

During 2022-23 (till 31st Dec'2022) six major incidents have been investigated by OISD out of which one incident was jointly investigated with PNGRB.

**14.4.4.8. Encouragement of Safety Performance across the industry through 'Oil Industry Safety Awards':**

Annual evaluation of Safety Performance of the Industry members is done by a specially developed methodology, which takes cognizance of associated hazards, incident recorded during the year and safety management system of the installation. Installations/Organizations achieving 'exceptional safety performance' during the year, are awarded with the Oil Industry Safety Award. In addition, individuals either company employees or contract labours making exceptional contributions towards the cause of safety are also encouraged and presented with such awards. From the year 2019-20, a new category of award 'innovation in HSE' has been added, both at individual and organisation level.

## 14.4.5. Directorate General of Hydrocarbons (DGH)

Directorate General of Hydrocarbons (DGH) was set up on 8th April, 1993 with an objective to promote sound management of the Indian petroleum and natural gas resources having a balanced regard for the environment, technological and economic aspects of the petroleum activity.

**14.4.5.1. Role and Functions of DGH**

i) To review the exploration programmes of companies operating under Petroleum Exploration Licences granted under the Oilfields (Regulation and Development) Act, 1948 and the Petroleum and Natural Gas Rules, 1959 with a view to advising Government on the adequacy of these programmes.

ii) To evaluate the hydrocarbon reserves discovered and estimated by the operating companies.

iii) To advise the Government on the offering of acreages for exploration to companies as well as matters relating to relinquishment of acreage by companies.

iv) To review the development plans for commercial discoveries of hydrocarbon reserves proposed by the operating companies and advise Government on the adequacy of such plans and the exploitation rates proposed and matters relating thereto.

v) To review and audit concurrently the management of petroleum reservoirs by operating companies and advise on any mid course correction required to ensure sound reservoir management practices in line with the optimal exploitation of reserves and the conservation of petroleum resources.

vi) To regulate the preservation, upkeep and storage of data and samples pertaining to petroleum exploration, drilling, production of reservoirs etc. and to cause the preparation of data packages for acreage on offer to companies.

vii) Assist the Government in Contract Management functions.

viii) Exploration & Development of unconventional hydrocarbon resources like Gas Hydrate, Shale gas/oil and oil shale.

ix) All other matters incidental thereto and such other functions as may be assigned by the Government from time to time.

**New Opportunities**

The Government of India with its multiple opportunities and offerings of blocks and fields under the Hydrocarbon Exploration and Licensing Policy (HELP), Discovered Small Field (DSF) Policy and Coal Bed Methane Policy has given equal opportunities across various sizes of players, new entrants, foreign players, operators, and service providers.

The below section captures the individual offerings and the latest progress achieved until December 2022.

**Hydrocarbon Exploration and Licensing Policy (HELP)**

a) Hydrocarbon Exploration and Licensing Policy (HELP) was launched with the objective of enhancing production of oil & gas in the Indian sedimentary basin. Hydrocarbon Exploration Licensing Policy (HELP) was a paradigm shift from cost recovery to revenue sharing mechanism. It was a massive footstep towards improving the 'Ease of Doing Business' in the Indian E&P sector. The Government of India introduced the Open Acreage Licensing (OAL) mechanism as a part of the HELP which gives exploration companies the option to select the exploration blocks on their own, without having to wait for the formal bid round from the Government. Some of the most acclaimed features of HELP that have received industry tributes are:

i. Uniform licensing system for all types of conventional and unconventional hydrocarbons

ii. Freedom to carve out blocks through EoI

iii. 100% FDI allowed

iv. Marketing and Pricing freedom, Reduced Royalty Rates

v. Further Concessional Royalty Rates in case of early commercial production

vi. Exploration rights for full contract life

**14.4.5.2. Status of OALP Bid Rounds:**

In Seven rounds of bid under OALP, 139 blocks were on offer and 134 exploration blocks covering an area of 2,07,692 Sq. Km. were awarded to successful bidders. Five (5) un-awarded blocks were offered under OALP-Round-III and in all of them CBM was focus; however, no bids were received for those CBM blocks. 239 bids were received for the remaining 134 blocks that are spread over 19 Sedimentary Basins.

| Bid Rounds | Number of Blocks | Area Awarded (Sq. Km.) |
|---|---|---|
| OALP-I | 55 | 59,283 |
| OALP-II | 14 | 29,233 |
| OALP-III | 18 | 29,765 |
| OALP-IV | 7 | 18,510 |
| OALP-V | 11 | 19,789 |
| OALP-VI | 21 | 35,346 |
| OALP-VII | 8 | 15,766 |
| **Total** | **134** | **2,07,692** |

**14.4.5.3. OALP Bid Round-VIII:**

It was launched on 7th July 2022 offering 10 blocks covering around 34,365 Sq. Km. of acreage area. Bid submission for OALP Bid Round-VIII is upto 16.05.2023.

**14.4.5.4. Offshore Bid Round (OALP Bid Round-IX):**

Under this bidding round 26 blocks covering an area of approximately 2.23 lakh Sq. Km. for Exploration and Development through International Competitive Bidding are under offer. Out of these blocks-18 blocks are carved out by Government & rest 8 blocks are as per EoIs received from potential investors.

**14.4.5.5. Discovered Small Field (DSF) Policy**

a) In 2015, the Government of India launched the Discovered Small Field (DSF) Policy which was a monumental step for awarding discovered acreages and monetize the unmonetized discoveries. With its attractive features and improved fiscal terms such as Revenue Sharing Contract model, unified license, moderate royalty rates, DSF substantially removed the regulatory burden on the operators.

b) First bidding round under the Discovered Small Field Policy was launched on 25th May 2016 offering 46 Contract Areas for international bidding. A total of 30 contracts areas were awarded in March, 2017. It is expected that in-place locked hydrocarbons reserves of 40 Million Metric Tonnes (MMT) of oil and 22 Billion Cubic Metres (BCM) of gas will be monetised over a period of 15 years.

c) On 7th February, 2018, Government approved the Discovered Small Field (DSF) Policy Bid Round-II, an extension of the Discovered Small Field Policy notified on 14.10.2015. Under DSF Bidding Round-II, 24 Contract Areas estimated to have ~190 Million Metric Tonnes (MMT) Oil and Oil equivalent gas (O+OEG) in-place were offered for bidding. Subsequently, a total of 24 Revenue Sharing Contracts were signed on March 7, 2019.

d) Following the success of DSF Bid Round-I (2016) & DSF Bid Round-II (2018) and the fact that there are still many more unexploited discoveries, the Government, in June-2021, launched DSF Bid Round-III having 32 Contract Areas. Subsequently, 31 Contract Areas were awarded (out of 31 CAs, 1 contract is yet to be signed).

**14.4.5.6. Coal Bed Methane Policy**

a) Coalbed Methane (CBM), an un-conventional source of natural gas, is considered an important alternative for augmenting India's energy resources. With the fifth-largest proven coal reserves in the world, India holds significant prospects for the exploration and production of CBM.

b) India's CBM resources are estimated at around 92 trillion cubic feet (TCF), or 2,600 billion cubic metres (BCM). The country's coal and CBM reserves are found in 12 states of India, with the Gondwana sediments of eastern India holding the bulk.

c) In order to harness CBM potential in the country, CBM blocks were carved out by DGH in close interaction with the Ministry of Coal (MoC) & Central Mine Planning and Design Institute (CMPDI), Ranchi.

d) To date, four CBM bidding rounds have been implemented, resulting in the award of 33 CBM blocks [including 2 blocks on Nomination and 1 block through Foreign Investment Promotion Board (FIPB) route] which covers 16,598 Sq. Km. At present 08 CBM Blocks are

active of which 05 are under production and 03 blocks are in the development phase. The cumulative production of CBM up to December-2022 is around ~5.58 BCM.

e) Special CBM Bid Round 2021 - Recognizing the fact that non-conventional hydrocarbons are going to play a pivotal role, the Government in its pursuit of scaling up production of hydrocarbons in the country launched the Special CBM Bid Round-2021 (SCBM-2021), under the Hydrocarbon Exploration Licensing Policy through International Competitive Bidding. Under SCBM-2021, 04 CBM blocks were awarded covering an area of ~3,862 Sq. Km. Currently, all these 04 CBM blocks are in exploration phase.

f) Special CBM Bid Round 2022 (SCBM-2022): Government of India announced offering 16 CBM Blocks under Open Acreage Licensing Policy (OALP) through international Competitive Bidding (ICB) covering an area of ~5,817 Sq. Km.

**14.4.5.7. Data driven Reforms and initiatives**

The Indian government has recognized how crucial quality E&P data is for making a project techno-economically viable. The GoI has ushered data driven reforms in the sector to enable investors to view, analyse E&P data and make sound investment decisions at any given point of time.

This section of the document talks about the various initiatives taken by GoI and the latest achievements made in this area until December 2022 in detail.

**14.4.5.8. National Data Repository (NDR)**

Availability of quality data is an indispensable pre-requisite for E&P companies to plan and make informed decision during bidding process. Taking cognizance of this aspect, the National Data Repository (NDR) at DGH is aiming to expand its E&P Data Visualization and Interpretation (DVI) facilities currently available in physical Data Viewing Rooms to online/anywhere/ anytime data visualization and interpretation facility globally. NDR is a GIS enabled web portal with data entitlement, reporting and data trading, tracking and delivery of data order via internet. At present ~304 Companies and more than 950 users are registered at NDR.

For achieving this NDR, DGH has set up a private cloud facility at its premises in the PDC, Noida & SDC Bhubaneshwar for remote access for promoting exploration of blocks identified under various OALP/ DSF rounds for bidding. This will help people located in remote locations to work on India's G&G data without the requirement to travel to DGH office to access its DVI facilities.

E&P Data currently available in NDR (as on 31st Dec 2022):

- 2D Seismic Data: 3.284 Million LKM
- 3D Seismic Data: 1.041 Million SKM
- Well and log data: 22,563 nos.
- Well Reports: 46,826 nos.

**14.4.5.9. National Seismic Programme:**

a) In alignment to the Hon'ble Prime Minister's vision of Atmanirbhar Bharat, MoP&NG formulated an ambitious plan to conduct seismic surveys in all sedimentary basins of India where no/scanty data is available to have a better assessment of India's hydrocarbon potential. This initiative was targeted to enhance domestic exploration and production and reduce dependence on imports. The project is being implemented through National Oil Companies through service providers across 23 states. With its seamless efforts, the NSP project is now completed.

b) National Seismic Programme (NSP) was launched in October 2016 to trace hydrocarbon resources. With its aim to undertake appraisal in all sedimentary

basins across India, especially where no/scanty data is available. A total 46,960 LKM could be acquired out of the target 48,243 LKM-close to 97% of the target has been met.

c) The areas where seismic survey couldn't be carried out due to inaccessible terrain and hostile environment it is planned to acquire 40,000 flight LKM of Gravity-Magnetic data by undertaking Airborne Geophysical survey. The Airborne survey is to be implemented through OIL. As of 31st December, 2022 OIL has submitted the necessary application to DGCA and is awaiting permission.

d) Progress in Andaman: The area surrounding the Andaman & Nicobar (A&N) islands has significant potential for oil and gas. Thus, for a comprehensive appraisal of Andaman offshore, DGH formulated a plan to acquire 22,500 LKM of 2D Broadband seismic data acquisition, processing, and interpretation thereof covering basinal area of approx. 2,81,613 Sq. Km. The survey activities commenced on 30.08.2021 and now the data acquisition & processing part has been completed and whole data is uploaded on NDR portal. Presently, the data Interpretation part is undergoing.

e) Quality geophysical data of acquisition and interpretation is one of the most important aspects in considering a field to be technologically & commercially viable. The NSP is helping in providing quality data and insights into the prospectivity assessment in drilling plans which is a capital-intensive project thereby helping the operators in making sound decision regarding bidding for the new contractual regime.

f) Appraisal of Sedimentary Basin upto EEZ: Approximately 1.13 Million Sq. Km. area is unappraised in the Offshore Basinal Areas of Indian sedimentary basins up to Exclusive Economic Zone (EEZ) in Eastern sector, Western sector and Andaman areas owing to release of NO-GO areas for exploration from different agencies. ONGC was entrusted as a nodal agency for EEZ survey. Accordingly, ONGC awarded the contract (70,000 LKM with a provision of 20% extension) to service provider for 2D Broadband Seismic Data Acquisition covering these three sectors. As on 31st December, 2022 approx. 23,431 LKM seismic data has already been acquired under EEZ survey.

**14.4.5.10. EoDB-Initiatives for facilitating clearances/approvals and enhanced coordination:**

a) Urja Pragati Portal (Upstream Response by Joint Action for proactive Governance and Timely Implementation): To facilitate E&P operators and monitor the approvals/ clearances, URJA PRAGATI web-based interactive portal has been launched recently by DGH to prioritize and flag the long pending issues concerning the upstream hydrocarbon sector involving various stakeholders such as Operators, Central Ministries and State Governments. The issues to be dealt through this portal covers clearances related to PEL, PML, FC, WL, CTE/CTO, ESZ and CRZ.

- Two workshops were jointly organized (by MoEF & CC and DGH) to sensitize E&P operators about new reforms.
- 5 Inter-Ministerial Coordination and Meeting Committee (ICMC) meetings were held to discuss the FC/EC and WL proposal requiring approval from MoEF & CC.
- Fortnightly Regional Coordination Meeting (FRCM) by IROs and with States and user agencies has been put in place to expedite the clearance process.
- Review meetings with State Departments to discuss the long pending cases.
- VCs meetings with various State Forest Officials through URJA PRAGATI portal to discuss the long pending cases.

b) Upstream India Portal: 'Upstream India' portal was launched which provides handholding to E&P operators along with services like sharing of facilities/ infrastructure available at DGH, creation of a Knowledge Sharing Platform, organization of regular Workshops/ Seminars/Conferences/Training Sessions/Discussions etc. on latest Government Policies/Technologies/ Usage of Inventories etc.

c) Reduction in 'No go' areas: In a landmark decision, GoI has opened up the Exclusive Economic Zone (EEZ) for exploration and development activities. Now, oil companies can operate in nearly entire EEZ (99%) by following standard protocols and global practices. All new exploration and development acreages have pre-marked 'No Go' areas, defense installations, forest/wildlife/ESZs or EFAs, etc. prior awarding the block. This exercise is further getting mapped exhaustively for facilitating bidders.

d) Empowered Coordination Committee (ECC): This committee has been constituted under the chairmanship of Cabinet Secretary to discuss the defence, environment, license etc. related issues pertaining to the Hydrocarbon sector. 3 ECC meetings were held during the year 2022, wherein number of policy issues relating to forest/ environment/wildlife clearance and defence were resolved.

e) Hydrocarbon Clearance Cell: Hydrocarbon Clearance Cell (HCC)/North East Coordination Committee (NECC) has been established in DGH, MoP&NG which is dedicated to expediting statutory clearances and tracking, coordinating, and facilitating grant of PEL and PML from State and Central Governments. Presently, 13 young professionals have been posted at various State Offices in the State of Assam, Arunachal Pradesh & Tripura and are placed with various Departments of State Govt. of Assam, Arunachal Pradesh and Tripura for ease of processing Clearance and Approval proposals under various environmental regulations as well as expediting the other issues related to Oil & Gas E&P activities requires administrative/ regulatory supports from the State Govt.

#### 14.4.5.11. Research Studies

DGH has sponsored the study to be conducted by National Institute of Oceanography (NIO) to develop the guidelines for Petroleum Exploration & Development Projects in Offshore areas beyond 12 NM (inclusive of Monitoring & Mitigation Measures) and for management of marine natural resources.

#### 14.4.5.12. Academia-Industry Collaboration

- Memorandum of Understanding (MoU) was signed between Pandit Deendayal Energy University, Gandhinagar, Gujarat and Directorate General of Hydrocarbons Research Project on Geo-scientific Data Analysis of Kutch-Saurashtra Basins in December 2022.
- Memorandum of Understanding (MoU) was signed between Saint Petersburg (Mining University), Saint Petersburg, Russia and Directorate General of Hydrocarbons Research Project for undertaking a joint conceptual and consultative study in March 2022.

#### 14.4.5.13. Liquidation of Clearances pendency

DGH is proactively involved in the facilitation of resolution of various statutory environment related clearance like environment/forest/wildlife clearance/ Pending PEL/PML cases of various E&P operators by coordinating with various concerned departments of Central & State Governments and other statutory bodies. Due to this rigorous follow up/interference of NECC coordinators with Central Ministries and State Governments, the pendency of clearances has been shrunken from 164 nos. to 95 nos.

### 14.4.6. Centre for High Technology (CHT)

Established in 1987,Centre for High Technology (CHT) acts as the Technical Wing of MoP&NG for implementation of scientific and technological programmes of Govt. of India. Major functions of CHT include:

- Performance Benchmarking of Refineries and Pipelines.
- Performance Improvement in Refineries through Best Practices, Special Studies, Operational Improvement and Process Technology.
- Energy Efficiency Improvement in Downstream Hydrocarbon Sector.
- Petroleum Product Quality Improvement.
- Sharing of Best Practices and Information & Knowledge Dissemination.
- Integration with Alternative Energies and New Initiatives in Downstream Sector for Future Sustainability.
- Promoting Innovations and R&D in Downstream Hydrocarbon Sector including Hydrogen Research. Co-ordination of activities of Scientific Advisory Committee (SAC) on Hydrocarbons of MoP&NG.
- Reduction of Water foot print.
- Development of import substitute fuels, chemicals and catalysts.
- Nodal agency for implementation of PM JI-VAN Yojana.

#### 14.4.6.1. Major activities undertaken:

**1. Performance Benchmarking:**

Performance benchmarking of PSU refineries is being conducted regularly since 2010 and Pipelines & SPMs benchmarking was initiated in 2018 cycle through M/s Solomon Associates (SA), USA. The study for cycle 2022 is under progress for both Refinery and pipelines. Petrochemicals benchmarking is also being planned.

**2. Refinery Performance Improvement**

**2.1 Energy Efficiency Improvement Study of PSU refineries.**

**2.1.1. PAT (Perform, Achieve and Trade)**

The energy reduction Target for refining sector in PAT cycle -2 was set at 5.49% equivalent to 1.01 Million TOE. Against this, the actual energy reduction of 8.05%, equivalent to 1.48 Million TOE was achieved. For the current PAT cycle-6 (2020-21 to 2022-23), the sectoral energy reduction Target of 5.49% has been retained, which is equivalent to energy saving target of 1.17 Million TOE.

**2.1.2. Mission Q1 by 2030 in PSU refineries**

A Roadmap on specific energy consumption for PSU Refineries has been prepared for improvement in energy consumption to bring all refineries in Quartile 1 (Q1) of Solomon Benchmarking. The target is also aligned with India's NDC of 45% reduction in Specific Energy Consumption by 2030 over the base year of 2005.

**2.1.3. Annual audit on furnace efficiency and steam leaks**

To improve energy efficiency and reduce energy consumption, CHT organizes surveys every year in the areas of Furnace/Boiler efficiency or Steam leak taken up every alternate year. Survey in area of steam leak audit was completed during Saksham-2022. Furnace/boiler efficiency survey for the 2023 year is also completed.

**2.1.4. Development of Water Consumption Norms and Reduction of Water Footprint for Refineries** through EIL has been carried out. A savings of 2,369 m3/hr has been achieved against a target of

2,901 m3/hr in short term. A long term (2023-25) target reduction is in progress.

**2.1.5. Performance Improvement Programme of PSU Refineries:** 7 PSU refineries (HPC-Mumbai and Visakh, BPC-Mumbai and Kochi, IOC-Panipat, Paradip and Mathura) have started the study in first phase. In the second phase, for balance 8 refineries (IOC-Barauni, Gujarat, Haldia, Bongaigaon, Guwahati, Digboi, CPCL-Manali and NRL), action will be taken up by respective refineries.

**3. Energy Technology Meet (ETM):**

The 25th Energy Technology Meet (ETM) formerly known as Refining & Petrochemicals Technology Meet (RPTM) was organised along with HPCL in Mumbai, during 15-17 September, 2022. The theme of the Meet was kept as "Refining in New Energy Era". The event had presentation of 78 oral papers spread over 15 Technical Sessions and 59 papers in Poster Sessions along with 16 Exhibition Stalls and was attended by around 1,200 delegates/ invitees from India and abroad.

**4. Promotion of innovation and development of Indigenous Technology**

CHT co-ordinates the activities of Scientific Advisory Committee (SAC) on Hydrocarbons of MOP&NG in identifying and funding of research projects for downstream hydrocarbon sector including projects of national importance.

**4.1. Hydrogen Research:** CHT has funded various projects for production of hydrogen from different pathways, development of fuel cell buses in tie- up with vehicle manufacturer as well as transport operators, storage and dispensing of hydrogen, production of HCNG and demonstration of HCNG fuelled buses in Delhi.

CHT provided input for the development of Science, Technology and Innovation Policy (STIP) of Govt. of India.

**5. Awards**

CHT is actively associated with the following Annual Awards instituted by Ministry of Petroleum & Natural Gas, Government of India:

- Refinery Performance Improvement Award
- Saksham Awards (based on Steam Leak and Furnace Efficiency Surveys)
- Innovation Award

**6. Implementation of PM JI-VAN Yojana**

Pradhan Mantri JI-VAN Yojana was announced in March, 2019 for promotion of 2G ethanol technology. Steering Committee of CHT for PM JI-VAN Yojana, approved VGF/ Financial assistance for 6 commercial projects and 3 demonstration project. RFS issued for remaining 6 Commercial and 7 Demonstration projects.

**7. Activity Committee Meetings (ACM)/webinars**

With the aim of sharing of best operational practices & improvements and dissemination of information on latest developments, CHT organises various ACMs/ webinars in critical areas/ technologies in refining sector and pipelines operations.

## 14.4.7. RGIPT–Rajiv Gandhi Institute of Petroleum Technology, Amethi

**14.4.7.1. New Academic Programmes:**

The Institute has improved its academic offerings in the past year by adding B.Tech. programmes in computer science and design engineering, information technology, chemical engineering with a focus on renewable energy, geoscience and

engineering, and electrical engineering with a focus on e-vehicle technology. Integrated dual degree programmes with a B.Tech in Computer Science & Engineering and an M. Tech in Artificial Intelligence have also been launched by RGIPT. Besides this, the Institute has also done Enhancement in Fellowship of Ph.D. students, Industry Sponsored Ph.D. Fellowships, Provision of Minor in B.Tech. Programmes & appointment of Adjunct Faculty.

**14.4.7.2. Research & Development:**

RGIPT can readily provide its industrial research & consultancy services to the national and international industries in mutually beneficial research areas. The faculty members are involved in the projects sponsored by the Department of Science & Technology, Science & Engineering Research Board, Department of Atomic Energy, Council of Scientific & Industrial Research, Petroleum Conservation Research Association, Department of Scientific & Industrial Research, Ministry of Minority Affairs, Oil India Limited, Oil & Natural Gas Limited and NTPC Energy Technology Research Alliance.

The research articles from RGIPT have been published by internationally reputed publishers like the American Chemical Society, Royal Society of Chemistry, Elsevier, Wiley Inter-science, and Springer, etc. The faculty members have been invited to deliver lectures both at national and international levels.

**14.4.7.3. Green Hydrogen:**

A significant project with a budget of ₹ 98 lakhs was received from National Thermal Power Corporation Limited in the year 2020 and successfully completed. To show the product's commercial potential, a prototype flow-through electrolyzer without a membrane was subsequently created. To safeguard the technology, four patent applications are being processed with NTPC.

**14.4.7.4. Central Research Facility:**

RGIPT has a dedicated central research facility with a range of sophisticated instrumentation facilities. With these facilities available on campus, the Institution is well-equipped to carry out research activities in frontier areas of energy.

**14.4.7.5. RGIPT is now a Nodal Centre for India Hydrocarbon Appraisal Program (I-HAP):**

The 'Indian Hydrocarbon Appraisal Program (I-HAP)' was conceptualized and launched by the Ministry of Petroleum and Natural Gas with the objective of complete mapping of the Sedimentary Basins and to assess the hydrocarbon potential of India. RGIPT has been made the Nodal Agency to coordinate with various agencies and execute the Program.

**14.4.7.6. Urja Shakti:**

The Urja Shakti award is presented to honour women energy professionals having more than 25 years of work. We feel immensely proud to announce that Urja Shakti Lifetime Achievement Award-2021 was awarded to the first women Director of Indian Oil Corporation Limited, Ms. Sukla Mistry.

**14.4.7.7. Inauguration of Incubation & Skill Development Centre:**

It is a state-of-the-art centre to provide a platform for the promotion and support of start-up activities in the field of science, technology and management for motivated entrepreneurs across the country. The center will also serve in upgrading the technical skill of people, helping them to be industry ready.

**14.4.7.8. Design & Innovation Centre (DIC):**

DIC promotes the execution of cutting-edge energy research and thus fosters the culture of energy innovation. Design & Innovation Centre is run by the undergraduate students to address the scientific & engineering challenges in energy research. Currently, 55 DIC projects are being executed with financial support from the institute. It is to be noted that the B. Tech. students are being recognized as young scientists and their works are being published in reputed international journals of the American Chemical Society, Elsevier, and Wiley.

**14.4.7.9. MoUs with National/International Institutions:**

RGIPT and Gujarat Energy Research and Management Institute (GERMI) have identified several areas wherein they can combine their core strengths and aid each other to further their activities and serve the Petroleum, Refining, Petrochemical, Fuel Cell, Energy Policy, Think Tank, Battery Energy Storage, E-Mobility & Renewable Energy Sector as a whole.

**14.4.7.10. Industry-Academia Collaboration:**

To fortify such strong collaborations with industries and institutions, RGIPT has recently signed numerous MoUs as under -

***MoU with IOCL (Business Division) & IOCL (Refinery Division)***

***MoU with Institute of Drilling Technology (IDT), ONGC***

***MoU with NASSCOM***

***MoU with Nihilent Limited***

***MoU with Capgemini***

**14.4.7.11. International Training Programme for Mongol Refinery, Mongolia:**

RGIPT conducted a training program on "Advanced Petroleum Refining Technologies" in collaboration with IOCL (Business Division) for the working professional of Mongol Refinery. The topics such as Global Energy Scenario, Advanced Refining Process Technologies, Refinery Planning & Coordination, Energy Benchmarking, Process Design, and Process Intensification were covered in this programme.

**14.4.7.12. Energy Institute, Bengaluru (Centre of RGIPT, Jais, Amethi)**

**Introduction:**

Energy Institute, Bengaluru (EIB), Centre of RGIPT Jais, is presently, operated from a transit campus situated at Vidya Nagar Cross, Bengaluru. EIB is envisioned to be a distinguished academic and research institute to foster technology driven academic and research programmes in the domain of energy. It strives to produce brilliant and skilled man-power by inculcating the required technical expertise in-line with sectorial needs of the society. EIB intends to drive societal growth through research and development activities, energy innovation and entrepreneurship. The Institute aims to conduct leading-edge industrial, technological, and fundamental research in the field of energy; Offer quality education to students; offer short-term training courses to Industrial professionals in the field of energy.

**1. Academic Programmes:**

EIB currently offers four M. Tech programmes namely Renewable Energy, Electric Vehicle Technology, Data Science Specialisation in Energy and Artificial Intelligence Specialisation in Energy. Centre also offers the Ph.D programmes in disciplines of Electrical and Electronics Engineering, Mechanical Engineering, Chemical Engineering and Material Science & Engineering.

Centre presently hosts a total of 47 M. Tech. students and 13 Ph.D. students working in the field of Green Energy, Sustainable Transportation and Applications of Artificial Intelligence in Energy Systems.

**2. Construction of EIB Campus:**

The Government of Karnataka allotted 150 acres for the construction of EIB campus. EIB is making all efforts to complete the construction of the campus and the campus is expected to materialize by end of 2023.

**14.4.7.13. Assam Energy Institute (AEI), Sivasagar: Centre of RGIPT, Jais, Amethi)**

**1. Academic Programmes:**

Assam Energy Institute (AEI), Sivasagar (Centre of RGIPT Jais, Amethi) offers three year Polytechnic diploma courses in Petroleum Engineering, Chemical Engineering, Mechanical Engineering, Fire & Safety Engineering & Electronics & Instrumentation Engineering. The admission in these courses has been done based on the Polytechnic

Admission Test, conducted by Directorate of Technical Education, Govt of Assam. The 3rd batch of diploma students passed out in August-2022.

2. **Construction activities at AEI:**

The construction activities at AEI such as Boundary Wall & Gates, Academic Building (wing B), one dining hall, two number of Girls Hostel and three number of Boys Hostel are currently being carried out by CPWD.

## 14.4.8. IIPE-Indian Institute of Petroleum & Energy, Visakhapatnam

### 14.4.8.1. Introduction:

Indian Institute of Petroleum & Energy (IIPE) is established by the Government of India under the aegis of the Ministry of Petroleum & Natural Gas, in the year 2016 at Visakhapatnam in accordance with the provisions made in the 'Andhra Pradesh Reorganization Act, 2014'. The main objective of the institute is to meet the quantitative and qualitative gap in supply of skilled man power for the petroleum sector and to promote research activities needed for the growth of the sector recognizing the challenges, as a domain specific institute in research in emerging areas like Shale Gas, Coal Bed Methane, Gas Hydrates and Renewable Energy etc. The institute is co-promoted as an energy domain specific institute by the leading Oil PSUs namely HPCL, ONGC, OIL, GAIL & IOCL.

The Indian Institute of Petroleum & Energy Act, 2017 (No. 3 of 2018) enacted by the Parliament, declares IIPE is an 'Institute of National Importance'.

**Programs/Courses:** IIPE is presently offering 4-year B.Tech Programs in Petroleum Engineering and Chemical Engineering in addition to Ph.D research courses. The students are admitted to the B.Tech Courses based on their JEE (Advanced) rankings. The 3rd batch (2018-22) of B.Tech students were graduated in the month of June 2022. For the Academic Year 2022-23, a total number of admissions held in B.Tech is 111, of which 58 in Chemical Engineering and 53 in Petroleum Engineering.

**Placements:** During the year the institute has achieved 98.64% placements for 2018-22 batch students. In this academic session, 61 companies offered 117 placements to the students. Highest CTC is 24 LPA and the average CTC is 9.53 LPA. Many new core companies in Oil & Energy sectors and from Analytics & Consulting have been roped in for providing placements to students. All students of 2019-23 batch (100%) were offered industrial internships with companies such as ONGC, HPCL, IOCL, MRPL & BPCL.

**Research & Development:** In this academic year, a total of 44 publications were made as research articles, Book Chapters, Books, and Conference Papers. During the year a total of nine projects, sponsored by ICMR, DST, NBHM (DAE), MoES, DBT, and NRF(Singapore) are ongoing with a total outlay of ₹ 4,26,76,952. Faculty of the Institute submitted 29 proposals for sponsored projects with an estimated budget of ₹ 11,81,20,104. To encourage a research culture, the Institute started Institute Research Grant (IRG), which acts as a seed grant for the faculty members.

IIPE introduced the cumulative contingency and sandwich Ph.D program to promote foreign collaboration. This year the Institute started the Summer Internship Programme (SIP) and selected 6 Interns for the program.

**MoUs:** IIPE, this year, has signed MoUs with IIT-Madras and 'Petroleum Research School of Norway (NFiP)' for research collaboration and faculty & students' exchange programs. IIPE has also signed MoU with the various local multi-speciality Hospitals such as CARE Hospitals, Sevenhills Hospital, Medicover Hospitals and Visakha Eye Hospital to provide outpatient medical services to faculty, staff & their dependents and students at par with CGHS rates on credit basis.

**Manpower & Women Employees:** The Institute has recruited 11 faculty members and 14 non-teaching staff additionally, this year. IIPE has presently 27 faculty members & 21 Non-teaching Staff, on regular basis, of which 06 are women employees.

**14.4.8.2. Best practices:**

i. The academic Calendar of the Institute is now Day Specific rather than Date Specific. The courses are being bench marked with top notch Institutes.

ii. Internships are provided to every student in public sector Oil Companies or institutes like ISRO and IITs etc.

iii. Experts from different social organisations who are involved in Career Development are invited for imparting the personality development programs to students.

iv. Digital learning & online teaching has been adopted along with provision of e-library resources, online books & publications in the present scenario.

v. Each student is nominated with faculty mentor and the students are monitored academically on real time basis.

**14.4.8.3. Future Plan:**

i. Starting of the construction of the new campus from the year 2023 and shifting from the temporary campus to new permanent campus by 2024/25;

ii. Implementation of MoUs with world repute institutes/universities and encouraging the quality research for attainment of patents by the year 2023.

iii. Institute will host foreign Nationals for research courses.

## 14.4.9. Petroleum Planning & Analysis Cell (PPAC)

**14.4.9.1. Introduction:** Petroleum Planning & Analysis Cell (PPAC) was established as an attached office of MoP&NG w.e.f. 1st April 2002 after dismantling the Administered Pricing Mechanism (APM) in the petroleum sector and abolition of the erstwhile Oil Coordination Committee (OCC). The Governing Body under the chairmanship of Secretary, P&NG and senior officials of MoP&NG and Chief Executives of major oil and gas PSUs as members, provides necessary supervision and guidelines in the functioning of PPAC. PPAC is expected to assist the Government of India, inter alia, in discharging of the following functions with vision of being authentic source for data & policy analysis on hydrocarbon sector;

a. Maintenance of an information data bank on Oil and Gas Sector.

b. Analysing trends in the international oil market & domestic prices.

c. POL demand forecasting.

d. Conducting studies in the Oil & Gas and Energy Sector.

e. Forecasting and evaluation of petroleum import and export trends.

f. To provide inputs to Government particularly on pricing of petroleum products and administration of subsidy schemes including PMUY.

g. Determination & notification of Domestic Natural Gas price and HT HP Gas price ceiling on six monthly basis as per Government guidelines.

**14.4.9.2. Important Database and dissemination of regular MIS Reports on oil and gas sector:** PPAC maintains data related to production, consumption, import and export of crude and petroleum products and oil infrastructure. It also maintains data related to production of natural gas, import of LNG and consumption of natural gas and on the CGD sector. Under the mandate of PPAC, many daily, fortnightly, monthly, six-monthly and annual reports are published on PPAC's website http://ppac.gov.in as well as on the mobile app "PPACE" available on Apple App store and Google Play store. These reports pertain to daily prices of crude oil and petroleum products, Consumption of POL products and Industry Sales Review, LPG Sales, crude oil processing and production, POL products imports & exports, consumption and import of Natural Gas etc. Besides the regular Reports and inputs on Petroleum products, PPAC also carries out many studies on the Demand, Supply, Transportation and Pricing of MS, HSD, LPG, Gas etc. The Reports by the PPAC assist the Policy makers and are also much demanded

and appreciated by the Industry as well as other institutions and organisation in oil and gas sector.

**14.4.9.3. Price Trends of Petroleum products and impact of subsidy/under-recoveries:**

**1. Crude Oil:**

Due to India's reliance on imports to meet the domestic demand, the prices of crude oil and petroleum products in the international markets have a decisive influence on the domestic prices of petroleum products. The prices of crude oil, after continuously being at the level of more than $100/bbl for over three years, started falling sharply during the second half of 2014. As a result, the average price of Indian crude oil basket during 2015-16, 2016-17 and 2017-18 was recorded at $46.17/bbl, $47.56/bbl and $56.43/bbl respectively. The price increased to $69.88/ bbl during 2018-19 and fell to $60.47/bbl in 2019-20. The prices increased from a low of $19.90/bbl during April 2020 to a high of $64.73/bbl during March 2021 and averaged at $44.82/bbl for 2020-21, then increased to $79.18/bbl during 2021-22 and is at $95.91/bbl during 2022-23 (till 31st January 2023).

**2. Petrol and Diesel:**

Prices of petrol and diesel have been made market-determined with effect from 26.06.2010 and 19.10.2014 respectively. Since then, the Public Sector Oil Marketing Companies (OMCs) take appropriate decision on pricing of petrol and diesel in line with international product prices and other market conditions. The OMCs have not only increased but also decreased the prices of petrol and diesel in line with changes in international prices of petroleum product and rupee dollar exchange rate, etc.

With effect from 16th June 2017, Daily pricing of petrol and diesel has been implemented in the entire country.

**3. Domestic LPG (Subsidised):**

- **PAHAL (DBTL)**- Effective from 1st January 2015, the PAHAL (DBTL) scheme, 2014 was implemented in the entire country wherein the subsidy on Domestic LPG is transferred to the eligible consumers directly to their bank accounts.

  Since May, 2020, subsidy is not given to consumer on Domestic LPG (at Delhi Market) under the DBTL scheme. However, in far-flung areas and some other markets, there exists some subsidy mainly due to higher inland freight from port to bottling plant.

  Further, for the financial year 2022-23, the effective cost of 14.2 kg domestic LPG Cylinder for PMUY consumers is made ₹ 200 below the effective cost for non-PMUY consumers up to 12 Cylinders and the difference amount is credited to the bank account of the PMUY consumers as subsidy.

  Further, the Government of India has also approved a one-time grant of ₹ 22,000 crores to PSU OMCs towards under-recoveries in Domestic LPG.

- **PMUY Scheme-Pradhan Mantri Ujjwala Yojana (PMUY)** was launched on 1st May, 2016 for providing free LPG connections by Oil Marketing Companies (OMCs) to women belonging to the below poverty line (BPL) households and whose name is appearing in the Socio- Economic Caste Census 2011. The said scheme was revised in March, 2018. Under the revised scheme, a total of 8 crore BPL households were covered over a period of 4 years (till 2019-20) with additional inclusion of BPL families covered under one of the following categories:

  a) Antyodaya Ann Yojana (AAY)

  b) Pradhan Mantri Awas Yojana (Gramin)

  c) SC/ST households

  d) Forest dwellers

  e) Most backward classes

  f) Tea and Ex-Tea Garden tribes

  g) People residing in islands and river island.

The objective of the scheme was to provide clean fuel to all poor households.

The said scheme was further revised in December, 2018. Under the latest guidelines, the benefit was to be extended to such poor households which were not covered either in the SECC list or in the expanded categories as per guidelines revised in March, 2018.

The target of 8 crore connections has been achieved in September 2019, well ahead of the target completion date.

- **Ujjwala 2.0:** In the Union Budget 2021-22, the scheme has further been extended to cover 1 crore more beneficiaries. In this phase, special facility has been given to migrant families; only a self-declaration is required for getting a gas connection. Subsequently, Govt. approved for release of additional 60 lakh connections under PMUY (Ujjwala 2.0).

- **PMGKY**: To help the poor to fight the battle against corona virus, the Government decided to provide gas cylinders free of cost to the beneficiaries under Pradhan Mantri Ujjwala Yojana (about 8 crore) for a period of 3 months under Pradhan Mantri Garib Kalyan Yojana. These cylinders were initially supplied for the period April-June 2020.

  The scheme was extended for 3 months w.e.f 1st July 2020 till 30th September 2020 for those beneficiaries who had been credited with the advance for buying first/second cylinder, but were not able to buy the free cylinders till 30th June 2020.

  The scheme was further extended for 3 months w.e.f 1st October 2020 till 31st December 2020 for those beneficiaries who had been credited with the advance for buying first/second cylinder, but were not able to buy the free cylinders till 30th September 2020.

**4. Scheme for Promotion of flagging of merchant ships in India**

This scheme came into force with effect from 14.07.2021 to provide subsidy support to Indian Shipping companies in global tenders floated by Ministries and CPSEs for import of government cargo. The scheme shall be for a period of 5 years and budgetary support of ₹ 1,624 crore shall be provided over a period of 5 years as subsidy support to Indian shipping companies in global tenders. This scheme under MoP&NG is applicable for imports of two products i.e. LPG and Crude Oil.

**5. PDS Kerosene**

Effect from 1st October, 2016, Direct Benefit Transfer in PDS Kerosene Scheme 2016 (DBTK) was implemented in 4 districts in Jharkhand State. This scheme was extended to another 6 districts effective 1st April, 2017 and the entire state of Jharkhand was covered under DBTK effective 1st July, 2017.

Effective March 2020, the retail selling price of PDS Kerosene is being maintained at NIL under recovery level on Pan India basis.

**6. Subsidy/Under-recovery**

The total subsidy/under-recovery on petroleum products (including DBTL subsidy, PMUY subsidy, Natural gas Subsidy for North-East and Scheme for Flagging of merchant ships in India) for the year 2021-22 was ₹ 2,237 crore in comparison to ₹ 12,231 crore in 2020-21.

**14.4.9.4. Important Activities:** Some of the important activities during 2021-22 undertaken by PPAC were as follows:

**1. Domestic natural gas pricing and ceiling price for gas produced from discoveries in deep water, ultra-deep water and high pressure-high temperature areas: for notification and issuance under the provisions of the New Domestic Natural Gas Pricing Guidelines, 2014:**

Domestic Natural Gas prices were notified for the periods 01.04.2022 to 30.09.2022, 01.10.2022 to 31.03.2023 in line with the New Domestic Natural Gas Pricing Guidelines, 2014.

Ministry of Petroleum & Natural Gas allowed marketing freedom including pricing freedom subject to the ceiling price on the basis of landed price of alternate fuels for the gas produced from discoveries in Deep-water, Ultra deep water and High pressure-High Temperature areas vide notification dated 21st March 2016. Gas price ceiling was notified by PPAC for the period April 2022 to September 2022 and October 2022 to March 2023 under the said notification.

| Period | Domestic Gas price (US$/MMBTU) | Deep Water/ Ultra Deep Water (Ceiling Price) (US$/MMBTU) |
|---|---|---|
| 01 Nov'2014-31 Mar'2015 | 5.05 | - |
| 01 Apr'2015-30 Sept'2015 | 4.66 | - |
| 01 Oct'2015-31 Mar'2016 | 3.82 | - |
| 01 Apr'2016-30 Sept'2016 | 3.06 | 6.61 |
| 01 Oct'2016-31 Mar'2017 | 2.5 | 5.3 |
| 01 Apr'2017-30 Sept'2017 | 2.48 | 5.56 |
| 01 Oct'2017-31 Mar'2018 | 2.89 | 6.3 |
| 01 Apr'2018-30 Sept'2018 | 3.06 | 6.78 |
| 01 Oct'2018-31 Mar'2019 | 3.36 | 7.67 |
| 01 Apr'2019-30 Sept'2019 | 3.69 | 9.32 |
| 01 Oct'2019-31 Mar'2020 | 3.23 | 8.43 |
| 01 Apr'2020-30 Sept'2020 | 2.39 | 5.61 |
| 01 Oct'2020-31 Mar'2021 | 1.79 | 4.06 |
| 01 Apr'2021-30 Sept'2021 | 1.79 | 3.62 |
| 01 Oct'2021-31 Mar'2022 | 2.9 | 6.13 |
| 01 Apr'2022-30 Sept'2022 | 6.1 | 9.92 |
| 01 Oct'2022-31 Mar'2023 | 8.57 | 12.46 |

2. **Roadmap to Reduce Import Dependence in Energy:** PPAC is preparing a Strategy document on Roadmap to Reduce Import Dependency In Energy. Earlier, working on the clarion call given by the Hon'ble Prime Minister at the Urja Sangam in Mar 2015, a committee submitted its report in April 2016 on 'Roadmap to reduce import dependency in energy', outlining five broad strategies to achieve reduction in import dependency in the Oil & Gas sector. However in view of the current global scenarios, changing dynamics and to add new spheres that may help reduce import dependency in Oil & Gas sector, the revised Strategy document is being prepared as per the directions of IMAC (Integrated Monitoring & Advisory Committee) under the chairmanship of Hon'ble Minister, MoP&NG.

The re-assessed strategies are the inputs from the six working groups constituted by the IMAC for studying, analysing and quantifying the impact of various initiatives taken by the concerned

Ministries/ Departments from FY 2016 to FY 2020 towards achievement of the roadmap of reducing import dependency of oil/gas/coal and in the overall energy sector. These reports have been aggregated and compiled and being presented in a unified view on India's strategy for import reduction of Oil & Gas. The report is a holistic reassessment of policies/steps as envisaged in the import reduction roadmap and mapping all actionable points because of these strategies/ initiatives in terms of their impact on energy demand and savings with timelines to roll out the reassessed roadmap in reducing import dependence by the year 2024-25. PriceWaterhouseCoopers (PwC) was engaged by Petroleum Planning & Analysis Cell (PPAC) in October 2021 for providing external support for the preparation of the comprehensive report.

3. **Parallel LPG Marketing:** An expert committee to review Parallel Marketing System of LPG in India was constituted by MoPNG vide order dated 30th May 2019 to look into various issues related to parallel marketing system of LPG in India. PPAC has provided support to Expert Committee members in the finalization of its report. The Expert Committee Report has been submitted to MoPNG in May 2022.

4. **Revised methodology for estimating LPG coverage in India:** To assess the country's present LPG coverage, there is no direct mapping available for number of households with LPG connection at present in the country. With the last census in 2011, the actual household size as of 2021 is not available. PPAC had carried out a study on LPG outlook till 2030 as part of its annual work program of FY 2020-21 which inter-alia included a report on review of methodology for estimating LPG coverage in India. PPAC has accordingly reviewed the methodology of PSU OMCs for estimating LPG coverage in the country. The review concluded that the current methodology suffered from few limitations and it was necessary to evolve an alternate methodology which depicted a more accurate LPG coverage in India. PPAC has worked out the district-wise LPG coverage with the new methodology.

5. **Energy Demand Projections Model (EDPM):** PPAC as part of 'demand for petroleum products' subgroup of the Working group on 'Enhancing Refining capacity by 2040' has developed long term projections (2020-2045 with a 5 year interval) of the Total Final consumption of the Petroleum products in the six end-use demand sectors (viz. transport, cooking, industry, agriculture, telecom and buildings) taking 3 different scenarios (Baselines, Transition and Transformation depending on the Energy transition to cleaner fuels). The earlier model with base year of 2015 was updated with base year of 2020 and is being recalibrated in line with the current dynamics and energy policies of the Country.

6. **Visual Analytics module for Oil & Gas data:** The Vision of PPAC is to be the most authentic official source for data and policy analysis on the hydrocarbon sector in the country. PPAC takes oil and gas data from various OMCs, government departments and ministries and prepares reports, which helps in analyzing the trends and making decisions & policies.

   To strengthen its process, PPAC uses latest technologies, software, and methodologies. In line with this, PPAC has deployed SAS Visual Analytics platform on top of data collected from various OMCs. The visual analytics capabilities with modern graphical ways of expressing information, helps users at PPAC create reports & identify insights efficiently & quickly.

   Complete process of data collection, storage & dissemination has been standardized; and with various checks & validations, clean & accurate data is used in preparing a wide variety of statistical reports & for meaningful insights and trends. The process has become easier,

efficient and more stream-lined with the availability of data & reports anytime, anywhere.

7. **Involvement of PPAC in many Strategic Committees/Study Groups for the Oil & Gas Sector:** PPAC is involved in various studies/activities like, Rating of Retail Outlets & LPG Distributorships network, verification of remote retail outlets, measures for continued viability of Natural Gas production from nomination fields in the context of 2014 guidelines and strategies to increase the share of Gas consumption in the primary energy mix. PPAC was also involved in the multi agency study on "Rerouting of shipping during hostilities", carried out under the aegis of National Security Council Secretariat (NSCS) and also member of Diversion Committee headed by Secretary Port, Shipping & Waterways and Working Level Diversion Committee headed D.G , Naval Operation for regular updation of situation.

## 14.4.10. Petroleum and Natural Gas Regulatory Board (PNGRB)

The Petroleum and Natural Gas Regulatory Board (PNGRB) was constituted under the PNGRB Act, 2006, notified via Gazette Notification dated 31st March, 2006. The Act provides for the establishment of PNGRB to protect the interests of consumers and entities engaged in specified activities relating to petroleum, petroleum products and natural gas and to promote competitive markets and for matters connected therewith or incidental thereto. The Board under the Act has to regulate the refining, processing, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas excluding production of crude oil and natural gas so as to ensure uninterrupted and adequate supply of petroleum, petroleum products and natural gas in all parts of the country. The vision of PNGRB is as under:

"To create a vibrant energy market with rapid and orderly growth through facilitation of flow of investments into the basic infrastructure for efficient transportation and distribution of petroleum, petroleum products and natural gas at minimum cost and high level of protection of consumer interests through fair trade practices and competition amongst the entities so as to ensure the enhanced competitiveness of Indian economy and customer satisfaction."

PNGRB has authorised 33,527 Km. Natural Gas Pipeline network across the Country till December 2022. 22,335 Km. pipelines are operational which includes Common Carrier Tie-in Connectivity, dedicated pipelines & sub transmission pipelines and the remaining are under construction.

PNGRB has also authorised 13,330 Km. Petroleum and Petroleum Product Pipelines across the Country till December 2022, out of this 8,939 Km pipelines are operational and the remaining are under construction.

In order to expand the coverage of CGD Networks, PNGRB has granted authorization for 61 GAs under 11th CGD Bidding Round and 6 GAs under 11A CGD Bidding Round. So far 297 GAs have been authorized for development of CGD Networks across the country.

Board notified the commencement of Unified Tariff Regulation on 18th November, 2022 by way of PNGRB (Determination of Natural Gas Pipeline Tariff) Amendment Regulations, 2022. In addition, Board also notified Integrated Tariff which means that cost plus pipelines of an entity which are directly interconnected and as may be submitted by an entity will have a single tariff instead of multiple tariffs for those respective pipelines so interconnected. Whereas in case of Unified tariff, natural gas pipelines of different entities which are part of national gas grid will have a single tariff. Unified tariff will eliminate the cascading tariff and will give flexibility to customers to source gas from any terminal / source across multiple interconnected pipelines of different entities on the natural gas grid system and will enable customers to overcome the disadvantages in terms of geographical locations, particularly for consumers in geographical locations, far from source of natural gas.

The PNGRB has notified regulations for mobile dispensing of LNG, LNG and Class "B" Petroleum Products as well as EV Charging and Battery Swapping Facilities at Petroleum Retail Outlets. Further, Knowledge Sharing workshops were organized jointly with industries to share latest technological developments, learning from incidents, best practices etc. for CGD networks, Pipelines, Marketing Installations etc. for safe operations, emergency handling and to prevent recurrence of incidents.

The Board also notified amendments in technical regulations for Retails Outlets, LNG Facilities, and Capacity Determination during the year.

### 14.4.11. Brahmaputra Cracker & Polymer Limited (BCPL)

The Assam Gas Cracker Project (AGCP) was initiated in pursuance of the Memorandum of Settlement signed by the Central Government with the All Assam Students Union (AASU) and All Assam Gana Sangram Parishad (AAGSP) on 15th August, 1985. The AGCP, located at Lepetkata, Dibrugarh Dist., was approved by the Cabinet Committee on Economic Affairs (CCEA) on 18th April, 2006. A joint venture company, namely M/s Brahmaputra Cracker & Polymer Limited (BCPL), was incorporated on 8th January, 2007 to implement the project. The Project was commissioned on 2nd January, 2016 at a cost of ₹ 9,965 crore and was dedicated to the Nation by the Hon'ble Prime Minister, on 5th February, 2016.

GAIL (India) Limited is the main promoter of BCPL having 70% of equity participation and the remaining 30% equity is equally shared by Oil India Ltd (OIL), Numaligarh Refinery Limited (NRL) and Government of Assam. The feedstock for the complex is Natural Gas from M/s OIL and M/s ONGC and Naphtha from M/s NRL. The complex is designed to process Natural Gas and Naphtha to produce 2,20,000 Tons per annum (TPA) of LLDPE/HDPE (Linear Low Density Polyethylene/ High Density Polyethylene) & 60,000 Tons per annum (TPA) of PP (Poly-propylene). The main complex of BCPL is located at Lepetkata, Distt. Dibrugarh, Assam.

The project is a Central Sector Scheme of Govt. of India and is supported by way of Capital Subsidy and Feedstock subsidy. Vide a decision of CCEA in its meeting held on 24.12.2019, the administrative control of BCPL was transferred from Department of Chemicals and Petrochemicals, Ministry of Chemicals and Fertilizers to Ministry of Petroleum and Natural Gas. The plant has been operating at more than 100% capacity since last four years. During FY 2021-22, the company has generated revenue of ₹ 3,243 crore making profit of ₹ 691 crore. The net worth of the company is ₹ 3,281 crore as on 31.03.2022.

BCPL is implementing two value addition projects viz. Butene-1 and 2nd Stage Hydrogenation of Pyrolysis Gasoline (HPG) plants at Dibrugarh at a cost of ₹ 386 crore, which will help produce value added products and by-products leading to realization of better margins and product slate in the times to come.

### 14.4.12. Indradhanush Gas Grid Limited (IGGL)

Indradhanush Gas Grid Limited (IGGL), a Joint Venture Company of IOCL, ONGC, GAIL, OIL, and NRL with equal equity contribution, was incorporated on 10.08.2018 for the implementation of the prestigious North East Gas Grid (NEGG) project, an approximate 1,656 Km. long natural gas pipeline grid, with a design capacity of 4.75 mmscmd at an estimated cost of ₹ 9,265 crores. The project was conceived in line with the Hydrocarbon Vision 2030 for the Northeast for connecting the eight Northeastern states i.e. Assam, Arunachal Pradesh, Meghalaya, Tripura, Mizoram, Nagaland, Manipur & Sikkim to the National Gas Grid and the indigenous gas sources of the Northeast. The foundation Stone of the NEGG was laid by the Hon'ble Prime Minister Shri Narendra Modi on 09.02.2019 and Cabinet Committee on Economic Affairs (CCEA) approved Viability Gap Funding/ Capital Grant of ₹ 5,559 Crore (60% of the estimated total cost of Project i.e., ₹ 9,265

Crore) for the NEGG project on 08.01.2020. Final Authorization for implementation of the NEGG project was received from PNGRB on 17.11.2020.

The construction activities of the NEGG project are in full swing with scheduled completion by March 2024. The NEGG project is a project of strategic importance and on implementation of the project, it will ensure reliable and uninterrupted natural gas supplies to the consumers viz. industrial, City Gas Distribution networks in North East region which are expected to boost industrial as well as economic growth of the region while conserving the environment and supplementing efforts of the Government for development of a Gas based economy in the North East.

### 14.4.13. Indian Strategic Petroleum Reserves Limited (ISPRL)

Government of India (GoI) in the interest of meeting the strategic objective of country's energy security, decided on 7th January 2004 to construct Strategic Petroleum Reserves (SPRs) facilities. As India is heavily dependent on import of crude oil to support the economic activities and growth and to meet the energy needs of its citizens, these SPRs would serve as buffer to deal with any situation of supply chain disruptions, especially due to external reasons. Such emergency reserves would enable the country to keep its refineries fed with crude oil even in the face of disruption of crude oil imports and ensure uninterrupted supplies of petroleum products across the country. In exceptional circumstances, the buffer stock of crude oil could be used to partially absorb an abnormal spike in the global oil prices.

To implement the decision of GoI to construct SPR facilities, a Special Purpose Vehicle (SPV) Indian Strategic Petroleum Reserve Limited (ISPRL) was established on 16th June 2004 as a subsidiary of Indian Oil Corporation Limited. Subsequently in January 2006, ISPRL became awholly owned subsidiary of Oil Industry Development Board (OIDB).



View of underground strategic cavern

**ISPRL Phase-I**

Under Phase-I of SPR program, ISPRL completed the construction and filling of crude oil in underground rock caverns with 5.33 MMT capacity at three locations namely Visakhapatnam (1.33 MMT) in Andhra Pradesh and Mangalore (1.5 MMT) & Padur (2.5 MMT) in Karnataka.

All the three facilities i.e. Visakhapatnam, Mangalore & Padur have been commissioned in June'2015, October'2016 and December'2018 respectively. All these three facilities were dedicated to the Nation by Hon'ble Prime Minister on 10th February'2019.

ISPRL Crude was first time released for Mangalore Refinery and Petrochemicals Limited (MRPL) from ISPRL Mangalore Cavern in August 2019. Subsequently crude oil was released from Padur facility also to MRPL in October 2019.

The release/sale of strategic crude oil is carried out through an Inter-ministerial Empowered Committee chaired by Secretary, MoP&NG with Secretary, Department of Expenditure, MoF; Secretary, Home; Secretary, Planning Commission; Secretary, Defence, Secretary, National Security Council and Secretary, Ministry of Shipping as members.

The release of the commercial stock through leasing/renting up to 30% and sale/ purchase of crude oil of up to 20% of capacity is handled by a Committee of Directors as determined by ISPRL Board from time to time comprising of Directors of ISPRL.

The COVID-19 pandemic that gripped the world, and effected lockdowns globally, impacted the crude oil demand world over and India was no exception. The refineries operated at a bare minimum capacity, as a result of drastic reduction in the demand for petroleum products. This coupled with increase in supply of crude, resulted in a demand supply imbalance which saw the crude oil prices nosedive across the globe. To take advantage of the prevailing low crude oil prices, the Strategic Reserves were filled with purchase of crude oil from Middle East countries.

ISPRL operates the storage facilities as custodian of core critical sovereign crude oil reserves. It also coordinates the release and replenishment of strategic crude oil stock during supply disruptions.



View of above ground facilities at cavern area Padur



Tree Plantation at Mangalore Site by JS (IC), MoPNG

**14.4.13.1. Agreement with Abu Dhabi National Oil Company (ADNOC)**

An agreement was signed between ADNOC and ISPRL on 10th Feb'2018, permitting ADNOC to use one compartment at Mangalore. As per the agreement, ADNOC filled approx. 5.8 Million Barrels of crude at ISPRL's Mangalore cavern in the year 2018. ADNOC can use a portion of this oil as commercial supply to its customers in India, while the rest will remain as strategic storage to be released on directions of GoI to meet emergencies such as supply disruptions due to natural disaster or geopolitical factors. The Mangalore facility has two compartments of 0.75 MMT each. One of the compartments is being utilized by Abu Dhabi National Oil Company (ADNOC).

ADNOC successfully dispatched its first commercial consignment to HPCL, Vizag in Dec 2019 as per the terms of Agreement between ADNOC and ISPRL. Thereafter ADNOC has been regularly selling crude consignments from the Mangalore SPR to various Indian Refineries and replenishing as per the contractual terms.

**14.4.13.2. Commercialization: Crude upliftment from ISPRL by MRPL and HPCL**

Cabinet on 8th July'2021 has considered and approved the proposals to utilize part of the petroleum reserves created under Phase I of Strategic Petroleum Reserve (SPR) for commercialization operations.

ISPRL has started releasing crude to State run Refiners HPCL and MRPL from August 2021. ISPRL deposited an amount of ₹ 4,900.60 Crore in Bharatkosh account of Govt of India realized as revenue from Crude Oil sale.



Joint Secretary (Refineries), MoPNG visit at Mangalore Cavern Portal site



ISPRL Vishakhapatnam facilities Plant View

**ISPRL Phase-II**

On 8th July'2021, the Cabinet Secretariat has given its approval for development of Commercial cum Strategic Petroleum Reserves under Phase-II at Chandikhol, Odisha (4 MMT) and Padur-II, Karnataka (2.5 MMT) and dedicated SPMs and associated pipelines on Design, Built, Finance, Operate and Transfer (DBFOT) basis under PPP mode. This is expected to augment India's energy security by another 12 days according to the consumption data for FY 2019-20.

For Phase-II at both locations, ISPRL will acquire the land through Budgetary support from Government of India and once land acquistion is done, it will be handed over to successful bidder through single stage biding. The concessionaire shall Construct, fill the crude oil and operate it.

Land acquisition process for both the locations i.e. Chandikhol, Odisha and Padur II, Karnataka is in progress. Marine survery for SPM at Padur has been done. NEERI has carried out the EIA for both the locations.

ISPRL is also exploring feasibility of adding more caverns to enhance SPR capacity in the country.

**14.4.13.3. US Department of Energy officials visit to ISPRL Vishakhapatnam**

A senior US delegation from Department of Energy (DOE) dealing with of Strategic Reserves visited ISPRL office at Noida and facilities at Vishakhapatnam on 14th and 15th Nov 2022. The US delegation shared the experience of operations of salt caverns. The challenges in operation of caverns were discussed by both sides.

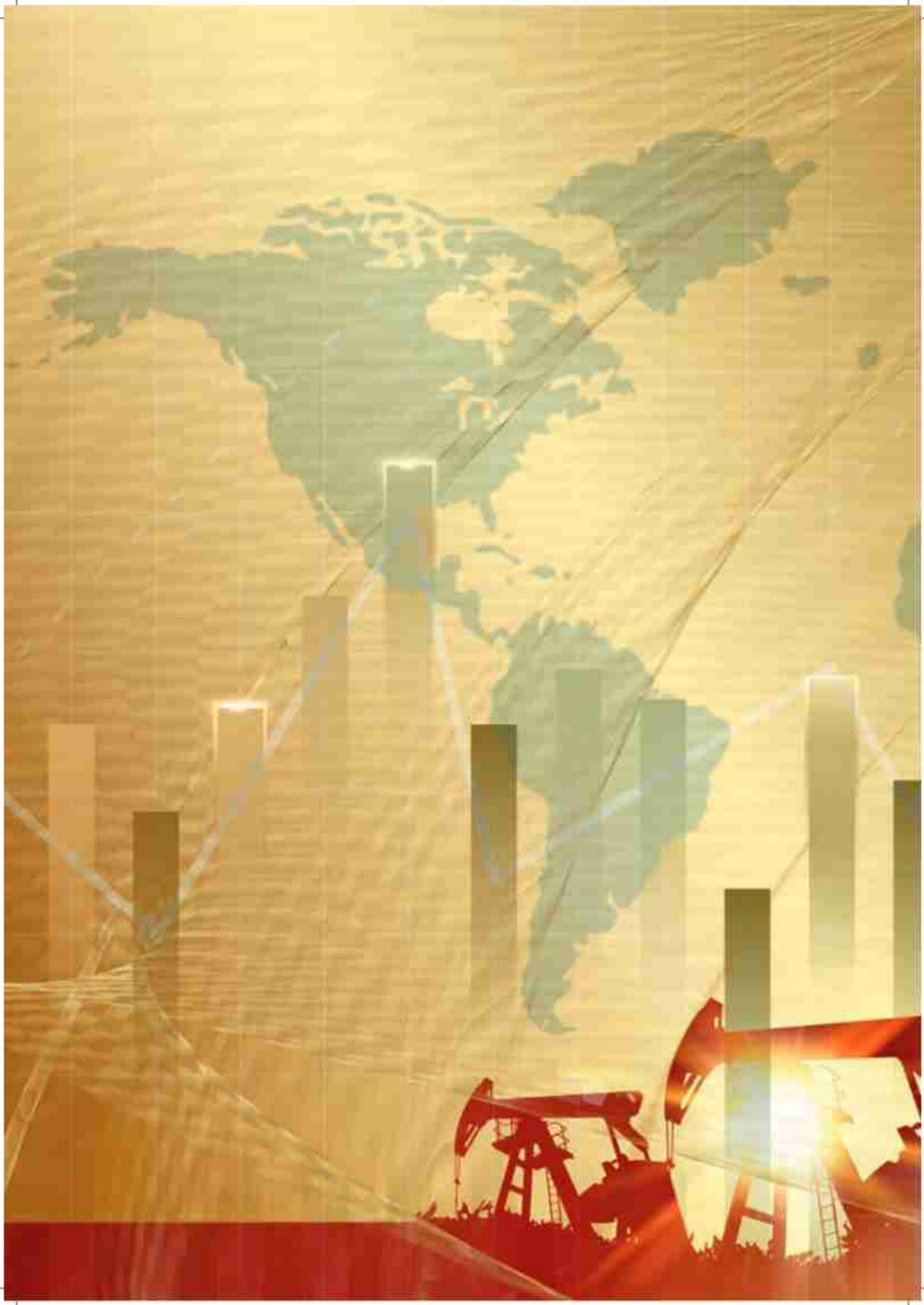
ISPRL had released crude oil from SPR's during the coordinated release declaration by US.

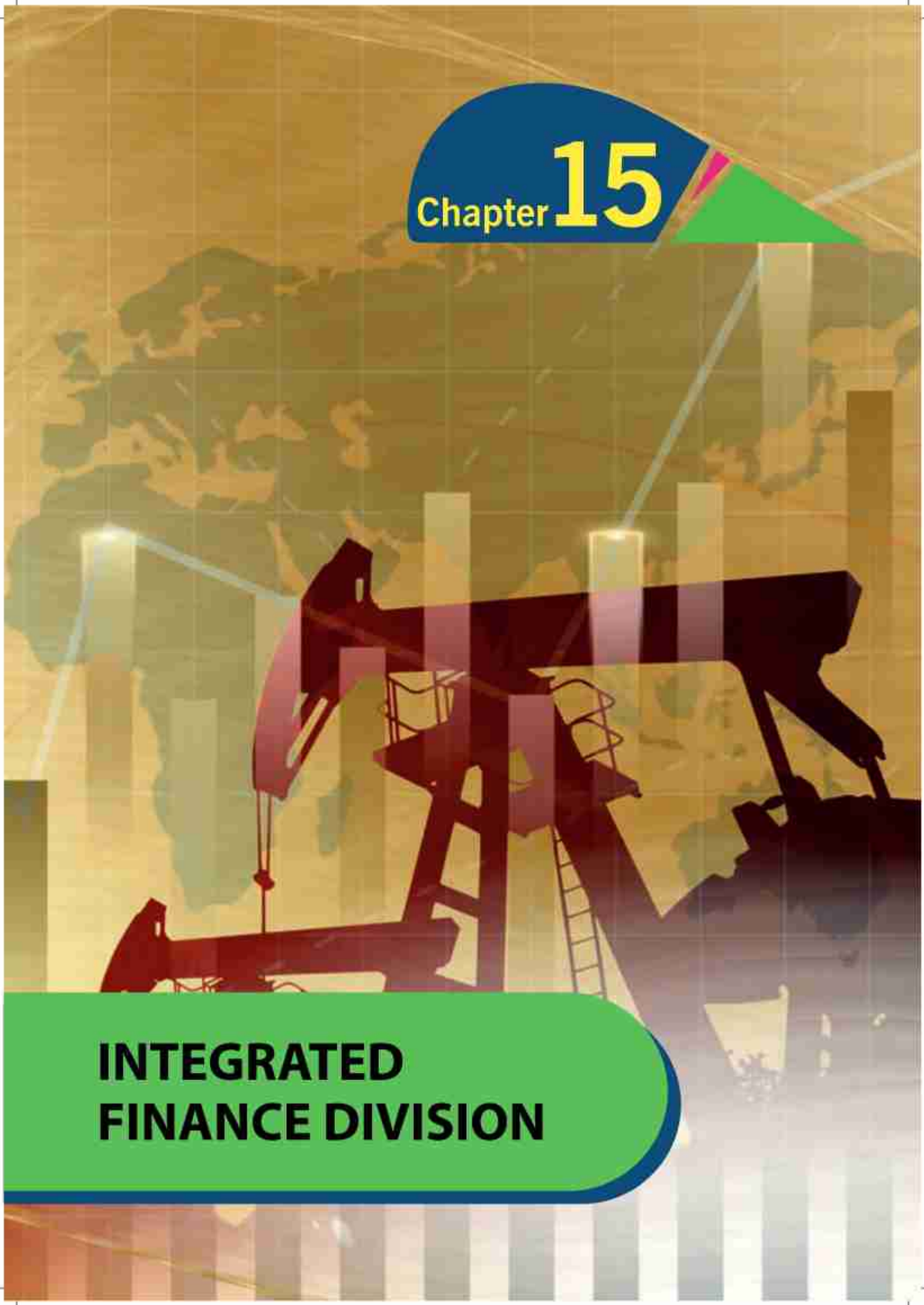


US Department of Energy Officials DOE at ISPRL Vishakhapatnam Cavern Portal



US Department of Energy DOE officials at ISPRL Head Office




Chapter 15
INTEGRATED
FINANCE DIVISION

# 15 Integrated Finance Division

IFD, headed by AS&FA is mandated with the dual responsibility of supporting the Secretary of the administrative Ministry/Department as well as representing the Ministry of Finance.

Financial Advisers are expected to advise administrative Secretaries in :-

i) Policy formulation with a focus on the financial implications of the policy and :

ii) Make recommendations in accordance with departmental goals and objectives with in the overall macro-framework laid down by Ministry of Finance.

Due to this, IFD is expected to have a complete appreciation of the policies and priorities of the Ministry/Department and should guide the Secretary in taking transactional decisions on a day to day basis. Within the ambit of financial propriety defined by Ministry of Finance, this Division should factor in the sectoral priorities/goals/objectives/outcomes without compromising the budgetary integrity.

Discharge of this responsibility is done through two Sections, as per following work allocation:-

(i) Budget Related Work regarding formulation and finalization of Main Budget of the Ministry.

(ii) Policy related Advice

(iii) Parliament Related Work

(iv) Advice on Exploration Policy Matters

(v) Audit Matters

(vi) Financial Concurrence/vetting of Administrative, Establishment & Personal Matters of MoP&NG.

(vii) Advice on CPSE related Policy Matters

(viii) Advice on Other Policy Matters



View of MRPL's Mangalore Refinery

## Inputs for Annual Report 2022-23 of MoP&NG (Budget Estimates)

(₹ in Crore)

| Name of Scheme/Item | Actual 2021-22 | BE 2022-23 | Actual 2022-23 (upto 31.1.2023) |
|---|---|---|---|
| **REVENUE** | | | |
| Secretariat -Economic Services | 36.86 | 49.16 | 34.11 |
| DBT for LPG | 177.06 | 4000.00 | 10.95 |
| Other subsidy payable including NE Region (Domestic Natural Gas) | 391.00 | 811.00 | 744.29 |
| Project Management Expenditure | 241.65 | 64.00 | 9.88 |
| DBT for Kerosene | 1.53 | 0.0 | 0.00 |
| Other subsidy payable including NE Region(Kerosene) | 0.00 | 0.0 | 0.00 |
| Feedstock Subsidy to BCPL/Assam Gas Cracker Complex | 1,042.92 | 137.5 | 116.88 |
| Scheme for LPG Connection to Poor Households (PMUY) | 1,568.44 | 800.00 | 680.00 |
| Payment to Indian Strategic Reserves Limited (O&M) | 129.49 | 210.58 | 123.27 |
| Gas Authority of India-PhulpurDhamraHaldia Pipeline Project | 589.55 | 0.00 | 0 |
| Indradhanush Gas Grid Limited (IGGL) - Part of the North East Natural Gas Pipeline Grid | 850.00 | 1,798.27 | 1,528.53 |
| Pradhan Mantri JI-VAN Yojna | 151.50 | 314.36 | 0.00 |
| National Bio-Fuel Fund | 0.00 | 1.00 | 0.00 |
| Petroleum Regulatory Board (PNGRB) | 0.00 | 0.00 | 0.00 |
| 2. Society for Petroleum Laboratory | 1.69 | 2.88 | 0.00 |
| Setting up of Indian Institute of Petroleum Energy (IIPE) Vishakhapatnam | 23.75 | 150.00 | 0 |
| Establishment of Rajiv Gandhi Institute of Petroleum and Technology (RGIPT), Assam | 100.00 | 0.00 | 0.00 |
| Establishment of Centre of Excellence for Energy, Bangalore | 100.00 | 0.00 | 0.00 |
| Payment of Differential Royalty to State Governments | 0.88 | 1.11 | 1.11 |
| Payment to Oil Marketing Companies as compensation for under recoveries in their domestic LPG operations | 0 | 0 | 22,000.00 |
| Numaligarh Refinery Expansion Project | 0.00 | 0.00 | 0.00 |
| Scheme for promotion of flagging of merchant ships in India | 0.00 | 0.00 | 0.00 |
| **Total** | **5,406.32** | **8,339.86** | **25,249.02** |
| **CAPITAL** | | | |
| Payment to Indian Strategic Petroleum Reserve Limited (ISPRL) | 0.00 | 0.00 | 0.00 |
| Payment to ISPRL for construction of caverns Phase-II | 210.00 | 600.00 | 0.00 |
| Capital Support to Oil Marketing Companies | 0.00 | 0.00 | 0.00 |
| Interest free Loan to Biecco-Lawrie | | | |
| Secretariat -Economic Services | 0.00 | 0.00 | 0.00 |
| National Seismic Programme | 137.31 | 0.00 | 0 |
| **Total** | **347.31** | **600.00** | **0.00** |
| **Grant Total ( Revenue +Capital)** | **5,753.63** | **8,939.86** | **25,249.02** |

## 16.2. Revenue Capital Receipts*

(₹ In thousand)

| Total Receipts of 6 months | | upto Detailed Heads | Total Receipts | | | 2022-2023 | | 2023-2024 |
|---|---|---|---|---|---|---|---|---|
| Apr-Sept | Apr-Sept | | | | | | | |
| 2021-2022 | 2022-2023 | | 2019-2020 | 2020-2021 | 2021-2022 | Budget Estimates | Revised Estimates | Budget Estimates |
| 43374786 | 50347606 | Profit Petroleum | 44777421 | 37458596 | 86749572 | 60334434 | 96655918 | 90406807 |
| 28597449 | 49895403 | Royalty | 56259001 | 35585349 | 57194897 | 57114446 | 77547598 | 81533062 |
| 102300 | 100000 | PEL Fees | 142133 | 330000 | 204600 | 175584 | 150000 | 150000 |
| 13100 | 13500 | PLP | 40829 | 30200 | 26200 | 25400 | 27000 | 27000 |
| **7,20,87,635** | **10,03,56,509** | **Total** | **10,12,19,384** | **7,34,04,145** | **14,41,75,269** | **11,76,49,864** | **17,43,80,516** | **17,21,16,869** |

*information/data taken upto 30.11.2022



## Revenue Receipts-DIVIDEND (upto 30.11.2022)

(₹ In thousand)

| Sl No. | Name of the CPSE/Bank | Long Term Borrowings as on 31/3/2022 | Debt Equity Ratio as on 31/3/2022 | Dividend paid to Government for 2021-2022 | | Total dividend paid for 2021-22 (sum of columns a+b) | Interim Dividend for 2021-22 paid/to be paid in 2022-23 | Total Dividend paid during 2022-223 (sum of columns b+d) | Cash/Cash equivalent as on 31/03/22 | General Reserves on 31/03/22 | Capital expenditure during 2022-23 | Estimated capital expenditure for 2023-24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Interim Dividend in 2021-22 | Final Dividend paid/to be paid in 2021-23 | | | | | | | |
| | | | | a | b | c=a+b | d | e | | | | |
| 1 | ONGC | 63969020 | 0.03:1 | 55097161 | 24078818 | 79175979 | 75851593 | 99930411 | 501050 | 2166081370 | 299500037 | 301250046 |
| 2 | Oil India Ltd | 116356435 | 0.43 | 5682984 | 307188 | 5990172 | 9200000 | 9507188 | 6567109 | 258941166 | 43020000 | 44500000 |
| 3 | IOCL | 633158400 | 0.84:1 | 43632900 | 17453280 | 61086180 | 0 | 17453280 | 8829800 | 1024788900 | 285490000 | 284761900 |
| 4 | HPCL | 349769261 | 0.90:1 | 0 | 0 | 0 | 0 | 0 | 1072195 | 0 | 145000000 | 120000000 |
| 5 | BPCL | 154819725 | 0.49:1 | 11491836 | 6895102 | 18386938 | 0 | 6895102 | 7675379 | 327755617 | 100000000 | 100000000 |
| 6 | EIL | 0 | 0 | 576917 | 288459 | 865376 | 576917 | 865376 | 13202317 | 16440253 | 160000 | 980000 |
| 7 | BLIL | 0 | 0 | 0 | 1111525 | 1111525 | 0 | 1111525 | 469425 | 2990369 | 264924 | 400000 |
| 8 | GAIL | 48300866 | 0.15 | 20561311 | 2258387 | 22819697 | 10287588 | 12545974 | 13675625 | 35054938 | 76500000 | 77500000 |
| | **Total** | **1,31,80,72,841** | | **11,64,81,798** | **5,01,34,372** | **16,66,16,170** | **8,56,28,510** | **13,57,62,882** | **3,83,17,275** | **3,79,69,97,675** | **87,34,34,961** | **85,18,91,946** |

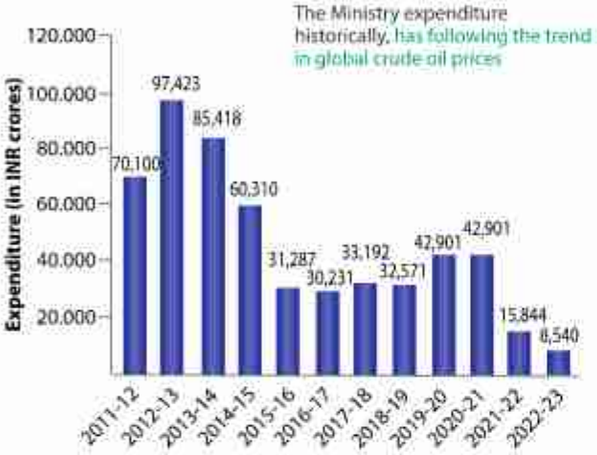
# Ministry of Petroleum and Natural Gas

## CS Budget Allocation & Trend Analysis

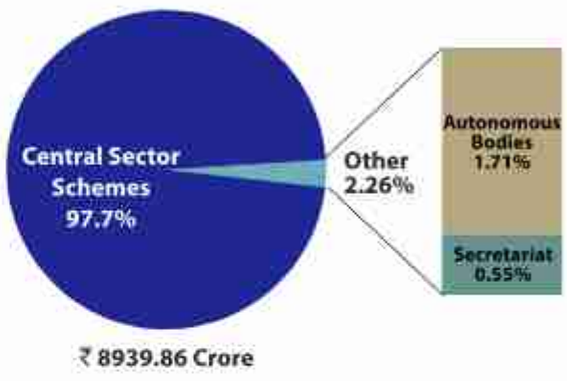
**In FY 21-22 M/o PNG actual expenditure was 0.15% of GoI actual expenditures**
**In Fy 22-23, 97.7% of M/o PNG budget has been allocated to 11 CS Schemes**

**Ministry Expenditure 2010-21**
**MoPNG**

In INR cr




**Demand for Grants 2022-23**
**MoPNG**




₹ 8939.86 Crore

*Note Figure for 2021-22 are Budget Estimates* and for 2022-23 are Budget Estimates^.*
*Sources: Union Budget 2021-22; PRS.*

**Zero budget schemes are excluded from the count of schemes*
*Source: Demand for Grants, Budget (2022-23)*

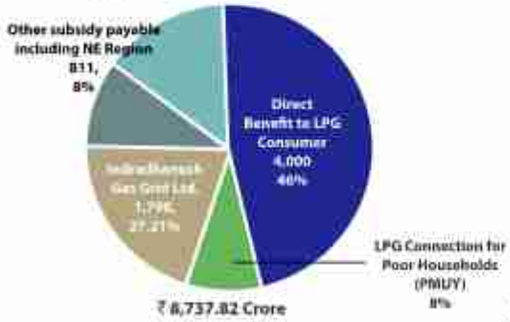
# Ministry of Petroleum and Natural Gas

## CS Budget Allocation & Trend Analysis

**Top 4 schemes contribute to over 85% of the M/o PNG 2022-23 CS budget allocations**

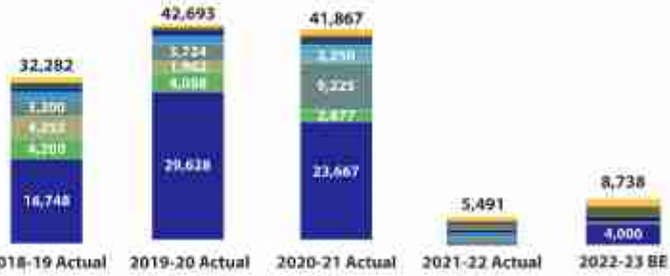
In INR Cr

**Demand for Grants 2022-23**
MoPNG | By Scheme




₹ 8,737.82 Crore

**CS Budget Trend (FY19-23)**
MoPNG | 5 Year Trend | By Schemes




- Top 3 schemes **Direct Benefit Transfer for LPT, Other Subsidy payable including NE region and Indradhanush Gas Grid Ltd.** contribute to 76% of CS 2022-23 Budget allocations

- The budget on **Direct Benefit Transfer-LPG FY22-23 BE** has increased 22 times as compared to FY21-22 actual
- The **spends on other schemes viz Feedstock Subsidy to BCPL/Assam GCC and National Seismic Programme** have decreased significantly in FY22-23
- **Feedstock subsidy** to BCPL/Assam GCC was recently transferred from M/o Chemicals & Fertilizers to M/o PNG
- The budget on **Indradhanush Gas Grid Ltd has gone 2 times in FY 22-23 BE as compared to FY 21-22 Actuals.**

RE-Revised Estimates, BE-Budget Estimates | Source: Demand for Grants, Budget (2018-19, 19-20, 20-21, 21-22, 22-23)

## Action Items from 2022-23

**BOOSTING DOMESTIC EXPLORATION**

- 09 DSF Bid Rounds-84 Contract Areas
- 07 Bid Rounds of Open Acreage Policy (OALP) held-134
- Special CBM Bid Round-2021 & 2022-04 CBM Blocks awarded & one block under offer
- 99% Area to be No-Go Area opened up exploration activities

**PROMOTING GAS ECONOMY**

- Additional ~13,029 km pipeline under construction, upcoming and proposed to be laid to complete Gas and by 26-27
- Additional 22.3 MMTPA LNG import capacity is under construction by various entries

**REFINING**

- Capacity Expansion of Numaligarh Refinery from 30 MMTPA to 9.0 MMTPA

**ETHANOL BLENDING**

- 10% Ethanol Blending achieved in FY2022-23 and now upto 20% blending target notified
- Total financial assistance of ` 895 crore approved for 6 commercial 2G project-3 demo projects

**REFORMS**

- Green Hydrogen Mission
- Scope 1 and Scope 2 emissions
- Double Burner Solar Cook Top
- E 20 fuel dispensing
- Recycling of single use plastic
- Renewable Energy project

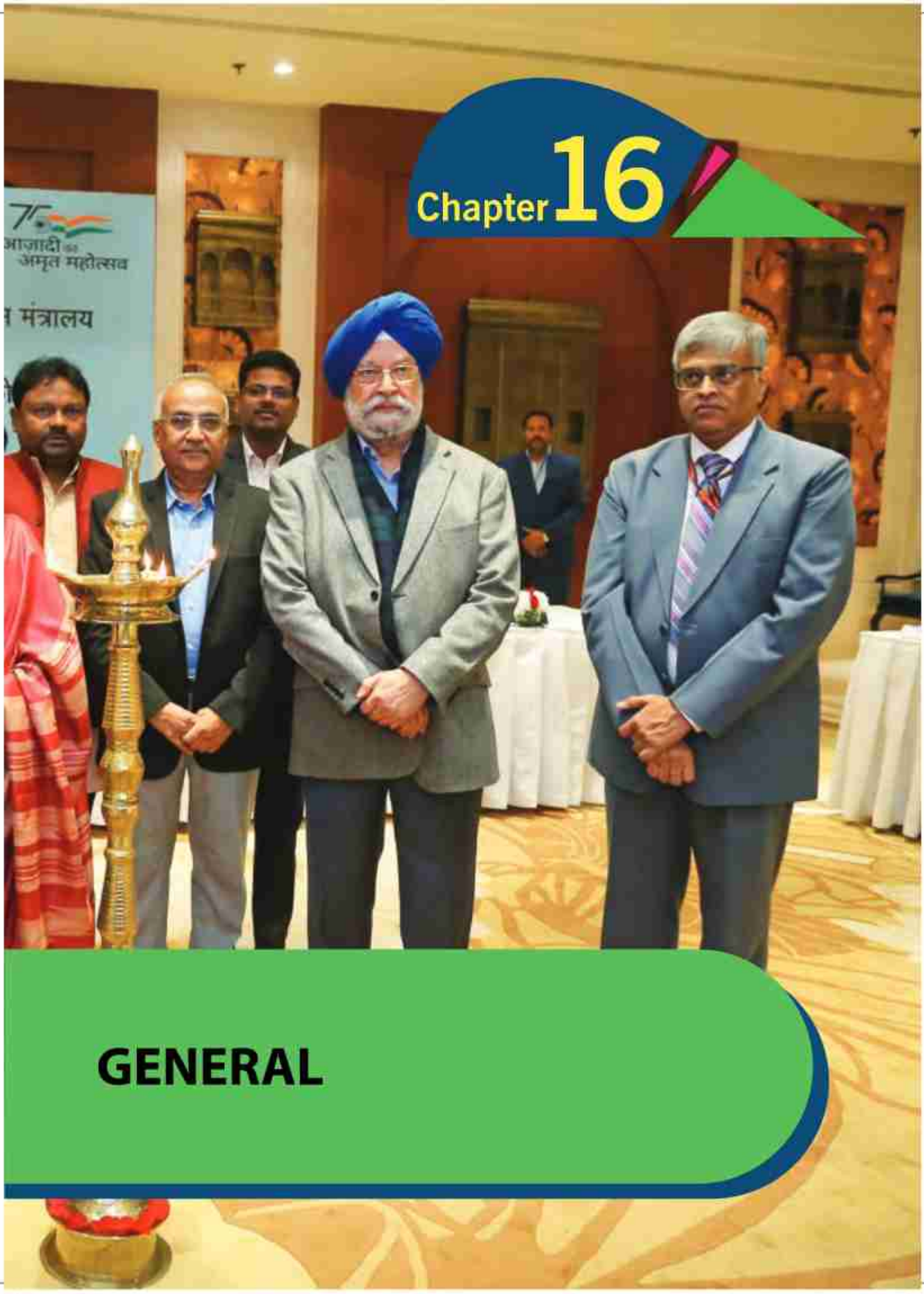
**SUPPLY SECURITY-LONG TERM**

- Take steps to decrease the import of crude oil and Natural Gas resources by focusing on alternative fuels
- Become Net exporter of petrochemicals

**GENERAL**

- 500 new "Waste Wealth" plants under GOBARdhan (Gelvenzing Organic Bio-Agro Resources chain)
- Explore possibility of a hybrid model to leverage roof top solar for cooking supported by in-house battery infrastructure for storage of energy and 24x7 usage


ट्रोलियम और प्राकृतिक गैस
की
हिन्दी सलाहकार समिति की




Chapter 16

# GENERAL

# 16 General

## Progressive use of Hindi in Official Work

**16.1.1.** With a view to promote official language Hindi in the official work in the Ministry and its undertakings, the Ministry of Petroleum & Natural Gas took a number of steps so as to increase its usage. These steps include organizing of Hindi Workshops, on the spot inspections of the sections of the Ministry and its undertakings, organizing Hindi fortnight, organizing meetings of Hindi Advisory Committee, Official Language Implementation Committee etc.

**16.1.2.** There is a Hindi Advisory Committee functioning in the Ministry under the Chairmanship of Hon'ble Minister for Petroleum and Natural Gas. Hon'ble Minister of State for Petroleum and Natural Gas is Vice Chairman of this committee. The Committee consists of Six Members of Parliament, Nine non-official members as its members, besides senior officers of the Ministry and PSUs of the Ministry as its official members. The function of the committee is to render advice to the Ministry for promotion of official language in official work. A meeting of this committee was held on 25.11.2022 in New Delhi.

**16.1.3.** The Ministry had introduced a Rajbhasha Shield Scheme for our PSUs to enable them to compete with each other for the use of Hindi in official work in their respective organizations. Prize distribution was done by Hon'ble Minister on 25th November 2022.

**16.1.4.** Similarly, an Official Language Implementation Committee is also functioning in the Ministry under the Chairmanship of Joint Secretary (G & Admn.). The function of this committee is to review the progress of official language in the Ministry and its undertakings and give suggestions for the promotion of the same. Regular meetings of the committee were organized during the year under review and follow up action was taken on the suggestions of the committee.

**16.1.5.** The Committee of Parliament on Official Language visited around 41 offices of our PSUs which includes offices of OIL, ONGC, IOCL, BPCL, HPCL, GAIL, Balmer Lawrie, ONGC Videsh Ltd., CHT and EIL etc and reviewed the progress of official language in these offices. A number of times, the Committee appreciated the efforts taken by these offices



for the promotion of Hindi. Follow up action has been taken on the assurances given to the Committee by these offices. Senior officers of the Ministry also took part in these meetings.

**16.1.6.** During the year under review, the Ministry notified a few Offices of our PSUs under Rule 10(4) of Official Language Rules, 1976. With a view to assessing the progress of official language in our PSUs and in pursuance of the targets fixed in the Annual Programme 2022-23 issued by the Department of Official Language, senior officers of the Ministry inspected more than 35 offices of our PSUs and reviewed the progress of Hindi in these offices. On the spot suggestions were given to the officers concerned for removing the deficiencies.

**16.1.7.** With a view to assist the officials to do their maximum work in Hindi and to remove their hesitation to do the same, regular Hindi workshops were conducted in the Ministry. Large number of officials attended these workshops and benefitted from the suggestions given in these workshops. As a result of this, percentage of Hindi correspondence in the Ministry has increased considerably.

**16.1.8.** In pursuance of the directions of the Department of Official Language, Hindi Fortnight was organized in the Ministry from 14th September to 28th September, 2022. During this occasion, a Message from the Hon'ble Minister was issued to all our officers as well as to all the PSUs. Various activities including different Hindi Competitions were conducted during this fortnight. Large number of officials of the Ministry participated in these competitions and successful candidates were given awards.

**16.1.9.** Third Petroleum Rajbhasha Sammelan was successfully organized under the Chairmanship of Joint Secretary (Gen. & Admn.) on 09.09.2022 in New Delhi. A number of Rajbhasha Officers of all PSUs/ Organisations under the administrative control of MOPNG participated in this event.

**16.1.10.** One of the important tasks assigned to the Hindi Division of the Ministry is to translate various documents of the Ministry. The Hindi Division successfully carried out these responsibilities. The translation of various documents including the Parliament Questions, Cabinet Notes and Parliamentary Standing Committee material, MOUs etc. was done well in time.

## 16.2. Right to Information

Right to Information (RTI) Act-2005 has been implemented in the Ministry of Petroleum & Natural Gas as per Gazette Notification of Government of India dated 15th June, 2005. RTI Act is inter-alia designed to promote transparency and accountability in the functioning of public authorities.

As per provision of the Right to Information Act-2005, the Under Secretary/Assistant Director in the Ministry of Petroleum & Natural Gas have been designated as Central Public Information Officers (CPIO) in respect of their work allocations. Accordingly, the Director/Deputy Secretary/Economic Adviser in the Ministry of Petroleum & Natural Gas have been designated as First Appellate Authority (FAA). The list of CPIO/FAA of this Ministry is being updated regularly in view of change in allocation of work.

Information under Section 4(2) of RTI Act 2005 i.e. to provide information Suo Motu to the public at regular interval is being regularly updated on the Ministry website.

An on-line system called RTIMIS has been introduced by DoP&T. With the aid of this online system, applications and appeals received from public are being disposed of within the stipulated time frame. To provide information to citizens in timely and trouble free manner and to promote transparency, all Oil & Gas PSUs and other organizations under the administrative control of this Ministry are now on DoP&T online RTIMIS portal.

In order to ensure digitalization of records, RTI applications and appeals received in physical form are being scanned, uploaded

and forwarded to concerned CPIO and FAA of the Ministry for speedy and timely disposal.

During January to December 2022, 1,820 applications/receipts and 94 appeals have been received under RTI Act, 2005 in the Ministry.

## 16.3 Start-Up India

Under the Start-up India initiative of Oil and Gas Sector, proposals/ applications are invited through open advertisements by the individual PSUs for funding and mentoring. The themes for the proposals include leveraging Internet of Things (IoT) in Upstream/ Midstream/ Downstream operations of Oil PSUs, Digitization of business processes, Green Fuels, Alternative Energy, Improved technologies for Hydrocarbon industry besides topics of societal relevance. Before the round of receiving Start-up applications, Oil PSUs also organize Hackathon/ IDEATION challenges periodically for the Start-ups to showcase their talents and provide innovative ideas.

The PSUs under the Ministry of Petroleum and Natural Gas have created startup funds aggregating to ₹ 405 Crore. At present, a total no. of 232 Startups are being funded by oil and gas PSUs with disbursed fund value of approximately ₹ 208 Crores. Some startups supported by Oil and Gas PSUs have already matured.

## 16.4 Skill Development

Under Skill India initiative, Hydrocarbon Sector Skill Council (HSSC) was set up under Societies Registration Act, 1860 on 26.04.2016. An MoU for collaboration in the area of skill development was signed between Ministry of Petroleum & Natural Gas and Ministry of Skill Development & Entrepreneurship on 28th November, 2016.

Several high priority trades were identified in consultation with the Industry members for National Occupational Standard (NOS)/



Qualification Pack (QP) development. Till date, 20 QPs have been approved by National Skill Qualification Committee (NSQC).

Skill Development Institutes (SDIs) for hydrocarbon sector have been set up at six cities viz Bhubaneswar, Vizag, Kochi, Ahmedabad, Guwahati and Raebareli. Till September 2022, more than 23,000 trainees have been trained in these SDIs.

The permanent campus of Skill Development Institute (SDI), Bhubaneswar, which envisages providing world class industry-based skill training using state of the art infrastructure and technology to create an industry ready talent pool was dedicated to the Nation on 20th August, 2021.

## 16.5. Make in India

This Ministry has aligned the public procurement in Oil & Gas Sector in line with DPIIT's Public Procurement (Preference to Make in India) Order, 2017.

## 16.6. Public Grievances

In accordance with guidelines of the Cabinet Secretariat, Government of India, the Public Grievance Cell has been functioning in the Ministry of Petroleum & Natural Gas (MoPNG). The Cell has been attending to the grievances of members of the public against the Public Sector Oil & Gas Companies and other organizations under the administrative control of this Ministry.

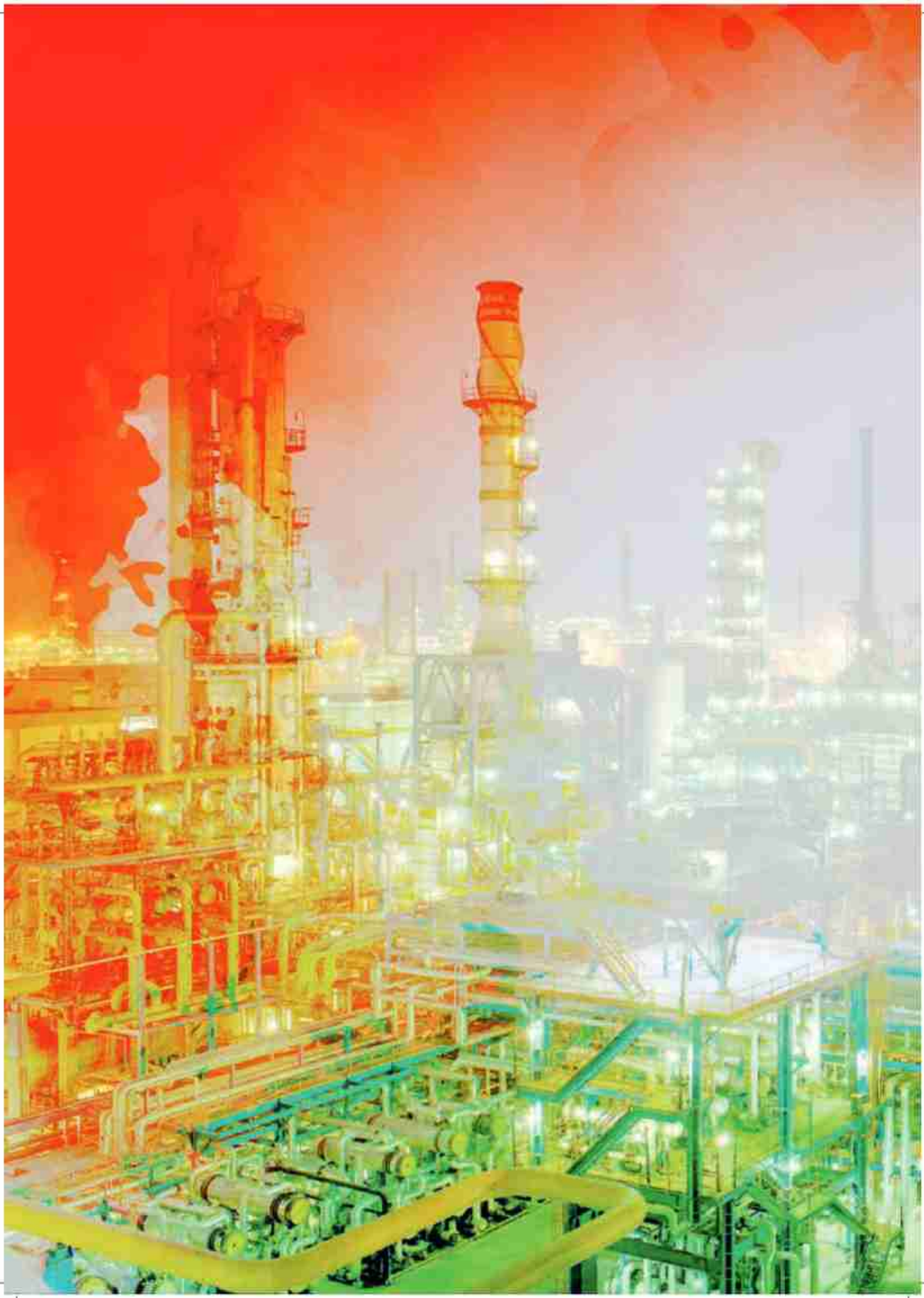
All possible efforts are being taken to ensure the regular monitoring of the public grievances received through Department of Public Grievances (DPG), Department of Administrative Reforms and Public Grievances (DARPG) and other Departments of the Government as well as the members of the public.

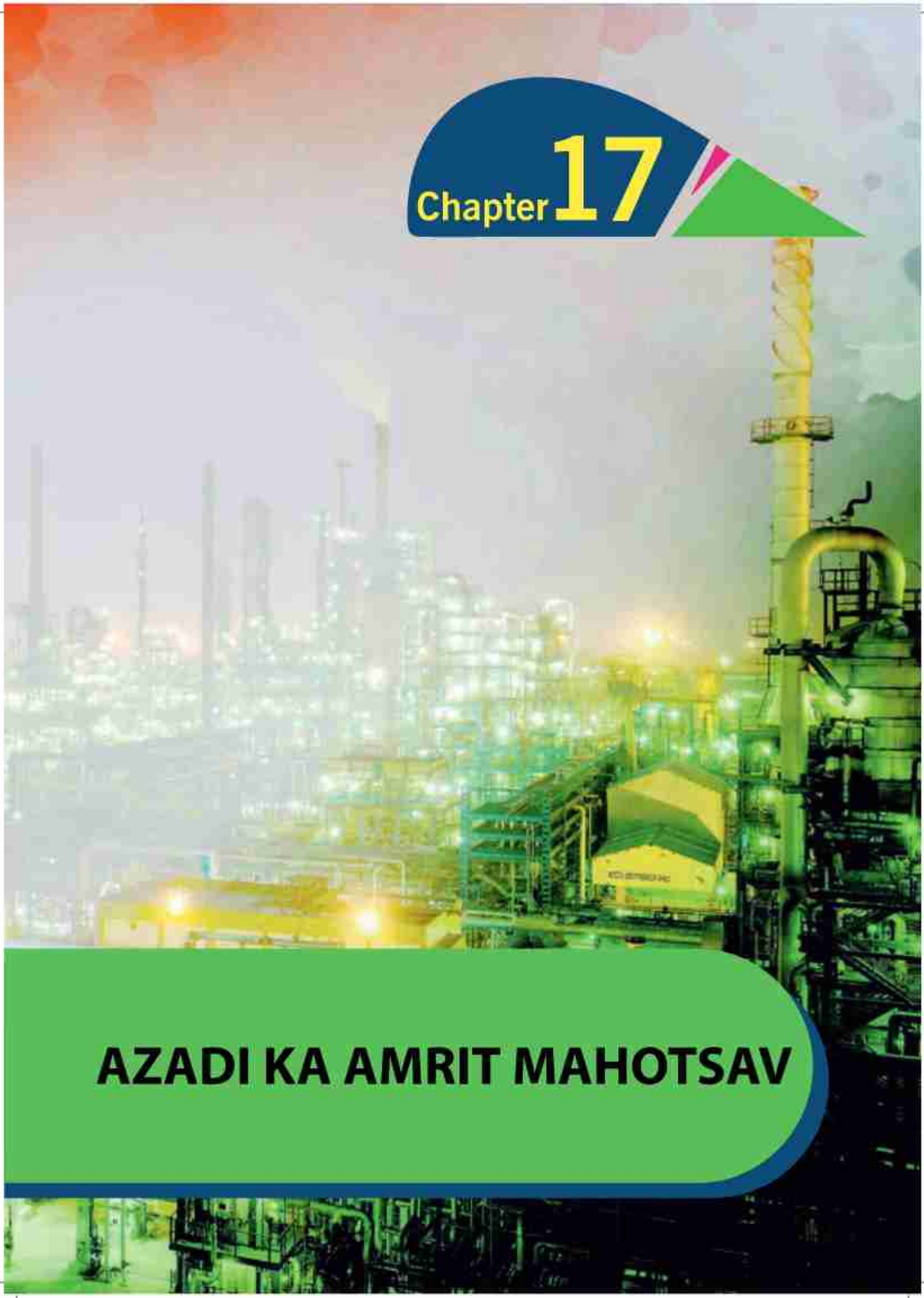
An online system called "Centralized Public Grievance Redressal and Monitoring System (CPGRAMS) has been introduced in the month of June, 2008. With the aid of CPGRAMS, public grievances from the public and others are received speedily, analysed promptly according to its subject and forwarded to the concerned for faster resolution.

In addition, a systematic mechanism in MoPNG has also been evolved so as to ensure speedy and expeditious redressal of the public grievances. The review of pendency of PGs in the MoPNG and Oil & Gas PSUs is undertaken regularly by Senior Officers.

During January to December 2022, out of total number of 17,843 PGs received, 95% stands disposed of as on 31st December, 2022.







Chapter 17

# AZADI KA AMRIT MAHOTSAV

# 17 Azadi Ka Amrit Mahotsav

1. Azadi Ka Amrit Mahotsav is an initiative of the Government of India to celebrate and commemorate 75 years of progressive India and the glorious history of it's people, culture and achievements. Azadi ka Amrit Mahotsav is an embodiment of all that is progressive about India's socio-cultural, political and economic identity. The official journey of "Azadi ka Amrit Mahotsav" commence on 12th March, 2021 which starts a 75 week countdown to 75th anniversary of India's Independence. It will end on 15th August, 2023.

2. Ministry of Petroleum and Natural Gas (MoP&NG) and Organisations under its administrative control are organizing various events/activities to celebrate Azadi ka Amrit Mahotsav. Oil Public Sector Undertakings (OPSUs) under MoP&NG have conducted 257 activities till December, 2022. The details of events/activities conducted by OPSUs under MoP&NG are being timely updated on the prescribed AKAM website (amritmahotsav.nic.in) on regular basis.

3. Various events /activities conducted to engage people across different demography, emphasizing upon Awareness, Impact, Growth and Safety of Petroleum products. These activities revolve around:

   - Engaging students with study visits to Refinery, LPG Plant and other Oil Installations.
   - Awareness programme on Ujjwala, LPG Safety, PNG, CNG, CGD.
   - Exhibitions on Bio-fuel, SATAT etc.

   These activities highlighted Ministry's contribution in transforming India and its commitment towards India's future energy security.

   During the period, various programmes conducted under aegis of MoP&NG, which are as under:

## Indian Oil Corporation Ltd. (IOCL)

i. Celebrating 75 years of Independence at Mathura was planned from 16th to 28th March, 2022.

   Visit of 5 groups of 25 students from local schools at Mathura was planned from 16th to 28th March, 2022. Plant safety related videos were shown to them and educated them about the safe operation of the bottling plant. Regarding conservation of fuels was discussed with the group of students. Plant visit was organized during the event also educated them about the plant operation, cylinder filling process, SQC, types of cylinders and also composite cylinder etc.

ii. Exhibition on a Biofuels Perspective for North-East India Imphal, Manipur, 25.04.2022

   OMCs hosted an exhibition on Biofuels Perspective for North-East India at IndianOil's Imphal Depot on 25.04.2022. The exhibition highlighted India's journey and achievements in the biofuels sector, technological advancements made and new projects under the aegis of MoP&NG.

   The event also saw active participation from senior officials from OMCs, respective entrepreneurs, local media, transporters, local RO dealers and common people. IndianOil officials interacted with the participants and raised awareness levels on biodiesel, compressed biogas, various activities being undertaken by Government on encouraging entrepreneurs for setting up Biodiesel & Ethanol Plants, and how biofuels are essential in protecting our environment and reducing import dependency on fossil fuels.

iii. Exhibition on a Biofuels & Flag-off of first consignment of M-15 blended MS IOCL Digboi, Assam, 29.04.2022

   Digboi is historically important as crude oil was discovered here in late 19th century and Asia's first oil well was dug here in 1866. It is also the site of our first refinery as early as 1901. Digboi added another feather to its cap with IndianOil loading and dispatching its first batch of M-15 methanol blended MS truck on 28.04.2022. An exhibition on Biofuels was conducted at IOCL Digboi depot, Assam on 29.04.2022.

iv. Activities undertaken by Indian Oil Corporation Limited at Barauni Refinery, Bihar

| | | |
|---|---|---|
| 1 | 11.03.2022 | Awareness Programme for Contract Workers by Dy. CLC, Patna |
| 2 | 01.05.2022 | Awareness Programme for contractors by EPFO, Muzaffarpur |
| 3 | 16.06.2022 | Jigyasa Rath for creating awareness on Jigyasa quiz amongst residents of villages of Begusarai and Begusarai town |
| 4 | 10-11.06.2022 | Jan Vriksharopan |

v. Exhibition on a Biofuels at Doimukh (Itanagar) Arunachal Pradesh, 05.05.2022

The AKAM iconic events celebrations in NER concluded with a Biofuels exhibition conducted at Indian Oil Corporation Limited's Doimukh (Itanagar) depot, Arunachal Pradesh on 05.05.2022. The event was inaugurated by Shri Opak Gao, Secy FCS, Govt. of Arunachal Pradesh and attended by government officials, senior officials from OMCs, transporters, local RO dealers and common people.



vi. Haldia Refinery flags-off "JIGYASA QUIZ RATH" at 31.05.2022

Celebrating Azadi Ka Amrit Mahotsav, IndianOil along with the Ministry of Culture and the Ministry of Petroleum and Natural gas have started the 'Jigyasa: AKAM Quiz' that offers a scholarship of 55 lakh rupees to the winners. Participants in the age group of 13 to 18 are eligible to play the pre-qualifier round. The Jigyasa Quiz has been launched in April 2022 to create awareness and further the knowledge of Indian heritage through the means of technology, innovation, and inclusive learning.

Haldia Refinery is continuously communicating and coordinating with around 650 schools to encourage children in age group of 13 to 18 to participate in the National Level Quiz. This initiative in its pursuit of wide publicity and encouraging maximum participants from Purba Medinipur District to take part in this largest ever quiz competition, organized by India, aims to create awareness about India's rich cultural heritage, civilization, literature, architecture and inherited knowledge which has its roots in ancient India.




vii. Haldia Refinery conducted study visit for school students at Haldia on 10.06.2022

As a part of celebrating Azadi Ka Amrit Mahotsav, taking offline efforts after the pandemic-normalcy for inclusive education for students of Assembly of God Church School-Haldia, a study visit to Haldia Refinery. As per MoP&NG guidelines multiple groups of students from various schools & colleges in the vicinity were engaged for study visit to Refinery locations in different batches.

viii. LPG Awareness programme Under Azadi Ka Amrit Mahotsav in Leh on 3rd June, 2022

An Awareness programme on LPG under Azadi ka Amrit Mahotsav was conducted in Leh LPG BP in which Adv. Tashi Gyalson, Chairman/CEC, LAHDC Leh, Sh Jamyang Tsering Namgyal, MP Ladakh, Sh Arvind Nath Jha, Deputy Secretary (Gen.), MoP&NG, Senior and other officers of IOCL participated.

CEC Tashi Gyalson alongwith MP Ladakh appreciated IOCL for conducting the programme and further stressed the need for having an effective plan for transporting LPG Cylinders during refilling to remote regions of Ladakh to reduce additional stress and cost for such people. He also spoke of PM's vision of making Ladakh carbon-neutral and sought assistance from stakeholders like IOCL in sorting out alternatives for effective fuels for heating systems during the harsh winter season in Ladakh.

Sh Arvind Nath Jha, Deputy Secretary (Gen.), Ministry of Petroleum & Natural Gas, had a detailed interaction with the beneficiaries about various Govt. schemes.




## Oil & Natural Gas Corporation Ltd. (ONGC)

i. Study tour of Kendriya Vidyalaya students to gas installation/well of ONGC at Agartala, Tripura in the North East on 5th January, 2022

Students from Kendriya Vidyalaya (ONGC North Colony, Agartala) visited Tripura Asset's ADB Installation on 05.01.2022, as part of the Study Tour activity of the Azadi Ka Amrit Mahotsav series of events planned for celebrating 75 years of Independence. COVID Appropriate Behaviour was strictly followed while conducting the trip.

ii. Study Visit of Students to Oil Installation/Rigs at Rajahmundry Asset, Andhra Pradesh during 28th February-4th March, 2022

ONGC Rajahmundry Asset organized a study visit for five groups of 35-50 students each to Tatipaka Mini Refinery and Kesanapalli GCS. The visits were conducted on 28th February-4th March 2022 to the students of East and West Godavari District and Krishna District of Andhra Pradesh.



iii. Study Visit of students of Commerce College, Sibsagarto Production Installation and Drilling Rig of Geleky field at ONGC Assam Asset on 23rd March, 2022

In continuation of celebrating 75 year of India's Independence study visit of students belonging to Sibsagar Commerce College, Sivasagar Assam was arranged by SDC, ONGC Assam Asset on 23.03.2022. As many as 125 students belonging to three different levels such as B.A, B.Com. and M.Com. participated in the event.

iv. Study tour of Students has been organized to visit Oil/Gas installation & Fire Station of ONGC at Jorhat Asset, Assam in North East on 11th & 12th April, 2022 and at ONGC Mehsana, Gujarat, celebrating India@75 during 21st & 22nd April, 2022

## GAIL (India) Ltd.

i. Awareness Program/Seminars on PNG/CGD at Dehradun on 15th March 2022

GAIL organized the Awareness Program (under the aegis of Ministry of Petroleum & Natural Gas) on City

Gas Distribution as part of Azadi ka Amrit Mahotsav celebration on 15.03.2022. Various CGD customers of GAIL, amongst the student fraternity from various universities like Shiv Nadar University, RGIPT, IIPE and UPES attended the programme. The session was conducted on **"City Gas Distribution-Safety Aspects".**

ii. Awareness Program on Compressed Natural Gas (CNG) at Jammu on 27th May 2022

GAIL organized the Awareness Program on City Gas Distribution as part of Azadi ka Amrit Mahotsav celebration on 27.05.2022. The program was organized at Indian Institute of Technology, Jammu. Students of IIT, Jammu and IIM, Jammu attended the program.

iii. GAIL organized the Awareness Program on City Gas Distribution as part of Azadi ka Amrit Mahotsav celebration on 28.07.2022 at Lucknow. The program was organized by Team GAIL Training Institute, Noida and CSR. The awareness drive was organized by engaging 25 Auto Rickshaws and awareness program theme on CNG Awareness was displayed on Auto Rickshaws, also 200 pamphlets containing the information and uses of CNG along with calendar were given to each Auto Rickshaw Driver for distribution to the local public.



AAS PAAS / CITY FOCUS

INBRIEF

**सीएनजी के प्रयोग को लेकर फैलाई जागरूकता**

**LUCKNOW:** भारत की आजादी के 75 साल पूरे होने के अवसर पर देश भर में आजादी का अमृत महोत्सव मनाया जा रहा है। इसी कड़ी में पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के तत्वाधान में गेल इंडिया लिमिटेड, लखनऊ कार्यालय से सीएनजी जागरूकता अभियान का आयोजन गेल ट्रेनिंग इंस्टिट्यूट, नोएडा एवं सीएसआर विभाग द्वारा किया गया। जिसके अंतर्गत ऑटो चालकों ने सीएनजी के प्रयोग को बढ़ावा देने के लिए पूरे लखनऊ शहर में पम्पलेट वितरित किये। इस अवसर पर संजय गुप्ता (वरिष्ठ प्रबंधक, गेल) ने मुख्य अतिथि अमित कुमार सिंह (मुख्य महाप्रबंधक, गेल) एवं उपस्थित सभी का स्वागत किया। मुख्य अतिथि अमित कुमार सिंह ने ऑटो रिक्शा की कलर को हरी झंडी दिखाकर रवाना किया। इस अवसर पर संजय गुप्ता (महाप्रबंधक, गेल) एवं धर्मेंद्र खत्री (उप महाप्रबंधक, गेल) के द्वारा आजादी के अमृत महोत्सव तथा सीएनजी जागरूकता अभियान पर चर्चा की गई।

iv. GAIL organized Health & Wellness campaign comprising of Free Health check-up & distribution of medicines through Mobile Medical Units to underprivileged public with awareness campaign on health and hygiene at different locations in 4 states viz. Uttar Pradesh, Uttrakhand, Madhya Pradesh and Punjab.



Inauguration of Health camp by First lady of GAIL

All the programs and initiatives benefitted more than 700 beneficiaries over 13 locations. The beneficiaries not only get the gist of the meaning of Amrit Kaal but they were also provided quality healthcare services at their doorsteps.



पत्रिका

आजादी के अमृत महोत्सव के उपलक्ष्य में शिविर लगाकर की स्वास्थ्य की जांच

18.11.2022



शिविर में छात्रों की जांच करते डॉक्टर।

गुना: आजादी के अमृत महोत्सव के उपलक्ष्य में गुरुवार को गेल स्किल इंस्टिट्यूट गुना में अध्ययनरत 150 छात्रों की कैंप लगाकर स्वास्थ्य की जांच की गई। शिविर डॉ. कपिल सिंह और उनकी टीम द्वारा गेल के सीएसआर प्रोजेक्ट आरोग्य के अंतर्गत आयोजित किया गया था। इसमें छात्रों की सामान्य बीमारियों का उपचार करते हुए दवाईया दी गई और उनके स्वास्थ्य की भी जांच की गई। इस स्वास्थ्य शिविर का शुभारंभ गेल के दिल्ली स्थित कार्यालय से आए मुख्य महाप्रबंधक (प्रशिक्षण) संजय अग्रवाल ने किया। आज ही के दिन मुख्य अतिथि अग्रवाल ने यहां के छात्रावास में रह रहे बच्चों की सुविधा के लिए कैफेटेरिया का लोकार्पण भी किया। ज्ञात हो कि आज ही गेल स्किल इंस्टीट्यूट गुना में सीएनजी ट्रेड के दूसरे बैच की शुरूआत की गई तथा उससे संबंधित 35 लाभार्थियों को एजुकेशन किट भी प्रदान किया गया। उपरोक्त कार्यक्रम की कड़ी में अपने उद्बोधन में गेल–दिल्ली से आए उच्च अधिकारी श्री संजय अग्रवाल ने प्रशिक्षणार्थियों का मनोबल बढ़ाया तथा उनके आगे बढ़ने के लिए प्रेरित किया। इस आयोजन में गेल विजयपुर के डीजीएम सीएसआर ए एम त्रिपाठी गेल की अधिकारी नमिता तथा कार्यप्रदायी संस्था के रीजनल मैनेजर यशोधर सिंह मौजूद रहे।

## Hindustan Petroleum Corporation Ltd. (HPCL)

i. HPCL Nagpur LPG Regional Office organized LPG Safety Seminar on 4th March'22 at Nagpur. Activities like Emergency measures in case of leakage, LPG safety and conservation Tips, Brief Description of Ujjwala - 2.0 Scheme, Do's and Don'ts of LPG Installation, Various digital modes for booking and payment of refills, Toll Free Leakage complaint No. and Customer Complaint No., Information on Refill portability, Across the counter connection (Secondary) etc., Safety Pamphlets distributed to customers for future reference etc were undertaken.



The Program saw physical participation of more than 200 persons. Program was also done at 10 places, which saw more than 350 participants attending the seminar through virtual mode. Some glimpses of the said program are mentioned below

ii. LPG Awareness program was conducted in the Village Sultana of Jhunjhunu District on 06th April 2022. HPCL officials, Distributors, Villagers and official of Gram Panchayat Sultana and approximate 250 participants were present in the program.

iii. Awareness program on Energy Conservation for students was conducted under Azadi ka Amrit Mahotsav on 28.10.2022 by HPCL Shimla Retail RO at Kullu, Himachal Pradesh. More than 250 students alongwith Teachers were present. Approx. 60 Students participated enthusiastically in Painting, Declamation, Quiz and Slogan writing competition on the topic of Energy Conservation. Prize and Certificates were also distributed.

iv. Hindustan Petroleum Corporation Limited conducted a field visit of Students from Kendriya Vidyalaya at Visakh Refinery on 16.09.2022 as part of Azadi ka Amrit Mahotsava. Senior Officer from Ministry of Petroleum and Natural Gas participated in the program. He emphasized the special aspects of Energy conservation. He said that the



employment opportunities in the energy sector will expand in the future.

## Mangalore Refinery and Petrochemicals Ltd (MRPL)

MRPL in association with Mangalore City Corporation organized a programme to commemorate and honour Freedom fighters of Coastal Karnataka and a Talk on the Constitution of India under the banner of 'Azadi Ka Amrit Mahotsava' on 14.05.2022. Books on Constitution of India both in Kannada and English languages were distributed to enlighten people about the true values of Indian constitution.

## Chennai Petroleum Corporation Ltd (CPCL)

i. Study Group visit of students of Velammal Engineering College, Chennai-27th May 2022

CPCL organized the first study tour for 45 Engineering students from Velammal Engineering College, Chennai. The students were briefed about the various primary and secondary processes involved in crude refining and the array of products

**Chennai Petroleum Corporation Limited**

(A Government of India Enterprise and Group Company of IndianOil)

CPCL

आज़ादी का अमृत महोत्सव



**As part of the celebration under the aegis of 'Azadi ka Amrit Mahotsav', Chennai petroleum Corporation Limited (CPCL) organized the first study tour for engineering students of Vellamal Engineerig college, Chennai.**

produced from the refinery. They were also appraised on role of CPCL towards ensuring energy security of the country, thereby contributing towards nation-building. Later on, the students were taken to a control room to provide exposure on real time controls of the process units.

ii. Study Group visit of students of Shri Venkateswara College of Engineering, Chennai -7th June 2022.

CPCL organized the second & third study tour for 75 Engineering students from Shri Venkateswara College of Engineering, Chennai in two batches comprising of under graduate students in one batch and post graduate students in the other batch. The students were briefed about the various refinery processes involved in crude oil refining and the wide basket of petroleum and value added products produced from the refinery. The students were appraised on CPCL's journey since inception

and its contribution towards nation building through its various contributions from cottage industries to the defence sector.

iii. AKAM-Exhibition on Nation-building and CPSEs 9th-12th June 2022

CPCL proudly participated in the exhibition on "Nation-building and CPSEs" organized by DPE SCOPE under the aegis of Azadi ka Amrit Mahotsav. CPCL showcased its contributions towards nation-building since independence and exhibited its first-of-its kind initiatives. The exhibition was organized as a 4-day event at Mahatma Mandir Convention and Exhibition Centre, Gandhi Nagar, Gujarat between 9th-12th June, 2022.

iv. Study Group Visit-SSN College of Engineering, Chennai-10th June 2022

CPCL organized the fourth study tour for 75 Engineering students from SSN College of Engineering, Chennai. The students were briefed about the refinery overview followed by a guided tour to the refinery. The students were interactive and CPCL gave a glimpse on the future of the petroleum industry and also the impact of new technologies in the energy sector including alternate fuels like Biofuel and Electric Vehicles. The importance of Safety at the workplace and at home while dealing with Petroleum products was also emphasized.

## Oil India Limited (OIL)

i. Students from Kendriya Vidhyalaya visited OIL's Secondary Tank Farm in Madhuban, Assam on 21st & 22nd March, 2022

OIL organized study visits for four batches of students from Class XI and Class XII of Kendriya Vidhyalaya, Duliajan to its Secondary Tank Farm (STF), Madhuban, Assam, which was inaugurated by the Shri Narendra Modi, Hon'ble Prime Minister, on 22nd February 2021. OIL's STF is an integrated plant where most of the utility requirements are fulfilled in-house, like power generation, water extraction, and treatment, steam generation, etc. The visit was organized as a part of ongoing celebrations under Azadi Ka Amrit Mahotsav during 21st & 22nd March 2022.

During the visit, students were given a tour of the STF and were briefed about the primary objective of the STF plant, which is to dehydrate the crude oil and reduce the Base Sediment and Water content. Installation engineers explained to students the process through which the formation water is removed from crude oil and is treated in Effluent Treatment Plant (ETP) to make it suitable for disposing into water disposal wells and water injection wells.

ii. ITI Lahowal student visits OIL's Field Engineering Department on 26.04.2022

OIL organized a study visit of students from ITI Lahoal to OIL's Field Engineering Department. These visits are among several study visits of students being organized by OIL under the Azadi Ka Amrit Mahotsav (AKAM) campaign to celebrate 75 years of India's Independence.

During the visits, the students were taken to various departments to give them knowledge of the various types of machinery used in the industry, OIL engineers briefed students on various aspects &



functions of these machinery. The student also visited the OIL's workshop. The visit was a learning experience for the students.

## Bharat Petroleum Corporation Ltd (BPCL)

i. BPCL Mumbai Refinery organized Study Tour for College Students to Refinery as part of Azadi Ka Amrit Mahotsav. The Study tour was organized for 313 Students from different college/schools and 192 students from Swami Vivekanand College of Polytechnic, Chembur. During the study tour, the students were introduced the purpose of visit, given Presentation on Importance of Safety, Refinery overview with processes and products, Exhibition of the various products, Guided tour of the refinery, Presentation of study material to each student.

The students were overwhelmed with the visit and expressed their gratitude. They were astonished at the developments made by this country in the field of Refining and Petroleum

ii. Bareilly Territory of BPCL organized event of "LPG Surakshan Sangosthi" on 16.03.2022 under "Azadi Ka Amrit Mahotsav" at Lakhimpur Kheri, UP. Ujjwala Program Conducted in presence of 350 participants and around 600 participants connected Live through YouTube/ Virtual mode. Awareness program on Ujjwala conducted on Ujjwala – 2.0 scheme, Emergency measures in case of leakage, LPG Conservation tips, Do's and Don'ts of LPG installation etc.

## Numaligarh Refinery Ltd. (NRL)

i. Study Visit of students to Refinery on 27th May, 2022

NRL organized an exposure tour of 5 groups comprising 25 students from Class VIII to XII standard to study Refinery Processes at NRL. The programme was held on 27th May' 2022 and students from 4 different schools participated under Golaghat District (Assam). NRL officials have organized an audio-visual presentation after the site visit.

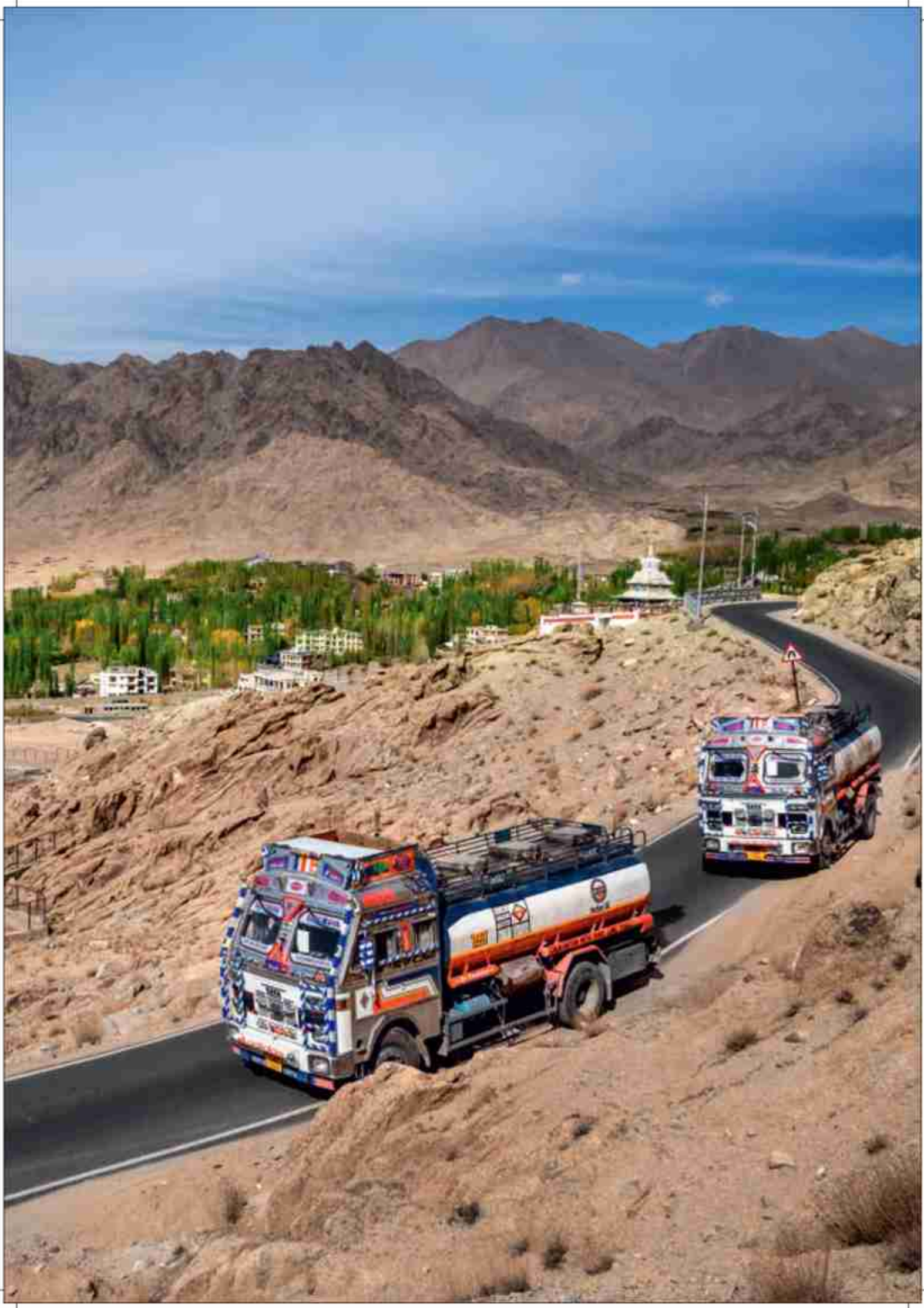
ii. Initiative to Promote Healthcare

In the month of December, 2022, NRL provided 2 nos. well-equipped ambulance vehicles to cater healthcare services in 2 Districts of Arunachal Pradesh, viz. Kurung Kumey District and Lower Siang District. For smooth operation and management, the vehicles were handed over to District Hospital of Kurung Kumey District and Kangku Circle under Lower Siang District.

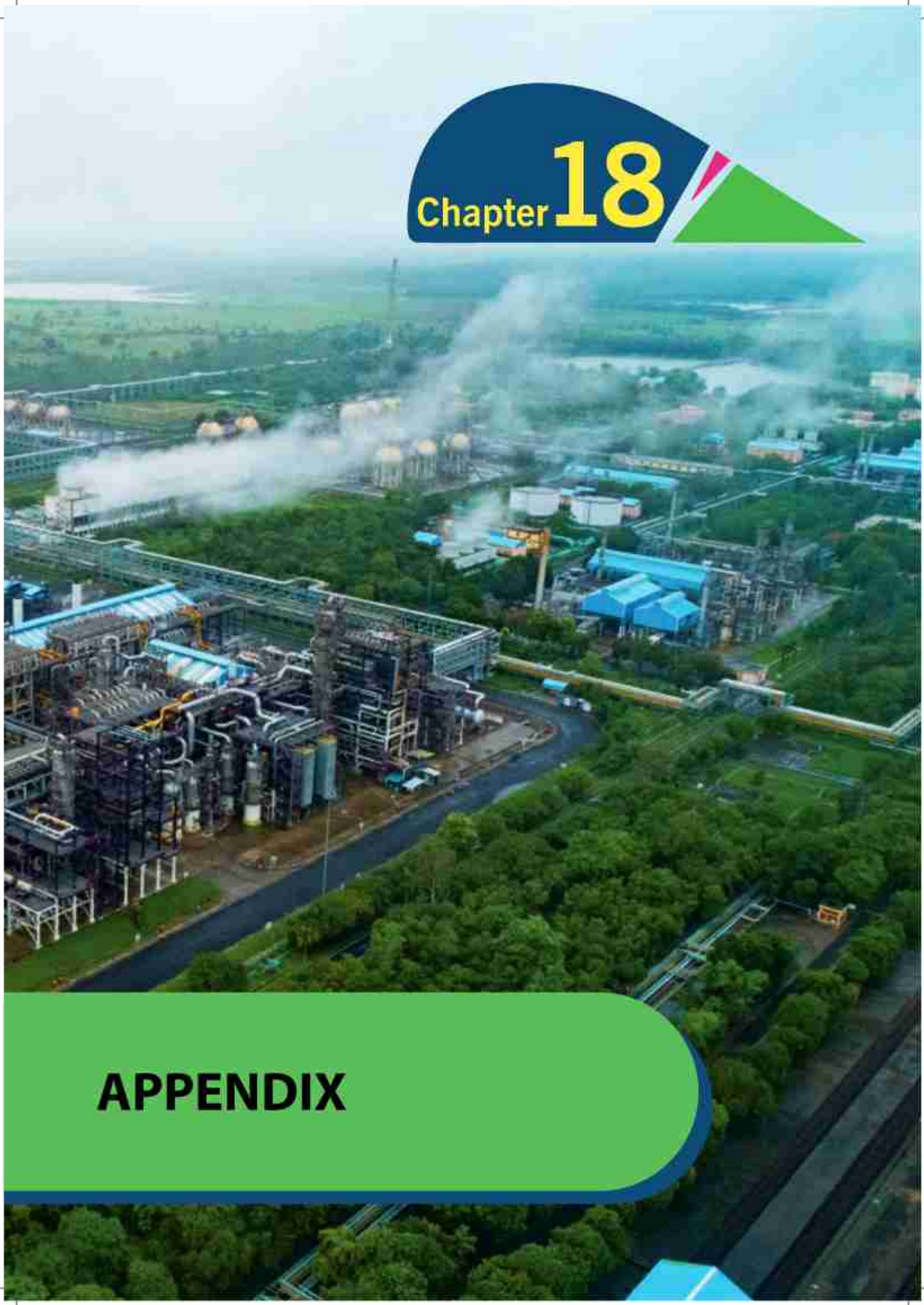
The Union Cabinet Minister of Law and Justice, Sh. Kiren Rijiju flagged off both the Ambulances on 30th Dec'2022 at Nahurlagun, Arunachal Pradesh.












# APPENDIX

# 18 Appendix

## Appendix-I

**Mnistry of Petroleum & Natural Gas**

**(Petroleum aur Prakritik Gas Mantralaya)**

1. Exploration for, and exploitation of petroleum resources, including natural gas and Coal Bed Methane, gas hydrates and shale gas.
2. Production, supply, distribution, marketing and pricing of petroleum, including natural gas, Coal Bed Methane and petroleum products.
3. Oil refineries, including Lube Plants.
4. Additives for petroleum and petroleum products
5. Blending and blending prescriptions for bio-fuels including laying down the standards for such blending.
6. Marketing, distribution and retailing of bio-fuels and its blended products.
7. Overall coordination concerning bio-fules, National Policy on bio-fuels, policy of bio-fules, policy/scheme for supporting manufacturing of bio-fules, setting up of a National bio-fule Development Board and strengthening the existing institutional mechanism and research, development and demonstration on transport, stationary and other applications of bio-fuels.
8. Lube blending and greases.
9. Conservation of Petroleum products.
10. Planning, development, control and assistance to all industries dealt with by the Ministry.
11. Strengthening energy security by acquiring oil and gas equity abroad and participation in transnational oil and gas pipeline projects.
12. Creation and administration of strategic petroleum reserve through Indian Strategic Petroleum Reserves Limited (ISPRL).
13. Petroleum Planning and Analysis Cell (PPAC).
14. All attached or subordinate offices or other organization concerned with any of the subjects specified in the list, including Directorate General of Hydrocarbons (DGH), Centre for High Technology (CHT), Oil Industry Development Board (OIDB), Petroleum Conservation Research Association (PCRA), etc.
15. Planning, development and regulation of oilfield services.
16. Administration of Engineers India, including their subsidiaries and joint ventures.
17. Public sector project falling under the subject included in this list except such projects which are specifically allotted to any other Ministry/ Department.
18. The Oil Field (Regulation and Development) Act, 1948 (53 of 1948).
19. The Oil and Natural Gas commission (Transfer of undertaking and Repeal) Act, 1993 (65 of 1993).
20. The Petroleum Pipeline (Acquisition of right of User in Land) Act, 1962 (50 of 1962).
21. The ESSSO (Acquisition of Undertaking in India) Act, 1974 (4 of 1974)
22. The Oil Industry (Development) Act, 1974 (47 of 1974).
23. The Burmah-Shell (Acquisition of Undertaking in India) Act, 1976 (2 of 1976).
24. The Caltex (Acquisition of Shares of Caltex Oil Refining (India) Limited and of the undertaking in India of Caltex (India) Limited Act, 1977.
25. Administration of the Petroleum Act, 1934 (30 of 1934) and the rules made there under.
26. Administration of Balmer Lawrie Investment Limited and Balmer Lawrie and Company Limited.
27. Petroleum & Natural Gas Regulatory Board Act, 2006.
28. Matters pertaining to Brahmputra Cracker and Polymer Limited.
29. Matters pertaining to SATAT initiatives.
30. Matters pertaining to Gas Authority of India Limited (GAIL).
31. Matter pertaining to natural gas pipelines.
32. Matter pertaining to LNG terminals.
33. The Rajiv Gandhi Institute of Petroleum Technology (RGIPT) Act, 2007.
34. Matter pertaining to Indian Institute of Petroleum & Energy (IIPE), Act 2017 (3 of 2018).
35. Liquefied Petroleum Gas (Regulation of Supply and Distribution) Order, 2000.
36. Matter pertaining to Direct Benefit Transfer of LPG (DBTL) PAHAL.
37. Matter pertaining to Direct Benefit Transfer in Kerosene (DBTK).
38. Matter pertaining to Pradhan Mantri Ujjwala Yojana (PMUY).

# Appendix-II

List of Public Sector Undertakings and other organizations under the administrative control of the Ministry of Petroleum & Natural Gas.

## I. Oil Companies in which Government of India has shareholding as on 31.03.2022

1. Oil & Natural Gas Corporation Limited 58.91%
2. Indian Oil Corporation Limited (IOCL) 51.50%
3. Bharat Petroleum Corporation Limited 52.98%
4. GAIL (India) Limited 51.45%
5. Engineers India Limited 51.32%
6. Oil India Limited 56.66%
7. Balmer Lawrie & Co Limited

   There is not direct holding by Govt. of India in Balmer Lawrie & Co Ltd Balmer Lawrie Investments Ltd (BLIL), a Government Company holds 61.8% of shares in Balmer Lawrie & Co Ltd. Central Govt. holds 59.57% in Balmer Lawrie Investments Ltd.

## II. Subsidiaries and other Companies.

1. ONGC Videsh Limited-wholly owned by ONGC.
2. Mangalore Refinery & Petrochemicals Limited Subsidiary of ONGC.
3. Hindustan Petroleum Corporation Limited (HPCL) subsidiary of ONGC.
4. Petronet MHB Limited (PMNBL) subsidiary of ONGC.
5. Bharat Petro Resources Limited-Subsidiary of BPCL.
6. BPCL-KIAL Fuel Farm Facility Pvt. Ltd.-Subsidiary of BPCL
7. Numaligarh Refineries Limited-Subsidiary of OIL India Ltd.
8. Chennai Petroleum Corporation Limited-Subsidiary of IOCL
9. Certification Engineers International Limited-Wholly owned Subsidiary of EIL
10. GAIL Gas Limited-Wholly owned by GAIL
11. Brahmaputra Cracker and Polymer Limited-Subsidiary of GAIL
12. Konkan LNG Limited-Subsidiary of GAIL
13. Tripura Natural Gas Company Limited-Subsidiary of GAIL
14. Bengal Gas Company Limited-Subsidiary of GAIL

## III. Other Organisations

1. Oil Industry Development Board
2. Petroleum Conservation Research Association
3. Oil Industry Safety Directorate
4. Centre for High Technology
5. Petroleum Planning & Analysis Cell
6. Directorate General of Hydrocarbons
7. Rajiv Gandhi Institute of Petroleum & Technology
8. Petroleum and Natural Gas Regulatory Board
9. Indian Institute of Petroleum Energy

## Appendix-III

## Production of Crude Oil and Natural Gas

| State/Region | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec) (P) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| **I. Production of Crude oil (TMT)** | | | | | | | |
| Andhra Pradesh | 276 | 322 | 296 | 243 | 195 | 202 | 177 |
| Arunachal Pradesh | 55 | 50 | 43 | 56 | 53 | 48 | 34 |
| Assam | 4203 | 4345 | 4309 | 4093 | 3902 | 3988 | 3119 |
| Gujarat | 4605 | 4591 | 4626 | 4707 | 4651 | 4627 | 3640 |
| Rajasthan | 8165 | 7887 | 7667 | 6653 | 5891 | 5887 | 3931 |
| Tamil Nadu | 284 | 345 | 395 | 415 | 410 | 367 | 249 |
| Tripura | - | - | - | - | - | 3 | 2 |
| West Bengal | - | - | - | - | - | 0.05 | 0.01 |
| Offshore | 18421 | 18145 | 16868 | 16003 | 15391 | 14569 | 10927 |
| **Total Crude Oil Production** | **36009** | **35684** | **34203** | **32170** | **30494** | **29691** | **22078** |
| of which | | | | | | | |
| ONGC-Nomination | 22218 | 22249 | 21042 | 20627 | 20183 | 19451 | 14722 |
| OIL-Nomination | 3258 | 3376 | 3293 | 3107 | 2937 | 2987 | 2360 |
| Pvt/JVs-PSC + RSC/CBM | 10532 | 10059 | 9868 | 8436 | 7374 | 7253 | 4995 |
| **II. Production of Natural Gas (MMSCM)** | | | | | | | |
| Andhra Pradesh | 868 | 959 | 1081 | 912 | 827 | 809 | 544 |
| Arunachal Pradesh | 28 | 30 | 28 | 46 | 55 | 58 | 41 |
| Assam | 3128 | 3219 | 3289 | 3141 | 2995 | 3371 | 2689 |
| Gujarat | 1580 | 1607 | 1402 | 1342 | 1138 | 1017 | 700 |
| Jharkhand (CBM) | 3 | 4 | 4 | 5 | 2 | 4 | 7 |
| Madhya Pradesh (CBM) | 6 | 200 | 357 | 345 | 334 | 290 | 202 |
| Rajasthan | 1277 | 1442 | 1483 | 1883 | 2040 | 2619 | 1747 |
| Tamil Nadu | 983 | 1207 | 1208 | 1097 | 911 | 1067 | 846 |
| Tripura | 1430 | 1440 | 1554 | 1473 | 1634 | 1531 | 1238 |
| West Bengal (CBM) | 555 | 531 | 350 | 306 | 307 | 389 | 303 |
| Offshore | 22038 | 22011 | 22117 | 20635 | 18429 | 22869 | 17551 |
| **Total Natural Gas Production** | **31897** | **32649** | **32873** | **31184** | **28673** | **34024** | **25868** |
| of which | | | | | | | |
| ONGC-Nomination | 22088 | 23429 | 24675 | 23746 | 21872 | 20629 | 15057 |
| OIL-Nomination | 2937 | 2881 | 2722 | 2668 | 2480 | 2893 | 2295 |
| PSC Regime | 6872 | 6338 | 5477 | 4770 | 4321 | 10502 | 8516 |

P: Provisional

Note: 1. Production of Crude oil includes Condensate

2. Figures may not tally due to rounding off

Source: ONGC, OIL & DGH

## Appendix-IV

### Installed Capacity and Refinery Crude Throughput (Crude Oil Processed)

(Figures in TMT)

| Refinery | Installed Capacity | Refinery Crude Throughput | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 01.04.2022 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec) (P) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **(a) PUBLIC SECTOR** | **151716** | **143748** | **151942** | **156692** | **152629** | **133693** | **145491** | **118676** |
| 1. IOCL, Guwahati, Assam-1962 | 1000 | 864 | 1024 | 863 | 892 | 849 | 730 | 803 |
| 2. IOCL, Barauni, Bihar-1964 | 6000 | 6526 | 5819 | 6661 | 6516 | 5469 | 5620 | 5060 |
| 3. IOCL, Koyali, Gujarat-1965 | 13700 | 13994 | 13811 | 13505 | 13075 | 11603 | 13474 | 11748 |
| 4. IOCL, Haldia, West Bengal-1975 | 8000 | 7689 | 7655 | 7965 | 6463 | 6759 | 7305 | 6394 |
| 5. IOCLMathura, Uttar Pradesh-1982 | 8000 | 9230 | 9240 | 9737 | 8948 | 8926 | 9123 | 7129 |
| 6. IOCL, Digboi, Assam-1901 | 650 | 533 | 666 | 676 | 664 | 605 | 708 | 534 |
| 7. IOCL, Panipat, Haryana-1998 | 15000 | 15638 | 15654 | 15281 | 15038 | 13181 | 14849 | 9969 |
| 8. IOCL,Bongaigaon, Assam-1974 | 2700 | 2486 | 2402 | 2513 | 2045 | 2450 | 2639 | 2031 |
| 9. IOCL, Paradip, Odisha-2016 | 15000 | 8230 | 12730 | 14616 | 15778 | 12508 | 13217 | 9563 |
| **Total IOCL** | **70050** | **65191** | **69001** | **71816** | **69419** | **62351** | **67665** | **53231** |
| 10. BPCL, Mumbai, Maharashtra-1955 | 12000 | 13541 | 14054 | 14773 | 15017 | 12941 | 14437 | 10504 |
| 11. BPCL, Kochi, Kerala-1963 | 15500 | 11820 | 14095 | 16051 | 16515 | 13282 | 15402 | 11535 |
| 12. BORL, Bina, Madhya Pradesh-2011 | 7800 | 6360 | 6708 | 5716 | 7913 | 6190 | 7410 | 5770 |
| **Total BPCL** | **35300** | **31722** | **34857** | **36539** | **39445** | **32412** | **37248** | **27810** |
| 13. HPCL, Mumbai, Maharashtra-1954 | 9500 | 8510 | 8641 | 8671 | 8065 | 7374 | 5558 | 7289 |
| 14. HPCL, Visakh, Andhra Pradesh-1957 | 8300 | 9335 | 9635 | 9773 | 9115 | 9050 | 8410 | 6843 |
| **Total HPCL** | **17800** | **17846** | **18276** | **18444** | **17180** | **16425** | **13968** | **14132** |
| 15. CPCL, Manali, Tamil Nadu-1965 | 10500 | 9725 | 10289 | 10271 | 10161 | 8243 | 9040 | 8364 |
| 16. CPCL-CBR, Narimanam Tamil Nadu-1993 | 0 | 531 | 500 | 423 | 0 | 0 | 0 | 0 |
| **Total CPCL** | **10500** | **10256** | **10789** | **10695** | **10161** | **8243** | **9040** | **8364** |
| 17. NRL, Numaligarh, Assam-1999 | 3000 | 2683 | 2809 | 2900 | 2383 | 2707 | 2624 | 2358 |
| 19. MRPL, Mangalore, Karnataka-1996 | 15000 | 15965 | 16130 | 16231 | 13953 | 11475 | 14871 | 12724 |
| 18. ONGC, Tatipaka, Andhra Pradesh-2001 | 66 | 86 | 80 | 66 | 87 | 81 | 75 | 56 |
| **(b) Private & JVs Sector** | **99500** | **101614** | **99993** | **100513** | **101757** | **88080** | **96212** | **69896** |
| 20. RIL, Jamnagar, Gujarat - 1999 | 33000 | 32823 | 33153 | 31752 | 33019 | 34100 | 34757 | 26187 |
| 21. RIL, Jamnagar ( SEZ), Gujarat-2008 | 35200 | 37351 | 37317 | 37393 | 35876 | 26841 | 28264 | 20511 |
| **Total RIL** | **68200** | **70174** | **70470** | **69145** | **68895** | **60941** | **63021** | **46699** |
| 22. NEL, Vadinar, Gujarat - 2006 | 20000 | 20919 | 20693 | 18896 | 20620 | 17067 | 20164 | 13697 |
| 23. HMEL, Bhatinda, Punjab - 2012 | 11300 | 10521 | 8830 | 12473 | 12242 | 10072 | 13027 | 9500 |
| **Grand Total** | **251216** | **245362** | **251935** | **257205** | **254386** | **221773** | **241703** | **188572** |

Note: Totals may not tally due to rounding off figures.

P: Provisional.

## Appendix-V

### Production of Petroleum Products

(Figures in TMT)

| Products | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec) (P) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| LPG | 11326 | 12380 | 12786 | 12823 | 12072 | 12238 | 9558 |
| Motor Spirit | 36593 | 37784 | 38039 | 38616 | 35779 | 40238 | 31275 |
| Naphtha | 19946 | 20006 | 19786 | 20679 | 19403 | 19994 | 12838 |
| ATF | 13831 | 14594 | 15479 | 15238 | 7092 | 10294 | 10746 |
| Kerosene | 6041 | 4408 | 4072 | 3211 | 2393 | 1916 | 763 |
| HSD | 102484 | 107904 | 110535 | 111221 | 100441 | 107175 | 83909 |
| LDO | 629 | 562 | 702 | 620 | 729 | 805 | 443 |
| Total Fuel Oils | 9962 | 9486 | 10032 | 8609 | 7242 | 8327 | 6953 |
| of which | | | | | | | |
| a) Furnace Oil | 9694 | 9019 | 9598 | 8214 | 6882 | 7587 | 6083 |
| b) LSHS/HHS/RFO | 268 | 468 | 434 | 395 | 360 | 741 | 870 |
| Lube Oils | 1029 | 1036 | 949 | 932 | 1069 | 1173 | 944 |
| Bitumen | 5185 | 5277 | 5803 | 5244 | 5245 | 5111 | 3586 |
| Petroleum Coke | 13936 | 14754 | 14676 | 15528 | 12655 | 15508 | 11810 |
| Others | 22589 | 26215 | 29503 | 30219 | 29393 | 31525 | 23310 |
| **Total Production of Petroleum Products** | **243551** | **254405** | **262361** | **262940** | **233513** | **254305** | **196135** |
| of which | | | | | | | |
| **Refineries** | **239256** | **249797** | **257430** | **258181** | **229301** | **250254** | **193478** |
| **Fractionators** | **4294** | **4608** | **4931** | **4760** | **4212** | **4051** | **2657** |

Note: Totals may not tally due to rounding off figures.

P: Provisional.

Source: CPSEs

## Appendix-VI

### Consumption of Petroleum Products

(Figures in TMT)

| Products | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (Apr-Dec) (P) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| LPG | 21608 | 23342 | 24907 | 26330 | 27558 | 28330 | 21256 |
| Motor Spirit | 23765 | 26174 | 28284 | 29975 | 27969 | 30849 | 26264 |
| Naphtha | 13241 | 12889 | 14131 | 14268 | 14100 | 14277 | 9491 |
| SKO | 5397 | 3845 | 3460 | 2397 | 1798 | 1494 | 393 |
| ATF | 6998 | 7633 | 8300 | 7999 | 3698 | 5008 | 5387 |
| HSDO | 76027 | 81073 | 83528 | 82602 | 72713 | 76687 | 63924 |
| LDO | 449 | 524 | 598 | 628 | 855 | 1020 | 542 |
| Fuel Oil (FO+LSHS) | 7150 | 6721 | 6564 | 6302 | 5586 | 6255 | 5107 |
| Lubes/Greases | 3470 | 3884 | 3668 | 3833 | 4097 | 4570 | 3391 |
| Bitumen | 5935 | 6086 | 6708 | 6720 | 7524 | 7874 | 11496 |
| Petroleum Coke | 23964 | 25657 | 21346 | 21708 | 15605 | 15772 | 11496 |
| Others | 6593 | 8339 | 11723 | 11365 | 12791 | 12099 | 6120 |
| **Total Consumption** | **194597** | **206166** | **213216** | **214127** | **194295** | **204233** | **164868** |

Notes: Consumption includes sales by oil companies, own consumption & direct private imports.

P: Provisional

Source: PPAC

## Imports / Exports of Crude Oil and Petroleum Products

| ITEM | 2017-18 | | | 2018-19 | | | 2019-20 | | | 2020-21 | | | 2021-22 (P) | | | 2022-22 (Apr-Dec) (P) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TMT | ₹ Crore | Million USD | TMT | ₹ Crore | Million USD | TMT | ₹ Crore | Million USD | TMT | ₹ Crore | Million USD | TMT | ₹ Crore | Million USD | TMT | ₹ Crore | Million USD |
| **Imports** | | | | | | | | | | | | | | | | | | |
| **1. Crude Oil Import** | **220433** | **566450** | **87803** | **226498** | **783183** | **111915** | **226955** | **717001** | **101376** | **196461** | **459779** | **62248** | **212382** | **901262** | **120675** | **172390** | **993713** | **124989** |
| **2. LNG Imports** | **20709** | **52122** | **8051** | **21691** | **71867** | **10253** | **25575** | **67383** | **9489** | **24929** | **58129** | **7864** | **23227** | **100011** | **13382** | **15392** | **113525** | **14300** |
| **3. Petroleum Product Import** | **35461** | **88374** | **13637** | **33348** | **113665** | **16341** | **43788** | **125742** | **17689** | **43248** | **109430** | **14770** | **42062** | **188636** | **25240** | **32873** | **163353** | **20912** |
| **Petroleum Product Imports** | | | | | | | | | | | | | | | | | | |
| LPG | 11380 | 37875 | 5849 | 13235 | 49939 | 7178 | 14809 | 50347 | 7070 | 16476 | 53752 | 7242 | 17120 | 91899 | 12293 | 13554 | 78799 | 9905 |
| MS | 174 | 581 | 91 | 670 | 3104 | 445 | 2146 | 9610 | 1357 | 1351 | 4950 | 674 | 671 | 3895 | 519 | 1069 | 8117 | 1001 |
| Naphtha | 2212 | 8161 | 1261 | 2082 | 9665 | 1391 | 1662 | 6678 | 941 | 1199 | 3844 | 518 | 1268 | 7137 | 959 | 1296 | 6998 | 921 |
| ATF | 300 | 1159 | 178 | 259 | 1392 | 200 | 65 | 309 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SKO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 12 | 2 | 0 | 1 | 0 | 0 | 1 | 0 |
| HSD | 1361 | 4269 | 660 | 555 | 2486 | 360 | 2796 | 11619 | 1632 | 648 | 1960 | 265 | 75 | 425 | 57 | 313 | 3305 | 422 |
| LOBS/ Lube oil | 2539 | 12075 | 1860 | 2457 | 13349 | 1910 | 2675 | 11869 | 1673 | 2693 | 12170 | 1647 | 3106 | 20166 | 2704 | 2362 | 15517 | 2074 |
| Fuel Oil | 1213 | 3231 | 499 | 1419 | 4782 | 696 | 4583 | 11791 | 1650 | 6454 | 14312 | 1936 | 9024 | 32958 | 4398 | 6204 | 26255 | 3332 |
| Bitumen | 950 | 1902 | 293 | 877 | 2149 | 309 | 1630 | 3634 | 510 | 2055 | 4325 | 586 | 2638 | 7850 | 1052 | 1998 | 5977 | 800 |
| Petcoke | 12777 | 11100 | 1709 | 7926 | 10350 | 1494 | 10674 | 9713 | 1374 | 8256 | 6410 | 861 | 5739 | 11741 | 1570 | 4304 | 8805 | 1178 |
| Others | 2556 | 8020 | 1237 | 3869 | 16449 | 2358 | 2749 | 10172 | 1438 | 4112 | 7695 | 1038 | 2421 | 12564 | 1688 | 1773 | 9578 | 1280 |
| **Total Import (1+2+3)** | **276602** | **706946** | **109491** | **281537** | **968716** | **138508** | **296317** | **910125** | **128554** | **264638** | **627338** | **84883** | **277671** | **1189909** | **159297** | **220655** | **1270591** | **160202** |
| **Exports** | | | | | | | | | | | | | | | | | | |
| LPG | 359 | 1501 | 231 | 417 | 1976 | 283 | 463 | 1970 | 277 | 452 | 1797 | 241 | 513 | 3214 | 430 | 393 | 2882 | 364 |
| MS | 14036 | 54580 | 8464 | 12885 | 60419 | 8641 | 12710 | 54512 | 7708 | 11606 | 36530 | 4977 | 13482 | 81649 | 10879 | 9101 | 74307 | 9404 |
| Naphtha | 8951 | 29075 | 4505 | 6963 | 28893 | 4137 | 8897 | 31509 | 4439 | 6509 | 18643 | 2530 | 6861 | 37231 | 4984 | 4454 | 26382 | 3337 |
| Aviation Turbine Fuel | 7183 | 25348 | 3931 | 7389 | 34030 | 4867 | 6906 | 28458 | 4021 | 3544 | 9377 | 1287 | 5186 | 27112 | 3661 | 5260 | 44554 | 5578 |
| Kerosene | 17 | 68 | 10 | 19 | 98 | 14 | 176 | 560 | 78 | 15 | 48 | 7 | 14 | 77 | 10 | 9 | 82 | 10 |
| Diesel | 29735 | 99492 | 15426 | 27931 | 123882 | 17675 | 31653 | 123919 | 17481 | 30576 | 81611 | 11132 | 32407 | 164741 | 22088 | 21913 | 186574 | 23488 |
| Lubes | 13 | 118 | 18 | 8 | 106 | 15 | 8 | 96 | 13 | 15 | 93 | 12 | 10 | 114 | 15 | 11 | 122 | 15 |
| Fuel Oil | 2525 | 5291 | 817 | 2197 | 6537 | 923 | 1527 | 3811 | 537 | 1177 | 2318 | 313 | 1757 | 6633 | 890 | 1445 | 6267 | 782 |
| Bitumen | 64 | 119 | 18 | 23 | 72 | 10 | 25 | 89 | 13 | 7 | 23 | 3 | 6 | 28 | 4 | 6 | 29 | 4 |
| Petcoke/CBFS | 561 | 687 | 107 | 1124 | 3255 | 463 | 465 | 1096 | 155 | 577 | 292 | 39 | 187 | 553 | 74 | 139 | 351 | 45 |
| Others | 3387 | 9110 | 1412 | 2140 | 8429 | 1208 | 2854 | 7998 | 1128 | 2290 | 6436 | 865 | 2330 | 10449 | 1402 | 3001 | 18539 | 2330 |
| **Export of Petroleum Products** | **66833** | **225388** | **34940** | **61096** | **267697** | **38236** | **65685** | **254018** | **35848** | **56769** | **157168** | **21406** | **62755** | **331801** | **44438** | **45730** | **360089** | **45358** |
| **Net Import** | **209770** | **481558** | **74551** | **220441** | **701019** | **100272** | **230632** | **656108** | **92706** | **207869** | **470170** | **63476** | **214916** | **858108** | **114859** | **174924** | **910503** | **114844** |
| **Net Petroleum Product Export** | **31372** | **137014** | **21303** | **27747** | **154031** | **21895** | **21898** | **128276** | **18159** | **13521** | **47738** | **6636** | **20693** | **143165** | **19198** | **12857** | **196736** | **24446** |

P: Provisional

2: Other exports include VGO, Benzene, MTO & Sulphur.

Source: Petroleum Planning & Analysis Cell.

## Appendix-VIII

### Internal & External Budgetary Resources

(Figures in ₹ Crore)

| CPSEs | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | |
|---|---|---|---|---|---|---|---|---|
| | Actual | Actual | Actual | Actual | Actual | Actual | BE | Actual (Apr-Dec) |
| (1) | (2) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| **CPSE-wise Internal & Extra Budget Resources** | | | | | | | | |
| ONGC | 28006 | 72902 | 29450 | 29538 | 26859 | 27741 | 29950 | 19153 |
| OVL | 17617 | 6798 | 5827 | 5435 | 5734 | 4681 | 8180 | 1970 |
| OIL | 11083 | 8154 | 3181 | 4247 | 13332 | 4367 | 4302 | 2902 |
| GAIL | 1814 | 3680 | 7143 | 4562 | 6253 | 7148 | 7500 | 6188 |
| IOCL | 20737 | 21457 | 28208 | 31421 | 28684 | 30391 | 28549 | 24495 |
| BPCL | 16949 | 8998 | 10993 | 11064 | 11064 | 11860 | 10000 | 8930 |
| HPCL | 5757 | 7210 | 12438 | 16311 | 14700 | 16771 | 14500 | 8849 |
| MRPL | 616 | 1281 | 1072 | 1318 | 2179 | 674 | 815 | 339 |
| CPCL | 1269 | 1020 | 1314 | 961 | 583 | 636 | 584 | 461 |
| NRL | 503 | 420 | 465 | 529 | 1029 | 3605 | 6774 | 4273 |
| BL | 74 | 83 | 132 | 46 | 43 | 22 | 40 | 30 |
| EIL | * | * | 87 | 171 | 733 | 70 | 160 | 40 |
| **Total (I&EBR)** | **104426** | **132004** | **100309** | **105603** | **111194** | **107968** | **111354** | **77631** |
| Exploration & Production Sector | 72383 | 95455 | 49613 | 44769 | 52994 | 46376 | 50536 | 31612 |
| Refining & Marketing Sector | 30524 | 32794 | 46990 | 56668 | 51446 | 54948 | 53876 | 39737 |
| Petro-Chemicals Sector | 1446 | 3672 | 3487 | 3949 | 5979 | 6551 | 6742 | 6211 |
| Engineering Sector | 74 | 83 | 219 | 217 | 776 | 93 | 200 | 70 |
| **Total (I&EBR)** | **104426** | **132004** | **100309** | **105603** | **111194** | **107968** | **111354** | **77631** |

Note: BE IEBR 2021-22 as printed in Expenditure budget document 2021-22.

*: For the purpose of reporting IEBR , EIL was introduced first time w.e.f 2018-19.

Source: Central Public Sector Enterprises.

## Appendix-IX

## PSU-WISE VARRIATION IN PROFIT BEFORE TAX (PBT) AND PROFIT AFTER TAX (PAT) 2021-22 VIS-A 2020-21

### Oil & Natural Gas Corporation (ONGC)

The PBT and PAT of ONGC for FY 2021-22 has increased as compared to PBT and PAT for FY 2020-21 mainly due to better price realization on crude ($ 76.62/bbl vs 42.78/bbl), correspondent increase in VAP prices and better realization on natural gas ($ 2.35/mmbtu vs $2.09/mmbtu). Further, During 2nd quarter of FY 2021-22, the Company had decided to opt for lower tax regime u/s 115BAA of the Income Tax Act, 1961, with effect from FY 2020-21.

Accordingly, the Company has reviewed provision for tax expenses and remeasured its net deferred tax liabilities which has further improved the PAT for FY 2021-22.

### Indian Oil Corporation Limited (IOCL)

The PBT for the Financial Year (FY) 2021-22 was ₹ 31,733.07 crore against ₹ 29,715.65 crore in FY 2020-21 and the PAT for FY 2021-22 was ₹ 24,184.10 crore against ₹ 21,836.04 crore in FY 2020-21.

The variation in profit for FY 2021-22 vis-a-vis 2020-21 is primarily due to continuing inventory gains in FY 2021-22 caused by further upturn in prices.

The year witnessed significant improvement in refinery and gas margins but the same was largely offset by fall in the marketing and petrochemical margins. The overall increase in profitability was subdued due to exchange losses in the year as compared to gains in previous year, and the increase in finance and other costs.

### Gas Authority India Limited (GAIL)

GAIL Profit Before Tax (PBT) increased by 113% to ₹ 13,590 crore in FY 2021-22 as against ₹ 6,386 crore in FY 2020-21. The Profit After Tax (PAT) increased by 112% to ₹ 10,364 crore in FY 2021-22 as against ₹ 4,890 crore in FY 2020-21 mainly on account of increased gas marketing and transmission volume, better gas marketing spread and higher product prices. During FY 2021-22, Company achieved highest ever Revenue, PBT and PAT as compared to any of the previous financial years.

### Oil India Limited (OIL)

Profit Before Tax (PBT) of the year 2021-22 is higher at ₹ 4,986.50 crore as compared to ₹ 723.07 crore in the year 2020-21. The increase is primarily due to better crude oil and natural gas price realization by about US$ 34.98/BBL and US$ 0.26/MMBTU respectively in the year 2021-22. The Profit After Tax (PAT) for the year 2021-22 is ₹ 3,887.31 crore.

### Bharat Petroleum Corporation Limited (BPCL)

Profit Before Tax (PBT) for FY 2021-22 (₹ 15,672 crores) [restated after BORL merger and BGRL merger] is lower when compared to FY 2020-21 (₹ 22,618 crores) mainly on account of exceptional items in FY 2020-21 to the tune of ₹ 6,449 crores which was primarily relating to one-time gain on disposal of investment in one of the subsidiaries (Numaligarh Refinery Limited) and impairment of investment in its subsidiary (Bharat PetroResources Limited). Further, the profitability in FY 2021-22 was impacted by lower marketing margins, merger of subsidiaries BORL and BGRL, higher refining margins as compared to FY 2020-21. During FY 2021-22, BPCL has achieved highest ever Revenue from operations of ₹ 4,32,422 crores [restated] compared to any of previous financial years. Profit after tax (PAT) for FY 2021-22 is ₹ 11,363 crores [restated].

### Engineers India Limited (EIL)

The reason for variation in PBT & PAT:

Engineers India Ltd. is a technical consultancy organization under projects in two segments namely Consultancy & Engineering segment and Turnkey segment. The recognition of revenue of the Company depends on orders in hand as well as new orders secured by the Company. During the recent years the profitability margins have reduced as the Company is executing major orders in the Turnkey segment. Further, due to the impact of Covid, there has been a certain slowdown in the new investments as well as execution of existing projects which has led to decline in revenue during the FY 2021-22.

However, the Profit Before Tax (PBT) & Profit After Tax (PAT) of the Company for the FY 2021-22 has increased to ₹ 447.84 crore & ₹ 344.41 crore respectively as compared to Profit Before Tax (PBT) & Profit After Tax (PAT) of ₹ 350.57 crore & ₹ 259.50 crore respectively in FY 2020-21. The profitability during the FY 2020-21 was declined majorly due to the impact of one time exceptional item of ₹ 154.96 crore on account of provision for probable future principal defaults in PF investments.

## ONGC Videsh Limited (OVL)

Profit Before Tax (PBT) of the company has increased from ₹ 2,338/- crore to ₹ 4,295/- mainly on account of Higher Crude Oil Prices in FY 2021-22 as compared to FY 2020-21. Profit after tax (PAT) has decreased from ₹1,886 crore in FY 2020-21 vis-a-vis ₹1,494 crore FY 2021-22 mainly on account of Higher Taxes & Impairment Losses.

## Hindustan Petroleum Corporation Limited (HPCL)

For the financial year 2021-22, HPCL has reported profit before tax (PBT) of ₹ 8,204 crores as compared to ₹ 14,247 crores for FY 2020-21. Navigating through a challenging environment, HPCL has delivered Profit After Tax (PAT) of ₹ 6,383 crores during the financial year 2021-22, in comparison with ₹ 10,664 crores during FY 2020-21 on standalone basis. The variation is due to the geopolitical tensions arising from prolonged Russia Ukraine conflict resulted in increased financial volatility, which led to significant surge in crude prices. The marketing margins were suppressed during the year in comparison to previous year as increase in international prices was not fully passed on to consumers. In addition, other significant income i.e. ERV gains recorded on appreciation of Rupee against US dollar, had come down significantly in 2021-22 on reversal of trend.

## Mangalore Refinery & Petrochemicals Limited (MRPL)

FY 2021-22 ushered in on the back of a preceding year when the average Benchmark GRM was US$ 0.53/bbl due to COVID pandemic. MRPL's capacity utilization was affected at the beginning of FY 2021-22 due to lockdown and travel restrictions caused by the second wave of COVID pandemic. The capacity utilization in H1 was just above 80% and a GRM of US$ 3.33/bbl was clocked. The Benchmark GRM for the same period was US$ 2.92/bbl. With removal of travel restrictions, pick up in industrial activity and improvement in fuel demand the Capacity Utilization in H2 was commendable and the company ended the year at 100% on net throughput. The product cracks improved during the year and the company turned around from loss in the previous year and registered a profit of ₹ 2,955 crore. For the Financial Year 2021-22, the Company's Profit Before Tax (PBT) was ₹ 2,708.33 crore and Profit After Tax (PAT) was ₹ 2,955.27 crore.

## Balmer Lawrie & Co. Ltd. (BL)

The Profit Before Tax for the financial year 2021-22 was ₹ 17,014.45 lacs and profit after tax was ₹ 12,280.65 lacs as compared to profit before tax of ₹ 15,664.97 lacs and profit after tax of ₹ 11,645.10 lacs during the financial year 2020-21. The positive variance of 8.61 % in PBT and 5.46 % in PAT for the year 2021-22 as compared to 2020-21 is attributable to the easing out effect of Covid-19 pandemic on the performance of SBU-Travel and Vacations, which was severely affected in F.Y. 2020-21 due to the same, as well as the increase in turnover and profitability of the manufacturing businesses.

## Chennai Petroleum Corporation Limited (CPCL)

CPCL has posted all time high PBT of ₹1,832 crore for FY 2021-22 as compared to ₹ 1,277 crore during FY 2020-21. This was mainly due to robust operations and higher cracks on refined products amidst the slower demand recovery in the backdrop of continuing COVID/Omicron threat particularly in the first half of the financial year.

## Appendix-X

A total of 53 paras from 07 Inspection Reports were outstanding against this Ministry as on 31.12.2021. In the meantime, 06 para has been settled and 8 new paras have been added for Financial Year 2021-22. Besides this C&AG has also included 02 left para for the Financial Years 2017-18 and 2018-19 in their Inspection Report. Hence, as per the latest intimation by the Audit on 17.11.2022, a total of 62 IR Paras from 08 IRs have been shown pending including new paras for the year 2021-22.

Position of ATN in respect of Audit Observation included in the Annual Report as well as those included in earlier Annual Reports.

| Sl. No. | Year | No. of paras/PA reports on which ATNs have been submitted to PAC/COPU after vetting by Audit | Details of the Paras/PA reports on which ATNs are pending | | |
|---|---|---|---|---|---|
| | | | No. of ATNs not sent by the Ministry even for the first time | No. of ATNs sent but returned with observations and Audit is awaiting their resubmission by the Ministry | No. of ATNs which have been finally vetted by Audit but have not been submitted by the Ministry to PAC/COPU |
| 1. | 2008 | 23 | - | 3 | - |
| 2. | 2009-10 | 14 | - | 3 | - |
| 3. | 2010-11 | 5 | - | 2 | - |
| 4. | 2011-12 | 4 | - | 4 | - |
| 5. | 2012-13 | 4 | - | 3 | - |
| 6. | 2013 | - | 1 | 4 | - |
| 7. | 2014 | - | 2 | 5 | - |
| 8. | 2015 | - | 9 | - | - |
| 9. | 2016 | 3 | 12 | - | - |
| 10. | 2017 | 3 | 3 | 18 | 6 |
| 11. | 2018 | 9 | 6 | 19 | - |
| 12. | 2019 | 11 | 13 | 14 | 3 |
| 13. | 2020 | 12 | 6 | 4 | 2 |
| 14. | 2021 | 6 | 6 | 5 | 3 |
| 15. | 2022 | 3 | 2 | 9 | 2 |

The Report no. 14 of 2021 of Comptroller and Auditor General of India (C&AG) on Compliance Audit Observation includes important audit findings noticed as a result of test check of accounts and records of Central Government owned companies and corporations conducted by the officers of the C&AG under Section 143(6) of the Companies Act 2013 or the statutes governing various corporations.

### Undue enrichment through recovery of turnover tax from consumers

Indian Oil Corporation Limited collected ₹ 262.60 crore of Turnover Tax from consumers in Andhra Pradesh in violation of legal provisions of Andhra Pradesh General Sales Tax Act, 1957 and afterwards settled the legal case with Government of Telangana by making payment of ₹ 65.65 crore (25 per cent) against total imposed penalty of ₹ 262.60 crore, thus resulting in undue enrichment to Indian Oil Corporation Limited by ₹ 196.95 crore.

**(Para 2.1)**

### Non-adherence to statutory requirement of pollution clearance resulted in infructuous expenditure

To replace two old and less efficient oil fired boilers, Indian Oil Corporation Limited decided (June 2015) to install a Petcoke fired Boiler (Boiler) for its Guwahati Refinery (Refinery) at an estimated cost of ₹ 132.58 crore (revised to ₹ 163.09 crore in March 2018). The new Boiler was expected to reduce the power generation and steam cost of the Refinery by ₹ 79.40 crore per year. 'Consent to Establish/No Objection Certificate' was required to be obtained from the concerned State

Pollution Control Board before construction of the Boiler. Indian Oil Corporation Limited, however, applied for 'Consent to Establish/ No Objection Certificate' to the Pollution Control Board, Assam in April 2018 when the project was already completed to the extent of 70-80 per cent. Thereafter, Pollution Control Board, Assam issued (August 2018) a show cause notice to the Indian Oil Corporation Limited with instruction to stop all activities regarding the Boiler project with immediate effect. Thus, non-compliance with the statutory requirement by the Indian Oil Corporation Limited resulted in entire expenditure of ₹ 120.38 crore incurred on the project till then becoming infructuous while forgoing the cost benefits of ₹ 79.40 crore per year due to non-commissioning of the Boiler.

**(Para 2.2)**

## Loss due to flaring of High Pressure gas

High pressure gas evolved in the process of separation of oil, water and gas in offshore process system of Mumbai High offshore fields is further compressed in the process gas compressors and fed to the wells for gas lift purpose. In this process, balance gas is transported to gas processing plant of Oil and Natural Gas Corporation Limited at Uran for further processing and sale to consumers. Any disruption in compression leads to flaring of valuable high pressure gas which also has an adverse impact on environment. During the period of 2012-13 to 2019-20, high pressure gas valuing ₹ 816.08 crore was flared in Mumbai High field due to non-availability of standby process gas compressors, power shut down and frequent tripping of process gas compressors.

**(Para 2.4)**

## Avoidable expenditure due to delay in procurement of regular casing pipes

Mumbai High Asset and Bassein & Satellite Assets of Oil and Natural Gas Corporation Limited sent indents for procurement of casing pipes for the year 2015-16 & 2016-17 to Corporate Material Management group. Corporate Material Management clubbed the indents for both the years and floated a tender and took more than 782 days to finalise the tender as against the specified time of 176 days. The delay in placement of purchase order and receipt of material resulted in usage of costlier (2 to 2.5 times) casing pipes due to which, company incurred an avoidable expenditure of ₹ 21.56 crore.

**(Para 2.6)**

## Avoidable expenditure due to idling of departmental rig at Mahanadi-Bengal-Andaman Basin, Kolkata and hiring of another rig at Tripura Asset

Mahanadi-Bengal-Andaman Basin of Oil and Natural Gas Corporation Limited at Kolkata carried out drilling activities by using type-I departmental rig (drilling depth capacity upto 3,050 meters). To complete the Minimum Work Programme at Barrackpore well, which was a deep well and beyond the capacity of available type-I departmental rig, it was decided to deploy type-III rig (drilling depth capacity upto 6,100 meters) from Agartala to Kolkata. Therefore, the type-III rig was released in May 2020 from Tripura Asset and commissioned in January 2020. As the ready location was not available at Mahanadi-Bengal-Andaman Basin, Kolkata the rig remained idle for 213 days. Moreover, to continue its operations at Tripura Asset, Oil and Natural Gas Corporation Limited hired another rig. Thus due to improper planning, Oil and Natural Gas Corporation Limited incurred an avoidable expenditure of ₹ 29.69 crore.

**(Para 2.7)**

## Non-creation of adequate facilities resulted in avoidable flaring of Low Pressure gas

Mehsana Asset of Oil and Natural Gas Corporation Limited produces associated and free gas which is either consumed for internal use, sold to consumers or flared. Delay and non-creation of adequate facilities at Mehsana Asset resulted in avoidable flaring of 193 lakh standard cubic meter gas due to which Oil and Natural Gas Corporation Limited incurred an avoidable loss of revenue of ₹ 15.13 crore during the period from April 2016 to March 2020.

**(Para 2.8)**

### Avoidable payment of penal interest due to non-maintenance of debt-equity ratio stipulated by the State Bank of India

ONGC Petro additions Limited (OPaL), a joint venture company of Oil and Natural Gas Corporation Limited, started a project with an estimated cost of ₹ 21,396 crore and signed Rupee Loan Agreement (January 2013) with consortium of banks led by State Bank of India (SBI) and later (July 2014) revised the project cost to ₹ 27,011 crore. OPaL, accordingly signed an amendatory agreement with SBI & consortium banks and fixed the scheduled Commercial Operation Date as 30 June 2015 and agreed that overall project cost would be funded with debt-equity ratio of 66:34 till 31 December 2015 and thereafter as 58:42, failing which additional interest of 1 per cent per annum would be charged by the banks with effect from 01 June 2015. OPAL could not tie up the required equity portion even within the extended time period and incurred an avoidable penal interest of ₹ 25.81 crore.

**(Para 2.9)**

### Undue benefit extended to private parties by awarding work in violation of CVC guidelines

ONGC Videsh Limited awarded the work of auditing of its oil and gas reserves valuing ₹ 10.60 crore to the private parties on nomination basis disregarding Central Vigilance Commission guidelines, thereby, extending undue benefit to the private parties.

**(Para 2.10)**



India's First ever Floating CNG Terminal of GAIL at Namo Ghat, Varanasi to feed tourists boats converted to run on CNG

## Appendix-XI

### List of Assets acquired by Indian PSU's Abroad

| Sr. No. | Country | Name of Asset | Company Name | Participating Companies & P.I. |
|---|---|---|---|---|
| 1 | Russia | Imperial Energy | OVL | ONGC Videsh-100% |
| 2 | | Sakhalin -1 | OVL | ONGC Videsh: 20%,<br>ENL(O): 30%, Sodeco: 30%,<br>Rosneft subsidiaries:20%<br>(SMNG-11.5 and RN Astra-8.5) |
| 3 | | | Vankorneft | ONGC Videsh : 26%<br>Consortium of OIL,IOCL & BPRL : 23.9%<br>OVLVostok Oil LLC *: 50.1%<br>Operator: RN Vankor (an affiliate of Rosneft)<br>* wef December 2020 |
| 4 | South Sudan | GPOC | OVL | ONGC Videsh: 25%,<br>CNPC: 40%<br>Petronas: 30%, Nilepet: 5% |
| 5 | | SPOC | OVL | ONGC Videsh: 24.125%<br>Petronas: 67.875%, Nilepet: 8% |
| 6 | Syria | AFPC | OVL | SSPD(O): 62.5-66.67% (Shell:CNPC- 65:35)<br>HESBV: 37.5-33.3% (ONGBV:CNPC-50:50) |
| 7 | | Block 24 | OVL | ONGC Videsh: 60%<br>IPRMEL(O): 25%, TOM: 15% |
| 8 | UAE | Lower Zakum Concession | OVL | Indian Consortium: 10%<br>(ONGC Videsh 4%,<br>IOC-3%,<br>BPRL %,<br>ADNOC (O): 60%,<br>INPEX: 10%<br>CNPC: 10%, ENI: 5%,<br>TOTAL: 5% |
| 9 | | ACG | OVL | ONGC Videsh: 2.31%,<br>BP(O): 30.374551%,<br>AzACG: 25%, MOL: 9.569102%,<br>INPEX: 9.307229%,<br>Equinor Apsheron AS: 7.269034%,<br>ExxonMobil: 6.791381%,<br>TPAO: 5.729798%,<br>Itochu: 3.648905% |

| Sr. No | Country | Name of Asset | Company Name | Participating Companies & P.I. |
|---|---|---|---|---|
| 10 | Azerbaijan | BTC Pipeline | OVL | ONGC BTC Ltd: 2.36%,<br>BP (O): 30.1%,<br>AzBTC: 25%, MoL: 8.9%,<br>INPEX: 2.5%,<br>Equinor Apsheron AS: 8.71%<br>TPAO: 6.53%,<br>Itochu: 3.4%,<br>TOTAL: 5%, ENI: 5%,<br>Exxon: 2.5% |
| 11 | Libya | Block 43 | OVL | ONGC Videsh: 100% |
| 12 | Colombia | MECL | OVL | ONGC Videsh: 50%, SIPC: 50% |
| 13 | | Block RC-10 | OVL | ONGC Videsh: 50% (Operator),<br>Ecopetrol: 50% |
| 14 | | Block CPO-5 | OVL | ONGC Videsh: 70% (Operator),<br>Geopark: 30% |
| 15 | | Block SSJN-7 | OVL | ONGC Videsh: 50%<br>Canacol Energy Ltd (Operator): 50% |
| 16 | Venezuela | San Cristobal | OVL | ONGC Videsh: 40%,<br>CVP-PDVSA: 56%<br>PDVSA Social: 4% |
| 17 | | Carabobo-1 | OVL | PDVSA: 71%, Repsol: 11%<br>ONGC Videsh: 11%,<br>IOC: 3.5%, OIL: 3.5% |
| 18 | Brazil | BC-10 | OVL | ONGC Videsh: 27%,<br>Shell(O): 50%<br>QatarEnergy: 23% |
| 19 | | Block BM-SEAL-4 | OVL | ONGC Videsh: 25%,<br>Petrobras (Operator): 75% |
| 20 | Iran | Block Farzad-B | OVL | ONGC Videsh(O): 40%<br>IOC: 40%, OIL: 20% |
| 21 | Vietnam | Block 06.1 | OVL | ONGC Videsh: 45%,<br>Zarubezhneft EP Vietnam B.V: 35%,<br>Petro Vietnam: 20% |
| 22 | | Block 128 | OVL | ONGC Videsh: 100% |

| Sr. No | Country | Name of Asset | Company Name | Participating Companies & P.I. |
|---|---|---|---|---|
| 23 | Myanmar | Block A1 | OVL | ONGC Videsh: 17%,<br>MOGE: 15% |
| 24 | | Block A3 | OVL | Posco International(O): 51%,<br>Kogas: 8.5%, GAIL: 8.5% |
| 25 | | Block B-2 | OVL | ONGC Videsh 97% (Operator),<br>M&S 3% (Carried) |
| 26 | | Block EP-3 | OVL | ONGC Videsh 97% (Operator),<br>M&S 3% (Carried) |
| 27 | | Pipeco 1 | OVL | ONGC Videsh: 17%,<br>MOGE: 15%<br>POSCO International (O): 51%,<br>Kogas: 8.5%, GAIL: 8.5% |
| 28 | | Pipeco 2 | OVL | ONGC Videsh: 8.347%,<br>CNUOC(O)-50.9%,<br>MOGE: 7.365%,<br>POSCO International: 25.041%,<br>GAIL: 4.1735%,<br>KG-SEAGP: 4.1735% |
| 29 | Bangladesh | SS-04 | OVL | ONGC Videsh -45% (Operator),<br>Oil India Limited (OIL) – 45%,<br>BAPEX-10% (Carried) |
| 30 | | SS-09 | OVL | ONGC Videsh -45% (Operator),<br>Oil India Limited (OIL) – 45%,<br>BAPEX-10% (Carried) |
| 31 | Iraq | Block 20 | OVL | ONGC Videsh: 100% |
| 32 | Mozambique | Rovuma Area-1 | OVL | TotalEnergies (O): 26.5%<br>ONGC Videsh Rovuma Limited: 10%<br>BREML: 10%<br>(ONGC Videsh: 6%<br>& OIL: 4%),<br>ENH: 15%,<br>Mitsui: 20%,<br>BPRL: 10%,<br>PTTEP: 8.5% |



# 19 Social Media Outreach




Celebrating Good Governance Day (Sh. Atal Bihari Vajpayee's Birthday)




MoPNG pays tribute on Veer Baal Diwas



Hon'ble Minister, MoS & Secy, MoPNG launched 58th edition of the Indian Petroleum and Natural Gas Statistics 2021-22




Over 3000 appointment letters issued in PSUs under MoPNG during two tranches of Rozgar Mela



Hon'ble Minister Sh. Hardeep Singh Puri handing over Swachhata Pakhwada Awards



Hon'ble Minister Sh. Hardeep Singh Puri at LPG Week, Greater Noida



Dance to Decarbonise, A run up event to India Energy Week



IEW Curtain Raiser Event in Bengaluru



MoU signed between MoPNG & ONGC for fiscal 2022-23




Press Conference at India Energy Week Curtain Raiser



Secy. Sh. Pankaj Jain inaugurated Ujjwala pavillion & exhibition at LPG Week, Greater Noida



Hon'ble PM Sh. Narendra Modi inaugurates various Oil & Gas Projects in Andhra Pradesh & Telangana



Hon'ble Minister Sh. Hardeep Singh Puri funding Ace Athlete Anju Bobby George's sports academy



Secy. Sh. Pankaj Jain at ADIPEC-2022



Secy. MoPNG Sh. Pankaj Jain having productive discussions in Brazil



Launch of indigenously developed AVGAS 100 LL by Sh. Hardeep Singh Puri



Secy. MoPNG Sh. Pankaj Jain visited UNICA office in Brasilia



Hon'ble PM Sh. Narendra Modi releases Cheetahs in Kuno National Park



Hon'ble Minister Sh. Hardeep Singh Puri inaugurated India Pavilion in ADIPEC UAE



Hon'ble Minister Sh. Hardeep Singh Puri inaugurated Asia's largest Agri-Residue based Biogas plant in Sangrur




MoPNG observed Cyber Jagrookta Diwas



Sh. Hardeep Singh Puri in Houston, Participating in the Industry Roundtable India-US Strategic Partnership




Hon'ble MoS Sh. Rameswar Teli distributed Ujjwala connections under PMUY 2.0 in Sikkim




Hon'ble Minister Sh. Hardeep Singh Puri attends Gastech event in Milan, Italy



PM Sh. Narendra Modi Inaugurates projects in Mangalore




Independence Day Celebration



Har Ghar Tiranga



PM Sh. Narendra Modi dedicates 2nd Generation Ethanol Plant in Panipat, Haryana to the nation.




MoPNG congratulates Indian Contingent for their performance at CWG 2022




MoU signed between IOCL and NTCA for transcontinental relocation of African Cheetahs




Celebrating 'Har Ghar Tiranga' at foreign properties (EIL Abu Dhabi)




Celebrating 'Har Ghar Tiranga' at IOC Filling Station, Leh Ladakh



Hon'ble Minister Sh. Hardeep Singh Puri addresses on the occasion of World Biofuel Day



Hon'ble Minister Sh. Hardeep Singh Puri celebrates 'Har Ghar Tiranga' with Cabin Crew, New York



Hon'ble Minister Sh. Hardeep Singh Puri virtually inaugurated 166 CNG stations in 14 States



Hon'ble PM Sh. Narendra Modi inaugurated Energy Infrastructure projects in Jharkhand



Swachhata Pakhwada with BSF at Attari-Wagah border



Dy. Secy. Sh. Arvind Nath Jha addressed Swachhata Pakhwada at Govt. School Ernakulam



Launch of BPCL's Swachhata Pakhwada by Secy. MoPNG Sh. Pankaj Jain



MoPNG Observed Swachhata Pakhwada



Reduction of 'No Go' area



Capacity of Digboi Refinery augmented




Secy. MoPNG Sh. Pankaj Jain's address at London Investor Meet



Flag off of Swachhata Pakhawada Rath by MoS Sh. Rameswar Teli



Flood Relief donation to Assam



Swachhata Kit distribution & Pledge taken



Launch of Surya Nutan Solar Cooking System



Yoga Day Celebrations



Ministry of Petroleum
and Natural Gas
Government of India

IEW | G20

आज़ादी का अमृत महोत्सव

पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय

भारत सरकार



# वार्षिक रिपोर्ट
# 2022-23




भारत 2023 INDIA

# वसुधैव कुटुम्बकम्

**ONE EARTH • ONE FAMILY • ONE FUTURE**

भारत की G20 अध्यक्षता–"वसुधैव कुटुम्बकम" अर्थात् "एक पृथ्वी • एक परिवार • एक भविष्य" – महा उपनिषद के प्राचीन संस्कृत ग्रंथ से लिया गया है। निश्चित रूप से यह विषय वाक्य सभी के जीवन–मानव, पशु, पौधे और सूक्ष्मजीव–के मूल्यों और पृथ्वी ग्रह पर तथा व्यापक रूप से ब्रह्मांड में उनकी परस्पर संबद्धता की पुष्टि करता है।

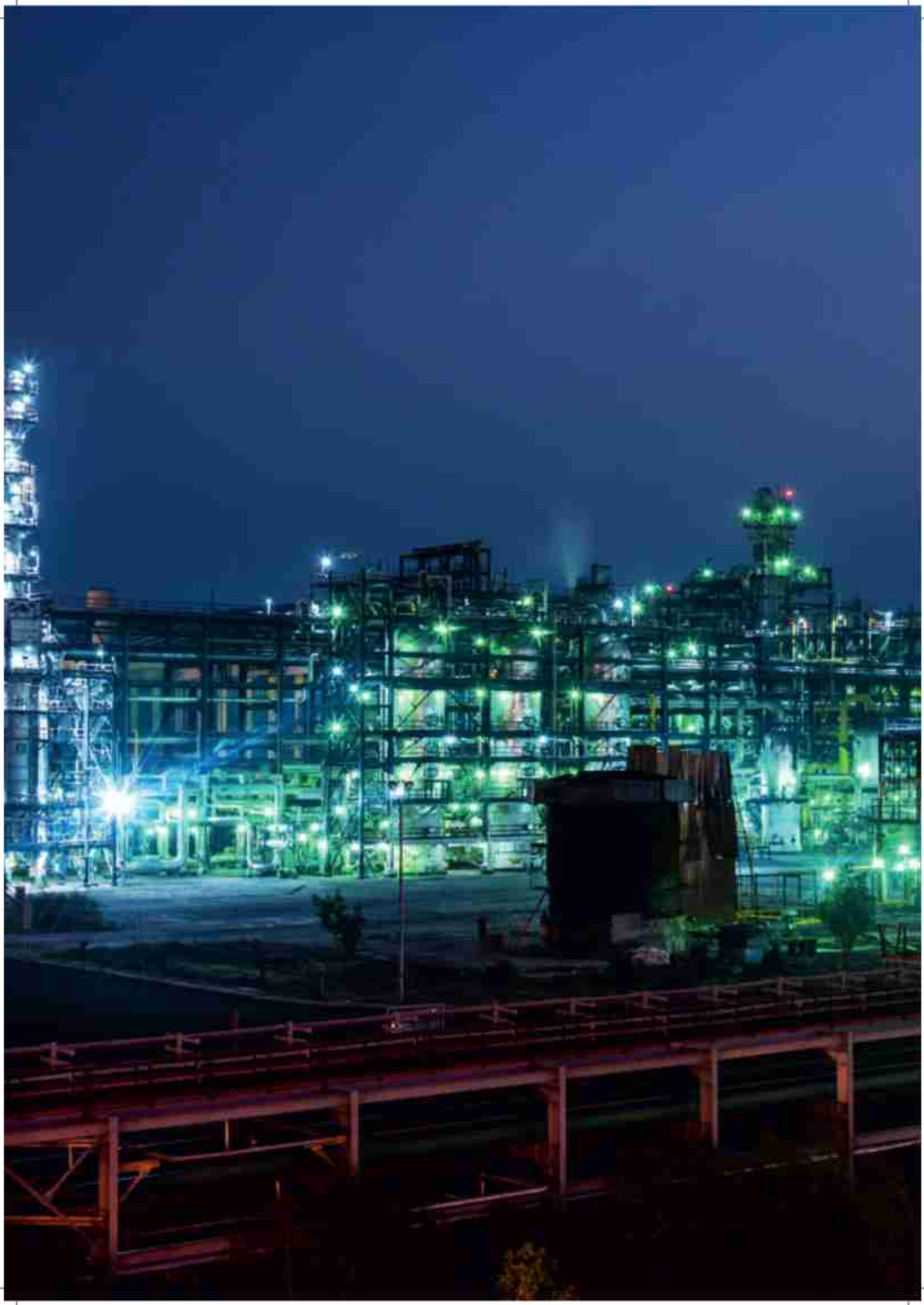


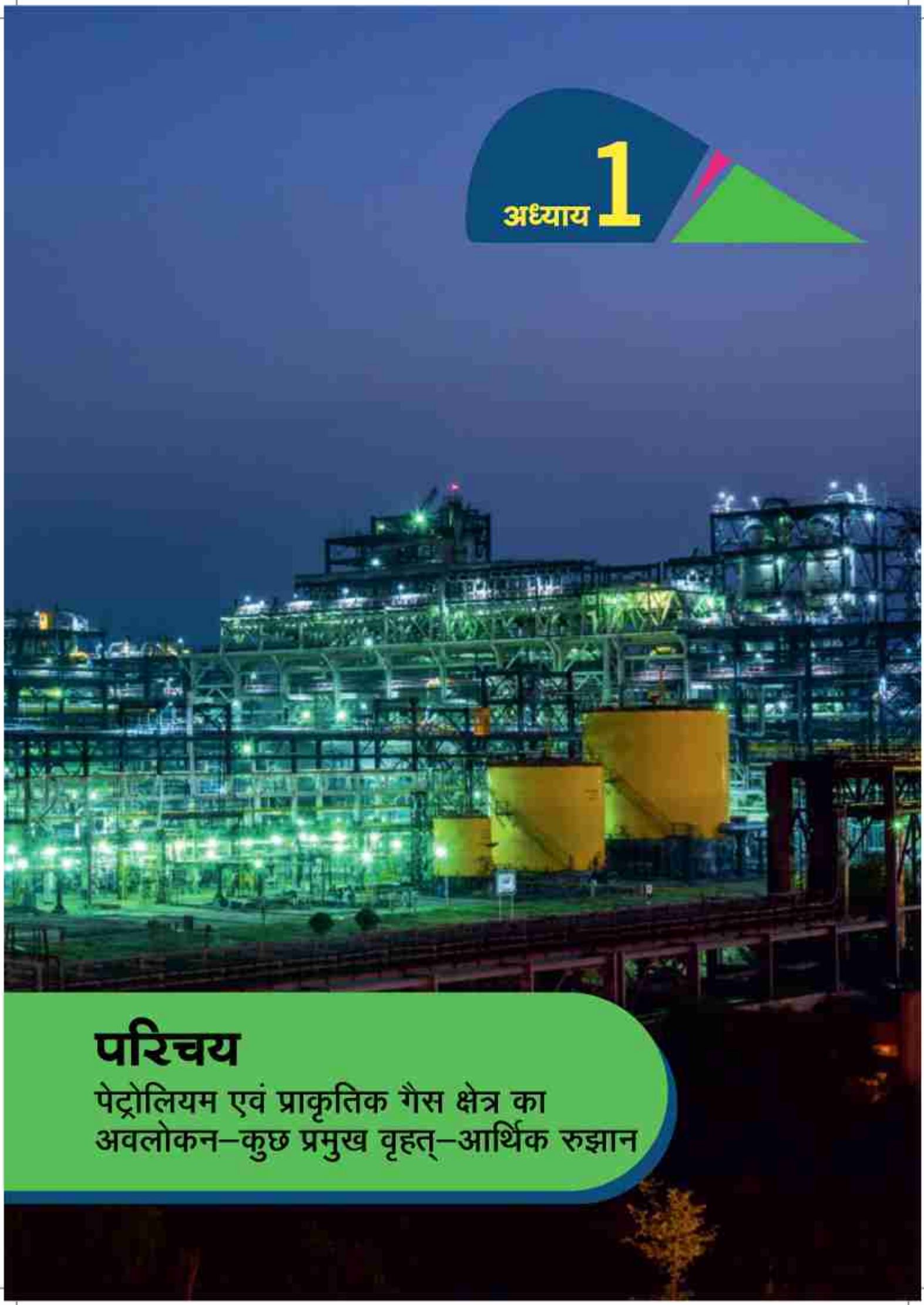

गैस आधारित अर्थव्यवस्था बनने से संबंधित प्रयासों में तीव्रता लाना
जैव ईंधन को परिचालित रखने के प्रयोजनार्थ घरेलू स्रोतों पर अधिक निर्भरता
जीवाश्म ईंधन विशेषकर पेट्रोलियम और कोयले का स्वच्छ उपयोग
गतिशीलता को डी–कार्बोनाइज करने के लिए विद्युत के योगदान को बढ़ाना
भारत की ऊर्जा कार्यनीति के सात प्रमुख कारक
2030 तक 450 जीडब्ल्यू के नवीकरणीय लक्ष्य की प्राप्ति
सभी प्रकार की ऊर्जा प्रणालियों में डिजिटल नवाचार
हाइड्रोजन सहित उभरते ईंधनों की ओर अग्रसर


LNG

# विषय–वस्तु


| | |
|---|---|
| अध्याय 1: परिचय | 3 |
| अध्याय 2: अन्वेषण और उत्पादन | 29 |
| अध्याय 3: पाइपलाइन और प्राकृतिक गैस | 55 |
| अध्याय 4: रिफाइनरी | 61 |
| अध्याय 5: विपणन और वितरण | 73 |
| अध्याय 6: अंतरराष्ट्रीय सहयोग और संबंध | 79 |
| अध्याय 7: पूर्वोत्तर–क्षेत्र का विकास | 91 |
| अध्याय 8: अनुसंधान एवं विकास और नई प्रौद्योगिकी | 103 |
| अध्याय 9: जैव इंधन | 121 |
| अध्याय 10: संरक्षण | 127 |
| अध्याय 11: संवेदनशील पेट्रोलियम उत्पादों के संबंध में मूल्य निर्धारण नीति | 133 |
| अध्याय 12: अनुसूचित जाति, अनुसूचित जनजाति, अन्य पिछड़ा वर्ग और दिव्यांगजन का कल्याण | 137 |
| अध्याय 13: महिलाओं का कल्याण, विकास और सशक्तिकरण | 141 |
| अध्याय 14: उपक्रम/संगठन | 145 |
| अध्याय 15: एकीकृत वित्त प्रभाग | 241 |
| अध्याय 16: सामान्य | 249 |
| अध्याय 17: आजादी का अमृत महोत्सव | 255 |
| अध्याय 18: परिशिष्ट | 267 |
| अध्याय 19: सोशल मीडिया आउटरीच | 284 |





अध्याय 1

# परिचय

## पेट्रोलियम एवं प्राकृतिक गैस क्षेत्र का अवलोकन–कुछ प्रमुख वृहत्–आर्थिक रुझान

# 1 परिचय

**1.1.** श्री हरदीप सिंह पुरी दिनांक 08 जुलाई, 2021 से पेट्रोलियम एवं प्राकृतिक गैस मंत्री का कार्यभार संभाल रहे हैं।

**1.2.** श्री रामेश्वर तेली दिनांक 08 जुलाई, 2021 से पेट्रोलियम एवं प्राकृतिक गैस राज्य मंत्री का कार्यभार संभाल रहे है।

**1.3.** श्री पंकज जैन, आईएएस (एएमः 1990) ने 30 दिसबर, 2021 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में सचिव का पदभार ग्रहण किया है।

**1.4.** श्री प्रवीण मल खानूजा, आईए और एएसः1994 ने 12 अगस्त, 2022 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में अपर सचिव का कार्यभार ग्रहण किया।

**1.5.** सुश्री कामिनी चौहान रतन, आईएएस (यूपीः 1997), ने 22 नवंबर, 2022 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में अतिरिक्त सचिव और वित्तीय सलाहकार का कार्यभार ग्रहण किया।

**1.6.** श्री सुनील कुमार, आईआरएएसः1995, 1 मई, 2019 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में संयुक्त सचिव का पदभार संभाल रहे हैं।

**1.7.** डॉ. नवनीत मोहन कोठारी, आईएएस (एमपीः 2001), 12 मार्च, 2020 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में संयुक्त सचिव का पदभार संभाल रहे हैं।

**1.8.** सुश्री ईशा श्रीवास्तव, आईएफएसः 2004, 2 मार्च, 2022 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में विशेष कार्य अधिकारी का कार्यभार संभाल रही हैं।

**1.9.** सुश्री सुजाता शर्मा, आईएएस (एपीः 2006), ने 12 दिसंबर, 2022 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में संयुक्त सचिव का कार्यभार ग्रहण किया।

**1.10.** श्री रोहित माथुर, सीएसएस, दिनांक 17 जनवरी, 2020 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में संयुक्त सचिव (स्वस्थाने) का कार्यभार संभाल रहे हैं।

**1.11.** सुश्री पेरिन देवी, सीएसएस, दिनांक 31 अगस्त, 2021 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में संयुक्त सचिव (स्वस्थाने) का कार्यभार संभाल रही हैं।

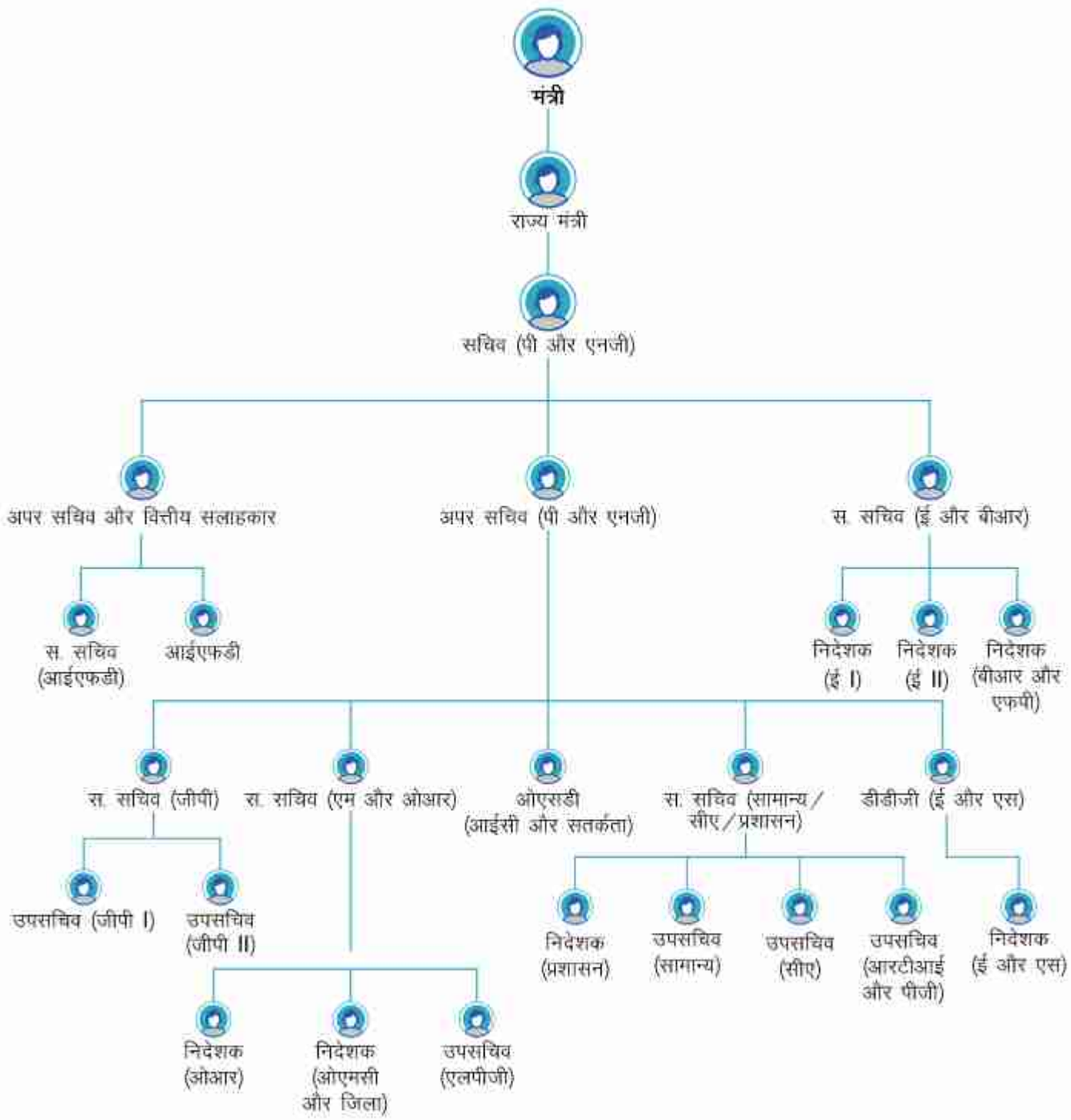
**1.12.** श्री धीरज कुमार ओझा, आईएसएसः 1999, दिनांक 10 दिसंबर, 2021 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में उप महानिदेशक का कार्यभार संभाल रहे हैं।

**1.13.** श्री राजिदर कुमार, आईईएसः 2003, 11 मार्च, 2022 से पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय में आर्थिक सलाहकार के पद पर हैं।



विजयपुर, उत्तर प्रदेश में गेल की गैस प्रसंस्करण इकाई का दृश्य

# पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय का संगठन चार्ट



# पेट्रोलियम एवं प्राकृतिक गैस क्षेत्र का प्रदर्शन– कुछ प्रमुख वृहत्–आर्थिक रुझान

## 1.1. प्रस्तावना

भारत में निरंतर जारी औद्योगीकरण और शहरीकरण से ऊर्जा क्षेत्र और इसके नीति निर्माताओं की माँग अत्यधिक बढ़ी है। आईईए के इंडिया एनर्जी आउटलुक 2021 के अनुसार, प्रति व्यक्ति ऊर्जा का उपयोग वैश्विक औसत के आधे से भी कम है और राज्यों में और ग्रामीण तथा शहरी क्षेत्रों के बीच ऊर्जा के उपयोग और सेवा की गुणवत्ता में व्यापक अंतर है। बढ़ती अर्थव्यवस्थाएं आबादी, शहरीकरण और औद्योगीकरण का अर्थ है भारत 2040 तक सभी परिदृश्यों में किसी भी देश की तुलना में सबसे अधिक ऊर्जा मांग की वृद्धि देखेगा।

आईईए के इंडिया एनर्जी आउटलुक 2021 के अनुसार, भारत की तेल की मांग लगभग 4 मिलियन बैरल प्रति दिन (एमबी/डी) बढ़कर 2040 में 8.7 एमबी/डी तक पहुंच जाएगा, जो किसी भी देश की सबसे अधिक वृद्धि है। इसके विपरीत, सतत विकास परिदृश्य में विद्युतीकरण, दक्षता और वैकल्पिक इंधन पर बल दिया जा रहा है जो तेल की बढ़ती मांग को 1 एमबी/डी तक सीमित करता है। सरकार ने 2030 तक ऊर्जा मिश्रण में प्राकृतिक गैस की हिस्सेदारी को बढ़ाकर 15% तक करने का लक्ष्य रखा है। वर्तमान में (2021 में) प्राथमिक ऊर्जा मिश्रण में प्राकृतिक गैस की हिस्सेदारी 6.3% है।

हाइड्रोकार्बन ईंधन की बढ़ती मांग को पूरा करने के लिए अन्य बातों के साथ–साथ अपनाई गई प्रमुख कार्यनीतियों में घरेलू तेल और गैस उत्पादन को बढ़ाने के लिए अन्वेषण और उत्पादन में निवेश को आकर्षित करना, गैस आधारित अर्थव्यवस्था अपनाना, रिफाइनरी प्रक्रियाओं में सुधार के लिए तकनीकी उन्नयन, ऊर्जा दक्षता और उत्पादन, जैव–ईंधन अर्थव्यवस्था में तेजी लाना, विदेशी तेल और गैस पोर्टफोलियो का विस्तार करना, तेल और गैस आपूर्ति स्रोतों में विविधता लाना आदि शामिल है। सरकार ने स्वच्छ और हरित ईंधन उपलब्ध कराने के लिए देश भर के प्रमुख मांग केंद्रों को कवर करने हेतु राष्ट्रीय गैस ग्रिड, नगर गैस वितरण नेटवर्क का विकास किया है।




भारत में एचपीसीएल का पहला एथेनॉल लोडेड रेक

## 1.2. तेल, गैस और पेट्रोलियम उत्पादों का उत्पादन

वर्ष 2020–21 में 30.49 मीट्रिक टन (एमएमटी) की तुलना में वर्ष 2021–22 के दौरान कच्चे तेल का उत्पादन 29.69 मिलियन एमएमटी था, जिसने 2.6% की गिरावट दर्शाई है। वर्ष 2021–22 के दौरान ओएनजीसी के पश्चिमी अपतट से स्वदेशी कच्चे तेल का अधिकतम उत्पादन हुआ जो कच्चे तेल के कुल उत्पादन का लगभग 45.8% है। 2021–22 में 29.69 एमएमटी के कुल कच्चे तेल और घनीभूत उत्पादन में 65.5% (19.45 एमएमटी) ओएनजीसी (नामांकित क्षेत्रों) से, 10.1% (2.99 एमएमटी) ओआईएल (नामांकित क्षेत्रों) से और 24.4% (7.25 एमएमटी) पीएससी/आरएससी व्यवस्था का योगदान रहा।

वित्त वर्ष 2021–22 के दौरान प्राकृतिक गैस का उत्पादन 34.02 बिलियन क्यूबिक मीटर (बीसीएम) रहा, जो 2020–21 में 28.67 बीसीएम के उत्पादन से 18.7% अधिक है। वर्ष 2021–22 के दौरान ओएनजीसी के पश्चिमी अपतट से प्राकृतिक गैस का अधिकतम उत्पादन हुआ जो कुल प्राकृतिक गैस उत्पादन का लगभग 46.1% है। वर्ष 2021–22 में 34.02 बीसीएम के कुल प्राकृतिक गैस उत्पादन में से 60.6% (20.63 बीसीएम) ओएनजीसी (नामांकित क्षेत्र), 8.5% (2.89 बीसीएम) ओआईएल (नामांकित क्षेत्र) और 30.9% (10.50 बीसीएम) पीएससी/आरएससी/सीबीएम व्यवस्था का योगदान रहा।

वर्तमान वित्त वर्ष 2022–23 (अप्रैल–दिसंबर, 2022) के दौरान कच्चे तेल और प्राकृतिक गैस का उत्पादन क्रमशः 22.08 एमएमटी और 25.87 बीसीएम रहा।



ओएनजीसी के एमएचएन प्लेटफॉर्म का दृश्य

वित्त वर्ष 2020.21 (233.51 एमएमटी) की तुलना में वित्त वर्ष 2021.22 में पेट्रोलियम उत्पादों का उत्पादन 8.9% बढ़कर 254.31 एमएमटी हो गया। वित्त वर्ष 2021–22 के दौरान, डीजल (एचएसडी+एलडीओ) का उत्पादन हिस्सा उच्चतम रहा (42.5%) इसके बाद पेट्रोल/मोटर स्पिरिट (15.8%), नाफ्था (7.9%), पेट्रोलियम कोक (6.1%), एलपीजी (4.8%), एटीएफ (4%), ईंधन तेल (3.3%), बिटुमेन (2.0%), मिट्टी का तेल (0.8%) और ल्यूब और ग्रीस (0.5%) का स्थान रहा।

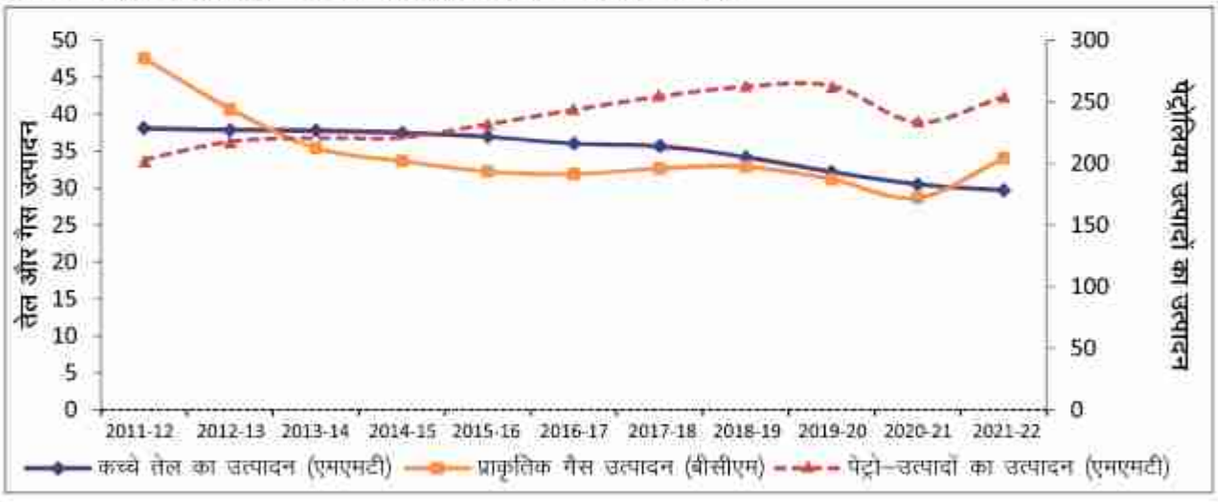
कच्चे तेल, प्राकृतिक गैस और पेट्रोलियम उत्पादों के उत्पादन के रुझान निम्नानुसार दर्शाए गए हैं:

तालिका 1: कच्चे तेल, प्राकृतिक गैस और पेट्रोलियम उत्पादों में उत्पादन के रुझान

| वर्ष | कच्चे तेल का उत्पादन (एमएमटी) | कच्चे तेल के उत्पादन में % वृद्धि | प्राकृतिक गैस उत्पादन (बीसीएम) | प्राकृतिक गैस उत्पादन में % वृद्धि | पेट्रो-उत्पादों का उत्पादन (एमएमटी) | पेट्रो-उत्पादों के उत्पादन में % वृद्धि |
|---|---|---|---|---|---|---|
| 2011-12 | 38.09 | 1.08 | 47.56 | -8.92 | 203.20 | 4.30 |
| 2012-13 | 37.86 | -0.60 | 40.68 | -14.47 | 217.74 | 7.15 |
| 2013-14 | 37.79 | -0.19 | 35.41 | -12.96 | 220.76 | 1.39 |
| 2014-15 | 37.46 | -0.87 | 33.66 | -4.94 | 221.14 | 0.17 |
| 2015-16 | 36.94 | -1.39 | 32.25 | -4.18 | 231.92 | 4.88 |
| 2016-17 | 36.01 | -2.53 | 31.90 | -1.09 | 243.55 | 5.01 |
| 2017-18 | 35.68 | -0.90 | 32.65 | 2.36 | 254.40 | 4.46 |
| 2018-19 | 34.20 | -4.15 | 32.87 | 0.69 | 262.36 | 3.13 |
| 2019-20 | 32.17 | -5.95 | 31.18 | -5.14 | 262.94 | 0.22 |
| 2020-21 | 30.49 | -5.21 | 28.67 | -8.05 | 233.51 | -11.19 |
| **2021-22** | **29.69** | **-2.63** | **34.02** | **18.66** | **254.31** | **8.90** |
| 2021-22 (अप्रैल–दिस.) | 22.38 | - | 25.67 | - | 186.01 | - |
| 2022-23 (अप्रैल–दिस.) | 22.08 | -1.35 | 25.87 | 0.76 | 196.14 | 5.44 |

पी: अनंतिम

ग्राफ 1: कच्चे तेल, प्राकृतिक गैस और पेट्रोलियम उत्पादों में उत्पादन के रुझान




## 1.3. रिफाइनिंग क्षमता और रिफाइनरी क्रूड थ्रूपुट

भारतीय रिफाइनिंग उद्योग ने स्वयं को विश्व स्तर पर एक प्रमुख खिलाड़ी के रूप में स्थापित करने के संदर्भ में उत्कृष्ट प्रदर्शन किया है। भारत, जो विश्व का चौथा सबसे बड़ा रिफाइनर है और चीन के बाद एशिया में दूसरा सबसे बड़ा रिफाइनर है, एक रिफाइनिंग हब के रूप में उभर रहा है, जिसकी रिफाइनिंग क्षमता मांग से अधिक है। दिनांक 01.04.2022 तक देश की रिफाइनरी क्षमता बढ़कर 251.22 एमपीटीए हो गई है। वर्ष 2021–22 के लिए रिफाइनरी क्षमता उपयोग 97.0% था। वित्त वर्ष 2020–21 के लिए 221.77 एमएमटी की तुलना में वित्त वर्ष 2021–22 के लिए कच्चे तेल का प्रसंस्करण 241.70 एमएमटी था, जो लगभग 8.99% की वृद्धि दर्शाता है। वर्तमान वित्त वर्ष 2022–23 (अप्रैल–दिसंबर, 2022) के दौरान कच्चे तेल का प्रसंस्करण 188.57 एमएमटी था। रिफाइनिंग क्षमता और क्रूड थ्रूपुट से संबंधित रुझान नीचे दर्शाया गया है: (परिशिष्ट–IV में विवरण दिया गया है)



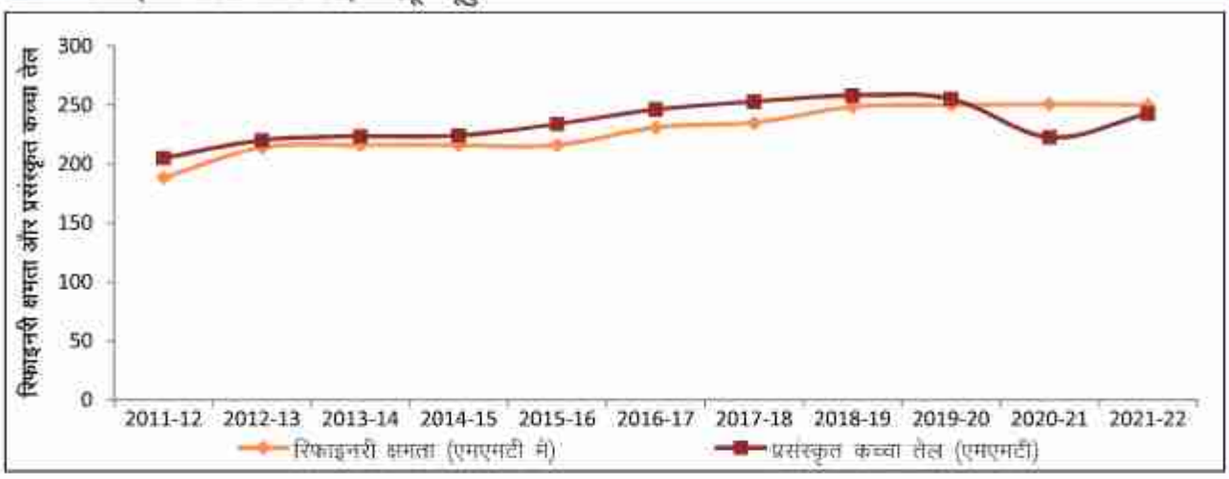
आईओसीएल बोंगाईगांव रिफाइनरी में इको पार्क का दृश्य

तालिका 1.2: रिफाइनरी क्षमता और रिफाइनरी क्रूड थ्रूपुट के रुझान (प्रसंस्कृत कच्चे तेल के रूप में)

| वर्ष | रिफाइनिंग क्षमता (एमएमटीपीए)@ | रिफाइनिंग क्षमता में % वृद्धि | प्रसंस्कृत कच्चा तेल (एमएमटी) | प्रसंस्कृत कच्चे तेल में % वृद्धि | रिफाइनिंग क्षमता की उपयोगिता |
|---|---|---|---|---|---|
| 2011-12 | 187.39 | 2.18 | 204.12 | 3.62 | 108.93 |
| 2012-13 | 213.07 | 13.70 | 219.21 | 7.39 | 102.88 |
| 2013-14 | 215.07 | 0.94 | 222.50 | 1.50 | 103.46 |
| 2014-15 | 215.07 | 0.00 | 223.24 | 0.33 | 103.80 |
| 2015-16 | 215.07 | 0.00 | 232.86 | 4.31 | 108.28 |
| 2016-17 | 230.07 | 6.97 | 245.36 | 5.37 | 106.65 |
| 2017-18 | 233.97 | 1.70 | 251.93 | 2.68 | 107.68 |
| 2018-19 | 247.57 | 5.81 | 257.20 | 2.09 | 103.89 |
| 2019-20 | 249.37 | 0.73 | 254.39 | -1.10 | 102.01 |
| 2020-21 | 249.87 | 0.20 | 221.77 | -12.82 | 88.76 |
| **2021-22** | **249.22** | **-0.26** | **241.70** | **8.99** | **96.99** |
| 2021-22 (अप्रैल–दिस.) | 249.22 | - | 177.21 | - | 93.48 |
| 2022-23 (अप्रैल–दिस.) | 251.22 | 0.80 | 188.57 | 6.41 | 99.01 |

पी: अनंतिम @: प्रारंभिक वर्ष के 1 अप्रैल के अनुसार #: एमएमटी का सीपीसीएल–सीबीआर 1 अप्रैल, 2019 से बंद हो गया।

ग्राफ 2 : रिफाइनरी क्षमता और रिफाइनरी क्रूड थ्रूपुट




## 1.4. पेट्रोलियम उत्पादों और प्राकृतिक गैस की खपत

लोगों द्वारा वाहन खरीदने में वृद्धि और सड़क परिवहन के उपयोग के कारण तेल की खपत और आयात में तेजी से वृद्धि हुई है। प्रधानमंत्री उज्ज्वला योजना (पीएमयूवाई) के माध्यम से गरीबी रेखा से नीचे रहने वाले परिवारों को एलपीजी कनेक्शन प्रदान किया जाता है। ग्रामीण क्षेत्रों में एलपीजी के बढ़ते उपयोग के साथ–साथ शहरी क्षेत्रों में पाइप से प्राकृतिक गैस (पीएनजी) के उपयोग में भी वृद्धि हुई है। भारत में प्राकृतिक गैस का बाजार तेजी से बढ़ रहा है, लेकिन इसकी भूमिका क्षेत्र, परिदृश्य और समय के साथ बदलती रहती है। भारत के वर्तमान ऊर्जा मिश्रण में प्राकृतिक गैस की 6.3% की हिस्सेदारी दुनिया में सबसे कम है। आईईए के वर्ल्ड एनर्जी आउटलुक 2021 के अनुसार, सड़क परिवहन के लिए ऊर्जा की मांग अगले दो दशकों में दोगुनी से अधिक होने का अनुमान है। हाल के वर्षों में परिवहन सबसे तेजी से बढ़ने वाला अंत्य उपयोग क्षेत्र रहा है, और भारत राजमार्ग, रेलवे और मेट्रो लाइनों से लेकर हवाई अड्डों और पत्तनों तक परिवहन अवसंरचना के वृहद विस्तार के लिए तैयार है।

वर्ष 2021.22 में प्राकृतिक गैस की कुल खपत 63.91 बीसीएम है जो वर्ष 2020.21 (60.82 बीसीएम) के खपत से 5.1% अधिक है। फीडस्टॉक के रूप में गैर–ऊर्जा उद्देश्य के लिए 35.9% उपयोग की तुलना में ईंधन के रूप में ऊर्जा उद्देश्य के लिए प्राकृतिक गैस की खपत 64.1% है। वर्ष 2021–22 के दौरान, प्राकृतिक गैस की उच्चतम खपत उर्वरक उद्योग में हुआ है जो 29.4% था, इसके बाद शहर और स्थानीय प्राकृतिक गैस वितरण नेटवर्क (सड़क परिवहन सहित) में 19.8%, बिजली क्षेत्र में 16.5% और रिफाइनरी में 8.6% खपत था। अप्रैल–दिसंबर, 2022 के दौरान गैस की खपत 45.66 बीसीएम रही।



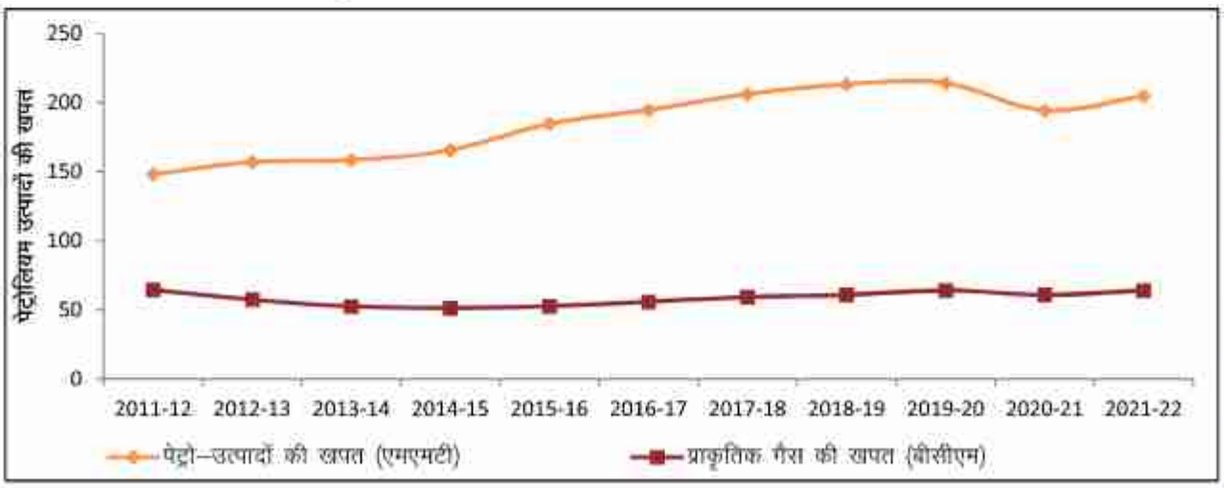
वित्त वर्ष 2021.22 के दौरान देश में पेट्रोलियम उत्पादों की कुल खपत 204.72 एमएमटी थी, जो वित्त वर्ष 2020.21 (194.295 एमएमटी) की तुलना में 5.4% की वृद्धि दर दर्शाता है जिसका कारण कोविड–19 के रोक के हटने के बाद पेट्रोलियम उत्पादों की अत्यधिक मांग है। वित्त वर्ष 2021–22 के दौरान, डीजल (एचएसडी + एलडीओ) की खपत में सबसे अधिक हिस्सेदारी (38%) रही, इसके बाद पेट्रोल / मोटर स्प्रिट (15.1%), एलपीजी (13.8%), पेट्रोलियम कोक (7.7%), नेफ्था (7%), बिटुमेन (3.8%), ईंधन तेल (3.1%), एटीएफ (2.4%), ल्यूब और ग्रीस (2.2%) और मिट्टी तेल (0.7%) की हिस्सेदारी है। वर्तमान वित्तीय वर्ष (अप्रैल–दिसंबर, 2022) के दौरान पेट्रोल की खपत 164.87 एमएमटी थी। गैस और पेट्रोलियम उत्पादों की खपत में रुझान नीचे दर्शाया गया है: (**विवरण परिशिष्ट VI पर है**)।

**तालिका 3: पेट्रोलियम उत्पादों और प्राकृतिक गैस के उपयोग का रुझान**

| वर्ष | पेट्रो–उत्पादों की खपत (एमएमटी) | पेट्रो–उत्पादों की खपत में % वृद्धि | प्राकृतिक गैस की खपत (बीसीएम) | पेट्रो–उत्पादों की खपत में % वृद्धि |
|---|---|---|---|---|
| 2011-12 | 148.13 | 5.03 | 64.45 | - |
| 2012-13 | 157.06 | 6.02 | 57.37 | -10.99 |
| 2013-14 | 158.41 | 0.86 | 52.37 | -8.70 |
| 2014-15 | 165.52 | 4.49 | 51.30 | -2.05 |
| 2015-16 | 184.67 | 11.57 | 52.52 | 2.37 |
| 2016-17 | 194.60 | 5.37 | 55.70 | 6.05 |
| 2017-18 | 206.17 | 5.95 | 59.17 | 6.24 |
| 2018-19 | 213.22 | 3.42 | 60.80 | 2.75 |
| 2019-20 | 214.13 | 0.43 | 64.14 | 5.51 |
| 2020-21 | 194.30 | -9.26 | 60.82 | -5.19 |
| **2021-22** | **204.72** | **5.37** | **63.91** | **5.08** |
| 2021-22 (अप्रैल–दिस.) | 149.16 | - | 49.07 | - |
| 2022-23 (अप्रैल–दिस.) | 164.87 | 10.53 | 45.66 | -6.95 |

पी: अनंतिम

**ग्राफ 3: पेट्रोलियम उत्पादों और प्राकृतिक गैस के उपयोग का रुझान**



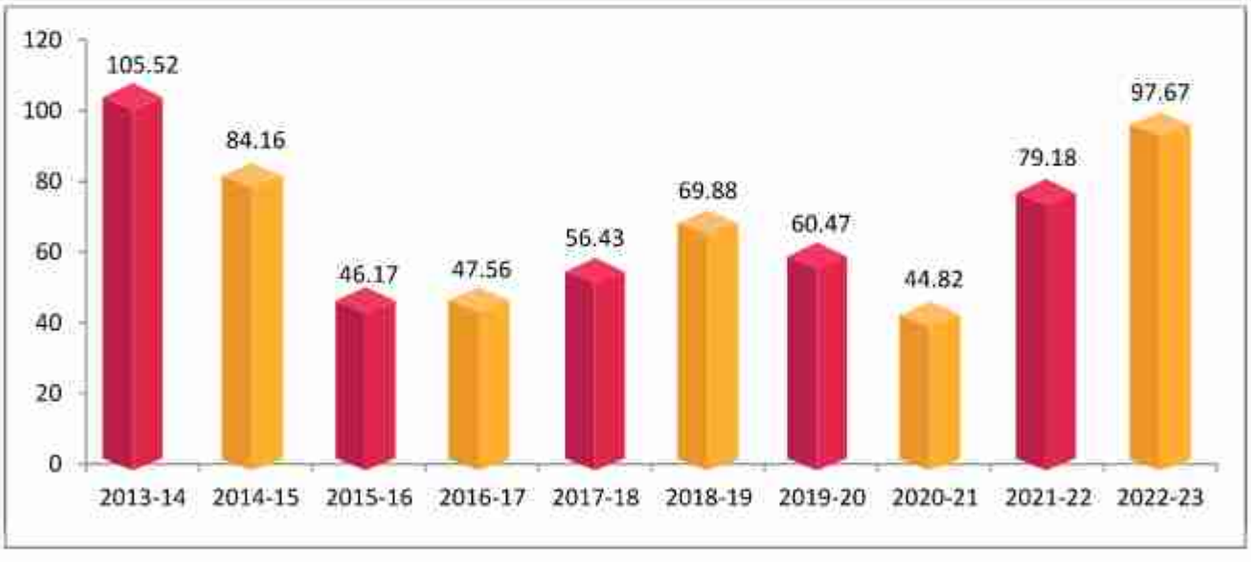
## 1.5. संवेदनशील पेट्रोलियम उत्पादों और कच्चे तेल पर मूल्य निर्धारण नीति

पेट्रोलियम उत्पादों के मूल्य निर्धारण को जुलाई 1975 से प्रशासित मूल्य तंत्र (एपीएम) के अधीन लाया गया था जब पेट्रोलियम उत्पादों के मूल्य निर्धारण को आयात समता सिद्धांतों से लागत प्लस सिद्धांतों में अंतरित किया गया था। एपीएम (1975 से 2002) के तहत निम्न उद्देश्य के साथ विभिन्न तेल पूल खातों को बनाए रखा जाता है: i) बिक्री मूल्य में स्थिरता सुनिश्चित करना; ii) उपभोक्ताओं को अंतरराष्ट्रीय कीमतों की उतार–चढ़ाव से बचाना; और iii) सार्वजनिक वितरण के लिए मिट्टी के तेल और घरेलू एलपीजी जैसे कुछ उत्पादों के उपभोक्ता मूल्य में राजसहायता और अन्य उत्पादों जैसे कि पेट्रोल, विमानन टर्बाइन इंधन (एटीएफ) आदि में क्रॉस सब्सिडी। एपीएम 01.04.2002 से निष्प्रभावित हो गया था और सरकार ने पीडीएस मिट्टी के तेल और घरेलू एलपीजी की बिक्री पर निर्दिष्ट फ्लैट दरों पर राजसहायता प्रदान करने का निर्णय लिया। इन बजटीय राजसहायता को प्रशासित करने के लिए, सरकार ने 'पीडीएस मिट्टी के तेल और घरेलू एलपीजी राजसहायता योजना 2002' तैयार की। इस योजना के तहत, यह निर्णय लिया गया कि इन राजसहायता को 3–5 वर्षों में क्रमबद्ध तरीके से समाप्त कर दिया जाएगा।

वर्ष 2004 से अंतरराष्ट्रीय बाजारों में तेल और पेट्रोलियम उत्पादों की कीमतों में हुई तेज वृद्धि और अस्थिरता वैश्विक चिंता का विषय बन गई है। कच्चा तेल का भारतीय बास्केट, जो मार्च 2002 में एपीएम के निष्प्रभाव होने के समय लगभग $ 23/बीबीएल था और मई 2004 में $36/बीबीएल था, 2010–11 के दौरान औसत $ 85.09 प्रति बैरल हो गया था। 2011–12 के दौरान कच्चे तेल के भारतीय बास्केट की औसत कीमत और बढ़कर 111.89 डॉलर प्रति बैरल हो गई।

तीन वर्षों से लगातार $ 100/बीबीएल से ऊपर रहने के बाद, वर्ष 2014 की दूसरी छमाही के दौरान कच्चे तेल की कीमतें तेजी से गिरने लगीं। परिणामस्वरूप, 2015–16, 2016–17 और 2017–18 के दौरान कच्चे तेल के भारतीय बास्केट की औसत कीमत क्रमशः $ 46.17/बीबीएल, $ 47.56/बीबीएल और $ 56.43/ बीबीएल दर्ज की गई। 2018–19 के दौरान कीमत बढ़कर $ 69.88 डॉलर/बीबीएल हो गई और 2019–20 में गिरकर $ 60.47 डॉलर/बीबीएल हो गई और कोविड–19 के प्रभाव के कारण 2020.21 के दौरान यह और गिरकर $ 44.82 डॉलर/बीबीएल हो गई। कोविड–19 के प्रभाव से कीमतों को उबरने के बाद 2021.22 में ये बढ़कर $ 79.18 डॉलर/बीबीएल हो गई।

ग्राफ 4: कच्चे तेल का रुझान: भारतीय बास्केट अमरीकी $/बीबीएल में




## 1.6. कच्चे तेल और प्राकृतिक गैस (एलएनजी) का आयात

2020–21 में 4,59,779 करोड़ रुपये के मूल्य के 196.461 एमएमटी आयात की तुलना में 2021–22 (पी) के दौरान कच्चे तेल का आयात 212.4 एमएमटी रहा, जिसका मूल्य 9,01,262 करोड़ रुपये था, जो कि 2020–21 की तुलना में मात्रा की संदर्भ से 8.1% और मूल्य की संदर्भ से 96.02% अधिक है। अप्रैल–दिसंबर 2022 के दौरान कच्चे तेल का आयात 9,93,713 करोड़ रुपये मूल्य पर 172.39 एमएमटी था, जो पिछले वर्ष की इसी अवधि की तुलना में मात्रा और मूल्य के संदर्भ में क्रमशः 0.16% और 61.87% अधिक है।



पेट्रोनेट एलएनजी लिमिटेड दाहेज एलएनजी टर्मिनल का दृश्य

वर्ष 2021–22 के दौरान प्राकृतिक गैस (एलएनजी) का आयात 23.2 एमएमटी था, जिसका मूल्य ₹ 1,00,011 करोड़ था, जबकि 2020–21 में ₹ 58,129 करोड़ के 24.9 एमएमटी का आयात हुआ था, जो 2020–21 की तुलना में मात्रा के संदर्भ में 6.83% और मूल्य के संदर्भ में 72.05% कम है। अप्रैल–दिसंबर, 2022 के दौरान एलएनजी का आयात 15.39 एमएमटी था, जिसका मूल्य ₹ 1,13,525 करोड़ था।

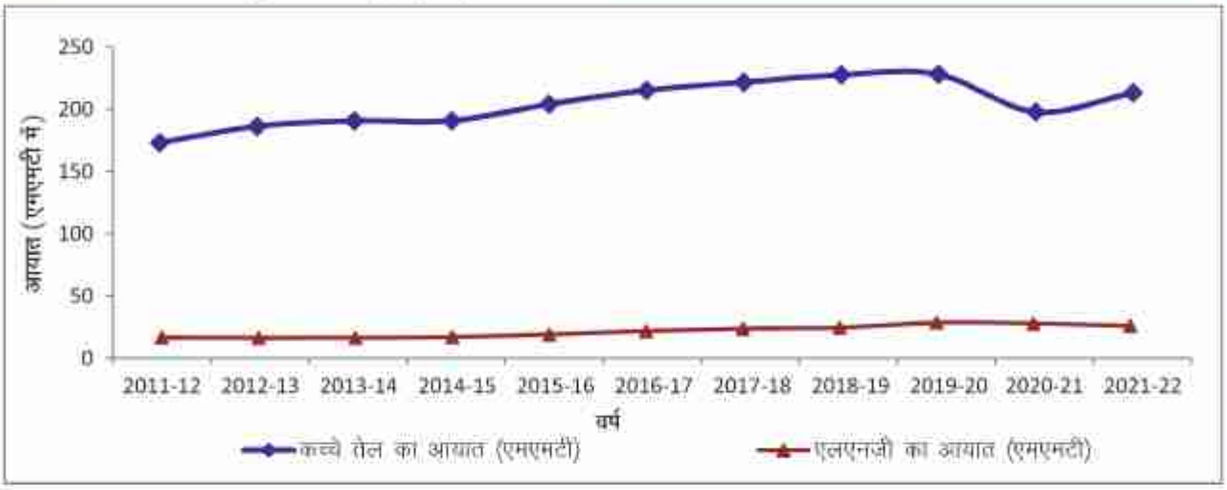
कच्चे तेल के आयात और कच्चे तेल के अंतरराष्ट्रीय (भारतीय बास्केट) मूल्यों में वृद्धि के रुझानों को तालिका–4 और ग्राफ–5 में दिखाया गया है।

**तालिका 4 : कच्चे तेल और प्राकृतिक गैस (एलएनजी) के आयात के रुझान**

| वर्ष | कच्चे तेल का आयात (एमएमटी) | कच्चे तेल के आयात में % वृद्धि | कच्चे तेल का आयात (₹ करोड़) | कच्चे तेल के आयात के मूल्य में % वृद्धि | एलएनजी (एमएमटी) का आयात | एलएनजी के आयात में % वृद्धि | एलएनजी का आयात (₹ करोड़) | एलएनजी के आयात के मूल्य में % वृद्धि |
|---|---|---|---|---|---|---|---|---|
| 2011-12 | 171.73 | 4.97 | 672220 | 47.65 | 13.58 | - | 31718 | - |
| 2012-13 | 184.80 | 7.61 | 784652 | 16.73 | 13.29 | -2.13 | 41902 | 32.11 |
| 2013-14 | 189.24 | 2.40 | 864875 | 10.22 | 13.43 | 1.06 | 53123 | 26.78 |
| 2014-15 | 189.43 | 0.10 | 687416 | -20.52 | 14.04 | 4.53 | 58359 | 9.85 |
| 2015-16 | 202.85 | 7.08 | 416579 | -39.40 | 16.14 | 14.95 | 45039 | -22.82 |
| 2016-17 | 213.93 | 5.46 | 470159 | 12.86 | 18.75 | 16.18 | 41084 | -8.78 |
| 2017-18 | 220.43 | 3.04 | 566450 | 20.48 | 20.71 | 10.42 | 52122 | 26.87 |
| 2018-19 | 226.50 | 2.75 | 783183 | 38.26 | 21.69 | 4.74 | 71867 | 37.88 |
| 2019-20 | 226.95 | 0.20 | 717001 | -8.45 | 25.57 | 17.91 | 67383 | -6.24 |
| 2020-21 | 196.46 | -13.44 | 459779 | -35.87 | 24.93 | -2.52 | 58129 | -13.73 |
| **2021-22** | **212.38** | **8.10** | **9,01,262** | **96.02** | **23.20** | **-6.68** | **1,00,011** | **72.05** |
| 2021-22 (अप्रैल–दिस.) | 156.51 | - | 613899 | - | 18.14 | - | 67566 | - |
| 2022-23 (अप्रैल–दिस.) | 172.39 | 10.15 | 993713 | 61.87 | 15.39 | -15.14 | 113525 | 68.02 |

पी: अनंतिम

ग्राफ 5: कच्चे तेल और प्राकृतिक गैस (एलएनजी) का आयात




## 1.7. पेट्रोलियम उत्पादों का आयात और निर्यात

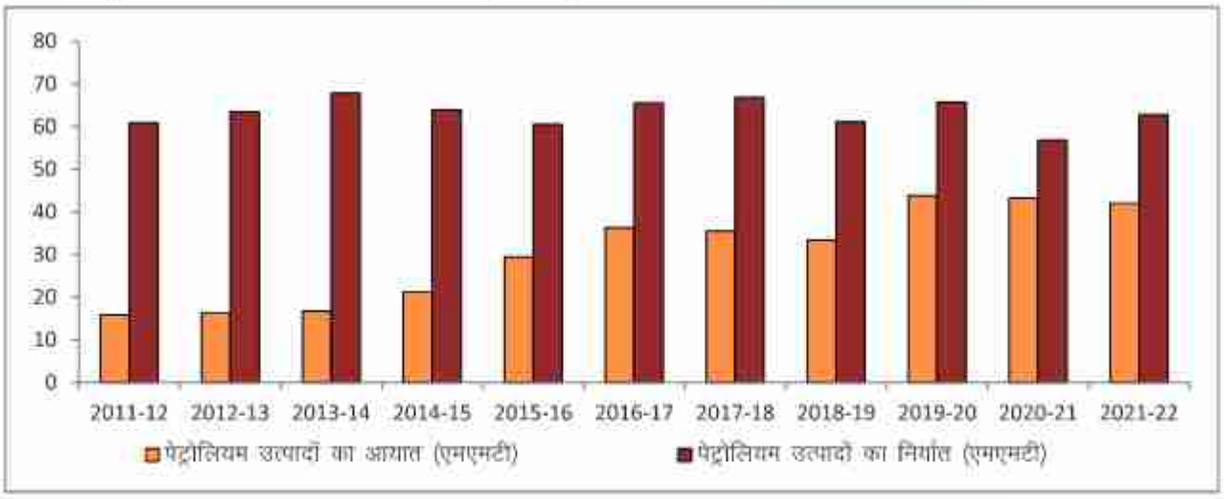
2021–22 (पी) के दौरान पेट्रोलियम उत्पादों का आयात 42.06 एमएमटी था, जिसका मूल्य ₹ 1,88,636 करोड़ था, जबकि 2020–21 में ₹ 1,09,430 करोड़ पर 43.25 एमएमटी का आयात किया गया था, जो 2020–21 की तुलना में मात्रा के संदर्भ में 2.74% कम और मूल्य के संदर्भ में 72.38% अधिक है। इसके अलावा, हालांकि 2021–22 (पी) के दौरान पेट्रोलियम उत्पादों का निर्यात 62.75 एमएमटी रहा, जिसका मूल्य ₹ 3,31,801 करोड़ था, जो 2020–21 के दौरान ₹ 1,57,168 करोड़ के मूल्य के 56.77 एमएमटी निर्यात की तुलना में मात्रा संदर्भ में 10.54% और मूल्य के संदर्भ में 111.11% की वृद्धि दर्शाता है। अप्रैल–दिसंबर 2022 (पी) के दौरान आयातित पेट्रोलियम उत्पादों की मात्रा 1,63,353 करोड़ रुपये मूल्य की 32.87 एमएमटी थी और 3,60,089 करोड़ रुपये मूल्य की 45.73 एमएमटी पेट्रोलियम उत्पादों का निर्यात किया गया था। पेट्रोलियम उत्पादों के आयात और निर्यात की प्रवृत्ति को मात्रा और मूल्य नीचे दर्शाया गया है: (**विवरण परिशिष्ट–VII पर है**):

तालिका 5: पेट्रोलियम उत्पादों और एलएनजी का आयात और निर्यात

| वर्ष | पेट्रोलियम उत्पादों का आयात (एमएमटी) | पेट्रोलियम उत्पादों के आयात में % वृद्धि | पेट्रोलियम उत्पादों का आयात (करोड़ ₹) | पेट्रोलियम उत्पादों के आयात में % वृद्धि | पेट्रोलियम उत्पादों का निर्यात (एमएमटी) | पेट्रोलियम उत्पादों के निर्यात में % वृद्धि | पेट्रोलियम उत्पादों का निर्यात (करोड़ ₹) | पेट्रोलियम उत्पादों के निर्यात में % वृद्धि |
|---|---|---|---|---|---|---|---|---|
| 2011-12 | 15.85 | -8.80 | 68091 | 21.59 | 60.84 | 2.98 | 284644 | 44.59 |
| 2012-13 | 16.35 | 3.18 | 68852 | 1.12 | 63.41 | 4.23 | 320090 | 12.45 |
| 2013-14 | 16.70 | 2.10 | 75896 | 10.23 | 67.86 | 7.03 | 368279 | 15.05 |
| 2014-15 | 21.30 | 27.57 | 74644 | -1.65 | 63.93 | -5.79 | 288580 | -21.64 |
| 2015-16 | 29.46 | 38.28 | 65361 | -12.44 | 60.54 | -5.31 | 176780 | -38.74 |
| 2016-17 | 36.29 | 23.19 | 71566 | 9.49 | 65.51 | 8.22 | 194893 | 10.25 |
| 2017-18 | 35.46 | -2.28 | 88374 | 23.49 | 66.83 | 2.01 | 225388 | 15.65 |
| 2018-19 | 33.35 | -5.96 | 113665 | 28.62 | 61.10 | -8.58 | 267697 | 18.77 |
| 2019-20 | 43.79 | 31.30 | 125742 | 10.62 | 65.69 | 7.51 | 254018 | -5.11 |
| 2020-21 | 43.25 | -1.23 | 109430 | -12.97 | 56.77 | -13.57 | 157168 | -38.13 |
| **2021-22** | **42.06** | **-2.75** | **188636** | **72.38** | **62.75** | **10.54** | **331801** | **111.11** |
| 2021-22 (अप्रैल–दिस.) | 30.85 | - | 134329 | - | 46.09 | - | 219304 | - |
| 2022-23 (अप्रैल–दिस.) | 32.87 | 6.55 | 163353 | 21.61 | 45.73 | -0.77 | 360089 | 64.20 |

*: प्राक्कलित पी: अनंतिम

ग्राफ 6 : पेट्रोलियम उत्पादों का आयात और निर्यात (मात्रा में)




## 1.8. इक्विटी तेल और विदेश से गैस

वित्त वर्ष 2021–22 के दौरान, भारत ने अपनी मांग की पूर्ति के लिए कच्चे तेल का 86% (220 एमएमटी) और प्राकृतिक गैस का 48% (23.4 एमएमटी) आयात किया।

किसी एक भौगोलिक क्षेत्र पर अत्यधिक निर्भरता से हमारी ऊर्जा सुरक्षा पर प्रतिकूल प्रभाव पड़ने की संभावना है। भारत में अधिकांश हाइड्रोकार्बन आयात मध्य–पूर्वी क्षेत्र से होता है, जहां पर होर्मुज जलडमरूमध्य एक चोक प्वाइंट के साथ–साथ एक भू–राजनीतिक फ्लैशप्वाइंट दोनों बन जाता है।

हाल ही में, ईरान और वेनेजुएला पर अमेरिकी प्रतिबंधों और रूस–यूक्रेन युद्ध के परिणामस्वरूप हमने आपूर्ति में व्यवधान और कीमतों में उतार–चढ़ाव देखा है।

कच्चे तेल और प्राकृतिक गैस की आपूर्ति के खतरों से खुद को बचाने और ओपीईसी पर अपनी निर्भरता कम करने के लिए, सरकार तेल और गैस के आपूर्ति स्रोतों के विविधीकरण पर जोर दे रही है। पिछले कुछ वर्षों में, संयुक्त राज्य अमेरिका, कनाडा, अंगोला और गुयाना जैसे कच्चे तेल के नए आपूर्तिकर्ताओं को शामिल किया गया है और साथ ही रूस जैसे मौजूदा आपूर्तिकर्ताओं से कच्चे तेल के आयात में वृद्धि की गई है। इसी तरह से एलएनजी के आयात को भी कतर के अलावा ऑस्ट्रेलिया, यूएसए और रूस जैसे नए स्रोतों को जोड़कर विविधीकृत किया गया है।

विदेशी संपत्तियों के अधिग्रहण पर अपने रुख में एक प्रमुख बदलाव करते हुए भारत धीरे–धीरे शुद्ध लाभांश–आधारित निवेश मॉडल से इक्विटी ऑयल मॉडल की हकदारी की ओर बढ़ रहा है। इससे हमें ऊर्जा की बढ़ती जरूरतों के लिए जरूरी तेल हासिल करने में मदद मिलेगी।

1 अप्रैल 2022 तक भारतीय पीएसयू ने विभिन्न ईएंडएस विदेशी संपत्तियों में लगभग $ 37.94 बिलियन अमेरिकी डॉलर का निवेश किया है। वित्त वर्ष 2021–22 के दौरान, इन परिसंपत्तियों से भारतीय पीएसयू के इक्विटी तेल और गैस की हिस्सेदारी लगभग 21.7 एमएमटीओई थी, जो भारत के घरेलू उत्पादन के 34.1% के बराबर है।

## 1.9. अन्वेषण और लाइसेंसिंग नीति में सुधार

सरकार ने अन्वेषण गतिविधियों को तेज करने, विदेशी और घरेलू निवेश आकर्षित करने और घरेलू उत्पादन बढ़ाने के उद्देश्य से विभिन्न नीतिगत पहलें की हैं। सरकार द्वारा तेल और गैस के घरेलू उत्पादन को बढ़ाने और आयात पर निर्भरता को कम करने के लिए की गई प्रमुख नीतिगत पहलें निम्नानुसार हैं:

**दीर्घकालिक पहलें:**

i. हाइड्रोकार्बन खोजों के शीघ्र मौद्रीकरण के लिए उत्पादन हिस्सेदारी संविदा (पीएससी) व्यवस्था में छूट, विस्तार और स्पष्टीकरण से संबंधित नीति, 2014।

ii. लघु क्षेत्र संबंधी नीति, 2015 तैयार की गई।

iii. हाइड्रोकार्बन अन्वेषण और लाइसेंसिंग नीति, 2016। ओपन एकरेज लाइसेंसिंग नीति (ओएएलपी): हाइड्रोकार्बन अन्वेषण और लाइसेंस नीति (एचईएलपी), 2017 को लागू करने की कार्य पद्धति।

iv. उत्पादन हिस्सेदारी संविदा के विस्तार की नीति, 2016 और 2017।

v. कोल बेड मीथेन के शीघ्र मौद्रीकरण की नीति, 2017।

vi. राष्ट्रीय डेटा कोष, 2017 की स्थापना।

vii. तलछटीय बेसिन 2017 में गैर मूल्यांकित क्षेत्रों का मूल्यांकन, हाइड्रोकार्बन संसाधनों 2017 का पुनर्मूल्यांकन।

viii. पेट्रोलियम संचालन 2017 के लिए स्थल पुनःस्थान और परित्याग संबंधी दिशानिर्देश।

ix. प्री–एनईएलपी और एनईएलपी ब्लॉक 2018 में प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट्स के कामकाज को कारगर बनाने का ढांचा।

x. पेट्रोलियम एवं प्राकृतिक गैस नियम 2018 के नियम–3 के खंड (के) के तहत 'पेट्रोलियम' की परिभाषा में संशोधन।

xi. तेल और गैस के लिए उन्नत पुनर्प्राप्ति विधियों को बढ़ावा देने और प्रोत्साहन देने की नीति, 2018।

xii. मौजूदा प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट्स, कोल बेड मीथेन कॉन्ट्रैक्ट्स और नामांकित क्षेत्रों के तहत अपरंपरागत हाइड्रोकार्बन के अनुप्रयोग और अन्वेषण के लिए नीतिगत ढांचा, 2018।

xiii. कोल इंडिया लिमिटेड (सीआईएल) और उसकी सहायक कंपनियों को आवंटित कोयला खनन पट्टे के तहत क्षेत्रों के लिए कोल बेड मीथेन (सीबीएम) के अनुप्रयोग और अन्वेषण के लिए नीतिगत ढांचा, 2018।

xiv. प्री–एनईएलपी और एनईएलपी ब्लॉक के संबंध में प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट्स के कार्यान्वयन को सुव्यवस्थित करने के लिए नीतिगत ढांचा, 2018।

xv. तेल और गैस के घरेलू अन्वेषण और उत्पादन को बढ़ावा देने के लिए हाइड्रोकार्बन अन्वेषण और लाइसेंसिंग नीति में सुधार, 2019।

xvi. विवाद समाधान समिति, 2019।

xvii. प्राकृतिक गैस विपणन सुधार, 2020।

xviii. ई–बिडिंग के माध्यम से घरेलू उत्पादित प्राकृतिक गैस के लिए बाजार मूल्य की खोज, 2020।

xix. घरेलू स्तर पर उत्पादित कच्चे तेल की बिक्री पर नियंत्रण, 2022।

xx. विपणन और मूल्य निर्धारण स्वतंत्रता के साथ डीपवाटर, अल्ट्रा डीपवाटर और उच्च दबाव–उच्च तापमान क्षेत्रों में की गई खोजों से उत्पादित गैस का बाजार मूल्य और बिक्री और पुनर्विक्रय का पता लगाना, 13 जनवरी, 2023।

xxi. भारतीय नौसेना के साथ विशेष व्यवस्था के तहत, लगभग 99% गैर–गमनीय क्षेत्रों को अन्वेषण और उत्पादन गतिविधियों के लिए खोल दिया गया है।

**अल्पकालिक पहलें:**

i. मौजूदा खोजों का शीघ्र मौद्रीकरण।

ii. आईओआर और ईओआर तकनीकों के कार्यान्वयन के माध्यम से रिकवरी फैक्टर में सुधार।

iii. सूखे कुओं का पुनरुद्धार।

iv. कुओं की इन्फिल ड्रिलिंग।

v. सुविधाओं और अन्य बुनियादी ढांचे का नवीनीकरण।

vi. सेवा संविदों और आउटसोर्सिंग के माध्यम से ऑनशोर छोटी और सीमांत खोजों का मौद्रीकरण।

vii. मौजूदा परिपक्व क्षेत्रों का पुनर्विकास और नए क्षेत्रों / सीमांत क्षेत्रों का विकास।

viii. चयनित क्षेत्रों में उपयुक्त प्रौद्योगिकियों का प्रवेश।

ix. प्रोडक्शन इनहैंसमेंट कॉन्ट्रैक्ट्स का कार्यान्वयन।

## 1.10. अन्वेषण और लाइसेंसिंग पॉलिसी में नीतिगत सुधारों का कार्यान्वयन, फरवरी, 2019

सरकार ने 28 फरवरी, 2019 को 'तेल और गैस के घरेलू अन्वेषण और उत्पादन को बढ़ावा देने के लिए अन्वेषण और लाइसेंसिंग पॉलिसी में सुधार' को अधिसूचित किया, जिसका उद्देश्य अन्वेषण गतिविधियों को तेज करना, विदेशी और घरेलू निवेश को आकर्षित करना और घरेलू उत्पादन में वृद्धि करना है। नीतिगत सुधारों का प्रमुख कार्यान्वयन निम्नानुसार है:

i. 'राजस्व' के स्थान पर 'उत्पादन' की अधिकता पर ध्यान केन्द्रित करना–आगे से ओएलएपी–IV बोली प्रक्रिया को लागू करना

क. संभाव्यता के आधार पर भारतीय तलछटी घाटियों का वर्गीकरण।

ख. अन्वेषण कार्यों से संबंधित कार्यक्रमों को अधिक महत्व देकर अन्वेषण गतिविधियों को बढ़ावा देना।

क. श्रेणी–II और III बेसिन: सरकार को राजस्व का कोई हिस्सा नहीं देना। कार्य–कार्यक्रम के आधार को 100% वेटेज देकर क्षेत्र पुरस्कार देना।

ख. श्रेणी–I बेसिन:

1. कार्य कार्यक्रम–70% वेटेज
2. राजस्व अंश–30% वेटेज
3. एचआरपी पर राजस्व अंश की कैपिंग–50%

ग. प्रारंभिक विकास के लिए अन्वेषण हेतु कम अवधि।

घ. प्रारंभिक मौद्रीकरण और वाणिज्यिक उत्पादन के लिए वित्तीय रियायतें।

ii. 28.02.2019 के बाद स्वीकृत क्षेत्र विकास योजना (एफडीपी) के लिए प्राकृतिक गैस के विपणन और मूल्य निर्धारण की स्वतंत्रता।

iii. राष्ट्रीय तेल कंपनियों (एनओसी) द्वारा संचालित 66 छोटे और सीमांत उत्पादक नामांकन क्षेत्रों में से बोली लगाना। ओएनजीसी ने 17 तटवर्ती संविदा क्षेत्रों के तहत 64 क्षेत्रों के लिए बोलियां आमंत्रित कीं, 15 संविदा क्षेत्रों के तहत 60 क्षेत्रों को सफलता प्रक्रिया के बाद बोली लगाने वालों को सौंप दिया गया है। 2 संविदा क्षेत्रों के तहत प्रस्तावित 4 क्षेत्रों के लिए कोई बोली प्राप्त नहीं हुई। ओआईएल ने 2 क्षेत्रों के लिए बोलियां आमंत्रित की हैं और 1 क्षेत्र से संबंधित कार्य चल रहा है।

iv. गैर–अन्वेषित/गैर–आवंटित क्षेत्रों में अन्वेषण में वृद्धि: बोली चक्र की आवृत्ति को वर्ष में दो बार से बढ़ाकर तीन बार करने सहित सरलीकृत और निवेशक अनुकूलित आदर्श बोली दस्तावेज।

v. अनुमोदन और मंजूरी में तेजी लाने के लिए अधिकार प्राप्त समन्वय समिति (ईसीसी) का गठन। समिति का गठन मई 2019 में किया गया था।

vi. संविदात्मक प्रशासन के तहत ठेकेदारों के साथ उभरे विवादों को हल करने के लिए विवाद समाधान हेतु विवाद समाधान समिति का गठन। समिति का गठन दिसंबर 2019 में किया गया था।

**ईज ऑफ डूइंग बिजनेस को बढ़ावा देना**

i. डीजीएच की भूमिका को पुनर्परिभाषित करना: अनुपालन/नियामक, विकास संबंधी और समन्वय की भूमिका निभाने के लिए डीजीएच की भूमिका को सुदृढ़ करने के लिए अतिरिक्त शक्तियों और कार्यों का प्रत्यायोजन अक्टूबर, 2019 को किया गया।

ii. सरकार/डीजीएच/प्रबंधन समिति के अनुमोदन प्राप्त करने की प्रक्रिया को कम करना और अनुमोदनों को शीघ्र प्रदान करने पर जोर देने के साथ सरलीकृत संविदात्मक शर्तें।

iii. निम्न के लिए आईटी वर्कफ्लो के आधार पर अनुमोदन प्रदान करने के लिए डीजीएच में इलेक्ट्रॉनिक सिंगल विंडो क्लीयरेंस सिस्टम बनाया गया है:

क. पीईएल/पीएमएल आवेदन प्रणाली

ख. पीएससी प्रबंधन प्रणाली

ग. ईसीएमएस आवेदन

घ. वेसल क्लीयरेंस प्रबंधन प्रणाली (वीसीएमएस)

ङ. एक्सपैट क्लीयरेंस प्रणाली

च. पर्यावरणीय मंजूरी

iv. 37 पीएससी प्रक्रियाओं के लिए स्व–प्रमाणन आधार पर दस्तावेज जमा करने के लिए मानक संचालन प्रक्रियाओं (एसओपी) सहित अन्य प्रक्रियाओं और पद्धतियों का सरलीकरण।

## 1.11. हाइड्रोकार्बन अन्वेषण लाइसेंसिंग नीति (एचईएलपी)

सरकार द्वारा 30 मार्च, 2016 को हाइड्रोकार्बन अन्वेषण लाइसेंसिंग नीति (एचईएलपी) को अधिसूचित किया गया था और दिनांक 1 जुलाई, 2017 को ओपन एकरेज लाइसेंसिंग पॉलिसी (ओएएलपी) की अधिसूचना के साथ इसे औपचारिक रूप से शुरू किया था। हाइड्रोकार्बन अन्वेषण लाइसेंसिंग नीति (एचईएलपी) प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट (पीएससी) व्यवस्था से रेवेन्यू शेयरिंग कॉन्ट्रैक्ट (आरएससी) व्यवस्था में एक आदर्श बदलाव है, जो 'ईज ऑफ डूइंग बिजनेस' के सिद्धांत के आधार पर नियामक बोझ को कम करके भविष्य में अन्वेषण और उत्पादन (ई एंड पी) गतिविधियों के लिए नियामक व्यवस्था को पूरी तरह से खत्म कर करता है। यह नीति अन्य बातों के साथ–साथ ईएंडपी प्रचालकों को एक समान लाइसेंसिंग के माध्यम से तेल क्षेत्र विनियमन और विकास (ओआरडी) अधिनियम, 1948 और पेट्रोलियम और प्राकृतिक गैस (पीएनजी) नियम, 1959 के तहत कवर किए गए सभी हाइड्रोकार्बन संसाधनों (पारंपरिक और अपारंपरिक) का पता लगाने और उनके दोहन के लिए उन्हें सक्षम बनाती है। एकरेज क्षेत्रों को अन्वेषण और विकास के लिए प्रदान करने हेतु एचईएलपी/ओपन एकरेज लाइसेंसिंग नीति (ओएएलपी) के तहत निम्नलिखित कदम उठाए गए हैं:

i. **ओएएलपी बोली प्रक्रिया के सात राउंड** के माध्यम से सभी बेसिन श्रेणियों में 2,07,691 वर्ग किलोमीटर क्षेत्र में फैले कुल **134 अन्वेषण ब्लॉक** सफल बोलीदाताओं को सौंपे गए हैं।

ii. इसके अलावा, 7 जुलाई, 2022 को शुरू की गई ओएएलपी बोली राउंड–VIII के तहत अंतरराष्ट्रीय प्रतिस्पर्धी बोली के माध्यम से 10 ओपन एकरेज वाले ब्लॉक सौंपे गए हैं, जिसमें कुल 36,316 वर्ग किलोमीटर का एकरेज क्षेत्र शामिल है। बोली बंद होने की तारीख 16.05.2023 है।

iii. अन्वेषण और विकास के तहत एकरेज को और बढ़ाने के लिए, सरकार ने 10 अक्टूबर 2022 को **मेगा ओएएलपी बोली (राउंड–IX)** शुरू किया है, जिसमें लगभग 2.23 लाख वर्ग किमी के क्षेत्र को कवर करने वाले **26 ओपन एकरेज वाले ब्लॉक** अंतरराष्ट्रीय प्रतिस्पर्धी बोली के माध्यम से अन्वेषण और विकास के लिए पेश किए गए हैं। पेश किए गए ब्लॉकों में 15 अल्ट्रा डीप–वाटर ब्लॉक, 8 शैलो वॉटर और 3 ऑनलैंड ब्लॉक शामिल हैं।

iv. **ओएएलपी (एससीबीएम–2021) के तहत विशेष सीबीएम बोली दौर 2021:** भारत सरकार ने 22 सितंबर 2021 को ओपन एकरेज लाइसेंसिंग पॉलिसी (ओएएलपी) के तहत विशेष सीबीएम बोली दौर–2021 आरंभ किया है, जिसमें ~700 बीसीएम पूर्वानुमानित सीबीएम संसाधन के साथ 8,458 वर्ग किलोमीटर को कवर करने वाले 15 सीबीएम ब्लॉक की पेशकश की गई है। अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) और प्राप्त बोलियों के बाद के मूल्यांकन के आधार पर, 3,862 वर्ग किलोमीटर क्षेत्र में फैले 4 ब्लॉक जिनमें लगभग 120 बीसीएम सीबीएम संसाधन हैं तीन कंपनियों को सौंपे गए हैं जिसमें एक एनओसी (ओएनजीसी) और 02 निजी कंपनियां (वेदांत और इनवेनियर पेट्रोडाइन एनर्जी) शामिल है और इसके लिए 9 सितंबर 2022 को भारत सरकार के साथ राजस्व शेयरिंग कॉन्ट्रैक्ट (आरएससी) हस्ताक्षर किया गया था।

v. **ओएएलपी (एससीबीएम–2022) के तहत विशेष सीबीएम बोली दौरा 2022:** सरकार ने 10 अक्टूबर 2022 को विशेष सीबीएम बोली दौर का दूसरा दौर शुरू किया, जिसमें 17 मार्च 2023 तक अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) के माध्यम से लगभग 5,860 वर्ग किलोमीटर क्षेत्र को कवर करने वाले 16 सीबीएम ब्लॉकों की पेशकश की गई है। प्रस्तावित सभी 16 ब्लॉक श्रेणी–III बेसिन में हैं। बोली जमा करने की प्रक्रिया 1 मई, 2023 से शुरू होगा और 31 मई, 2023 को बंद होगा।

## 1.12. खोजे गए लघु क्षेत्र संबंधी नीति (डीएसएफ)

दिनांक 14.10.2015 के राजपत्र संकल्प द्वारा अधिसूचित सीमांत क्षेत्र नीति (एमएफपी) और जिसे बाद में दिनांक 05.04.2018 की अधिसूचना के माध्यम से खोजे गए लघु क्षेत्र संबंधी नीति (डीएसएफ) के रूप में पुनर्नामित किया गया था, जिसका उद्देश्य तेल और गैस के घरेलू उत्पादन को बढ़ाने के लिए समयबद्ध चरणों में वर्षों से बंद हाइड्रोकार्बन संसाधनों का मौद्रीकरण करना है। डीएसएफ बोली दौर–I (2016) और डीएसएफ बोली दौर–II (2018) और डीएसएफ बोली दौर–III (2022) के तीन संपन्न डीएसएफ बोली दौर के तहत, सफल बोलीदाताओं को कुल 85 राजस्व शेयरिंग कॉन्ट्रैक्ट्स (आरएससी) जिसमें 175 डिस्कवरी/फील्ड शामिल हैं सौंपे गए थे।

## 1.13. प्राकृतिक गैस विपणन सुधार

i. गैस आधारित अर्थव्यवस्था की ओर बढ़ते हुए एक अन्य महत्वपूर्ण कदम उठाते हुए सरकार ने हेनरी हब (यूएसए), अल्बर्टा (कनाडा), एनबीपी (यूके), रूस आदि जैसे प्रमुख अंतरराष्ट्रीय केंद्रों में प्रचलित कीमतों के आधार पर अक्टूबर, 2014 में 'नए घरेलू प्राकृतिक गैस मूल्य निर्धारण दिशानिर्देशों' को मंजूरी दी ताकि उत्पादक और उपभोक्ता दोनों की आवश्यकताओं के बीच संतुलन रखा जा सके। प्राकृतिक गैस की कीमतों का हर छह महीने में संशोधन किया जाता है जिसे पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के तहत पेट्रोलियम योजना और विश्लेषण सेल (पीपीएसी) द्वारा अधिसूचित किया जाता है। इस नीति ने सरकारी हस्तक्षेप के बिना पारदर्शी तरीके से पूर्व परिभाषित मापदंडों पर निर्धारित घरेलू प्राकृतिक गैस की कीमतों को मानकीकृत करने में मदद की है। ये दिशानिर्देश नामांकित क्षेत्रों और एनईएलपी, पूर्व–एनईएलपी ब्लॉकों/क्षेत्रों से उत्पादित प्राकृतिक गैस पर लागू होते हैं, जहां सरकार द्वारा उत्पादन साझेदारी संविदा (पीएससी) के अनुसार मूल्य निर्धारण अनुमोदित किया जाता है।

ii. तदनुसार, 2015 के बाद से सरकार ने डीएसएफ, ओएएलपी, सीबीएम व्यवस्थाओं के तहत गैस के लिए तथा 28.02.2019 के बाद उत्तर–पूर्वी क्षेत्र (एनईआर) से उत्पादित गैस और नई गैस खोजों के लिए सभी व्यवस्थाओं के तहत विपणन और मूल्य निर्धारण स्वतंत्रता प्रदान की।

iii. उच्च दबाव–उच्च तापमान (एचपी–एचटी) जलाशयों और गहरे पानी और अत्यधिक गहरे पानी वाले क्षेत्रों जैसे दुर्गम क्षेत्रों में गैस उत्पादन को प्रोत्साहित करने के लिए सरकार ने 23 मार्च, 2016 को प्राकृतिक गैस उत्पादन पर मूल्य निर्धारण स्वतंत्रता सहित विपणन करने की छूट प्रदान की जिसमें पेट्रोलियम आयोजन और विश्लेषण सेल (पीपीएसी) द्वारा घोषित अर्धवार्षिक आधार की मूल्य सीमा लागू है।

iv. इसके अलावा, दिनांक 15.10.2020 के अधिसूचना के माध्यम से एक पारदर्शी और प्रतिस्पर्धी प्रक्रिया के माध्यम से गैस के बाजार मूल्य की खोज करने और सहयोगी कंपनियों को बोली में भाग लेने की अनुमति देने के लिए मानक प्रक्रिया तैयार की गई। गैस आधारित अर्थव्यवस्था की ओर बढ़ने के एक अन्य महत्वपूर्ण कदम उठाते हुए दिनांक 15.10.2020 की अधिसूचना के माध्यम से 'प्राकृतिक गैस विपणन सुधार' की घोषणा की गई ताकि पारदर्शी और प्रतिस्पर्धी प्रक्रिया से गैस उत्पादकों द्वारा बाजार में बेची जाने वाली गैस के बाजार मूल्य का पता लगाने के लिए मानक प्रक्रिया निर्धारित की जा सके; गैस की बिक्री के लिए सहयोगी कंपनियों को बोली प्रक्रिया में भाग लेने की अनुमति दी जा सके और कुछ क्षेत्र विकास योजना (एफडीपी) के लिए विपणन स्वतंत्रता की अनुमति दी जा सके जहां उत्पादन साझाकरण संविदा पहले से ही मूल्य निर्धारण स्वतंत्रता प्रदान करते हों।

इसके बाद, दिनांक 03.12.2020 की अधिसूचना के द्वारा ई–बिडिंग के माध्यम से घरेलू रूप से उत्पादित प्राकृतिक गैस के लिए बाजार मूल्य की खोज के लिए विस्तृत दिशानिर्देश जारी किए गए थे। ई–बिडिंग करने के लिए डीजीएच द्वारा सूचीबद्ध एजेंसियों को भी अधिसूचित किया गया है।

v. इसके अलावा, दिनांक 19.08.2021 के कार्यालय ज्ञापन द्वारा मूल्य निर्धारण और विपणन स्वतंत्रता वाले गैस उत्पादकों को पीएनजीआरबी द्वारा प्राधिकृत गैस एक्सचेंजों के माध्यम से कम मात्रा में गैस बेचने की अनुमति दी गई है।

vi. गैस सुधारों और पर्यावरण के रक्षण के लिए एक अन्य कदम के रूप में, सरकार ने दिनांक 22.11.2021 के कार्यालय ज्ञापन द्वारा तेल और गैस कुओं के परीक्षण के दौरान उत्पादित एड–हॉक/परीक्षण गैस के मौद्रीकरण के लिए विस्तृत दिशानिर्देश जारी किए।

vii. पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय ने और सुधार करने के लिए 30 अगस्त 2022 को **जाने–माने ऊर्जा विशेषज्ञ किरीट पारिख की अध्यक्षता में एक समिति** का गठन किया है, जो अन्य बातों के साथ–साथ **वर्तमान गैस मूल्य निर्धारण फॉर्मूले की समीक्षा** करेगी, अंत्य उपभोक्ताओं के लिए उचित मूल्य सुनिश्चित करेगी और गैस आधारित अर्थव्यवस्था सुनिश्चित करने के भारत के दीर्घकालिक विजन को साकार करने के लिए बाजार उन्मुख, पारदर्शी और विश्वसनीय मूल्य निर्धारण व्यवस्था का सुझाव देगी। इस समिति ने दिनांक 30.11.2022 को भारत सरकार को अपना प्रतिवेदन प्रस्तुत किया है।

viii. दिनांक 13 जनवरी, 2023 की अधिसूचना के माध्यम से सरकार ने विपणन और मूल्य निर्धारण स्वतंत्रता के साथ गहरे पानी, अत्यधिक गहरे पानी और उच्च दबाव/उच्च तापमान वाले क्षेत्रों में किए गए खोजों से उत्पादित गैस की बाजार मूल्य की खोज और बिक्री तथा पुनर्विक्रय पर स्पष्टीकरण प्रदान किया है।

## 1.14. क्रूड ऑयल डीरेग्यूलेशन संबंधी, नीति, 29 जून, 2022

आर्थिक कार्य संबंधी मंत्रिमंडलीय समिति ने 'घरेलू रूप से उत्पादित कच्चे तेल की बिक्री के विनियमन' को मंजूरी दे दी है। इस नीतिगत निर्णय के माध्यम से, सरकार 01.10.2022 से सभी नीतिगत व्यवस्थाओं में विपणन स्वतंत्रता प्रदान करते हुए कच्चे तेल का आवंटन और घनीभूत करना बंद कर देगी। उत्पादन साझेदारी कॉन्ट्रैक्ट्स (पीएससी) में मौजूद सरकार, या उसके नामित, या सरकारी कंपनियों को कच्चा तेल बेचने की शर्त को हटा दिया जाएगा और सभी अन्वेषण और उत्पादन संचालक घरेलू बाजार में अपने क्षेत्रों से कच्चा तेल बेचने के लिए स्वतंत्र होंगे। तथापि, पहले की तरह ही कच्चे तेल के निर्यात की अनुमति अब भी नहीं होगी। सरकारी राजस्व जैसे कि रॉयल्टी, उपकर और संविदात्मक भुगतान आदि की गणना बिक्री मूल्य या कच्चे तेल की भारतीय बास्केट की कीमतों के आधार पर की जाएगी, जैसा कि सरकार द्वारा नामित एजेंसी द्वारा गणना की गई जाती है, जो भी अधिक हो।

## 1.15. नो–गैस क्षेत्रों में कमी

सरकार अप्रैल 2022 में 'नो गैस' क्षेत्रों को लगभग 99% तक कम करने में सफल रही है, जो अब तक ईएंडपी गतिविधियों के लिए उपलब्ध नहीं थे। इससे लगभग 1 मिलियन वर्ग किमी का क्षेत्र अन्वेषण के लिए भारत के ईईजेड में उपलब्ध हो गया है।

## 1.16. डाटा सृजन के माध्यम से संभाव्य धारणा में विस्तार

i. **राष्ट्रीय डाटा कोष (एनडीआर):** एनडीआर 28 जून, 2017 को शुरू किया गया था और संपूर्ण अन्वेषण और उत्पादन (ईएण्डपी) डाटा को वाणिज्यिक अन्वेषण, अनुसंधान और विकास तथा शैक्षणिक उद्देश्यों हेतु उपलब्ध कराने के लिए इसे डीजीएच में स्थापित किया गया था। यह देश के भू–वैज्ञानिक डाटाबेस के भंडार के रूप में कार्य करता है और संभावित बोलीदाताओं को ओएएलपी के तहत बोली लगाने के लिए अपनी पसंद के ब्लॉक चुनने में मदद करने में महत्वपूर्ण भूमिका निभाता है। ईएंडपी डाटा की लगातार बढ़ती मांगों को पूरा करने के लिए, एनडीआर को क्लाउड–सक्षम हाइपर–कन्वर्ज्ड इंफ्रास्ट्रक्चर में अपग्रेड किया जा रहा है ताकि उद्योग को सार्थक उपयोग के लिए आसानी से डाटा की सुविधा मिल सके। 31 दिसंबर 2022 तक एनडीआर में अपलोड किया गया कुल डाटा 2डी भूकंपीय डाटा के रूप में 3.284 मिलियन लाइन किलोमीटर (एलकेएम), 3डी भूकंपीय डेटा के रूप में 1.041 मिलियन वर्ग किलोमीटर (एसकेएम) और 22,563 कुएं और लॉग डेटा तथा 46,826 रिपोर्ट हैं।

ii. **हाइड्रोकार्बन संसाधनों का पुनर्मूल्यांकन:** देश में हाइड्रोकार्बन संसाधन क्षमता के अद्यतन प्राक्कलन के लिए देश में सभी 26 तलछटी बेसिनों के हाइड्रोकार्बन संसाधनों का पुनर्मूल्यांकन 2017 में इसके पहले के प्राक्कलन के लगभग दो दशक पहले के बाद पूरा किया गया था। इसके परिणामस्वरूप 41.87 बिलियन टन (तेल और तेल के समतुल्य गैस) के ऑडर के पारंपरिक हाइड्रोकार्बन संसाधनों का अनुमान लगाया गया, जो कि 28.08 बिलियन टन (गैस के तेल और तेल के बराबर) के पहले के अनुमान की तुलना में लगभग 49% अधिक है।

iii. **राष्ट्रीय भूकंप कार्यक्रम (एनएसपी):** राष्ट्रीय भूकंप कार्यक्रम (एनएसपी) को 12 अक्टूबर 2016 को शुरू किया गया था ताकि ₹ 2,932.99 करोड़ की लागत पर स्वीकृत जमीनी क्षेत्रों में अमूल्यांकित तलछटी घाटियों में 48,243 लाइन किलोमीटर (एलकेएम) के डेटा अधिग्रहण, प्रसंस्करण और व्याख्या (एपीआई) के लिए 2डी भूकंपीय सर्वेक्षण आयोजित की जा सके। इसे ओएनजीसी और ओआईएल द्वारा निष्पादित किया गया था। आज की तारीख तक, परियोजना का 97.34% अर्थात् 46,752 एलकेएम भूकंपीय डेटा का अधिग्रहण, प्रसंस्करण और व्याख्या (एपीआई) पूरी हो चुकी है। वर्ष 2021 तक, 46,752 एलकेएम डेटा का अधिग्रहण अथवा 97% लक्ष्य पूरा हो चुका है और रिपोर्ट के साथ डाटा के राष्ट्रीय डाटा कोष (एनडीआर) में जमा किया जा चुका है। भौगोलिक दुर्गम क्षेत्र का शेष 2डी डेटा, जो दुर्गम भू–भाग और प्रतिकूल वातावरण के कारण प्राप्त नहीं किया जा सका अब हवाई भूभौतिकीय सर्वेक्षण के माध्यम से लिया जा रहा है। गुजरात ऊर्जा अनुसंधान और प्रबंधन संस्थान (जीईआरएमआई), गांधीनगर द्वारा एनएसपी डेटा का तृतीय–पक्ष मूल्यांकन अध्ययन किया गया है, जिसकी एक रिपोर्ट एनडीआर में उपलब्ध है।

लंबे फैलाव (12 से 18 किलोमीटर) और आधुनिक प्रौद्योगिकी का उपयोग करके एनएसपी के तहत सृजित डाटा ने कई अप्रयुक्त क्षेत्रों में महत्वपूर्ण उप–सतही भूवैज्ञानिक जानकारी प्रदान की है जो इन घाटियों के भूवैज्ञानिक सेट–अप को समझने में मदद करेगी। कुछ क्षेत्रों में उप–ट्रेपियन मेसोज़ोइक अवसादों की उपस्थिति का भी संकेत दिया गया है। यह डाटा मौजूदा उत्पादक बेसिनों के विस्तार की दिशा में महत्वपूर्ण जानकारी प्रदान करते हैं क्योंकि टेक्टोनिक्स फ्रेमवर्क के बारे में प्राप्त जानकारी में सुधार हुआ है। ऐसे कई बेसिनों जैसे कि महानदी, कच्छ–सौराष्ट्र, विंध्य, गंगा, बंगाल, हिमालयी फोरलैंड, केजी, राजस्थान, गंगा, छत्तीसगढ़, कडप्पा, डेक्कन सिंक्लीज आदि के 2डी रेखाओं में भूगर्भीय रुचि की विशेषताएं देखी जा सकती हैं।

iv. **एयरबोर्न ग्रेविटी एंड ग्रेडियोमेट्री (एजीजी) सर्वेक्षण:** एनएसपी परियोजना के तहत कवर नहीं किए जा सके दुर्गम और शत्रुतापूर्ण भौगोलिक क्षेत्रों को कवर करने के लिए ग्रेडियोमेट्री (एजीजी) सर्वेक्षण के साथ 40,000 उड़ान एलकेएम एयरबोर्न जियोफिजिकल सर्वे की भी योजना बनाई गई है और एक निविदा के माध्यम से सफल बोलीकर्ताओं के इसका ठेका सौंपा गया है और वित्त वर्ष 2022–23 के दौरान सर्वेक्षण पूरा करने होने की उम्मीद है। वर्तमान में, ठेकेदार द्वारा वैधानिक मंजूरी के लिए आवेदन किया गया है। डीजीसीए से मंजूरी मिलने के बाद काम शुरू किया जा सकता है।

v. **अंडमान बेसिन का पूर्ण मूल्यांकन:** 2डी भूकंपीय मूल्यांकन के साथ पूरे बेसिन को कवर करने के लिए हाल ही में 22,500 एलकेएम 2डी भूकंपीय एपीआई के माध्यम से लगभग 2.8 लाख वर्ग कि.मी. अंडमान बेसिन का सर्वेक्षण किया गया है। डेटा अधिग्रहण और विश्लेषण पूरा हो गया है।

vi. **विशेष आर्थिक क्षेत्र (ईईजेड) तक अपतटीय बेसिन क्षेत्र का मूल्यांकन:** पूरे अपतटीय क्षेत्र का पूर्ण मूल्यांकन करने की दृष्टि से, पूर्वी और पश्चिमी अपतटीय क्षेत्र में लगभग 82,000 एलकेएम 2डी ब्रॉडबैंड भूकंपीय अधिग्रहण के लिए विशेष आर्थिक क्षेत्र तक का काम शुरू किया गया है, जिसकी योजना अप्रैल, 2024 तक पूरी हो चुकी है। ईईजेड सर्वेक्षण के लिए ओएनजीसी को नोडल एजेंसी बनाया गया है। 31 दिसंबर 2022 तक, ईईजेड सर्वेक्षण के तहत लगभग 23,431 एलकेएम भूकंपीय डेटा पहले ही प्राप्त किया जा चुका है।

## 1.17. हाइड्रोकार्बन खोजों के प्रारंभिक मौद्रीकरण के दिशानिर्देश, जून 2020

दिनांक 23.06.2019 को जारी दिशा–निर्देशों के अनुसार स्वीकृत प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट/राजस्व साझाकरण संविदा के तहत अन्य गतिविधियों जैसे कि मूल्यांकन, व्यावसायिकता की घोषणा (डीओसी) और क्षेत्र विकास योजना (एफडीपी) की प्रस्तुति आदि के पूरा होने से पहले हाइड्रोकार्बन खोजों का मौद्रीकरण। देश की ऊर्जा सुरक्षा की दिशा में एक कदम के रूप में सार्वजनिक हित में निर्धारित संविदात्मक समय–सीमा के भीतर प्रारंभिक स्तर पर खोज के लिए मौद्रीकरण जारी किया गया है। इन दिशानिर्देशों से लाभ लेते हुए ओएनजीसी के अशोकनगर–1 के खोज का मौद्रीकरण किया गया और दिसंबर 2020 में इसका उत्पादन शुरू किया गया।

## 1.18. पेट्रोलियम और प्राकृतिक गैस मंत्रालय का निगरानी डैशबोर्ड, 2019

नामांकन और पीएससी/आरएससी/सीबीएम व्यवस्था के अन्वेषण और उत्पादन निष्पादन से संबंधित विभिन्न केपीआई की ऑनलाइन निगरानी और विश्लेषण के लिए 2019 के दौरान पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय का निगरानी डैशबोर्ड शुरू किया गया था।

## 1.19. निवेशक आउटरीच

29 अप्रैल 2022 को मुंबई में, 7–8 जुलाई 2022 को लंदन में और 27 और 28 सितंबर 2022 को ह्यूस्टन में आयोजित राष्ट्रीय और अंतरराष्ट्रीय कार्यक्रमों / रोड शो के माध्यम से ईएंडपी समुदाय तक नियमित आउटरीच किया गया है। निवेशकों के साथ बैठक के दौरान निम्नलिखित शुरू किए गए हैं:

i. 10 अक्टूबर 2022 को **मेगा ओएएलपी बोली दौर–IX** शुरू किया गया, जिसमें अंतरराष्ट्रीय प्रतिस्पर्धी बोली के माध्यम से अन्वेषण और विकास के लिए लगभग 2, 23 लाख वर्ग किलोमीटर के 26 खुले एक्रीएज वाले ब्लॉक शामिल थे। पेश किए गए ब्लॉकों में 15 अल्ट्रा डीप–वाटर ब्लॉक, 8 शैलो वॉटर और 3 ऑनलैंड ब्लॉक शामिल हैं।

ii. 10 अक्टूबर 2022 को विशेष **सीबीएम बोली दौर–2022 (एससीबीएम–2022)** शुरू किया गया, जिसमें 17.03.2023 तक अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) बोली के माध्यम से लगभग 5,860 वर्ग किमी क्षेत्र में फैले 16 सीबीएम ब्लॉक की पेशकश की गई। 01.05.2023 को बोली जमा करने की शुरूआत होगी और 31.05.2023 को यह समाप्त होगा।

## 1.20. प्राकृतिक गैस ग्रिड और नगर गैस वितरण (सीजीडी)

गैस पाइपलाइन अवसंरचना गैस स्रोतों को गैस उपभोक्ता बाजारों से जोड़कर प्राकृतिक गैस के परिवहन का एक किफायती और सुरक्षित तरीका है। गैस बाज़ार की संरचना और उसके विकास को एक प्राकृतिक गैस ग्रिड निर्धारित करता है। इसलिए, देश के सभी हिस्सों में प्राकृतिक गैस की पर्याप्त उपलब्धता और समान वितरण सुनिश्चित करने के लिए एक परस्पर राष्ट्रीय गैस ग्रिड की परिकल्पना की गई है। भारत की गैस पाइपलाइन अवसंरचना बढ़ती मांग और बढ़ती प्राकृतिक गैस आपूर्ति के अनुरूप तेजी से बढ़ रही है। भारत ने वर्तमान में ~33,600 कि.मी का अंतर–देशीय प्राकृतिक गैस पाइपलाइन नेटवर्क को प्राधिकृत किया है, जिनमें से ~22,300 कि.मी. पाइपलाइन चालू हैं और 30.09.2022 तक लगभग 13,000 कि.मी. पाइपलाइन निर्माणाधीन हैं।




नगर गैस वितरण (सीजीडी) नेटवर्क देश भर के विभिन्न भौगोलिक क्षेत्रों में स्थित घरेलू, वाणिज्यिक या औद्योगिक परिसरों और ट्रंक आधारित गैस पाइपलाइन कनेक्टिविटी या गैस स्रोतों और तकनीकी–वाणिज्यिक व्यवहार्यता के आधार पर पेट्रोलियम और प्राकृतिक गैस नियामक बोर्ड (पीएनजीआरबी) द्वारा पहचाने गए कंप्रेस्ड प्राकृतिक गैस (सीएनजी) स्टेशनों को प्राकृतिक गैस की आपूर्ति करने के लिए गैस पाइपलाइनों का एक परस्पर संबद्ध नेटवर्क है। पाइप्ड प्राकृतिक गैस (पीएनजी) कनेक्शन और कंप्रेस्ड प्राकृतिक गैस (सीएनजी) स्टेशनों की स्थापना नगर गैस वितरण (सीजीडी) नेटवर्क के विकास का हिस्सा है और इसे पेट्रोलियम और प्राकृतिक गैस नियामक बोर्ड (पीएनजीआरबी) द्वारा अधिकृत संस्थाओं द्वारा किया जाता है। 11ए सीजीडी बोली–प्रक्रिया दौर पूरा होने के बाद, 295 भौगोलिक क्षेत्रों (जीए) को प्राधिकृत किया गया है, जिसमें लगभग 98% आबादी और देश के कुल भौगोलिक क्षेत्र का 88% शामिल है, जो 28 राज्यों / संघ राज्य क्षेत्रों के लगभग 630 जिलों में फैला हुआ है, जिसमें इन जीए के सभी शहर शामिल हैं जिन्हें सीजीडी नेटवर्क के तहत कवर किया गया है। इसके अलावा, 30 नवंबर 2022 तक, पीएनजीआरबी द्वारा अधिकृत विभिन्न संस्थाओं द्वारा देश भर में कुल 1,02,03,779 घरेलू पीएनजी कनेक्शन, 36,467 वाणिज्यिक पीएनजी कनेक्शन और 14,503 औद्योगिक पीएनजी कनेक्शन प्रदान किए गए हैं। इसके अलावा नवंबर 2022 तक देश में कुल 4,918 सीएनजी स्टेशन चालू हैं।

## 1.21. ऊर्जा संबंधी कूटनीति

भारत की ऊर्जा संबंधी कूटनीति भारत की बढ़ती ऊर्जा जरूरतों को पूरा करने के लिए हाइड्रोकार्बन समृद्ध देशों और ऊर्जा मामलों से निपटने वाले प्रमुख अंतरराष्ट्रीय संगठनों के साथ ऊर्जा संबंधों को बनाए रखने और बढ़ावा देने पर केंद्रित है।

भू–राजनीतिक व्यवधानों के कारण वैश्विक ऊर्जा बाजारों में चरम अस्थिरता और अनिश्चितता के संदर्भ में पिछला वर्ष अद्वितीय था। इस तरह की उच्च स्तर की अस्थिरता ने ऊर्जा आयातकों पर कहर बरपाया और ऊर्जा और खाद्य सुरक्षा की उनकी सीमाओं का परीक्षण किया। एक प्रमुख ऊर्जा उपभोक्ता और आयातक के रूप में भारत ने विश्व मंच पर नेतृत्व की भूमिका निभाई और ऊर्जा निर्यातक समूहों को एक स्थायी, संतुलित और जिम्मेदार मूल्य निर्धारण की दिशा में प्रेरित करने के लिए ऊर्जा आयातक देशों के समूह की अग्रणी आवाज बन गया।

ऊर्जा सहयोग भारत के पारंपरिक ऊर्जा भागीदारों और नए उभरते ऊर्जा आपूर्तिकर्ताओं दोनों के द्विपक्षीय संबंधों का एक महत्वपूर्ण पहलू रहा है। संयुक्त अरब अमीरात, अमरीका और रूस जैसे हमारे कई आपूर्तिकर्ताओं के साथ हमारे संबंध परस्पर निवेश के लिए रणनीतिक साझेदारी में बदल गया है।

ऊर्जा संबंधी कूटनीति की निम्नलिखित मुख्य विशेषताएं उल्लेखनीय हैं:

- कच्चे तेल की निर्बाध और समय पर आपूर्ति सुनिश्चित करने के लिए भारतीय रिफाइनरों को समर्थन देना।
- भारतीय पीएसयू द्वारा ई एंड पी संपरिसंपत्तियों के अधिग्रहण सहित भौगोलिक विविधीकरण और तेल और गैस के स्रोतों का विस्तार।
- ऊर्जा गलियारों और ऊर्जा पुलों का निर्माण करके तेल और गैस के क्षेत्र में 'नेबरहुड फर्स्ट पॉलिसी' को बढ़ावा देने के लिए पहलें शुरू करना।
- बदलती ऊर्जा कीमतों को प्रतिबिंबित करने के लिए लंबी अवधि के लिए तेल और एलएनजी सौदों पर पुनःविचार करना।
- भारत को वैश्विक ऊर्जा कार्यक्रमों के लिए एक प्रमुख स्थान के रूप में विकसित करना–प्रथम भारत ऊर्जा सप्ताह का उद्घाटन, एशियाई मंत्रिस्तरीय ऊर्जा गोलमेज सम्मेलन की नौवीं बैठक और शंघाई सहयोग संगठन की ऊर्जा मंत्रियों की तीसरी बैठक का आयोजन।
- अंतरराष्ट्रीय संगठनों के साथ घनिष्ठ संबंध विकसित करना और संवादों को संस्थागत बनाना।
- ओपीईसी, आईईएफ और आईईए जैसे बहुपक्षीय ऊर्जा संगठनों के साथ भारत के संबंधों को बेहतर बनाना और उनकी विशाल हाइड्रोकार्बन की जरूरतों का लाभ उठाना, जहां भारत उत्पादक और उपभोक्ता देशों की जरूरतों को संतुलित करने की दिशा में अंतर ला सकता है।
- ऊर्जा स्रोतों के डीकार्बोनाइजेशन और चक्रीयता को बढ़ावा देने के लिए ग्लोबल बायोफ्यूल एलायंस के गठन की घोषणा।

## 1.22. किफायती परिवहन के लिए दीर्घकालिक विकल्प (सतत)

कंप्रेस्ड बायो गैस (सीबीजी) को शुद्ध और संपीड़ित किया जाता है, जो कृषि अवशेष, मवेशी गोबर, गन्ने दाब युक्त मृदा और डिस्टिलरी के स्पेंट वॉश, सीवेज जल, नगरपालिका ठोस अपशिष्ट (एमएसडब्ल्यू), औद्योगिक कचरे के बायोडिग्रेडेबल अंश आदि जैसे विभिन्न अपशिष्ट/बायोमास स्रोतों से अवायवीय अपघटन की प्रक्रिया के माध्यम से उत्पन्न होता है। दिनांक 1 अक्टूबर 2018 को "ससटेनेबल अल्टरनेटिव टुवर्ड्स अफोर्डेबल ट्रांसपोर्टेशन (सतत)" से संबंधित पहल शुरू की गई थी, जिसमें तेल और गैस विपणन कंपनियां (ओजीएमसी) मोटर वाहन और औद्योगिक ग्राहकों को आगे बिक्री करने के लिए सीबीजी की खरीद के लिए संभावित निवेशकों/उद्यमियों से एक्सप्रेशन ऑफ इंटरेस्ट (ईओआई) आमंत्रित हैं। इस पहल में निजी उद्यमियों द्वारा वर्ष 2023–24 तक 5,000 संयंत्र स्थापित करने की परिकल्पना की गई है। दिसंबर, 2022 तक एसएटीएटी में भाग लेने वाले ओजीएमसी ने उद्यमियों को 3,836 आशय पत्र जारी किए हैं। अब तक ~225 टन प्रति दिन की कुल क्षमता वाले 40 सीबीजी/बायोगैस संयंत्र संस्थापित किए गए हैं और 97 खुदरा दुकानों से सीबीजी की बिक्री शुरू हो चुकी है। इसके अलावा, सीबीजी सीजीडी सिंक्रोनाइजेशन योजना के तहत, सीजीडी नेटवर्क के 12 भौगोलिक क्षेत्रों में सीबीजी की बिक्री शुरू हो गई है। इस पहल के तहत सीबीजी क्षेत्र के विकास के लिए विभिन्न संबल प्रदान किए गए हैं। भारतीय रिजर्व बैंक द्वारा सीबीजी परियोजनाओं को प्राथमिकता क्षेत्र के ऋण के तहत शामिल किया गया है। भारतीय स्टेट बैंक, बैंक ऑफ बड़ौदा, केनरा बैंक और कुछ अन्य बैंकों ने सीबीजी परियोजनाओं के वित्तपोषण के लिए विशेष ऋण उत्पाद विकसित किए हैं। एसएटीएटी के अंतर्गत केनरा बैंक को नोडल बैंक के रूप में नामित किया गया है। उर्वरक नियंत्रण आदेश (एफसीओ) 1985 के तहत सीबीजी संयंत्रों से उत्पादित जैव खाद को "फर्मेंटेड जैविक खाद" (एफओएम) और तरल किण्वित जैविक खाद (एफएलओएम) के रूप में कवर किया गया है। उर्वरक विभाग ने उर्वरक कंपनियों को एफओएम को रासायनिक उर्वरकों के साथ "बास्केट दृष्टिकोण" के रूप में अनिवार्य रूप से उपयोग करने के लिए पत्र जारी किया है। इसके अलावा, सीपीसीबी ने मामला–दर–मामला आधार पर सीबीजी संयंत्र को 'व्हाइट कैटेगरी' के तहत शामिल किया है। पेट्रोलियम और प्राकृतिक गैस मंत्रालय ने सीजीडी नेटवर्क में प्राकृतिक गैस के साथ सीबीजी के सह–मिलन के लिए नीतिगत दिशानिर्देश जारी किए हैं ताकि इसके उपयोग को सुगम बनाया जा सके। ओजीएमसी ने 1 जून 2022 से सीबीजी खरीद मूल्य में संशोधन किया है। अब सीबीजी की कीमतें सीबीजी के खुदरा बिक्री मूल्य (आरएसपी) से संबद्ध हो गई हैं जो सीएनजी आरएसपी के समान होगी। एसएटीएटी के तहत, न्यूनतम खरीद मूल्य ₹ 54/– प्रति किलोग्राम और लागू जीएसटी है। इसके अलावा, 1 दिसंबर, 2022 से सीबीजी–सीजीडी सिंक्रोनाइजेशन योजना के तहत गेल ने बायोगैस/सीबीजी खरीद मूल्य को 1,082/एमएमबीटीयू से संशोधित कर 1,470/एमएमबीटीयू कर दिया है।

## 1.23. राष्ट्रीय जैव ईंधन नीति, 2018

सरकार ने राष्ट्रीय जैव ईंधन नीति 2018 को अधिसूचित किया था, जिसे बाद में जून 2022 में संशोधित किया गया,

जिसके तहत एथेनॉल आपूर्ति वर्ष (ईएसवाई) 2025–26 तक पेट्रोल में एथेनॉल के 20% मिश्रण और 2030 तक डीजल में 5% बायोडीजल के सम्मिश्रण की सांकेतिक लक्ष्य की परिकल्पना की गई है। इस लक्ष्य को निम्नानुसार प्राप्त किया जाना है:

क. संवर्धनशील घरेलू उत्पादन के माध्यम से चालू एथेनॉल / बायोडीजल आपूर्ति को सुदृढ करना।

ख. सेकंड जेनेरेशन (2जी) की बायो रिफाइनरियों की स्थापना।

ग. जैव ईंधन के लिए नए फीडस्टॉक का विकास कार्य।

घ. जैव ईंधनों में रूपांतरण के लिए नई प्रौद्योगिकियों का विकास।

ड जैव ईंधनों के लिए उपयुक्त वातावरण तैयार करना और मुख्य ईंधन के साथ इसका एकीकरण करना।

## 1.24. गैर पारंपरिक ऊर्जा

**1.24.1. ईबीपी कार्यक्रम:** एथेनॉल सम्मिश्रित पेट्रोल (ईबीपी) कार्यक्रम के उद्देश्य पर्यावरण संबंधी चिंताओं को दूर करना, आयात निर्भरता को कम करना और कृषि क्षेत्र को बढ़ावा देना जैसे कई परिणाम प्राप्त करना है। एथेनॉल के स्वदेशी उत्पादन को बढ़ावा देने के लिए सरकार ने 2014 से कई कदम उठाए हैं। इनमें निम्न शामिल हैं– प्रशासित मूल्य तंत्र को फिर से शुरू करना, एथेनॉल उत्पादन के लिए अतिरिक्त फीड स्टॉक को अनुमति देना जिसमें एथेनॉल उत्पादन के लिए गन्ना आधारित और अनाज आधारित (मक्का और भारतीय खाद्य निगम के पास चावल के अधिशेष स्टॉक) दोनों स्रोत शामिल हैं, डीनेचर्ड एथेनॉल पर केंद्र सरकार का विशेष नियंत्रण प्रभावी करने के लिए उद्योग (विकास & विनियमन) अधिनियम, 1951 में संशोधन, ईबीपी कार्यक्रम के तहत उपयोग किए जाने वाले एथेनॉल पर माल और सेवा कर (जीएसटी) दरों में 18% से 5% की कमी, जैव ईंधन पर राष्ट्रीय नीति–2018 को अधिसूचित करना, निवेशकों को दीर्घकालिक दृश्यता देने के लिए "दीर्घकालिक आधार पर एथेनॉल खरीद नीति" प्रकाशित करना, एथेनॉल उत्पादन क्षमता में वृद्धि के लिए ब्याज अनुदान योजना और एथेनॉल की साल दर साल बढ़ती, विभेदित और लाभकारी कीमतें।

उपरोक्त उपायों से एथेनॉल की खरीद / मिश्रित मात्रा में वृद्धि हुई है जो कि एथेनॉल आपूर्ति वर्ष (ईएसवाई – दिसंबर से नवंबर तक की अवधि) 2013–14 के 38 करोड़ लीटर से ईएसवाई 2021–22 में 433.6 करोड़ लीटर हो गया है। इसी अवधि में सम्मिश्रण प्रतिशत भी 1.53% से बढ़कर 10.02% हो गया है।

चूंकि सरकार ने पेट्रोल में 20% एथेनॉल सम्मिश्रण के लक्ष्य को 2030 से आगे बढ़ाकर ईएसवाई 2025–26 कर दिया है, ईएसवाई 2025–26 के दौरान 20% सम्मिश्रण प्राप्त करने के लिए एथेनॉल की अनुमानित आवश्यकता लगभग 1,016 करोड़ लीटर होगी, जिसके लिए आसवन क्षमता को मौजूदा 722 करोड़ लीटर प्रति वर्ष से दोगुना करके 1,500 करोड़ लीटर प्रति वर्ष किया जाना आवश्यकता है। तदनुसार, ओएमसी ने एथेनॉल की कमी वाले राज्यों में नए एथेनॉल संयंत्र स्थापित करने के इच्छुक संभावित परियोजना प्रस्तावकों के साथ समझौतों पर हस्ताक्षर करने के लिए रुचि की अभिव्यक्ति (ईओआई) प्रकाशित की है। सार्वजनिक क्षेत्र की ओएमसी ने प्रति वर्ष 431 कोर लीटर की उत्पादन क्षमता के लिए समर्पित एथेनॉल संयंत्र स्थापित करने के इच्छुक 131 परियोजना प्रस्तावकों के साथ दीर्घकालिक ऑफटेक समझौतों (एलटीओए) पर हस्ताक्षर किए हैं।

ईएसवाई: 2022–23 के लिए विभिन्न फीडस्टॉक से आपूर्तिकर्ताओं को भुगतान किए जाने वाले उत्पादित एथेनॉल का एक्स–मिल मूल्य निम्नानुसार हैं:

| कच्चा माल | एथेनॉल एक्स–मिल कीमत (₹/लीटर) |
|---|---|
| सी भारी गुड़ @ | 49.41 |
| बी भारी गुड @ | 60.73 |
| गन्ने का रस / चीनी / चीनी @ | 65.61 |
| क्षतिग्रस्त खाद्यान्न / अन्य # | 55.54 |
| एफसीआई द्वारा जारी अधिशेष चावल # | 58.50 |
| मक्का # | 56.35 |
| @: सरकार द्वारा निर्धारित मूल्य #: ओएमसी द्वारा निर्धारित मूल्य<br>उपरोक्त के अतिरिक्त परिवहन और जीएसटी देय हैं | |

**1.24.2. 2जी एथेनॉल कार्यक्रम:** पानीपत (आईओसीएल), बारगढ़ (बीपीसीएल), बठिंडा (एचपीसीएल) और नुमालीगढ़ (एनआरएल) में चार वाणिज्यिक परियोजनाओं और पानीपत में आईओसीएल की एक प्रदर्शनी परियोजना के लिए प्रधान मंत्री जी–वन योजना के तहत वित्तीय सहायता को मंजूरी दी गई है। माननीय प्रधान मंत्री द्वारा पानीपत में 2जी एथेनॉल बायो–रिफाइनरी को राष्ट्र को समर्पित किया गया है।



**1.24.3. बायोडीजल कार्यक्रम:** अप्रैल से नवंबर, 2022 की अवधि के दौरान, ओएमसी ने डीजल के साथ सम्मिश्रण के लिए 5.83 करोड़ लीटर बायोडीजल की खरीद की है।

**1.24.4. बायो–जेट (एटीएफ):** सरकार ने देश में सस्टेनेबल एविएशन फ्यूल (एसएएफ)/बायो–एविएशन टर्बाइन फ्यूल (बायो–एटीएफ) कार्यक्रम को आगे बढ़ाने के लिए जून 2021 में एक समिति का गठन किया था। समिति ने देश में बायो–एटीएफ कार्यक्रम के विभिन्न पहलुओं पर को व्यापक तरीके से गौर किया है जिसमें अन्य बातों के साथ–साथ कच्चे माल की उपलब्धता, एटीएफ की मांग, एसएएफ उत्पादन के लिए प्रौद्योगिकियां, अंतरराष्ट्रीय विमानन के लिए कार्बन ऑफसेटिंग और न्यूनीकरण योजना (सीओआरएसआईए), भारतीय मानक ब्यूरो (बीआईएस), इंजन के निष्पादन पर एसएएफ का प्रभाव, सम्मिश्रण प्रतिशत, सर्वोत्तम अंतरराष्ट्रीय प्रथाएं आदि ताकि भारत में एसएएफ/बायो–एटीएफ कार्यक्रम को आगे बढ़ाया जा सके और मंत्रालय को इसकी रिपोर्ट सौंपी जा सके। इसके अलावा, समिति की रिपोर्ट पर हितधारकों के साथ आगे की चर्चा शुरू की गई है। एसएएफ का उपयोग/की स्वीकृति से ग्रीन हाउस गैस (जीएचजी) के उत्सर्जन में कमी लाने में मदद मिलेगी।

**1.24.5. विश्व जैव ईंधन दिवस:** पारंपरिक जीवाश्म ईंधन के विकल्प के रूप में गैर–जीवाश्म ईंधन के महत्व के बारे में जागरूकता पैदा करने और जैव ईंधन क्षेत्र में सरकार द्वारा किए गए विभिन्न प्रयासों को उजागर करने के लिए हर साल 10 अगस्त को विश्व जैव ईंधन दिवस मनाया जाता है।

इस वर्ष के विश्व जैव ईंधन दिवस का विषय "कार्बन तटस्थ विश्व की ओर जैव ईंधन" था। विश्व जैव ईंधन दिवस के अवसर पर, पेट्रोलियम और प्राकृतिक गैस मंत्रालय ने जैव ईंधन के प्रचार और प्रसार के मुद्दों पर चर्चा करने के लिए एक वेबिनार का आयोजन किया। इस दिन, माननीय प्रधान मंत्री द्वारा पानीपत में 2जी एथेनॉल जैव–रिफाइनरी को राष्ट्र को समर्पित किया गया था।



माननीय प्रधान मंत्री द्वारा पानीपत में 2जी एथेनॉल बायो–रिफाइनरी का शुभारंभ

## 1.25. पेट्रोलियम और प्राकृतिक गैस मंत्रालय का परिव्यय

वित्त वर्ष 2021–22 के लिए पूंजीगत व्यय (सीएपीईएक्स) ₹ 1,08,556 करोड़ है अर्थात् वित्त वर्ष 2021–22 के कुल बजट प्राक्कलन का 103% (₹1,05,359 करोड़)। वित्त वर्ष 2022–23 में पेट्रोलियम और प्राकृतिक गैस मंत्रालय के तहत सीपीएसई के लिए कुल बजटीय आंतरिक और अतिरिक्त बजटीय संसाधन (आईईबीआर) (₹ 1,11,354 करोड़) है, जो वित्त वर्ष 2021–22 के वास्तविक व्यय (₹ 1,07,968 करोड़) से 3.1% अधिक है। चालू वित्त वर्ष 2022–23 (अप्रैल–दिसंबर) के दौरान, वास्तविक पूंजी व्यय कैपेक्स ₹ 77,631 करोड़ है जो बजट प्राक्कलन 2022–23 का 69.7% (₹ 1,11,354 करोड़) है। पेट्रोलियम और गैस क्षेत्र के अंतर्गत क्षेत्रवार आईईबीआर के रुझान **परिशिष्ट-VIII** में दिए गए है।

## 1.26. प्रधानमंत्री उज्ज्वला योजना

माननीय प्रधान मंत्री द्वारा 01.05.2016 को "प्रधानमंत्री उज्ज्वला योजना" का आरंभ किया गया था, जिसका उद्देश्य वित्त वर्ष से 2016–17 शुरू करके अगले 3 वर्षों की अवधि में गरीबी रेखा से नीचे (बीपीएल) के परिवारों की 5 करोड़ महिलाओं को निःशुल्क एलपीजी कनेक्शन प्रदान करना है। सरकार ने बाद में इसका दायरा 5 करोड़ से बढ़ाकर 8 करोड़ कर दिया, जिसे वित्त वर्ष 2019–20 तक प्राप्त किया जाना था। सरकार ने देश के सभी गरीब परिवारों को कवर करने के लिए पीएमयूवाई के लाभ को ऐसे गरीब परिवारों को भी दिया, जो एसईसीसी सूची या 7 चिन्हित श्रेणियों में नाम न होने के कारण रह गए थे।

पीएमयूवाई के तहत, सरकार बीपीएल परिवार की वयस्क महिला सदस्य को निःशुल्क एलपीजी कनेक्शन प्रदान करती है। प्रत्येक नए कनेक्शन के लिए सिलिंडर



और प्रेशर रेगुलेटर, डीजीसीसी कार्ड, सुरक्षा होज़ और ₹ 1,600/– की राशि के प्रशासनिक/स्थापना शुल्क के लिए सुरक्षा जमा की लागत सरकार वहन करती है। पीएमयूवाई योजना के तहत 8 करोड़ एलपीजी कनेक्शन प्रादान करने का लक्ष्य 31 मार्च, 2020 को लक्षित तिथि से 7 महीने पहले 7 सितंबर, 2019 को हासिल कर लिया गया था।

माननीय वित्त मंत्री ने वित्त वर्ष 2021–22 के अपने बजट भाषण के दौरान घोषणा की कि 8 करोड़ परिवारों को लाभान्वित करने वाली उज्ज्वला योजना को 1 करोड़ और लाभार्थियों को कवर करने के लिए बढ़ाया जाएगा। तदनुसार, माननीय प्रधान मंत्री की उपस्थिति में अखिल भारतीय आधार पर एक करोड़ अतिरिक्त एलपीजी कनेक्शन प्रदान करने के लिए 10 अगस्त, 2021 को उत्तर प्रदेश के महोबा जिले में उज्ज्वला 2.0 को आरंभ किया गया। उज्ज्वला 2.0 के तहत पहली बार लाभार्थियों को मुफ्त पहला रिफिल और चूल्हा दिया जा रहा है। इसके अलावा, प्रवासी परिवारों को नया कनेक्शन प्रदान करने के लिए विशेष प्रावधान किए गए हैं। उज्ज्वला 2.0 के तहत प्रवासी परिवारों की महिलाएं आवेदक पते के प्रमाण के रूप में स्व–घोषणा और परिवार घोषणा पत्र प्रस्तुत कर सकती हैं। पहली बार आवेदक उज्ज्वला कनेक्शन के लिए योजना की वेबसाइट www.pmuy.gov.in का उपयोग कर ऑनलाइन आवेदन कर सकते हैं। उज्ज्वला 2.0 के तहत 1.0 करोड़ के लक्ष्य को जनवरी, 2022 तक विधिवत प्राप्त कर लिया गया था। इसके अलावा, वंचित रह गए परिवारों को कवर करने के लिए, योजना के तहत लक्ष्य को और 60 लाख कनेक्शन बढ़ाते हुए 1.6 करोड़ कर दिया गया था और इसे दिसंबर, 2022 के दौरान हासिल किया गया था। दिनांक 01.04.2023 की स्थिति तक, उज्ज्वला 2.0 के तहत कुल 1.6 करोड़ एलपीजी कनेक्शन प्रदान किए जा चुके हैं।

## 1.27. पहल (डीबीटीएल योजना)

भारत सरकार ने 15.11.2014 को देश के 54 जिलों में 'पहल' नामक एलपीजी उपभोक्ता प्रत्यक्ष हस्तांतरण लाभ (डीबीटीएल) योजना शुरू की। बाद में इस योजना का विस्तार पूरे देश में किया गया। दिनांक 01.12.2022 तक, 29.04 करोड़ एलपीजी उपभोक्ता अपने आधार नंबर को अपने बैंक खातों और उपभोक्ता संख्या के साथ जोड़कर या आधार का उपयोग किए बिना अपने उपभोक्ता नंबर को सीधे बैंक खाते से जोड़कर योजना के तहत नकद हस्तांतरण के योग्य बन चुके हैं। इस योजना का उद्देश्य राजसहायता को युक्तिसंगत बनाना और राजसहायता लीकेज में कटौती करना है।



एलपीजी संयंत्र एमपीसीएल मेरलापल्ली में फ्लेक्स स्पैड हिंडोला

एलपीजी उपभोक्ता जो पहल योजना के अंतर्गत शामिल हैं, अपने एलपीजी रिफिल को गैर–राजसहायता मूल्य पर प्राप्त करते हैं और लागू एलपीजी राजसहायता सीधे अपने बैंक खातों में प्राप्त करते हैं। पहल के कार्यान्वयन के साथ, देश के एलपीजी उपभोक्ताओं को राशक्त बनाने के लिए राजसहायता प्रबंधन में पारदर्शिता की नई व्यवस्था लागू की गई है। पहल ने 'घोस्ट' खातों, बहुनाम खातों और निष्क्रिय खातों की पहचान करने में भी मदद की है।

वित्तीय संसाधनों को वास्तव में जरूरतमंदों तक पहुंचाना सुनिश्चित करने के लिए, भारत के माननीय प्रधान मंत्री ने 'गिव इट अप' अभियान शुरू करके सभी संपन्न एलपीजी उपभोक्ताओं से स्वेच्छा से अपनी एलपीजी राजसहायता छोड़ने की अपील की। गिव इटअप अभियान को समाज के प्रति प्रतिबद्ध लोगों से अच्छी प्रतिक्रिया मिली और इसके परिणामस्वरूप आज की स्थिति तक 1.12 करोड़ से अधिक उपभोक्ताओं ने स्वेच्छा से अपनी एलपीजी राजसहायता छोड़ दी है। सरकार के गिव इट अप अभियान को दुनिया भर से व्यापक प्रशंसा मिली है और यह मनोविज्ञान और व्यवहार के क्षेत्र से प्रेरित सार्वजनिक नीति में उपयोग किए जाने वाले नज टूल का एक प्रमुख और शुरुआती उदाहरण बन गया है।

## 1.28. डिजिटल भुगतान का संवर्धन

खुदरा विक्रय केन्द्रों पर डिजिटल भुगतान के बुनियादी ढांचे का महत्वपूर्ण रूप से विस्तार हुआ है। दिनांक 26.11.2022 तक, देश भर के 75,223 पेट्रोल पंपों पर 4,32,469 पीओएस टर्मिनल और 1,03,982 ई–वॉलेट सुविधाएं प्रदान की गई हैं, 69,775 खुदरा विक्रय केन्द्रों को भीम यूपीआई से सक्षम किया गया है। सभी एलपीजी वितरक और सिटी गैस वितरण कंपनियां भीम यूपीआई से सक्षम हैं।"

## 1.29. इलेक्ट्रिक वाहन चार्जिंग स्टेशन

देश में इलेक्ट्रिक वाहन चार्जिंग बुनियादी ढ़ांचे को बढ़ाने के लिए, तेल विपणन कंपनियां तकनीकी वाणिज्यिक व्यवहार्यता और पीईएसओ मानदंडों के अनुपालन के आधार पर देश के विभिन्न हिस्सों में चरणबद्ध तरीके से अपने रिटेल आउटलेट्स (आरओ) पर इलेक्ट्रिक वाहन चार्जिंग स्टेशन (ईवीसीएस) स्थापित कर रही हैं। दिनांक 01.12.2022 तक, ओएमसी द्वारा 4,644 ईवी चार्जिंग स्टेशन स्थापित किए हैं और 77 बैटरी स्वैपिंग स्टेशन अपने आरओ में स्थापित किए गए हैं।

## 1.30. बाजार का प्राधिकरण

पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय ने दिनांक 8.11.2019 के संकल्प के माध्यम से व्यापार में सुगमता को बढ़ावा देने और खुदरा क्षेत्र में निवेश करने के लिए निजी उद्यमियों को प्रेरित करने के लिए परिवहन ईंधन अर्थात् एमएस और एचएसडी के बाज़ार को प्राधिकृत करने हेतु दिशानिर्देश को संशोधित किया।

## 1.31. स्टार्ट अप इंडिया

तेल और गैस क्षेत्र की स्टार्ट–अप इंडिया पहल के तहत, व्यक्तिगत सार्वजनिक उपक्रमों द्वारा वित्त पोषण और सलाह के लिए खुले विज्ञापनों के माध्यम से प्रस्ताव/आवेदन आमंत्रित किए जाते हैं। प्रस्तावों के विषयों में तेल पीएसयू के अपस्ट्रीम/मिडस्ट्रीम/डाउनस्ट्रीम प्रचालनों में इंटरनेट ऑफ थिंग्स (आईओटी) का लाभ उठाना, व्यावसायिक प्रक्रियाओं का डिजिटलीकरण, स्वच्छ ईंधन, वैकल्पिक ऊर्जा, सामाजिक प्रासंगिकता के विषयों को अलावा हाइड्रोकार्बन उद्योग के लिए बेहतर प्रौद्योगिकी शामिल हैं। स्टार्ट–अप आवेदन प्राप्त करने के दौर से पहले, तेल पीएसयू अपनी प्रतिभा का प्रदर्शन करने और नवीन विचार प्रदान करने के लिए स्टार्ट–अप के लिए समय–समय पर हैकथॉन/आईडिएशन चुनौतियों का भी आयोजन करते हैं।

पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के तहत सार्वजनिक क्षेत्र के उपक्रमों द्वारा ₹ 405 करोड़ का एक स्टार्टअप कोष तैयार किया गया है। वर्तमान स्थिति के अनुसार कुल 232 स्टार्टअप को लगभग 208 करोड़ रु. के संवितरित निधि मूल्य के साथ तेल और गैस के सार्वजनिक क्षेत्र के उपक्रमों द्वारा वित्त पोषित किया जा रहा है। तेल और गैस के सार्वजनिक क्षेत्र के उपक्रमों द्वारा समर्थित कुछ स्टार्टअप पहले ही परिपक्व हो चुके हैं।

## 1.32. कौशल विकास

कौशल भारत पहल के तहत, दिनांक 26.04.2016 को सोसायटी पंजीकरण अधिनियम, 1860 के तहत हाइड्रोकार्बन क्षेत्र कौशल परिषद (एचएसएससी) की स्थापना की गई थी। कौशल विकास के क्षेत्र में सहयोग के लिए पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय और कौशल विकास और उद्यमिता मंत्रालय के बीच 28 नवंबर, 2016 को एक समझौता ज्ञापन पर हस्ताक्षर किया गया था। राष्ट्रीय व्यावसायिक मानक (एनओएस)/योग्यता पैक (क्यूपी) विकास के लिए उद्योग के सदस्यों के परामर्श से विभिन्न उच्च प्राथमिकता युक्त व्यवसायों की पहचान की गई है। अब तक, 20 क्यूपी को राष्ट्रीय कौशल योग्यता समिति (एनएसक्यूसी) द्वारा अनुमोदित किया गया है।

हाइड्रोकार्बन क्षेत्र के लिए कौशल विकास संस्थान (एसडीआई) को छह शहरों अर्थात भुवनेश्वर, विजाग, कोच्चि, अहमदाबाद, गुवाहाटी और रायबरेली में स्थापित किया गया है। सितंबर 2022 तक, इन एसडीआईज में 23,000 से अधिक प्रशिक्षुओं को प्रशिक्षित किया जा चुका है।

कौशल विकास संस्थान (एसडीआई), भुवनेश्वर का स्थायी परिसर, जो उद्योग के लिए तैयार प्रतिभा पूल बनाने के लिए अत्याधुनिक बुनियादी ढांचे और प्रौद्योगिकी का उपयोग करके विश्व स्तरीय उद्योग–आधारित कौशल प्रशिक्षण प्रदान करने की परिकल्पना करता है, 20 अगस्त, 2021 को राष्ट्र को समर्पित किया गया था।



औरैया, यूपी में गेल का पहला पेट्रोकेमिकल कॉम्प्लेक्स



अध्याय 2



# अन्वेषण और उत्पादन

# 2 अन्वेषण और उत्पादन

## 2.1. संदर्भ/पृष्ठभूमि

**2.1.1.** हाइड्रोकार्बन महानिदेशालय (डीजीएच) की स्थापना भारत सरकार के संकल्प द्वारा 1993 में पेट्रोलियम और प्राकृतिक गैस मंत्रालय के प्रशासनिक नियंत्रण के तहत की गई थी। डीजीएच की स्थापना का उद्देश्य पेट्रोलियम गतिविधि के पर्यावरण, सुरक्षा, तकनीकी और आर्थिक पहलुओं के संबंध में भारतीय तेल और प्राकृतिक गैस संसाधनों के संतुलित प्रबंधन को बढ़ावा देना था। इसके अलावा, डीजीएच को खोजे गए क्षेत्रों/अन्वेषण ब्लॉकों के लिए उत्पादन साझाकरण संविदाओं, खोजे गए लघु क्षेत्र से संबंधित नीति, हाइड्रोकार्बन अन्वेषण और उत्पादन नीति (एचईएलपी) और ई एंड पी गतिविधियों की निगरानी सहित नीतियों के कार्यान्वयन के माध्यम से निवेश को बढ़ावा देने से संबंधित कुछ उत्तरदायित्वों से सुदृढ़ किया गया है।

## 2.2. भारत में तलछटीय बेसिन

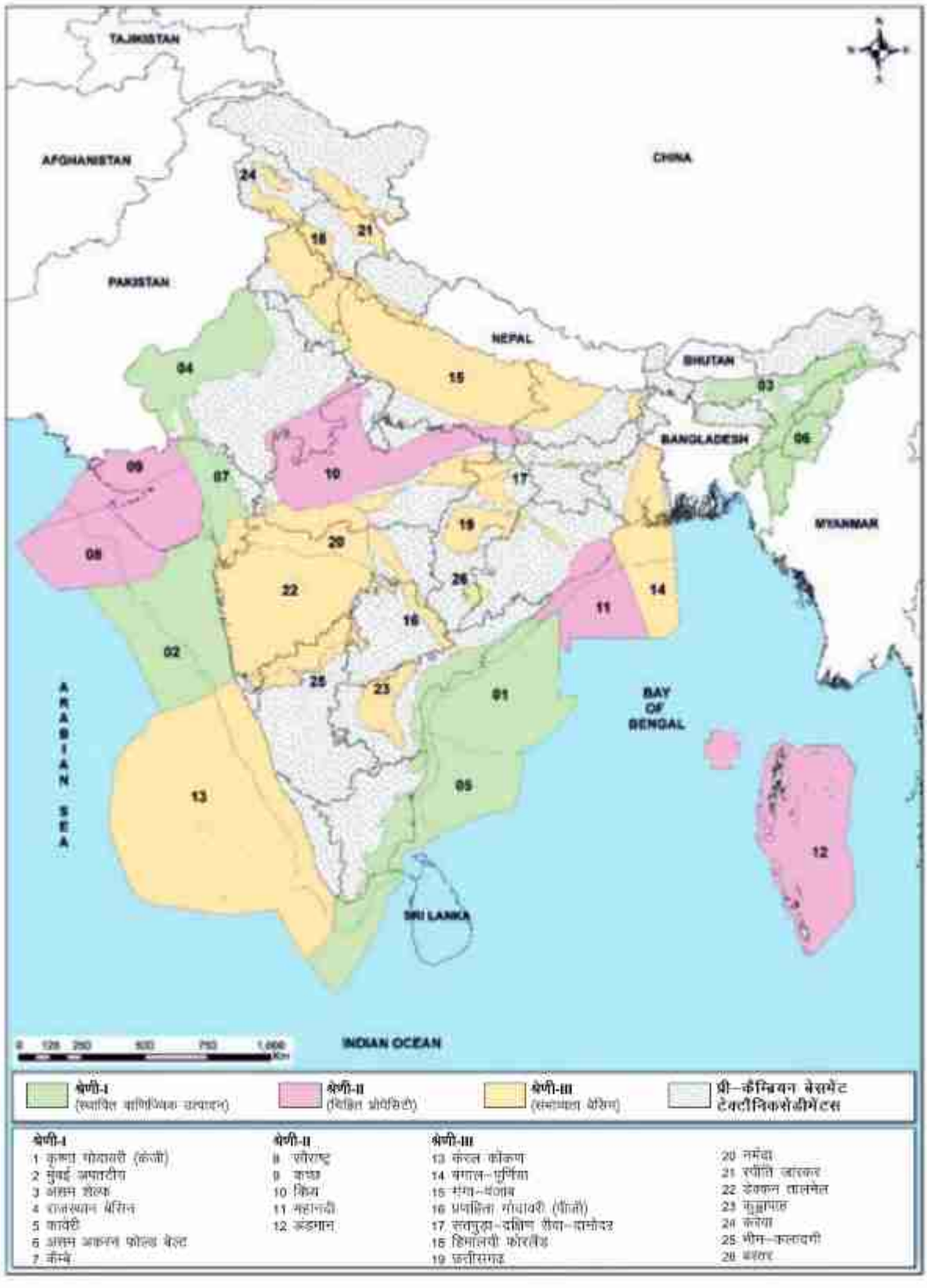
**2.2.1.** भारत में 26 तलछटीय बेसिन हैं जो 3.36 मिलियन वर्ग किलोमीटर क्षेत्र को कवर करते हैं। भारत के समुद्रतटीय तलछटीय बेसिनों की वायुसीमा लगभग 1.63 मिलियन वर्ग किलोमीटर है; अपतटीय तलछटीय बेसिनों, 400 मीटर आइसोबाथ तक की वायुसीमा लगभग 0.41 मिलियन वर्ग किलोमीटर है और 400 मीटर से अधिक गहन समुद्री क्षेत्र में, तलछटीय क्षेत्र अनुमानतः 1.32 मिलियन वर्ग किलोमीटर होना अनुमानित है।

**2.2.2.** भारतीय तलछटी घाटियों को वृहद रूप में उनकी संभावनाओं की डिग्री के आधार पर तीन श्रेणियों में विभाजित किया गया है, जैसा कि वर्तमान में ज्ञात है जो निम्नानुसार है:

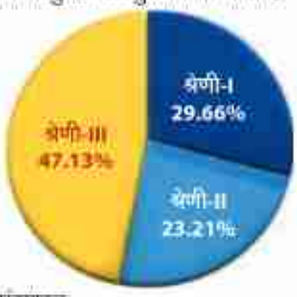
तालिका 2.1: **भारतीय तलछटीय बेसिन की श्रेणियां**

| बेसिन के प्रकार | क्षेत्र (वर्ग कि.मी.) | हाइड्रोकार्बन संभाव्यता | बेसिन/क्षेत्र |
|---|---|---|---|
| श्रेणी–I (7 बेसिन) | 9,98,325 | स्थापित वाणिज्यिक उत्पादन | कैम्बे, असम शेल्फ, मुंबई अपतट, कृष्णा गोदावरी, कावेरी, असम अराकान फोल्ड बेल्ट और राजस्थान |
| श्रेणी–II (5 बेसिन) | 7,80,974 | हाइड्रोकार्बन का ज्ञात संचय परंतु अब तक वाणिज्यिक उत्पादन नहीं | कच्छ, महानदी, अंडमान, विंध्य, सौराष्ट्र |
| श्रेणी–III (14 बेसिन) | 15,86,150 | संकेतित हाइड्रोकार्बन दर्शाते हैं कि यो भूगर्भीय संभावना के रूप में विचारित हैं। | हिमालयी फोरलैंड, गंगा–पंजाब, केरल– कोंकण, बंगाल–पूर्णिया, करेवा, स्पीति–जांस्कर, सतपुड़ा–दक्षिण रीवा–दामोदर, नर्मदा, दक्कन सिनेक्लिज, भीमा–कलडगी, कडप्पा, प्राणहिता – गोदावरी, बस्तार, छत्तीसगढ़ |
| कुल | **33,65,449** | | |

## भारतीय तलछटीय बेसिन



**2.2.3.** देश में कच्चे तेल और प्राकृतिक गैस का उत्पादन मुख्य रूप से श्रेणी–I के तलछटीय बेसिनों तक ही सीमित है। इसके अलावा, द्वितीय श्रेणी के पांच बेसिनों में बड़ी मात्रा में पेट्रोलियम संसाधन स्थापित किए गए हैं, तथापि इन बेसिनों से वाणिज्यिक उत्पादन होना आरंभ होना शेष है। हाल ही में बंगाल बेसिन में उत्पादन आरंभ हुआ है और इसे अगले पुनर्मूल्यांकन अध्ययन में श्रेणी उन्नयन के लिए तैयार किया जाएगा। विभिन्न श्रेणियों के तहत 3.36 मिलियन वर्ग किलोमीटर के कुल भारतीय तलछटीय क्षेत्र का वितरण निम्नानुसार प्रस्तुत किया गया है:




**2.3.** कच्चे तेल और प्राकृतिक गैस, पारंपरिक हाइड्रोकार्बन संसाधनों के अनुमानित संसाधन

**2.3.1.** देश के 26 तलछटीय बेसिनों में अनुमानत: 41.87 बिलियन टन तेल और गैस के समकक्ष तेल (ओ+ओईजी) पारंपरिक हाइड्रोकार्बन संसाधन हैं, जो कि 28.08 बिलियन टन तेल और गैस के समतुल्य तेल (ओ+ओईजी) के पूर्व स्थापित अनुमानों की तुलना में लगभग 49% अधिक है। बेसिन–वार विवरण इस प्रकार है:

**तालिका 2.2 : भारत में अनुमानित हाइड्रोकार्बन संसाधन**

| बेसिन श्रेणी | सं. | बेसिन का नाम | अनुमानित संसाधन (एमएमटीओई) अनुमान 2017 |
|---|---|---|---|
| श्रेणी–I (भंडार के साथ बेसिन का उत्पादन और शोषण किया जा रहा है) | 1 | असम अराकान फोल्ड बेल्ट | 1,632.80 |
| | 2 | असम शेल्फ | 6,001.20 |
| | 3 | खंभात | 2,585.60 |
| | 4 | कावेरी | 1,964.40 |
| | 5 | कृष्णा गोदावरी | 9,554.50 |
| | 6 | मुंबई अपतटीय | 9,646.00 |
| | 7 | राजस्थान | 4,126.00 |
| **श्रेणी-I कुल** | | | **35,510.50** |
| श्रेणी–II (बेसिन के साथ आकस्मिक होने के संसाधन विकसित और मुद्रीकृत) | 8 | अंडमान | 371.40 |
| | 9 | कच्छ | 898.40 |
| | 10 | महानदी | 650.60 |
| | 11 | सौराष्ट्र | 1,325.20 |
| | 12 | विंध्य | 632.50 |
| **श्रेणी-II कुल** | | | **3,878.10** |
| श्रेणी–III (बेसिन के साथ केवल संभावित संसाधन पता लगाया जाना है और पता चला) | 13 | बस्तर | 1.30 |
| | 14 | बंगाल–पूर्णिया | 828.30 |
| | 15 | भीम–कालदगी | 3.20 |
| | 16 | छत्तीसगढ़ | 25.00 |
| | 17 | कडप्पा | 5.10 |
| | 18 | डेक्कन सिनेक्लीज | 11.00 |
| | 19 | गंगा–पंजाब | 128.40 |
| | 20 | हिमालयी फोरलैंड | 44.40 |
| | 21 | करेवा | 4.00 |
| | 22 | केरल कोंकण | 1,244.60 |
| | 23 | नर्मदा | 18.00 |
| | 24 | प्रणहिता गोदावरी | 95.40 |
| | 25 | सतपुड़ा–दक्षिण रीवा–दामोदर | 63.00 |
| | 26 | स्पीति–ज़ांस्कर | 11.10 |
| **श्रेणी-III कुल** | | | **2,482.80** |
| **कुल (एमएमटीओई)** | | | **41,871.40** |

*एमएमटीओई: मिलियन मीट्रिक टन तेल और गैस के समतुल्य तेल*

**2.3.2. एचसी संसाधनों का आकलन करने के लिए पेट्रोलियम संसाधन प्रबंधन प्रणाली (पीआरएमएस) का कार्यान्वयन:** राष्ट्रीय स्तर पर पारंपरिक तेल और गैस के "भंडारण और संसाधन" को बनाए रखने और सभी ईएंडपी व्यवस्थाओं– नामांकन और अनुबंध (पीएससी, आरएससी और सीबीएम) के सभी ब्लॉकों/क्षेत्रों के संबंध में वार्षिक आधार पर उनकी रिपोर्टिंग करने के लिए 1 अप्रैल 2021 से "पेट्रोलियम संसाधन प्रबंधन प्रणाली (पीआरएमएस)" लागू किया गया है।

डीजीएच ने मार्च 2021 में सभी ऑपरेटरों को अधिसूचित किया कि वे वार्षिक आधार पर 1 अप्रैल 2021 की स्थिति के अनुसार संबंधित ब्लॉकों और क्षेत्रों के पीआरएमएस मानकों के अनुसार तेल और गैस के "भंडारण और संसाधन" संबंधित जानकारी दें। तदनुसार, ऑपरेटरों द्वारा उपलब्ध कराए गए आंकड़ों के आधार पर 01.04. 2022 की स्थिति के अनुसार देश के पारंपरिक हाइड्रोकार्बन के "भंडारण और संसाधन" का अनुमान लगाया गया है।

**2.3.3. 3 दिनांक 01 अप्रैल 2022 की स्थिति के अनुसार देश का पारंपरिक हाइड्रोकार्बन रिजर्व (2पी) और संसाधन (2सी):** देश में पांच ईएंडपी संचालन व्यवस्थाएं हैं, नामतः नामांकन, प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट (पीएससी), ओपन एकरेज लाइसेंसिंग पॉलिसी (ओएएलपी), खोजे गए लघु क्षेत्र (डीएसएफ) और पारंपरिक तथा अपरंपरागत हाइड्रोकार्बन भंडारों के लिए कोल बेड मीथेन (सीबीएम)।

दिनांक 1 अप्रैल 2022 तक, देश के पारंपरिक तेल और गैस संसाधनों (2पी+2सी) का अनुमान लगभग 652 एमएमटी तेल और 1,138 बीसीएम गैस है।

दो राष्ट्रीय तेल कंपनियों (एनओसी) अर्थात् तेल और प्राकृतिक गैस निगम लिमिटेड (ओएनजीसी) और ऑयल इंडिया लिमिटेड (ओआईएल) द्वारा नामांकन व्यवस्था क्षेत्रों को संचालित किया जाता है और इनका एकसाथ कुल वसूली योग्य (2पी+2सी) में लगभग तेल और गैस की मात्रा में क्रमशः 74% और 60% का बड़ा हिस्सा है, जिसके बाद पीएससी/आरएससी ऑपरेटरों का हिस्सा आता है। तेल और गैस के संबंध में राष्ट्रीय स्तर पर कुल 2पी भंडारण लगभग 449 एमएमटी और 649.6 बीसीएम है; एनओसी (नामांकन व्यवस्था क्षेत्रों) की क्रमशः लगभग 82% और 58% की महत्वपूर्ण हिस्सेदारी है। राष्ट्रीय स्तर पर कुल 2सी आकस्मिक संसाधन लगभग 203 एमएमटी और 489 बीसीएम हैं; एनओसी (नामांकन व्यवस्था क्षेत्रों) का क्रमशः लगभग 55% और 63% का एक बड़ा हिस्सा है।

राष्ट्रीय स्तर पर रिपोर्ट किए गए आकस्मिक संसाधन (2सी) उल्लेखनीय रूप से बहुत अधिक हैं और निर्धारित समय सीमा के भीतर इनमें नए या पुनर्विकास परियोजनाओं को प्राथमिकता देने की आवश्यकता है। ईओआर/नई ईओआर पद्धतियां, जो पहले ही आदर्श माना गया है और जो सफलता पुर्वक प्रारंभिक चरण की समाप्ति के बाद तकनीकी रूप से परिपक्व हो चुके हैं, को आकस्मिक संसाधनों के भंडारण में वृद्धि के लिए क्षेत्र स्तर पर वाणिज्यिक रूप से लागू करने की आवश्यकता है। भंडारण प्रबंधन संबंधी विश्व की सर्वोत्तम प्रथाओं को अपनाकर क्षेत्र स्तर पर अधिकतम भंडारण करने के लिए सरकार सभी ईएंडपी प्रचालकों के साथ लगातार बातचीत कर रही है।



सिलचर, असम में ओएनजीसी की तटवर्ती रिग

तालिका 2.3: 01.04.2022 की स्थिति के अनुसार कच्चे तेल और प्राकृतिक गैस भंडार (2पी) और संसाधन (2सी) की स्थिति

1 अप्रैल 2022 तक पारंपरिक हाइड्रोकार्बन भंडार की स्थिति (अनंतिम)

| क्षेत्र | 2पी यथास्थान | | 2पी ईयूआर | | वर्ष 2021-2022 के दौरान तेजी | | भंडार (2पी) | | शेष वसूली योग्य भंडार (2सी) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | तेल+पारं. (एमएमटी) | गैस (बीसीएम) | तेल+पारं. (एमएमटी) | गैस (बीसीएम) | तेल+पारं. (एमएमटी) | गैस (बीसीएम) | तेल+पारं. (एमएमटी) | गैस (बीसीएम) | तेल+पारं. (एमएमटी) | गैस (बीसीएम) |
| नामांकन (ओएनजीसी और तेल) | 6175.68 | 2784.01 | 1663.59 | 1295.82 | 19.41 | 20.59 | 369.61 | 377.30 | 112.39 | 307.63 |
| पीएससी | 1215.78 | 794.01 | 220.63 | 331.04 | -0.49 | -5.49 | 75.20 | 200.64 | 86.50 | 130.55 |
| डीएसएफ | 54.61 | 52.39 | 4.21 | 16.21 | 2.47 | 7.61 | 4.18 | 16.21 | 3.99 | 8.79 |
| सीबीएम | 0.00 | 234.05 | 0.00 | 58.71 | 0.00 | -2.95 | 0.00 | 55.42 | 0.00 | 41.51 |
| ओएएलपी | 0.50 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.34 |
| **कुल योग** | **7,446.58** | **3,864.97** | **1,888.44** | **1,701.78** | **21.39** | **19.75** | **449.00** | **649.56** | **203.02** | **488.82** |

**2.3.4. अपरंपरागत हाइड्रोकार्बन संसाधन कोल बेड मीथेन (सीबीएम):** अनुमानित सीबीएम संसाधन देश के 11 राज्यों में फैले हैं जो 2,600 बिलियन क्यूबिक मीटर (बीसीएम) अथवा 91.8 ट्रिलियन क्यूबिक फीट (टीसीएफ) है। सीबीएम संसाधनों का राज्य–वार विवरण इस प्रकार है:

तालिका 2.4: 01.04.2022 तक भारत में कोल बेड मीथेन संसाधनों का राज्य–वार वितरण

| सं. | राज्य | अनुमानित सीबीएम संसाधन (बीसीएम में) | गैस यथा–स्थान* (जीआईआईपी) (बीसीएम) |
|---|---|---|---|
| 1 | झारखंड | 722 | 53.42 |
| 2 | राजस्थान | 360 | 0.00 |
| 3 | गुजरात | 351 | 0.00 |
| 4 | ओडिशा | 244 | 0.00 |
| 5 | छत्तीसगढ़ | 241 | 0.00 |
| 6 | मध्यप्रदेश | 218 | 103.36 |
| 7 | पश्चिम बंगाल | 218 | 77.28 |
| 8 | तमिलनाडु | 105 | 0.00 |
| 9 | तेलंगाना और आंध्र प्रदेश | 99 | 0.00 |
| 10 | महाराष्ट्र | 34 | 0.00 |
| 11 | पूर्वोत्तर | 9 | 0.00 |
| | **कुल सीबीएम संसाधन** | **2,599** | **234.05** |

*नोट: अनंतिम आंकड़े। कुछ ऑपरेटरों से प्रतीक्षित पीआरएमएस रिपोर्टिंग के अनुसार आरक्षित आंकड़े

### 2.3.5 शेल गैस/तेल संसाधन

यह अनुमान लगाया गया है कि भारत में स्थित विभिन्न तलछटीय बेसिन (गंगा का मैदान, गुजरात, राजस्थान, आंध्र प्रदेश और अन्य तटीय क्षेत्र), जिनमें हाइड्रोकार्बन धारित हैं– कॉम्बे, असम–अराकान और दामोदर शामिल हैं, इन भारतीय तलछटीय बेसिनों में शेल तेल और गैस के दृष्टिकोण से शेल गैस और तेल के होने की संभावना है जिनका प्रचालन कुछ एजेंसियों द्वारा निम्नानुसार किया जा रहा है:

i. ओएनजीसी द्वारा अगस्त, 2013 में 5 बेसिनों नामतः प्री–एनईएलपी और एनईएलपी दौर और अन्य अन्वेषण कॉम्बे, कृष्णा गोदावरी, कावेरी, गंगा और असम के लिए 187.5 टीसीएफ के गैस संसाधनों के कार्यान्वयन के दौरान शेल गैस (1995–96) का अनुमान लगाया था।

ii. केन्द्रीय खान योजना और डिजाइन भूवैज्ञानिक संज्ञान व नवीन प्रौद्योगिकी संस्थान (सीएमपीडीआई) सहित: जुलाई, 2013 में गोंडवाना नामक एक बेसिन के लिए 45.8 टीसीएफ के अन्वेषण प्रसार और क्वांटम जम्प संसाधनों में शेल गैस वृद्धि का अनुमान लगाया गया है।

iii. संयुक्त राज्य भूवैज्ञानिक सर्वेक्षण (यूएसजीएस) ने जनवरी, 2011 में सभी तलछटीय बेसिनों के संसाधन मूल्यांकन में तीन बेसिनों नामतः कैम्बे, कृष्णा गोदावरी और कावेरी में 6.1 टीसीएफ की तकनीकी पुनर्प्राप्ति योग्य शेल गैस का अनुमान लगाया।

भारत में शेल गैस और तेल संसाधन क्षमता की संभावना को समझने और उसका दोहन करने के लिए, भारत सरकार ने 14 दिसंबर, 2013 को राष्ट्रीय तेल कंपनियों (एनओसी) द्वारा नामांकन व्यवस्था के तहत प्रदान किए गए अन्वेषण पट्टा (पीईएल)/पेट्रोलियम खनन पट्टा (पीएमएल) ब्लॉक में अपने देश के पेट्रोलियम में शेल गैस और तेल के अन्वेषण और दोहन के लिए नीतिगत दिशानिर्देशों को अधिसूचित किया।

कंपनियों को तीन चरणों में अपने पीएमएल और एमएल क्षेत्रों में अन्वेषण करनी थी। ओएनजीसी और ओआईएल इंडिया लिमिटेड को चरण–1 के तहत मूल्यांकन के लिए क्रमशः 50 और 6 ब्लॉक आवंटित किए गए थे। ओएनजीसी ने 4 बेसिनों में 50 ब्लॉकों की पहचान की और ओआईएल ने चरण–1 में 2 बेसिनों में 6 ब्लॉकों की पहचान की।

ओएनजीसी ने चरण–I में 4 बेसिनों– असम, केजी, कावेरी और कॉम्बे बेसिन में 50 ब्लॉकों की पहचान की। ओआईएल ने चरण–I में 2 बेसिनों–जैसलमेर और असम बेसिन में 6 ब्लॉकों की पहचान की।

आज की तारीख तक ओएनजीसी ने 30 कुएं खोदे हैं और ओआईएल ने पहले चरण में शेल तेल और गैस की खोज के लिए 4 कुएं खोदे हैं।

हाइड्रोकार्बन एक्सप्लोरेशन एंड लाइसेंसिंग पॉलिसी (एचईएलपी), 2016 के तहत एकल लाइसेंस के माध्यम से ठेकेदार एक ही लाइसेंस से सीबीएम, शेल गैस/तेल, टाइट गैस और गैस हाइड्रेट सहित पारंपरिक और अपरंपरागत तेल और गैस संसाधनों का पता लगाने में सक्षम हो गए हैं।

अगस्त 2018 में, भारत सरकार ने मौजूदा प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट्स (पीएसससी), कोल बेड मीथेन (सीबीएम) कॉन्ट्रैक्ट्स और नॉमिनेशन फील्ड के तहत मौजूदा एकरेज में अपरंपरागत हाइड्रोकार्बन की खोज और दोहन के लिए एक नीतिगत ढांचा अधिसूचित किया।

### 2.3.6. हाइड्रोकार्बन संसाधनों का पुनर्मूल्यांकन

देश में हाइड्रोकार्बन संसाधन क्षमता का अद्यतन अनुमान निकालने के लिए, देश के सभी 26 तलछटीय बेसिनों के हाइड्रोकार्बन संसाधनों का पुनर्मूल्यांकन 2017 में पूरा किया गया था जो इसके पहले लगभग दो दशक पहले निकाला गया था। इसके परिणामस्वरूप 41.87 बिलियन टन तेल और तेल समतुल्य गैस (ओ+ओईजी) की मात्रा में पारंपरिक हाइड्रोकार्बन संसाधनों का अनुमान लगाया गया, जो कि 28.08 बिलियन टन ओ+ओईजी के पूर्व अनुमान की तुलना में लगभग 49% अधिक है।

## 2.4. कच्चा तेल और प्राकृतिक गैस उत्पादन

**2.4.1.** वित्त वर्ष 2022–23 (अप्रैल से दिसंबर 2022) में कच्चे तेल का उत्पादन लगभग 22.08 मिलियन मीट्रिक टन (एमएमटी) रहा। लगभग 77% कच्चा तेल ओएनजीसी और ओआईएल द्वारा नामांकन व्यवस्था (जेवी शेयर के अतिरिक्त) से प्राप्त हुआ है और शेष 23% संविदात्मक व्यवस्था से निजी/जेवी कंपनियों द्वारा किया जाता है।

**2.4.2.** वित्त वर्ष 2022–23 (दिसंबर, 2022 तक) में अपतटीय कच्चे तेल के उत्पादन का अंश लगभग 49.5% है। शेष जमीनी कच्चे तेल का उत्पादन मुख्य रूप से आंध्र प्रदेश, अरुणाचल प्रदेश, असम, गुजरात, राजस्थान, तमिलनाडु, पश्चिम बंगाल आदि से हुआ है। वित्त वर्ष 2022–23 (दिसंबर 2022 तक) और पिछले 5 वर्षों में कच्चे तेल के उत्पादन का विवरण इस प्रकार है:

तालिका 2.5: राज्य–वार कच्चे तेल के उत्पादन से संबंधित रुझान (एमएमटी)

| स्थान का प्रकार | राज्य/स्थिति | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (पी) (अप्रैल-दिसम्बर) 2022) |
|---|---|---|---|---|---|---|---|
| अपतटीय क्षेत्र | पूर्वी अपतटीय क्षेत्र | 0.83 | 0.65 | 0.56 | 0.74 | 0.63 | 0.40 |
| | गुजरात अपतटीय क्षेत्र | 0.4 | 0.74 | 0.59 | 0.41 | 0.34 | 0.29 |
| | पश्चिमी अपतटीय क्षेत्र | 16.92 | 15.48 | 14.85 | 14.24 | 13.60 | 10.24 |
| **अपतटीय क्षेत्र योग** | | **18.14** | **16.87** | **16** | **15.39** | **14.57** | **10.93** |
| **पीएसयू का अंश** | | **16.24** | **14.97** | **14.54** | **14.24** | **13.62** | **10.25** |
| **निजी/संयुक्त उद्यमों का अंश** | | **1.91** | **1.9** | **1.47** | **1.15** | **0.95** | **0.68** |
| जमीनी क्षेत्र | आंध्र प्रदेश | 0.3 | 0.3 | 0.24 | 0.19 | 0.20 | 0.18 |
| | अरुणाचल प्रदेश | 0.05 | 0.04 | 0.06 | 0.05 | 0.05 | 0.03 |
| | असम | 4.34 | 4.31 | 4.09 | 3.9 | 3.99 | 3.12 |
| | गुजरात | 4.59 | 4.63 | 4.71 | 4.65 | 4.63 | 3.64 |
| | राजस्थान | 7.89 | 7.67 | 6.65 | 5.89 | 5.89 | 3.93 |
| | तमिलनाडु | 0.35 | 0.4 | 0.42 | 0.41 | 0.37 | 0.25 |
| | त्रिपुरा | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 |
| | पश्चिम बंगाल | | | | 0.0001 | 0.0001 | 0.00001 |
| **जमीनी क्षेत्र योग** | | **17.52** | **17.34** | **16.17** | **15.1** | **15.12** | **11.15** |
| **पीएसयू का अंश** | | **9.36** | **9.37** | **9.2** | **8.87** | **8.82** | **6.84** |
| **निजी/संयुक्त उद्यम का अंश** | | **8.15** | **7.97** | **6.97** | **6.23** | **6.30** | **4.31** |
| **कुल योग** | | **35.66** | **34.2** | **32.17** | **30.49** | **29.69** | **22.08** |
| **पीएसयू का अंश** | | **25.6** | **24.34** | **23.73** | **23.11** | **22.44** | **17.08** |
| **निजी/संयुक्त उद्यमों का अंश** | | **10.06** | **9.87** | **8.44** | **7.39** | **7.25** | **5.00** |

**2.4.3.** वर्ष 2022–23 (दिसंबर, 2022 तक) में प्राकृतिक गैस का उत्पादन लगभग 25.87 बिलियन क्यूबिक मीटर (बीसीएम) रहा। प्राकृतिक गैस उत्पादन का लगभग 67% ओएनजीसी और ओआईएल द्वारा नामांकन व्यवस्था (जेवी शेयर के अतिरिक्त) से हुआ और शेष 33% संविदात्मक व्यवस्था से निजी/संयुक्त उद्यम कंपनियों द्वारा किया गया था।

**2.4.4.** वित्त वर्ष 2022–23 (दिसंबर, 2022 तक) में अपतटीय प्राकृतिक गैस उत्पादन का अंश लगभग 68% है। सीबीएम सहित शेष प्राकृतिक गैस का उत्पादन 10 राज्यों अर्थात् आंध्र प्रदेश, अरुणाचल प्रदेश, असम, गुजरात, राजस्थान, तमिलनाडु, त्रिपुरा, झारखंड, मध्य प्रदेश और पश्चिम बंगाल से था। वर्ष 2022–23 (दिसंबर, 2022 तक) और पिछले 5 वर्षों के दौरान प्राकृतिक गैस उत्पादन संबंधी विवरण निम्नानुसार है:

तालिका 2.6 : राज्य–वार प्राकृतिक गैस उत्पादन संबंधी रुझान (एमएमएससीएम)

| स्थान का प्रकार | राज्य/स्थिति | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (पी) (अप्रैल-दिसम्बर) 2022) |
|---|---|---|---|---|---|---|---|
| अपतटीय श्रेत्र | पूर्वी अपतटीय श्रेत्र | 2816.7 | 2458.9 | 1823.1 | 1621.5 | 7024.8 | 5953.5 |
| | गुजरात अपतटीय श्रेत्र | 97.7 | 122.2 | 128.7 | 147.6 | 163 | 174.2 |
| | पश्चिमी अपतटीय श्रेत्र | 19096.2 | 19535.9 | 18683.6 | 16659.9 | 15681.1 | 11423.7 |
| **अपतटीय श्रेत्र योग** | | **22,010.6** | **22,117.1** | **20,635.4** | **18,429.1** | **22,868.9** | **17,551.4** |
| **पीएसयू का अंश** | | **17,791.2** | **19,041.8** | **18,576** | **17,086.4** | **15,942.9** | **11,554.9** |
| **निजी/संयुक्त उद्यमों का अंश** | | **4,219.5** | **3,075.3** | **2,059.4** | **1,342.6** | **6,926** | **5,996.5** |
| जमीनी क्षेत्र | आंध्र प्रदेश | 955.9 | 1076.5 | 906.1 | 827.5 | 808.6 | 544.5 |
| | अरुणाचल प्रदेश | 29.5 | 27.8 | 45.6 | 55.4 | 57.7 | 40.8 |
| | असम | 3219 | 3289.1 | 3141.2 | 2995.4 | 3371.5 | 2686.5 |
| | गुजरात | 1606.7 | 1402.2 | 1347.7 | 1138.4 | 1017.3 | 699.7 |
| | राजस्थान | 1436.4 | 1483.2 | 1882.5 | 2039.7 | 2618.8 | 1747.2 |
| | तमिलनाडु | 1207.2 | 1207.9 | 1096.7 | 910.9 | 1066.5 | 845.6 |
| | त्रिपुरा | 1440.4 | 1554.3 | 1472.8 | 1633.8 | 1530.8 | 1237.9 |
| जमीनी क्षेत्र सीबीएम | झारखंड | 4 | 3.6 | 4.6 | 1.7 | 4 | 6.8 |
| | मध्य प्रदेश | 199.8 | 356.7 | 344.9 | 333.7 | 290.1 | 201.7 |
| | पश्चिम बंगाल | 531.1 | 350.2 | 305.9 | 307 | 389.2 | 303 |
| **सीबीएम श्रेत्र योग** | | **10,629.9** | **10,751.5** | **10,547.9** | **10,243.4** | **11,154.6** | **8,313.6** |
| **सार्वजनिक उपक्रमों का अंश** | | **8,511** | **8,350** | **7,837.5** | **7,265.3** | **7,578.3** | **5,794.1** |
| **पीएसयू का अंश** | | **2,118.9** | **2,401.5** | **2,710.4** | **2,978.1** | **3,576.3** | **2,519.6** |
| **कुल योग** | | **32,640.5** | **32,868.6** | **31,183.3** | **28,672.4** | **34,023.5** | **25,865** |
| **पीएसयू का अंश** | | **26,302.2** | **27,391.8** | **26,413.6** | **24,351.7** | **23,521.2** | **17,349** |
| **निजी/संयुक्त उद्यमों का अंश** | | **6,338.3** | **5,476.8** | **4,769.8** | **4,320.7** | **10,502.3** | **8,516.1** |

**2.4.5.** भारत में कोल बेड़ मीथेन (सीबीएम) का वाणिज्यिक उत्पादन जुलाई 2007 से पश्चिम बंगाल के रानीगंज (दक्षिण) ब्लॉक में आरंभ किया गया था। वर्तमान में 08 सीबीएम ब्लॉक सक्रिय हैं, जिनमें से 05 ब्लॉकों से उत्पादन किया जा रहा है। इसमें 1 सीबीएम ब्लॉक से परीक्षण गैस और अन्य 4 सीबीएम ब्लॉक से वाणिज्यिक उत्पादन शामिल है। दिसंबर 2022 के दौरान सीबीएम उत्पादन लगभग 1.81 एमएमएससीएमडी था, जिसमें रानीगंज (दक्षिण) से 0.28 एमएमएससीएमडी, रानीगंज (पूर्व) से 0.81 एमएमएससीएमडी, सोहागपुर (पश्चिम) से 0.69 एमएमएससीएमडी तथा झरिया और बोकारो से 0.03 एमएमएससीएमडी शामिल था। दिसंबर–2022 तक समेकित सीबीएम उत्पादन लगभग 5.59 बीसीएम है। देश के कुल गैस उत्पादन में सीबीएम की हिस्सेदारी लगभग 3% है।

## 2.5. भारतीय तलछटीय क्षेत्र

भारत हाइड्रोकार्बन विजन 2025 के अनुसार, 100% भारतीय तलछटीय क्षेत्र का मूल्यांकन किया जाना है। जमीनी क्षेत्र के अंतर्गत 1.63 मिलियन वर्ग किलोमीटर (48.5%) कवर होता है और अपतटीय क्षेत्र 1.73 मिलियन वर्ग किलोमीटर है। अब तक, लगभग 61% बेसिनल क्षेत्रों

का मूल्यांकन किया गया है। भारतीय नौसेना के साथ विशेष व्यवस्था के तहत 'नो–गो' को लगभग 99% तक कम कर दिया गया है। इसी तरह के प्रयास डीआरडीओ और अंतरिक्ष विभाग के साथ किए जा रहे हैं ताकि अभी तक अनछुए क्षेत्रों का पता लगाया जा सके।

## 2.6. अन्वेषण और उत्पादन के प्रयोजनार्थ आवंटित ब्लॉक

**2.6.1.** भारत सरकार द्वारा 310 उत्पादन साझाकरण संविदाओं पर हस्ताक्षर किए गए जिनके तहत ब्लॉक के लिए लाइसेंसधारी/पट्टेदार के रूप में राष्ट्रीय तेल कंपनियों और निजी (भारतीय और विदेशी दोनों)/संयुक्त उद्यम कंपनियों के साथ 29 खोजे गए क्षेत्रों (पन्ना और मुक्ता क्षेत्रों के लिए हस्ताक्षरित एक पीएससी), एनईएलपी पूर्व अन्वेषण ब्लॉकों के तहत 28 अन्वेषण ब्लॉक और एनईएलपी व्यवस्था के तहत 254 ब्लॉक शामिल थे। इसके अलावा 85 संविदा क्षेत्रों को शामिल करते हुए खोजे गए लघु क्षेत्र (डीएसएफ) बोली दौर के तहत 85 राजस्व भागीदारी संविदाओं(आरएससी) पर हस्ताक्षर किए गए हैं। इसके अलावा, हाइड्रोकार्बन एक्सप्लोरेशन और लाइसेंसिंग पॉलिसी (एचईएलपी) के तहत सात (07) ओपन एकरेज लाइसेंसिंग कार्यक्रम (ओएलएपी) बोली दौर के दौरान कुल 134 आरएससी पर हस्ताक्षर किए गए हैं। वर्तमान स्थिति के अनुसार बोली के विभिन्न दौरों (खोजे गए क्षेत्र, एनईएलपी पूर्व, एनईएलपी, एचईएलपी और डीएसएफ) के तहत अब तक हस्ताक्षरित 310 पीएससी और 219 आरएससी में से 63 पीएससी और 180 आरएससी प्रचालनरत हैं।

**2.6.2** कच्चे तेल और प्राकृतिक गैस के घरेलू अन्वेषण और उत्पादन के लिए पेट्रोलियम एक्सप्लोरेशन लाइसेंस (पीईएल) विभिन्न व्यवस्थाओं के तहत समय–समय पर प्रदान किए गए हैं:

क) **नामांकन आधार:** राष्ट्रीय तेल कंपनियों नामतः तेल और प्राकृतिक गैस निगम लिमिटेड (ओएनजीसी) और ऑयल इंडिया लिमिटेड (ओआईएल) को एनईएलपी के कार्यान्वयन से पूर्व नामांकन आधार पर पेट्रोलियम एक्सप्लोरेशन लाइसेंस (पीईएल) प्रदान किया जाता है।

ख) **एनईएलपी पूर्व खोजे गए क्षेत्र:** सरकार द्वारा अगस्त 1992 में निजी क्षेत्र को लघु/मध्यम आकार के खोजे गए क्षेत्रों (ओएनजीसी और ओआईएल द्वारा प्रमाणित भंडारों की खोज की गई) के पेट्रोलियम खनन पट्टे (पीएमएल) की पेशकश की गई। उत्पादन भागीदारी संविदा (पीएससी) 1991–1993 के दौरान प्रदान किए गए जिसकी विशिष्ट विशेषता निजी कंपनियों का ऑपरेटर स्वरूप था। भारत सरकार द्वारा एनईएलपी पूर्व खोजे गए (लघु और मध्यम आकार के क्षेत्र) व्यवस्था के तहत 29 खोजे गए क्षेत्रों के लिए 28 संविदाओं (पन्ना–मुक्ता के लिए एक पीएससी) पर हस्ताक्षर किए गए। दिसंबर 2022 की स्थिति के अनुसार 21 कार्यशील एनईएलपी पूर्व खोजे गए फील्ड हैं। भारत सरकार की विस्तार नीति दिनांकित 28.03.2016 के तहत 10 एनईएलपी पूर्व क्षेत्रों के पीएससी का विस्तार किया गया है और 2 क्षेत्रों के लिए विस्तार किया जा रहा है।

ग) **एनईएलपी पूर्व अन्वेषण ब्लॉक:** वर्ष 1990 के बीच और एनईएलपी के कार्यान्वयन से पूर्व 28 अन्वेषण ब्लॉक निजी कंपनियों को प्रदान किए गए थे जहां ओएनजीसी और ओआईएल के पास हाइड्रोकार्बन खोजों के पश्चात ब्लॉक में भागीदारी के अधिकार प्राप्त हैं। दिसंबर, 2022 की स्थिति के अनुसार 9 कार्यशील एनईएलपी पूर्व अन्वेषण ब्लॉक हैं। भारत सरकार की विस्तारण नीति दिनांकित 07.04.2017 के तहत 2 पूर्व–एनईएलपी अन्वेषण ब्लॉकों के पीएससी का विस्तार किया गया है।

घ) **नई अन्वेषण लाइसेंसिंग नीति (एनईएलपी)–1999 के पश्चात की स्थिति:** एनईएलपी के तहत, अंतरराष्ट्रीय प्रतिस्पर्धी बोली प्रक्रिया के माध्यम से भारतीय निजी और विदेशी कंपनियों को अन्वेषण ब्लॉक प्रदान किए गए थे, जहां राष्ट्रीय तेल कंपनियों अर्थात ओएनजीसी और ओआईएल द्वारा भी समान स्तर पर प्रतिस्पर्धा की। दिसंबर 2022 तक 33 एनईएलपी ब्लॉकों में परिचालन हो रहा है।

ङ) **खोजे गए लघु क्षेत्र (डीएसएफ) से संबंधित नीति:** खोजे गए लघु क्षेत्र नीति के तहत, सरकार द्वारा राजस्व भागीदारी मॉडल के आधार पर 85 संविदा क्षेत्र, डीएसएफ–I, डीएसएफ–II और डीएसएफ–III बोली दौर प्रदान किए गए हैं। दिसंबर 2022 तक, खोजे गए लघु क्षेत्र (डीएसएफ) बोली दौर के तहत 85 संविदा क्षेत्रों के लिए राजस्व भागीदारी संविदाओं (आरएससी) पर हस्ताक्षर किए गए हैं। प्रदान किए गए पीएमएल के आधार पर 48 डीएसएफ संविदाएं कार्यशील हैं।

च) **हाइड्रोकार्बन अन्वेषण लाइसेंसिंग नीति (एचईएलपी):** इस नीति के तहत, सरकार द्वारा ओपन एकरेज लाइसेंसिंग पॉलिसी (ओएएलपी) के तहत सात बोली दौरों में राजस्व भागीदारी के आधार पर 134 अन्वेषी ब्लॉक आवंटित किए गए हैं।

## 2.7. पेट्रोलियम अन्वेषण लाइसेंस (पीईएल) और पेट्रोलियम खनन पट्टा (पीएमएल)

**2.7.1.** नामांकन व्यवस्था के तहत, ओएनजीसी द्वारा 5 पीईएल (2,995.00 वर्ग किलोमीटर) और 310 लंबी अवधि के पीएमएल ब्लॉकों का प्रचालन किया जा रहा है, जो लगभग 28,440.83 वर्ग किलोमीटर के क्षेत्र को कवर करता है। इसके अलावा, ओएनजीसी द्वारा लगभग 18,611.75 वर्ग किमी क्षेत्र को कवर करने वाले विभिन्न बेसिनों में 7 वर्षीय लघु अवधि के 18 पीएमएल ब्लॉकों में भी प्रचालन कर रहा है। इसके अतिरिक्त, ओआईएल 4,946.73 वर्ग किमी क्षेत्र को कवर करते हुए नामांकन व्यवस्था के तहत 2 पीईएल और 25 पीएमएल क्षेत्रों का संचालन कर रहा है। ओएनजीसी और ओआईएल द्वारा संचालित पीईएल/पीएमएल का बेसिन-वार विवरण इस प्रकार है:

**तालिका 2.7 क. दिनांक 31.12.2022 की स्थिति के अनुसार नामांकन व्यवस्था के तहत ओएनजीसी द्वारा बेसिन-वार पीएल ऑपरेटिव और पीएमएल**

| कंपनी/ ऑपरेटर | बेसिन/राज्य | | पीईएल | | पीएमएल | | | | कुल | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | दीर्घ कालिक | | लघु कालिक (7 वर्ष) | | | |
| | | | सं. | क्षेत्रफल (किमी2) | सं. | क्षेत्रफल (किमी2) | सं. | क्षेत्रफल (किमी2) | सं. | क्षेत्रफल (किमी2) |
| ओएनजीसी | असम-अराकान | असम | - | - | 42 | 1446.08 | 4 | 858.43 | 46 | 2304.51 |
| | | नगालैंड | 3 | 1590.00 | 1 | 12.00 | - | - | 4 | 1602.00 |
| | | त्रिपुरा | - | - | 16 | 1682.07 | 2 | 1363.05 | 18 | 3045.12 |
| | कॉम्बे | गुजरात | - | - | 156 | 5565.49 | 3 | 111.25 | 159 | 5676.74 |
| | कावेरी | तमिलनाडु-जमीनी | - | - | 24 | 644.68 | 2 | 3311.72 | 26 | 3956.40 |
| | | कावेरी-तटीय | | | 1 | 11.00 | - | - | 1 | 11.00 |
| | कृष्णा-गोदावरी | आंध्र प्रदेश-जमीनी | - | - | 34 | 1019.51 | 3 | 3309.58 | 37 | 4329.09 |
| | | केजी अपतटीय | - | - | 7 | 570.86 | - | - | 7 | 570.86 |
| | कच्छ अपतटीय | | 1 | 420.00 | - | - | - | - | 1 | 420.00 |
| | सौराष्ट्र अपतटीय | | - | - | 1 | 392.52 | 1 | 29.07 | 2 | 421.59 |
| | मुंबई अपतटीय | | 1 | 985.00 | 24 | 16256.98 | 3 | 9628.65 | 28 | 26870.63 |
| | जैसलमेर | राजस्थान | - | - | 4 | 839.64 | - | - | 4 | 839.64 |
| | | **कुल-ओएनजीसी** | **5** | **2,995** | **310** | **28,440.83** | **18** | **18,611.75** | **333** | **50,047.58** |
| | | | | | **नामांकन पीएमएल: 328 क्षेत्रफल (किमी2): 47,052.58** | | | | | |

**तालिका 2.7 ख. दिनांक 31.12.2022 की स्थिति तक नामांकन व्यवस्था के तहत ओआईएल द्वारा बेसिन-वार पीएल ऑपरेटिव और पीएमएल**

| कंपनी/ ऑपरेटर | बेसिन | | पीईएल | | पीएमएल | | कुल | |
|---|---|---|---|---|---|---|---|---|
| | | | सं. | क्षेत्रफल (किमी2) | सं. | क्षेत्रफल (किमी2) | सं. | क्षेत्रफल (किमी2) |
| ओआईएल-नामांकन | राजस्थान | जमीनी | - | - | 2 | 462.17 | 2 | 462.17 |
| | असम-अराकान | जमीनी | 2 | 136.75 | 23 | 4347.81 | 25 | 4484.56 |
| **कुल-ओआईएल** | | | **2** | **136.75** | **25** | **4,809.98** | **27** | **4,946.73** |

**2.7.2.** पीएससी व्यवस्था के तहत निजी/संयुक्त उद्यम कंपनियां 29,664 वर्ग किलोमीटर के क्षेत्र को कवर करते हुए 24 पीईएल और 65 पीएमएल ब्लॉकों में संचालन कर रही हैं। निजी/संयुक्त उद्यम कंपनियों द्वारा संचालित पीईएल/पीएमएल का बेसिन-वार विवरण इस प्रकार है:

तालिका 2.8. दिनांक 31.12.2021 की स्थिति के अनुसार पीएसपी व्यवस्था के तहत निजी/संयुक्त उद्यम कंपनियों के बेसिन–वार पीईएल और पीएमएल

| बेसिन का नाम | पीईएल | | पीएमएल | |
|---|---|---|---|---|
| | पीईएल (सं.) | क्षेत्रफल (वर्ग किमी) | पीईएल (सं.) | क्षेत्रफल (वर्ग किमी) |
| असम–अराकान फोल्ड बेल्ट | 1 | 3213 | 0 | 0 |
| असम–अराकान शेल्फ | 6 | 6608 | 4 | 263 |
| बंगाल–पूर्णिया | 1 | 3940 | 0 | 0 |
| खंभात | 5 | 842 | 43 | 1220 |
| कावेरी | 2 | 267 | 2 | 156 |
| कृष्णा गोदावरी | 2 | 2076 | 12 | 2388 |
| कच्छ | 2 | 1594 | 0 | 0 |
| महानदी | 1 | 832 | 0 | 0 |
| मुंबई | 2 | 1965 | 0 | 0 |
| राजस्थान | 0 | 0 | 4 | 3287 |
| सौराष्ट्र | 1 | 552 | 0 | 0 |
| विंध्य | 1 | 462 | 0 | 0 |
| **कुल योग** | **24** | **22,349** | **65** | **7,315** |

तालिका 2.9. दिनांक 31.12.2022 की स्थिति तक डीएसएफ के तहत निजी/संयुक्त उद्यम कंपनियों के बेसिन–वार पीएमएल

| बेसिन का नाम | पीएमएल का सं. | पीएमएल क्षेत्रफल (वर्ग किमी) |
|---|---|---|
| असम–अराकान फोल्ड बेल्ट | 1 | 47 |
| असम शेल्फ | 8 | 168 |
| बंगाल–पूर्णिया | 1 | 541 |
| खंभात | 8 | 1037 |
| कृष्णा गोदावरी | 9 | 1384 |
| कच्छ | 2 | 2092 |
| मुंबई | 16 | 6285 |
| राजस्थान | 1 | 73 |
| **कुल** | **46** | **11,628** |

* डीएसएफ–III संविदा के लिए 2 पीएमएल एए/ओएनडीएसएफ/पथरिया/2021 और एए/ओएनडीएसएफ/टीयूकेबीएआई/2021 प्रदान किया गया है लेकिन पीएमएल डीड पर हस्ताक्षर होने के बाद यह प्रभावी होगा।

### 2.7.3. एचईएलपी के तहत 31 दिसंबर 2022 तक पेट्रोलियम अन्वेषण लाइसेंस (पीईएल) के अनुदान की स्थिति

सात दौर की बोली प्रक्रिया द्वारा प्रदान किए गए 134 ब्लॉकों में कुल 167 पेट्रोलियम एक्सप्लोरेशन लाइसेंस (पीईएल) शामिल थे, 31 दिसंबर 2022 तक इनमें से 138 पीईएल 1,81,838.1 वर्गमीटर के क्षेत्र के लिए प्रदान किए गए हैं। संघ राज्य क्षेत्र पुडुचेरी द्वारा 40.53 वर्ग किमी के क्षेत्र के लिए दो पीईएल अस्वीकृत किए गए थे। इसके अलावा 7,136.41 वर्ग किमी क्षेत्र में 10 पीईएल राज्य सरकार तमिलनाडु, आंध्र प्रदेश और संघ राज्य क्षेत्र पुडुचेरी द्वारा प्रदान नहीं किया गया था। इस क्षेत्र को लौटाया गया है। 18,161.43 वर्ग किमी क्षेत्र के शेष 17 पीईएल विभिन्न राज्य सरकारों के पास लंबित हैं। पीईएल स्थिति का सारांश इस प्रकार है:

तालिका 2.10. दिनांक 31.12.2021 तक आरएसपी व्यवस्था के तहत निजी/संयुक्त उद्यम कंपनियों के बेसिन–वार उद्यम

| ओएलएपी बोली दौर | पीईएल की कुल सं. | प्रदान किए गए पीईएल | लम्बित पीईएल | अस्वीकृत पीईएल |
|---|---|---|---|---|
| ओएलएपी I | 76 | 66 | 2 | **8 |
| ओएलएपी II | 18 | 17 | 1 | |
| ओएलएपी III | 21 | 15 | 2 | **4 |
| ओएलएपी IV | 7 | 7 | - | - |
| ओएलएपी V | 13 | 13 | - | - |
| ओएलएपी VI | 24 | 14 | 10 | - |
| ओएलएपी VII | 8 | 6 | 2 | - |
| **कुल** | **167** | **138** | **17** | **12** |

*प्रदान किए गए कुछ ब्लॉक एक से अधिक राज्यों के अधिकार क्षेत्र में आते हैं इसलिए पीईएल की संख्या सौंपे गए ब्लॉकों की संख्या से अधिक है।

** तमिलनाडु, पुडुचेरी और आंध्र प्रदेश राज्य में पीईएल का अनुदान नहीं देने के कारण, ठेकेदारों द्वारा ब्लॉक/आंशिक क्षेत्र वापस कर दिया गया है।

तालिका 2.11. दिनांक 31.12.2022 की स्थिति के अनुसार ओएएलपी के तहत पीईएल की बेसिन–वार स्थिति

| बेसिन | पीईएल की कुल सं. | प्रदान किए गए पीईएल | लम्बित पीईएल | अस्वीकृत पीईएल |
|---|---|---|---|---|
| अंडमान–निकोबार | 6 | 6 | 0 | |
| असम अराकान फोल्ड बेल्ट | 17 | 16 | 1 | |
| असम शेल्फ | 30 | 28 | 2 | |
| बंगाल–पूर्णिया | 5 | 4 | 1 | |
| खंभात | 6 | 5 | 1 | |
| खंभात | 19 | 18 | 1 | |
| कावेरी | 15 | 6 | 2 | 5*; 2** |
| कडप्पा | 1 | 0 | 1 | |
| गंगा–पंजाब | 4 | 2 | 2 | |
| हिमालयी फोरलैंड | 1 | 1 | 0 | |
| केरल कोंकण | 1 | 1 | 0 | |
| कृष्णा गोदावरी | 9 | 4 | 0 | 5** |
| कच्छ | 8 | 7 | 1 | |
| महानदी | 9 | 9 | 0 | |
| मुंबई अपतटीय | 8 | 8 | 0 | |
| नर्मदा | 2 | 0 | 2 | |
| राजस्थान | 16 | 15 | 1 | |
| सतपुड़ा–दक्षिण रीवा–दामोदर | 1 | 0 | 1 | |
| सौराष्ट्र | 1 | 0 | 1 | |
| सौराष्ट्र | 3 | 3 | 0 | |
| विंध्य | 5 | 5 | 0 | |
| **कुल योग** | **167** | **138** | **17** | **12** |

कुछ बेसिन एक से अधिक अधिकार क्षेत्र में आते हैं जैसे कि तटवर्ती / अपतटीय में या कई राज्य में।

* तमिलनाडु/पुडुचेरी द्वारा 5 पीईएल अस्वीकार करने से ऑपरेटर ने क्षेत्र/ब्लॉक का समर्पण कर दिया।

** तमिलनाडु, आंध्र प्रदेश और पुडुचेरी राज्यों को मिलाकर 7 पीईएल के लिए अनुदान न मिलने के कारण, ऑपरेटर ने ब्लॉक वापस कर दिया।

## 2.8. नामांकन व्यवस्था के तहत ओएनजीसी ओर ओआईएल द्वारा अन्वेषण के प्रयास

ओएनजीसी और ओआईएल ने स्थापना के बाद से 31 दिसंबर, 2020 तक 9,17,333 लाइन किलोमीटर (एलकेएम) में 2डी भूकंपीय सर्वेक्षण किए हैं, 1,46,434 वर्ग किमी. 3डी भूकंपीय सर्वेक्षण किया है और 6,826 अन्वेषण कुएं ड्रिल किए हैं। ओएनजीसी और ओआईएल द्वारा किए गए 2डी, 3डी भूकंपीय और अन्वेषी कूपों के संदर्भ में किए गए अन्वेषी प्रयासों का विवरण इस प्रकार है:

तालिका 2.12. नामांकन व्यवस्था के तहत ओएनजीसी और ओआईएल के अन्वेषण संबंधी इनपुट

| क्र. सं. | कंपनी | 31.12.2021 तक संचयी अन्वेषी प्रयास | | अन्वेषी कुएं (सं.) |
|---|---|---|---|---|
| | | 2डी भूकंपीय (एलकेएम) | 3डी भूकंपीय (वर्ग किमी) | |
| 1 | ओएनजीसी–नामांकन | 8,83,040 | 1,34,723 | 6,408 |
| 2 | ऑयल इंडिया लिमिटेड–नामांकन | 34,293 | 11,711 | 418 |
| | **कुल** | **9,17,333** | **1,46,434** | **6,826** |

## 2.9. पीएससी और आरएससी के तहत निजी/संयुक्त उद्यम कंपनियों द्वारा अन्वेषी प्रयास

**2.9.1.** दिनांक 1 अप्रैल, 2022 तक पीएससी और आरएससी व्यवस्थाओं के तहत 2डी भूकंपीय, 3डी भूकंपीय और अन्वेषी कुओं के संदर्भ में निजी/संयुक्त उद्यम कंपनियों द्वारा किए गए बेसिन–वार अन्वेषी प्रयास इस प्रकार हैं:

तालिका 2.13. दिनांक 31.12.2022 तक पीएससी व्यवस्था में कुल अन्वेषणात्मक इनपुट

| बेसिन नाम | 2डी भूकंपीय एलकेएम | 3डी भूकंपीय एसकेएम | अन्वेषी कुएं (संख्या) |
|---|---|---|---|
| अंडमान–निकोबार | 27070 | 16562 | 6 |
| असम–अराकान फोल्ड बेल्ट | 1352 | 613 | 4 |
| असम–अराकान शेल्फ | 5468 | 2203 | 41 |
| बंगाल–पूर्णिया | 5247 | 4909 | 13 |
| खंभात | 29994 | 9167 | 317 |
| कावेरी | 64727 | 44561 | 51 |
| डेक्कन सिनक्लिज | 476 | 0 | 0 |
| गंगा | 3876 | 263 | 4 |
| हिमालय–फोरलैंड | 810 | 0 | 1 |
| केरल कोंकण | 52290 | 14035 | 7 |
| कृष्णा गोदावरी | 76106 | 70711 | 207 |
| कच्छ | 2985 | 8345 | 21 |
| महानदी | 59542 | 64659 | 53 |
| मुंबई | 21349 | 27285 | 51 |
| प्रणहिता गोदावरी | 195 | 0 | 1 |
| राजस्थान | 14157 | 16396 | 311 |
| सतपुड़ा–दक्षिण रीवा–दामोदर | 2050 | 304 | 2 |
| सौराष्ट्र | 16037 | 15428 | 16 |
| विंध्य | 3918 | 858 | 8 |
| गंगा–पंजाब | 2542 | 1420 | 4 |
| **कुल योग** | **3,90,191** | **2,97,718** | **1,118** |

तालिका 2.14. दिनांक 31.12.2022 तक आरएससी व्यवस्था (ओएएलपी) में कुल अन्वेषी इनपुट

दिनांक 31 दिसंबर 2022 तक, ब्लॉकों के ठेकेदारों ने 2डी भूकंपीय डेटा के 29,368.48 एलकेएम और 3डी भूकंपीय डेटा का के 24,205.6 वर्ग किमी सीडब्ल्यूपी का एकत्रण किया है।

| बेसिन | हासिल 2डी भूकंपीय (एलकेएम) | हासिल 3डी भूकंपीय (एलकेएम) |
|---|---|---|
| अंडमान–निकोबार | 8501 | 2130 |
| असम अराकान फोल्ड बेल्ट | 509 | 129 |
| असम शेल्फ | 2572 | 359 |
| बंगाल पूर्णिया | 100 | 701 |
| खंभात | 1519 | 893 |
| कावेरी | 0 | 1500 |
| केरल कोंकण | 0 | 1028 |
| कृष्णा गोदावरी | 431 | 1514 |
| कच्छ | 398 | 1358 |
| महानदी | 2305 | 3602 |
| मुंबई अपतटीय | 940 | 7711 |
| राजस्थान | 10651 | 655 |
| सौराष्ट्र | 202 | 1288 |
| विंध्य | 1241 | 1339 |
| **कुल** | **29,368** | **24,206** |

## 2.10. वर्ष 2022–23 में दिसंबर 2022 तक हाइड्रोकार्बन की खोज

31.12.2022 तक कुल 11 एचसी खोजें की गई है, जिनमें नामांकन व्यवस्था में 6 खोजें और संविदात्मक व्यवस्थाओं में 5 खोजें शामिल हैं।

तालिका 2.15. वर्ष 2022–23 में हाइड्रोकार्बन की खोज

| क्र. सं. | कंपनी | तेल की खोज | गैस की खोज | कुल |
|---|---|---|---|---|
| 1 | ओएनजीसी (नामांकन) | 1 | 4 | 5 |
| 2 | ओआईएल (नामांकन) | 1 | 0 | 1 |
| 3 | पीएससी / आरएससी | 3 | 2 | 5 |
| | **कुल** | **5** | **6** | **11** |

इस अवधि के दौरान, ओएनजीसी ने नामांकन और संविदात्मक व्यवस्था में अपने संचालित क्षेत्रों में 7 हाइड्रोकार्बन खोजें की हैं। इनमें से 5 तटवर्ती और 2 अपतटीय क्षेत्र में हैं। इनमें से दो जमीनी खोजें जो मंडपेटा–60 और केसनपल्ली–पश्चिम दीप–7 में की गई थी उनका ओएनजीसी द्वारा मौद्रीकरण किया गया है। वर्ष 2022–23 में दिसंबर, 2022 तक की गई हाइड्रोकार्बन खोजों का विवरण इस प्रकार है:

तालिका 2.16. ओएनजीसी द्वारा हाइड्रोकार्बन की खोज

| क्र. सं. | बेसिन/राज्य | कूपों की संख्या | हाइड्रोकार्बन का प्रकार | ऐकरेज |
|---|---|---|---|---|
| जमीनी | | | | |
| 1 | केजी–जमीनी (आंध्र प्रदेश) | मंडपेटा–60 | गैस | मंडपेटा पीएमएल |
| 2 | | मल्लेश्वरम–22 | गैस | मल्लेश्वरम पीएमएल |
| 3 | | केसनपल्ली पश्चिम दीप–7 | तेल और गैस | अदाविपलेम–पोनम्मांडा पीएमएल (सतह स्थिति) / वैनेत्यम पीएमएल (उप–सतह स्थिति) |
| 4 | | करुगोरुमिल्ली–1 | गैस | गोदावरी जमीनी |
| 5 | बंगाल जमीनी | कांकपुल–1 | गैस | डब्ल्यूबी एवं ओएनएनएन-2005/4 |
| अपतटीय | | | | |
| 6 | केजी–अपतटीय (पूर्वी तट) | जीएस–15–22 | गैस | वैनेत्यम |
| 7 | मुंबई अपतटीय (पश्चिमी तट) | एमबीएस171एचएए–1 | गैस | एमबी–ओएसएचपी–2017 / 1 |

**ओआईएल द्वारा हाइड्रोकार्बन की खोज:** वित्त वर्ष 2022–23 (दिसंबर 2022 तक) के दौरान, ओआईएल ने दिसंबर 2022 में कुएं सेसबिल–1, हगरीजन पीएमएल, असम में एक खोज (तेल) की है, जिसमें प्रारंभिक परीक्षण के दौरान हाइड्रोकार्बन की उपस्थिति स्थापित हुई है। खोज की वाणिज्यिक बिक्री स्थापित करने के लिए इसका विस्तार से परीक्षण करने की योजना बनाई गई है।

**संविदात्मक व्यवस्था में हाइड्रोकार्बन की खोज:** इसके अलावा, 2022–23 में दिसंबर, 2022 तक संविदात्मक व्यवस्था के तहत पांच हाइड्रोकार्बन खोजों को अधिसूचित किया गया है। हाइड्रोकार्बन खोजों का विवरण निम्नानुसार है:

| क्र. सं. | खोज का नाम | ब्लॉक | बेसिन | एनईएलपी/ एनईएलपी–पूर्व | ऑपरेटर | तेल/गैस |
|---|---|---|---|---|---|---|
| 1 | एफबी–1 | सीबी–ओएनएचपी–2017/7 | कैम्बे | ओएलएपी | वेदांता | तेल |
| 2 | आरई–7 | रव्वा | कृष्णा गोदावरी | एनईएलपी पूर्व क्षेत्र दौर | वेदांता | तेल |
| 3 | कांकपुल–1 (के–डब्ल्यूपी–सी) | डब्ल्यूबी–ओएनएन–2005/4 | बंगाल | एनईएलपी | ओएनजीसी | गैस |
| 4 | आरएफ–10 | रव्वा | कृष्णा गोदावरी | एनईएलपी पूर्व क्षेत्र दौर | वेदांता | तेल |
| 5 | एमबीएस171एचएए–1 | एमबी–ओएसएचपी–2017/1 | मुंबई अपतटीय | ओएएलपी | ओएनजीसी | गैस |

## 2.11. राष्ट्रीय आंकड़ा कोष (एनडीआर)

**2.11.1.** भारत सरकार द्वारा 30 जून, 2017 को हाइड्रोकार्बन अन्वेषण और लाइसेंसिंग नीति (एचईएलपी) के एक भाग के रूप में ओपन एकरेज लाइसेंसिंग प्रोग्राम (ओएएलपी) को अधिसूचित किया गया है।

राष्ट्रीय डेटा भंडार (एनडीआर) को डीजीएच में स्थापना किया गया था और 28 जून, 2017 को वाणिज्यिक अन्वेषण, अनुसंधान और विकास और शैक्षणिक उद्देश्यों के लिए संपूर्ण अन्वेषण और उत्पादन (ईएंडपी) डेटा उपलब्ध कराने के लिए लॉन्च किया गया था। एनडीआर एक पूर्व–अपेक्षित और प्रमुख घटक था जिसका उद्देश्य निवेशकों द्वारा सतही और उप–सतही भूवैज्ञानिक, भूभौतिकीय और अन्य तकनीकी डेटा देखने के लिए ओएएलपी को कार्यान्वित करना है।

पूरे देश के ईएंडपी डेटा को एनडीआर में अपलोड किया जा रहा है ताकि ओएएलपी के माध्यम से अपनी पसंद के खुले ब्लॉक का चुनाव करने के लिए किसी भी इच्छुक पार्टी को दुनिया भर का यह डाटा उपलब्ध हो सके।

31 दिसंबर 2022 तक एनडीआर में लोड किया गया संचयी डेटा:

क) 2डी भूकंपीय डेटा : 3,284 मिलियन एलकेएम

ख) 3डी भूकंपीय डाटा : 1,041 मिलियन एसकेएम

ग) कुएं और लॉग डाटा : 22,563 कुएं

घ) कुओं की रिपोर्ट : 46,826 रिपोर्ट

इसके अलावा, डेटा की उपलब्धता, रिपोर्टिंग और संवर्धित भंडारण में अधिक सुधार करने के उद्देश्य से क्लाउड सक्षम डेटाबेस प्लेटफॉर्म के माध्यम से राष्ट्रीय आंकड़ा कोष के पूर्ण उन्नयन की योजना बनाई गई है।

## 2.12. कच्चे तेल और गैस उत्पादन को बढ़ाने के लिए सरकार द्वारा की गई नीतिगत पहल

हाइड्रोकार्बन क्षेत्र को बढ़ावा देने के लिए एक प्रमुख अभियान के रूप में सरकार ने कई नीतिगत पहलों की हैं। हाइड्रोकार्बन क्षेत्र में सुधार घरेलू तेल और गैस उत्पादन में वृद्धि, निवेश में वृद्धि, बड़े पैमाने पर रोजगार सृजन, पारदर्शिता में वृद्धि और नियामक बोझ को कम करने के मार्गदर्शक सिद्धांतों पर आधारित हैं। कुछ उल्लेखनीय नीतिगत सुधार सूचीबद्ध हैं:

**2.12.1.** मार्च, 2016 में हाइड्रोकार्बन अन्वेषण और लाइसेंस नीति/ओपन एकरेज लाइसेंस कार्यक्रम (मार्च, 2016), सरकार ने हाइड्रोकार्बन अन्वेषण लाइसेंसिंग नीति (एचईएलपी) का आरंभ किया। एचईएलपी लागत वसूली से राजस्व भागीदारी प्रबंधन में एक आदर्श बदलाव किया गया है जिसमें ठेकेदार उत्पादन की शुरुआत से सरकार के साथ राजस्व साझा करते हैं। ठेकेदार बोली प्रस्तुत करते समय एलआरपी और एचआरपी पर राजस्व भागीदारी प्रतिशत उद्धृत करते हैं।

यह भारतीय अन्वेषण और उत्पादन (ईएंडपी) क्षेत्र में 'ईज ऑफ डूइंग बिजनेस' में सुधार करने की दिशा में एक बड़ा कदम था क्योंकि अब सरकार को ठेकेदारों

की दिन–प्रतिदिन की वाणिज्यिक गतिविधियों में हस्तक्षेप करने की आवश्यकता नहीं है। सरकार द्वारा 30 मार्च 2016 को हाइड्रोकार्बन एक्सप्लोरेशन और लाइसेंसिंग पॉलिसी (एचईएलपी) के एक भाग के रूप में ओपन एकरेज लाइसेंसिंग प्रोग्राम (ओएएलपी) का आरंभ किया गया था और इसे औपचारिक रूप से दिनांक 1 जुलाई 2017 से लागू किया गया था, जो अन्वेषण कंपनियों को सरकार की औपचारिक बोली दौर की प्रतीक्षा किए बिना अपने दम पर अन्वेषण ब्लॉकों का चयन करने का विकल्प देता है।

एचईएलपी में आकर्षक और उदार शर्तें हैं जैसे कि कम रॉयल्टी दरें, तेल उपकर का न होना, विपणन और मूल्य निर्धारण स्वतंत्रता, साल भर बोली लगाने की स्वतंत्रता, निवेशकों को अपनी रुचि के ब्लॉक बनाने की स्वतंत्रता, पारंपरिक और अपरंपरागत हाइड्रोकार्बन दोनों को कवर करने के लिए एकल लाइसेंस, संपूर्ण अनुबंध अवधि के लिए खोज की अनुमति और एक आसान, पारदर्शी और तेज बोली और पुरस्कार प्रक्रिया। एचईएलपी इच्छुक बोलीदाताओं द्वारा 3 विंडो (1 अप्रैल से 31 जुलाई, 1 अगस्त से 30 नवंबर और 1 दिसंबर से 31 मार्च) में रुचि प्रकटन (ईओआई) प्रस्तुत करने के लिए प्रोत्साहित करती है।

**एचईएलपी की मुख्य विशेषताएं**

- राष्ट्रीय डाटा कोष (एनडीआर) का उपयोग करके ब्लॉकों को बेहतर बनाने का अवसर
- पारंपरिक और अपरंपरागत दोनों हाइड्रोकार्बन के लिए एकीकृत लाइसेंस
- सरल और प्रचालन में आसान राजस्व साझाकरण मॉडल
- नियामक बोझ में कमी
- आसान प्रवेश और बाधा मुक्त निकास
- पूर्ण पारदर्शिता और समयबद्ध प्रक्रिया
- वैश्विक निजी कंपनियों के साथ–साथ राष्ट्रीय तेल कंपनियों के लिए समान अवसर
- बाजार मूल्य निर्धारण और बाजार तक आसान पहुंच
- अत्यधिक गहरे पानी और उथले पानी वाले क्षेत्रों के लिए रियायती रॉयल्टी व्यवस्था
- पूर्ण संविदा जीवन के लिए अन्वेषण अधिकार

सरकार द्वारा जनवरी 2018 में एचईएलपी के तहत पहला ओएएलपी बोली दौर आरंभ किया गया था। 2017 में देश में हाइड्रोकार्बन संसाधनों के सभी भू–वैज्ञानिक डेटा को समाहित करने वाला एक डेटाबेस, अत्याधुनिक राष्ट्रीय डेटा कोष आरंभ किया गया था जो सक्षम निवेशकों को सूचित निर्णय लेने में समर्थ बनाता है।

सरकार द्वारा 28 फरवरी 2019 को एचईएलपी के तहत अपस्ट्रीम क्षेत्र में नीतिगत सुधारों को अधिसूचित किया था ताकि अन्वेषण गतिविधियों को बढ़ाया जा सके, तलछटीय बेसिनों के अनछूए/अनाबंटित क्षेत्रों में घरेलू और विदेशी निवेश को आकर्षित किया जा सके और अनुमोदन प्रक्रियाओं को सुव्यवस्थित और तेज करके व्यापार में सुगमता को बढ़ाया जा सके। ये सुधार ओएएलपी दौर IV से लागू किए गए थे। श्रेणी–I बेसिन (पहले के 50% की तुलना में 70%), श्रेणी–II और III प्रकार के ब्लॉक के लिए अन्वेषी कार्य कार्यक्रम के लिए अधिक वेटेज के साथ श्रेणी विशिष्ट बोली मूल्यांकन मानदंड जो केवल खोजकर्ता कार्य कार्यक्रम, कम अन्वेषण अवधि, तेल और गैस उत्पादन में तेजी लाने के लिए रियायती रॉयल्टी दरें, वैकल्पिक विवाद समाधान तंत्र की शुरुआत और सांविधिक मंजूरी/अनुमोदन में तेजी लाने के लिए अधिकार प्राप्त समन्वय समिति (ईसीसी) पर आधारित है।

विश्व स्तरीय राष्ट्रीय डेटा कोष (एनडीआर) पर आधारित एचईएलपी/ओएएलपी के सफल कार्यान्वयन के साथ, सरकार ने भारत में अन्वेषण एकरेज में भारी वृद्धि हासिल की है। ओएएलपी बोली दौर की शुरूआत के बाद वृद्धि/अनुमानित सक्रिय एकरेज इस प्रकार है–

**क. भागीदारी का सारांश**

सात ओएएलपी बोली दौरों में, प्रस्तावित 139 ब्लॉकों में से 2,07,692 वर्ग किमी के क्षेत्र को कवर करने वाले 134 अन्वेषण ब्लॉक सफल बोलीदाताओं को सौंपे गए हैं। सीबीएम पर फोकस के साथ ओएएलपी–दौर–III के तहत प्रस्तावित पांच (5) ब्लॉक के लिए कोई बोली प्राप्त नहीं हुई है। शेष 134 ब्लॉकों के लिए कुल 239 बोलियां प्राप्त हुई हैं जो 19 तलछटीय बेसिनों में फैली हुई हैं।

ओएएलपी दौर में भागीदारी का सारांश इस प्रकार है:

| ओएएलपी बोली दौर | प्रस्तावित ब्लॉक | भागीदारों की संख्या | बोलियों की सं. | प्रस्तावित क्षेत्र (वर्ग कि.मी) | सौंपा गया क्षेत्र (वर्ग कि.मि.) |
|---|---|---|---|---|---|
| ओएएलपी-I | 55 | 9 | 110 | 59,283 | 59,283 |
| ओएएलपी-II | 14 | 8 | 33 | 29,233 | 29,233 |
| ओएएलपी-III | 23* | 5 | 42 | 31,722 | 29,765 |
| ओएएलपी-IV | 7 | 2 | 8 | 18,510 | 18,510 |
| ओएएलपी-V | 11 | 3 | 12 | 19,789 | 19,789 |
| ओएएलपी-VI | 21 | 3 | 24 | 35,346 | 35,346 |
| ओएएलपी-VII | 8 | 4 | 10 | 15,766 | 15,766 |
| **कुल** | **139** | **34** | **239** | **2,09,649** | **2,07,692*** |

* पांच सीबीएम ब्लॉकों के लिए कोई बोली प्राप्त नहीं हुई।

## सौंपे गए ब्लॉकों और अब तक किए गए कार्यों का सारांश

- दिनांक 31.12.2022 की स्थिति के अनुसार, ई एंड पी गतिविधियों के लिए 2,07,692 वर्गमीटर किमी. क्षेत्र में फैले 134 अन्वेषी ब्लॉकों के सौंपे जाने के साथ–साथ सात ओएएलपी बोली दौर समाप्त हो गए हैं। हालाँकि, सात ब्लॉकों को छोड़ने के बाद, 2,00,632 वर्ग किलोमीटर क्षेत्र को कवर करने वाले 127 अन्वेषी ब्लॉक चालू हो गए हैं।
- ओएएलपी बोली दौर–VII तक ~3.13 बिलियन अमेरिकी $ निवेश की प्रतिबद्धता
- सात ओएएलपी बोली दौरों के तहत 127 परिचालन ब्लॉकों में प्रतिबद्ध कार्य कार्यक्रम 27,745 एलकेएम 2डी भूकंपीय; 56,443 एसकेएम 3डी भूकंपीय और 470 अन्वेषी कुएं हैं
- सौंपे गए इन ब्लॉकों में अन्वेषण गतिविधियां चलाई जा रही हैं और स्थापना के बाद से लगभग 29,368 एलकेएम 2डी भूकंपीय सर्वेक्षण, 24,206 एसकेएम 3डी भूकंपीय सर्वेक्षण पूरा हो चुके है और 2022–23 की तीसरी तिमाही तक 21 कुएं खोदे जा चुके हैं
- अब की स्थिति तक मैसर्स वेदांता (राजस्थान में 2 और कैम्बे बेसिन में 2) और ओएनजीसी (मुंबई अपतटीय बेसिन में 1) द्वारा 5 खोजें (3 तेल + 2 गैस) की गई हैं। तेल की खोज: केडब्ल्यू2 उपदीप–1, दुर्गा–1 और एफबी–1; गैस/कंडेनसेट खोज: जया–1 और एमबीएस171 एचएए–ए

**ओएएलपी की सूचिबद्ध खोजें**

| क्र.सं. | ब्लॉक और बेसिन | ओएएलपी दौर | ऑपरेटर | कूप/खोज | खोज का प्रकार |
|---|---|---|---|---|---|
| 1 | आरजे–ओएनएचपी–2017/1 (राजस्थान बेसिन) | I | वेदांता | केडब्ल्यूपी–2–अपदीप 1 | तेल |
| 2 | | | | दुर्गा–1 | तेल |
| 3 | सीबी–ओएनएचपी–2017/2 (कैम्बे बेसिन) | I | | जया–1 | गैस और कंडेनसेट |
| 4 | सीबी–ओएनएचपी–2017/7 (कैम्बे बेसिन) | I | वेदांता | एफबी–1 | तेल |
| 5 | एमबी–ओएसएचपी–2017/1 (मुंबई अपतट बेसिन) | I | ओएनजीसी | एमबीएस171एचएए–ए | गैस और कंडेनसेट |

- **ओएएलपी बोली दौर–VIII:** 16.05.2023 तक अंतरराष्ट्रीय प्रतिस्पर्धी बोली के लिए 7 जुलाई 2022 को इसे शुरू किया गया जिसमें 36,364 वर्ग किमी. के कुल क्षेत्रफल वाले 10 ब्लॉकों की पेशकश की गई।
- **ओएएलपी के तहत विशेष सीबीएम बोली दौर:** इसके अलावा, भारत सरकार ने ओपन एकरेज लाइसेंसिंग पॉलिसी (ओएएलपी) के तहत दो विशेष सीबीएम बोली दौर (एससीबीएम) आरंभ किए थे। 22 सितंबर 2021 को आरंभ किए गए पहले एससीबीएम दौर में अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) के माध्यम से 8,458 वर्ग किमी. को कवर करते हुए 15 सीबीएम ब्लॉक के साथ ~700 बीसीएम पूर्वानुमानित सीबीएम संसाधन पेश किए गए। प्राप्त हुआ पांच (05) बोलियों के बोली मूल्यांकन के

आधार पर, 3,862 वर्ग किमी क्षेत्र को कवर करने वाले 4 सीबीएम ब्लॉक क्षेत्र तीन कंपनियों को सौंपे गए जिसमें 02 निजी कंपनियां और 9 सितंबर 2022 को भारत सरकार के साथ राजस्व भागीदारी संविदा (आरएससी) शामिल हैं।

- इसके अलावा, सरकार द्वारा 10 अक्टूबर 2022 को विशेष सीबीएम बोली दौर का दूसरा दौर शुरू किया गया है, जिसमें अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) के माध्यम से लगभग 5,860 वर्ग किमी. क्षेत्र को कवर करते हुए 16 सीबीएम ब्लॉक बोली लगाने के लिए पेश किए गए हैं।
- **ओएलएपी बोली दौर–IX (मेगा अपतटीय ओएएलपी बोली दौर–IX):** सरकार द्वारा अंतरराष्ट्रीय प्रतिस्पर्धी बोली के माध्यम से अन्वेषण और विकास के लिए 10 अक्टूबर 2022 को मेगा ओएएलपी बोली दौर–IX आरंभ किया गया था, जिसमें लगभग 2.23 लाख वर्ग किमी क्षेत्र को कवर करने वाले 26 ओपन एकरेज ब्लॉक की पेशकश की गई थी। इन 26 ब्लॉकों में से 18 सरकार द्वारा बनाए गए हैं और 8 संभावित निवेशकों से प्राप्त ईओआई के माध्यम से बनाए गए हैं। 15 ब्लॉक अत्यधिक गहरे पानी में हैं, 8 ब्लॉक उथले पानी में हैं और 3 जमीनी ब्लॉक में हैं।

### 2.12.2. खोजे गए लघु क्षेत्र पॉलिसी (डीएसएफ)

**डीएसएफ पॉलिसी: पृष्ठभूमि**

- आर्थिक कार्य संबंधी मंत्रिमंडलीय समिति (सीसीईए) द्वारा 2 सितंबर, 2015 को सीमांत क्षेत्र पॉलिसी को अनुमोदित किया गया था और 14.10.2015 की अधिसूचना सं. ओ–19018/22–95–ओएनजी–III द्वारा अधिसूचित किया गया था ताकि गैर–मौद्रीकृत राष्ट्रीय तेल कंपनियां (एनओसी) का उत्पाद हो सके। इस नीति का नाम बाद में परिवर्तित कर खोजे गए लघु क्षेत्र (डीएसएफ) पॉलिसी कर दिया गया था। 25 मई 2016 को डीएसएफ दौर–I शुरू किया गया था।
- सीसीईए ने 7 फरवरी 2018 की अपनी बैठक में नामांकन व्यवस्था की गैर–मौद्रीकृत खोजों के साथ–साथ प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट (पीएससी) व्यवस्था से गैर–मौद्रीकृत खोजों/लघु क्षेत्रों को इसमें शामिल करने के लिए इस नीति का विस्तार करने की मंजूरी दी। डीएसएफ–II दौर 09 अगस्त 2018 को शुरू किया गया था। सरकार ने भविष्य की बोली के दौरों के लिए डीएसएफ नीति का विस्तार करने का भी फैसला किया। इस प्रयोजन के लिए, अपर सचिव/अपर सचिव और वित्तीय सलाहकार (एमओपीएनजी), जेएस (अन्वेषण, एमओपीएनजी) और हाइड्रोकार्बन के महानिदेशक की एक समिति भावी बोली दौर के लिए अध्यक्ष एवं प्रबंध निदेशक (ओएनजीसी) और सीएमडी (ओआईएल) के परामर्श से क्षेत्र/खोजों की पहचान करेगी जिन्हें पेश किया जाएगा। डीएसएफ नीति के विस्तार को अधिसूचना संख्या ओ–31018/149/2016–ओएनजी–III दिनांक 5 अप्रैल 2018 द्वारा अधिसूचित किया गया था।

डीएसएफ दौरों की मुख्य राजकोषीय और नीतिगत विशेषताएं

- पारंपरिक और गैर–पारंपरिक हाइड्रोकार्बन के लिए एकल लाइसेंस
- संविदागत अवधि के दौरान अन्वेषण गतिविधि पर कोई प्रतिबंध नहीं लगाना
- कोई अग्रिम हस्ताक्षर बोनस नहीं देना
- अंतरराष्ट्रीय प्रतिस्पर्धी बोली के तहत बोलियां आमंत्रित किया जाना
- मूल्य निर्धारण और बिक्री–विपणन स्वतंत्रता
- कम रॉयल्टी, कोई उपकर नहीं लगाना, सीमा शुल्क से छूट
- योग्यता: किसी तकनीकी अनुभव की आवश्यकता नहीं है, विदेशी कंपनियों द्वारा 100% तक की भागीदारी
- बोली योग्य मापदंडों में कार्य–कार्यक्रम (50%) और राजस्व भागीदारी (50%) के बराबर भार
- उच्च राजस्व बिंदु (एचआरपी) पर 50% की कैप
- प्रारंभिक वाणिज्यिक उत्पादन को प्रोत्साहन देना
- परिनिर्धारित नुकसान में कमी (एलडी) राशि (डीएसएफ–I और II की एलडी दरों में 75% की कमी)
- उपयुक्त निकासी विकल्प

अब तक तीन डीएसएफ दौर आयोजित किए जा चुके हैं। मुख्य विवरण इस प्रकार हैं:

**डीएसएफ बोली दौर–I 2016**

- आरंभ की तारीख: 25 मई 2016
- प्रस्तावित क्षेत्र: 46 संविदागत क्षेत्र (67 क्षेत्र/खोज), 1,551 वर्ग किमी क्षेत्र, यथा–स्थाने 86 एमएमटीओई
- 34 संविदागत क्षेत्रों से 134 बोलियां प्राप्त हुईं
- सौंपे गए: 3.0 संविदागत क्षेत्र (4.3 क्षेत्र/खोज), 777 वर्ग किमी. का क्षेत्र, यथास्थाने 45 एमएमटीओई
- संविदा पर हस्ताक्षर की तारीखरु 27 मार्च 2017

**डीएसएफ बोली दौर-II 2018**

- आरंभ की तारीख: 09 अगस्त 2018
- प्रस्तावित क्षेत्र: 25 संविदागत क्षेत्र (59 क्षेत्र/खोज), 3,042 वर्ग किमी. का क्षेत्र, यथास्थाने 190 एमएमटीओई
- 24 संविदागत क्षेत्रों से 145 बोलियां प्राप्त हुईं
- सौंपे गए: 2.4 संविदागत क्षेत्र (5.8 क्षेत्र/खोज), 3,000 वर्ग किमी. क्षेत्रफल, यथास्थान 188.9 एमएमटीओई।
- संविदा पर हस्ताक्षर की तिथि: 7 मार्च 2019

**डीएसएफ बोली दौर-III 2022**

- आरंभ की तारीख: 10 जून 2021।
- प्रस्तावित क्षेत्र: 32 संविदागत क्षेत्र (75 क्षेत्र/खोज), ~13,000 वर्ग किमी. क्षेत्र, यथास्थान 232 एमएमटीओई
- 32 संविदागत क्षेत्रों (सीए) के लिए 107 बोलियां प्राप्त हुईं।
- 27 कंपनियों ने भाग लिया (04 पीएसयू और 2 विदेशी कंपनियां)।
- 30 संविदागत क्षेत्र (72 क्षेत्र/खोज), 12,400 वर्ग किमी. क्षेत्र, यथास्थाने 230 एमएमटीओई के लिए आरएससी पर हस्ताक्षर किए गए।
- संविदा पर हस्ताक्षर की तिथिरू 9 सितंबर 2022।

**डीएसएफ–I, II और III संविदा की स्थिति इस प्रकार है:**

| क्र. सं. | स्थिति | डीएसएफ–I | डीएसएफ–II | डीएसएफ–III | कुल |
|---|---|---|---|---|---|
| 1 | सौंपे गए संविदागत क्षेत्र (सीए) | 30 | 24 | 31 | 85 |
| 2 | सीए जहां पीएमएल लंबित है | 4 | 5 | 13 | 22 |
| 3 | त्याग के अधीन संविदा क्षेत्र | 6 | | | 6 |
| 4 | समाप्ति/समाप्त किए जाने के अधीन मामले | 5 | 5 | | 10 |
| 5 | आरएससी पर हस्ताक्षर किए जाने हैं | | | 1* | 1 |
| 6 | संचालन | 15 | 14 | 17 | 46 |

* एक संविदा क्षेत्र– आरएससी पर हस्ताक्षर किया जाना बाकी है।

**2.12.3. सीबीएम ब्लॉकों के लिए बोली लगाना:** भारत सरकार द्वारा वर्ष 1997 में कोल बेड मीथेन (सीबीएम) नीति तैयार की गई थी। देश में सीबीएम अन्वेषण के लिए लगभग 26,000 वर्ग किमी. क्षेत्र की पहचान की गई थी।

- भारत में अनुमानतः सीबीएम संसाधन लगभग 2,600 बिलियन क्यूबिक मीटर (बीसीएम) है।
- पेट्रोलियम और प्राकृतिक गैस मंत्रालय द्वारा चार सीबीएम बोली दौर चलाए गए हैं, जिसके परिणामस्वरूप 16,598 वर्ग किमी क्षेत्र के 33 सीबीएम ब्लॉक खनामांकन व्यवस्था में 2 ब्लॉक और विदेशी निवेश संवर्धन बोर्ड (एफआईपीबी) मार्ग के माध्यम से 1 ब्लॉक, सौंपे गए हैं।
- वर्तमान में पहले के सीबीएम दौर से संबंधित 08 सीबीएम ब्लॉक हैं जो सक्रीय हैं, जिनमें से 05 ब्लॉकों में उत्पादन हो रहा है। दिसंबर–2022 तक सीबीएम का समेकित उत्पादन लगभग 5.58 बीसीएम है।
- ओएएलपी (एससीबीएम–2021) के तहत विशेष सीबीएम बोली दौर 2021: भारत सरकार द्वारा 22 सितंबर 2021 को ओपन एकरेज लाइसेंसिंग पॉलिसी (ओएएलपी) के तहत विशेष सीबीएम बोली दौर–2021 आरंभ किया गया था, जिसमें अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) के माध्यम से ~700 बीसीएम पूर्वानुमानित सीबीएम संसाधन के साथ 8,458 वर्ग किलोमीटर को कवर करने वाले 15 सीबीएम ब्लॉक पेश किए गए थे। बोली प्रक्रिया दिनांक 31.05.2022 को समाप्त हुई।

  एससीबीएम बोली दौर–2021 के तहत, चार (4) ब्लॉक 03 कंपनियों (ओएनजीसी, वेदांता और इनवेनियर पेट्रोडाइन एनर्जी) को सौंपे गए थे, जो 3,862 वर्ग किमी के क्षेत्र को कवर करते हैं। इन 04 ब्लॉकों में से 02 ब्लॉकों के लिए पीईएल प्रदान किया गया है।
- ओएएलपी (एससीबीएम–2022) के तहत विशेष सीबीएम बोली दौर 2022: सरकार द्वारा 10 अक्टूबर 2022 को विशेष सीबीएम बोली दौर का दूसरा दौर शुरू किया था, जिसमें अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) के माध्यम से लगभग 5,817 वर्ग किलोमीटर को कवर करने वाले 16 सीबीएम ब्लॉक पेश किए गए हैं। सभी प्रस्तावित 16 ब्लॉक श्रेणी–III बेसिन में हैं।

**2.12.4. राष्ट्रीय भूकंपीय कार्यक्रम (एनएसपी) परियोजना**

सरकार द्वारा संपूर्ण गैर मूल्यांकित क्षेत्रों का 2डी भूकंपीय सर्वेक्षण करने से संबंधित कार्यक्रम आरंभ किया गया है। राष्ट्रीय भूकंपीय कार्यक्रम (एनएसपी) का आरंभ 12 अक्टूबर 2016 को किया गया था। इस कार्यक्रम के तहत, सरकार द्वारा 48,243 लाइन किलोमीटर (एलकेएम) के डेटा अधिग्रहण, प्रसंस्करण और व्याख्या (एपीआई) के लिए 2डी भूकंपीय सर्वेक्षण करने के प्रस्ताव को मंजूरी प्रदान कर दी गई है। इस परियोजना की अनुमानित लागत ₹ 29,321.99 करोड़ थी।

लक्ष्यबद्ध 48,243 एलकेएम (97% उपलब्धि) की तुलना में 46,960 एलकेएम 2डी भूकंपीय डेटा के कुल अधिग्रहण, प्रसंस्करण और व्याख्या (एपीआई) के साथ, यह परियोजना लगभग ₹ 1,950.00 करोड़ के कुल व्यय के साथ पूरी हो जाएगी। दुर्गम इलाकों और जटिल भौगोलिक क्षेत्रों के कारण शेष 3% नियोजित भूकंपीय डेटा का अधिग्रहण नहीं किया जा सका। 46,960 एलकेएम 2डी डेटा के रिपोर्ट के साथ उनके सभी संसाधित और व्याख्यायित डेटा को राष्ट्रीय डेटा रिपॉजिटरी (एनडीआर) पर अद्यतन किया गया है। गुजरात एनर्जी रिसर्च एंड मैनेजमेंट इंस्टीट्यूट (जीईआरएमआई), गांधीनगर को एनएसपी के डेटा का तीसरे–पक्ष द्वारा मूल्यांकन अध्ययन करने का काम सौंपा गया है।

एनएसपी परियोजना के तहत शेष दुर्गम और प्रतिकूल वातावरण वाले भौगोलिक क्षेत्रों को कवर करने के लिए, ₹ 80 करोड़ की अनुमानित लागत के साथ 40,000 उड़ान एलकेएम एयरबोर्न जियोफिजिकल सर्वेक्षण शुरू किए गए हैं। ऑयल इंडिया लिमिटेड को नोडल एजेंसी के रूप में नियुक्त किया गया है और एजीजी तथा

ग्रेविटी–मैग्नेटिक डेटा एपीआई को पूरा करने का कार्य उसे सौंपा गया है। ठेकेदार ने वैधानिक मंजूरी के लिए आवेदन किया है और डीजीसीए से मंजूरी प्राप्त होने के बाद काम शुरू हो जाएगा।

**अंडमान बेसिन क्षेत्र का व्यापक मूल्यांकन:**

भारत सरकार द्वारा भारतीय तलछटीय बेसिनों के गैर–मूल्यांकित क्षेत्रों का मूल्यांकन करने और देश में अन्वेषण गतिविधियों को बढ़ावा देने के उद्देश्य से एनएसपी का आरंभ किया गया था। एनएसपी ने अपने काम की शुरुआत तलछटीय बेसिनों के जमीनी हिस्से में अन्वेषण गतिविधियां शुरी करके की। अंडमान के गहरे अपतटीय सर्वेक्षण से शुरू करते हुए गैर–मूल्यांकित अपतटीय क्षेत्रों का कार्य शुरू किया गया।

दक्षिण पूर्व एशिया के सबसे विपुल पेट्रोलियम प्रांतों के निकट बंगाल की खाड़ी के दक्षिण–पूर्वी भाग में स्थित अंडमान बेसिन में प्रचुर मात्रा में पेट्रोलियम होने की संभावना वाला बेसिन है। कुल ईईजेड सीमा क्षेत्र सहित अंडमान बेसिन का विस्तार 6,64,080 वर्ग किमी में व्याप्त है और इसमें भारत के अपतटीय तलछटीय बेसिनों के गैर–मूल्यांकित क्षेत्रों का एक बड़ा हिस्सा है। बेसिन का 2डी भूकंपीय के 71,290 एलकेएम और 3डी भूकंपीय डेटा के 13,710 वर्ग किमी और 22 अन्वेषी कुओं के साथ बेसिन के पूर्वी भाग में 36: की सीमा तक मूल्यांकन किया गया है।

बेसिन में प्राप्त 2डी/3डी भूकंपीय अथवा कुआँ के आंकड़े बहुत कम थे और डेटा कवरेज मध्यम से विरल तक था। अंडमान और निकोबार द्वीप–समूहों के आसपास के क्षेत्र में तेल और गैस के होने की महती संभावना है, लेकिन वहां अन्वेषणात्मक गतिविधियां शुरू नहीं की जा सकी हैं क्योंकि अधिकांश क्षेत्र को 'वर्जित' क्षेत्र ('वर्जित क्षेत्र' का 0.37 मिलियन वर्ग कि.मी. क्षेत्र अंडमान बेसिन में पड़ता है) के रूप में नामित किया गया था।

द्वीप विकास प्राधिकरण (आईडीए) के निर्देशों और मंत्रिमंडल सचिवालय के सशक्त समन्व समिति (ईसीसी) द्वारा लिए गए निर्णय के अनुसरण में, डीजीएच ने अंतरिक्ष विभाग के साथ घनिष्ठ समन्वय में क्षेत्रों की हाइड्रोकार्बन संसाधन क्षमता और संबंधित क्षेत्रों संबंधी सुरक्षा निर्देशों के अनुसार भू–वैज्ञानिक डेटा एकत्र करने के उद्देश्य से भूकंपीय सर्वेक्षण करने की योजना तैयार की। तदनुसार, डीओएस और डीजीएच ने इसके लिए एक उपयुक्त ढांचा तैयार किया ताकि यह सुनिश्चित किया जा सके कि इससे भारत सरकार के अंतरिक्ष मिशन पर कोई प्रभाव नहीं पड़ेगा, साथ ही साथ अंडमान बेसिन की विपुल हाइड्रोकार्बन संसाधन क्षमता का वैज्ञानिक मूल्यांकन किया जा सके।

अंडमान अपतट के व्यापक मूल्यांकन के लिए, डीजीएच द्वारा लगभग 22,500 एलकेएम 2डी ब्रॉडबैंड भूकंपीय डेटा का अधिग्रहण, प्रसंस्करण और व्याख्या करने की योजना तैयार की गई है जो लगभग 2,81,613 वर्ग किमी बेसिन क्षेत्र को कवर करेगा। यह परियोजना गैसर्स ऑयल इंडिया लिमिटेड के माध्यम से कार्यान्वित की जा रही है। अंडमान के गहरे अपतटीय से कुल 22,500 एलकेएम भूकंपीय डेटा प्राप्त किया गया था। डाटा अधिग्रहण, प्रसंस्करण और व्याख्या पूरी हो चुकी है और एनडीआर पोर्टल पर इस डेटा को अपलोड किया गया है।

**विशिष्ट आर्थिक क्षेत्रों (ईईजेड) तक अपतटीय बेसिन क्षेत्रों का मूल्यांकन:**

दिनांक 10 जनवरी 2022 को मंत्रिमंडल सचिव की अध्यक्षता में अधिकार प्राप्त समन्वय समिति (ईसीसी) की चौथी बैठक में लिए गए निर्णय के परिणामस्वरूप, सरकार ने मूल्यांकन नहीं किए गए अपतटीय क्षेत्र का विशिष्ट आर्थिक क्षेत्र (ईईजेड) तक लगभग 1.13 मिलियन वर्ग किलोमीटर के क्षेत्र का मूल्यांकन शुरू किया। ईईजेड सर्वेक्षण के लिए ओएनजीसी को नोडल एजेंसी का कार्य सौंपा गया है। तदनुसार, ओएनजीसी ने तीन क्षेत्रों यथा पश्चिमी, पूर्वी और अंडमान अपतटीय को कवर करते हुए ईईजेड तक लगभग 82,353 एलकेएम 2डी ब्रॉडबैंड भूकंपीय डेटा अधिग्रहण करने के लिए संविदा की है। दिनांक 31 दिसंबर 2022 तक 23,431 एलकेएम भूकंपीय डेटा प्राप्त किए गए हैं।

### 2.12.5. प्राकृतिक गैस विपणन सुधार

- गैस आधारित अर्थव्यवस्था की ओर बढ़ने की दिशा में एक और महत्वपूर्ण कदम उठाते हुए उत्पादक और उपभोग दोनों क्षेत्रों की आवश्यकताओं के बीच संतुलन बनाने के लिए सरकार द्वारा हेनरी हब (यूएसए), अल्बर्टा (कनाडा), एनबीपी (यूके), रूस आदि जैसे प्रमुख अंतरराष्ट्रीय केंद्रों में मौजूद मूल्यों के आधार पर अक्तूबर, 2014 को 'नए घरेलू प्राकृतिक गैस मूल्य निर्धारण दिशानिर्देशों' को मंजूरी दी गई थी। प्राकृतिक गैस की कीमतें हर छह महीने में संशोधित की जाती हैं और पेट्रोलियम और प्राकृतिक गैस मंत्रालय के तहत पेट्रोलियम योजना और विश्लेषण सेल (पीपीएसी) द्वारा इन्हें अधिसूचित किया जाता है। इस नीति ने सरकारी हस्तक्षेप के बिना पारदर्शी तरीके से पूर्व–निर्धारित मापदंडों पर निर्धारित घरेलू प्राकृतिक गैस की कीमतों को मानकीकृत करने में मदद की है। ये दिशानिर्देश नामांकन क्षेत्रों और एनईएलपी, एनईएलपी पूर्व ब्लॉकों/क्षेत्रों से उत्पादित प्राकृतिक गैस पर लागू होते हैं, जहां उत्पादन भागीदारी संविदा (पीएससी) के तहत मूल्य निर्धारण को सरकार द्वारा अनुमोदित किया जाता है।
- इसके बाद, सरकार ने डीएसएफ, ओएएलपी, सीबीएम व्यवस्थाओं के तहत उत्पादित गैस के लिए 2015 के बाद से और उत्तर–पूर्वी क्षेत्र (एनईआर) से उत्पादित गैस के लिए और सभी व्यवस्थाओं के

तहत 28.02.2019 के बाद खोजे गए नई गैस के लिए विपणन और मूल्य निर्धारण की स्वतंत्रता प्रदान की।

- उच्च दबाव–उच्च तापमान (एचपी–एचटी) वाले जलाशयों और गहरे पानी तथा अत्यधिक गहरे पानी वाले क्षेत्रों जैसे दुर्गम क्षेत्रों से गैस उत्पादन को प्रोत्साहित करने के लिए, सरकार द्वारा 23 मार्च, 2016 को विपणन के लिए पेट्रोलियम योजना और विश्लेषण सेल (पीपीएसी) द्वारा अर्धवार्षिक आधार पर घोषित मूल्य सीमा के साथ प्राकृतिक गैस उत्पादन पर मूल्य निर्धारित करने की स्वतंत्रता प्रदान किया गया है।
- गैस आधारित अर्थव्यवस्था बनने की दिशा में एक और महत्वपूर्ण कदम उठाते हुए, दिनांक 15.10.2020 की अधिसूचना के माध्यम से 'प्राकृतिक गैस विपणन सुधार' की घोषणा की गई थी, ताकि गैस उत्पादकों द्वारा बाजार में बेचे जाने वाले गैस के बाजार मूल्य का निर्धारण करने के लिए इलेक्ट्रॉनिक बोली के माध्यम से पारदर्शी और प्रतिस्पर्धी प्रक्रिया के तहत मानक प्रक्रिया निर्धारित की जा सके, सहयोगी कंपनियों को गैस की बिक्री के लिए बोली प्रक्रिया में भाग लेने की अनुमति दी जा सके और कुछ क्षेत्र विकास योजनाओं (एफडीपी) के लिए विपणन स्वतंत्रता की अनुमति दी जा सके जहां उत्पादन भागीदारी अनुबंध पहले से ही मूल्य निर्धारण की स्वतंत्रता प्रदान करते हैं। तत्पश्चात, दिनांक 03.12.2020 की अधिसूचना के माध्यम से ई–बोली के माध्यम से घरेलू रूप से उत्पादित प्राकृतिक गैस के लिए बाजार मूल्य के निर्धारण के लिए विस्तृत दिशानिर्देश जारी किए गए थे। डीजीएच द्वारा ई–बिडिंग के लिए सूचीबद्ध एजेंसियों को भी अधिसूचित किया गया है।
- इसके अलावा, मूल्य निर्धारण और विपणन की स्वतंत्रता वाले गैस उत्पादकों को पीएनजीआरबी द्वारा दिनांक 19.08.2021 के कार्यालय ज्ञापन द्वारा अधिकृत गैस एक्सचेंजों के माध्यम से गैस की कम मात्रा (अर्थात 500 एमएमएससीएम प्रति वर्ष तक) बेचने के लिए अतिरिक्त विकल्प की अनुमति दी गई थी।
- गैस सुधारों के लिए एक अन्य प्रयास के रूप में और पर्यावरण को बचाने के लिए सरकार द्वारा दिनांक 22.11.2021 के कार्यालय ज्ञापन के माध्यम से तेल और गैस के परीक्षण के दौरान उत्पादित तदर्थ/परीक्षण गैस के मौद्रीकरण के लिए विस्तृत दिशानिर्देश जारी किए गए।
- दिनांक 13 जनवरी, 2023 की अधिसूचना के माध्यम से सरकार द्वारा बाजार मूल्य के निर्धारण और गहरे पानी, अत्यधिक गहरे पानी और उच्च दबाव/उच्च तापमान वाले क्षेत्रों में विपणन और मूल्य निर्धारण स्वतंत्रता के साथ अन्वेषों से उत्पादित गैस की बिक्री और पुनर्विक्रय पर स्पष्टीकरण प्रदान किया गया।

### 2.12.6. तेल और गैस के लिए संवर्धित वसूली विधियों को बढ़ावा देने और प्रोत्साहित करने के लिए नीतिगत ढाँचा (अक्तूबर 2018)

- सरकार द्वारा अधिशुल्क और उपकर की आंशिक छूट के रूप में राजकोषीय प्रोत्साहनों के माध्यम से और मौजूदा क्षेत्रों की उत्पादकता में सुधार के लिए पारिस्थितिकी तंत्र के विकास और घरेलू हाइड्रोकार्बन के समग्र उत्पादन को बढ़ाने के लिए संवर्धित वसूली (ईआर)/सुधारी गई वसूली (आईआर)/अपरंपरागत हाइड्रोकार्बन (यूएचसी) उत्पादन पद्धतियों/तकनीकों को बढ़ावा देने और प्रोत्साहित करने के लिए नीतिगत ढांचे को मंजूरी दी गई है। इस नीति के अनुसरण में, नीति के कार्यान्वयन की निगरानी के लिए एक संवर्धित वसूली (ईआर) समिति का गठन किया गया है।
- वर्तमान नीति के तहत कुल 202 क्षेत्रों की प्रारंभिक जांच की गई जिनमें से 34 उपयुक्त ईआर क्षेत्रों की पहचान की गई और पायलट चरण में कार्यान्वयन आरंभ करने के लिए 15 ईआर प्रस्तावों को मंजूरी दी गई थी। पायलट चरण के पूरा होने के बाद, जिसमें आम तौर पर 2 से 3 साल लगता है, ऑपरेटर द्वारा पायलट प्रदर्शन के आधार पर मूल्यांकन क्षेत्र के लिए एक वाणिज्यिक ईआर कार्यान्वयन योजना तैयार किया जाता है। वाणिज्यिक ईआर कार्यान्वयन के इस योजना के आधार पर, एमओपीएनजी की ईआर समिति ईआर नीति के तहत परियोजना के लिए ऑपरेटर को उपलब्ध कराए जाने वाले वित्तीय प्रोत्साहन की मात्रा निर्धारित की जाती है।

### 2.12.7. कच्चे तेल को नियंत्रण मुक्त करने संबंधी नीति (जून, 2022)

- आर्थिक कार्य संबंधी मंत्रिमंडल समिति ने 'घरेलू रूप से उत्पादित कच्चे तेल की बिक्री को नियंत्रण मुक्त करने' की मंजूरी दे दी है। इस नीतिगत निर्णय के माध्यम से, सरकार 01.10.2022 से सभी नीतिगत व्यवस्थाओं में विपणन स्वतंत्रता प्रदान करते हुए कच्चे तेल का आवंटन करना और उसे घनीभूत करना बंद कर देगी। प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट्स (पीएससी) में से सरकार या उसके नामित या सरकारी कंपनियों को कच्चा तेल बेचने की शर्त को हटा दिया गया है और सभी अन्वेषण और उत्पादन संचालक घरेलू बाजार में अपने क्षेत्रों से कच्चा तेल बेचने के लिए स्वतंत्र होंगे। हालांकि, पहले की तरह ही अभी भी कच्चे तेल के निर्यात की अनुमति नहीं है। सरकारी राजस्व जैसे कि अधिशेष, उपकर और संविदात्मक भुगतान आदि की गणना बिक्री मूल्य या कच्चे तेल की भारतीय बास्केट की कीमतों के आधार पर की जाएगी, जैसा कि सरकार द्वारा नामित एजेंसी द्वारा गणना की गई है, जो भी अधिक हो।

**2.12.8. अपरंपरागत हाइड्रोकार्बन के अन्वेषण और दोहन संबंधी नीतिगत ढांचा (अगस्त 2018)**

- नीति दस्तावेज में निर्धारित शर्तों के अधीन पीएससी और सीबीएम अनुबंधों के तहत मौजूदा एकरेज में शेल तेल और गैस तथा सीबीएम सहित अपरंपरागत हाइड्रोकार्बन की क्षमता का दोहन करने के लिए मौजूदा ठेकेदारों को प्रोत्साहित करने हेतु इस नीति को शुरू किया गया है। पहले इसकी अनुमति नहीं थी। इस नीति के कारण पीएससी के अधीन 72,027 वर्ग किमी का क्षेत्रफल और सीबीएम संविदा के तहत 5,269 वर्ग किलोमीटर का क्षेत्र पारंपरिक या अपरंपरागत हाइड्रोकार्बन के समकालीन अन्वेषण और दोहन के लिए एक साथ खोल दिया गया है।

**2.12.9. डेटा सृजन के माध्यम से संवर्धित संभाव्यता संग्रह**

- राष्ट्रीय डाटा कोष (एनडीआर) का उन्नयन: एनडीआर देश के भू–वैज्ञानिक डेटाबेस के भंडार के रूप में कार्य करता है और संभावित बोलीदाताओं को ओएएलपी के तहत बोली लगाने के लिए अपनी पसंद के ब्लॉक चुनने में मदद करने में महत्वपूर्ण भूमिका निभाता है। ईएंडपी डेटा की लगातार बढ़ती मांगों को पूरा करने के लिए, एनडीआर को क्लाउड–सक्षम हाइपर–कंवर्जेड इंफ्रास्ट्रक्चर में अपग्रेड किया जा रहा है ताकि सार्थक उपयोग के लिए उद्योग को आसानी से डाटा उपलब्ध कराने में सुविधा मिल सके।

- हाइड्रोकार्बन संसाधनों का पुनर्मूल्यांकन: देश के हाइड्रोकार्बन संसाधन की क्षमता का अद्यतन अनुमान निकालने के लिए, देश में लगभग दो दशक पहले किए गए अनुमानों के बाद 2017 में सभी 26 तलछटीय बेसिनों के लिए हाइड्रोकार्बन संसाधनों का पुनर्मूल्यांकन पूरा किया गया था। इसके परिणामस्वरूप 41.87 बिलियन टन तेल और गैस के समतुल्य तेल (ओ+ओईजी) के पारंपरिक हाइड्रोकार्बन संसाधनों का अनुमान लगाया गया, जो कि 28.08 बिलियन टन ओ+ओईजी (1995–96 प्राक्कलन) के पहले के अनुमान की तुलना में लगभग 49% अधिक है।

**2.12.10. तेल और गैस के घरेलू अन्वेषण और उत्पादन को बढ़ाने के लिए अन्वेषण और लाइसेंसिंग नीति में नीतिगत सुधार (28 फरवरी, 2019):** अन्वेषण गतिविधियों में तीव्रता लाना, विदेशी और घरेलू निवेश को आकर्षित करना और घरेलू उत्पादन में वृद्धि करना इन उद्देश्यों के साथ सरकार द्वारा दिनांक 28 फरवरी 2019 को तेल और गैस के घरेलू अन्वेषण और उत्पादन को बढ़ाने के लिए अन्वेषण और लाइसेंसिंग नीति में सुधार को अधिसूचित किया गया। नीतिगत सुधारों की प्रमुख विशेषताएं इस प्रकार हैं:

- 'राजस्व' से 'उत्पादन' को अधिकतम करने पर ध्यान संकेंद्रित करना।
- श्रेणी–I और III के तलछटीय बेसिनों में सरकार के साथ राजस्व संबंधी किसी प्रकार की हिस्सेदारी नहीं।
- अन्वेषण कार्य कार्यक्रम को अधिक महत्व देते हुए अन्वेषण गतिविधियों को बढ़ावा देना।

(क) श्रेणी बेसिन में गैर अन्वेषित क्षेत्रों के लिए न्यूनतम कार्य कार्यक्रम के लिए 70% भारिता और उच्चतम राजस्व भागीदारी बिंदु (एचआरपी) पर 50% की अधिकतम सीमा युक्त राजस्व भागीदारी के लिए 30% भारिता और

(ख) श्रेणी II और III तलछटीय बेसिनों के लिए न्यूनतम कार्य कार्यक्रम को 100% भारिता।

- प्रारंभिक विकास के लिए लघुतम अन्वेषण अवधि।
- शीघ्र मौद्रिकीकरण और वाणिज्यिक उत्पादन के लिए वित्तीय रियायतें।
- प्राकृतिक गैस के लिए विपणन और मूल्य निर्धारण की स्वतंत्रता।
- नीति के अंतर्गत, राष्ट्रीय तेल कंपनियों (एनओसी) द्वारा प्रचालित 66 लघु और सीमांत उत्पादन नामांकन क्षेत्रों में से बोली लगाने की परिकल्पना की गई है जिससे नई और नवीनतम प्रौद्योगिकी को शामिल करने के लिए निजी ईएंडपी खिलाड़ियों के साथ सहयोग किया जा सके, नए निवेश को बढ़ावा दिया जा सके और तेल और गैस के उत्पादन को बढ़ाने के लिए उन्नत ऑयल रिकवरी/बेहतर ऑयल रिकवरी (ईओआर/आईओआर) पद्धतियों को अपनाते हुए सर्वोत्तम प्रबंधन व्यवस्थाओं को अपनाया जा सके। जून 2019 के अंत में ओएनजीसी और ओआईएल द्वारा 66 क्षेत्रों की बोली लगाने के लिए एनआईओ जारी किया गया। तथापि, सफल बोलीदाताओं को केवल 22 क्षेत्र (ओएनजीसी द्वारा 6 अनुबंध क्षेत्रों के तहत 21 क्षेत्र और ओआईएल के 01 क्षेत्र) प्रदान किए गए। शेष 44 क्षेत्रों के लिए बोली पुनः आरंभ कर दी गई और इससे संबंधित कार्य प्रगति पर है।
- ओएनजीसी और ओआईएल समझौता ज्ञापन को वास्तविक उत्पादन के लिए 50% भारिता, अन्य वास्तविक मापदंडों को 30%, वित्तीय प्रदर्शन पैरामीटर 20% के साथ पुनर्गठित किया गया था।
- डीजीएच के अनुपालन/नियामक, विकासात्मक और समन्वय भूमिका को सुदृढ़ करने के लिए डीजीएच को अतिरिक्त अधिकारों और कार्यों के प्रत्यायोजन द्वारा डीजीएच की भूमिका को पुनः परिभाषित करना।
- एक वर्ष में दो बार से तीन बार बोली लगाने की आवृत्ति को बढ़ाने सहित सरलीकृत और निवेशक अनुकूल मॉडल बोली दस्तावेज।

**2.12.11. हाइड्रोकार्बन अन्वेषणों के प्रारंभिक मौद्रीकरण संबंधी दिशानिर्देश, जून 2020**

देश की ऊर्जा सुरक्षा की दिशा में कदम उठाने के रूप में, प्रोडक्शन शेयरिंग कॉन्ट्रैक्ट/राजस्व शेयरिंग कॉन्ट्रैक्ट के तहत निर्धारित संविदागत समय–सीमा के भीतर अर्थात मूल्यांकन, वाणिज्यिकता की घोषणा (डीओसी) और क्षेत्र विकास योजना (एफडीपी) प्रस्तुत करने जैसी अन्य गतिविधियों को पूरा करने से पहले अन्वेषणों के प्रारंभिक चरण में मौद्रीकरण के लिए दिनांक 23.06.2020 को दिशानिर्देश जारी किए गए थे।

## 2.13 ईएंडपी में व्यापार में ईज ऑफ डूइंग (ईओडीबी) बढ़ाने के लिए प्रमुख सुधार

- **अनुपालनात्मक भार को कम करना–स्वप्रमाणन के आधार पर दस्तावेजों को जमा करने के लिए प्रक्रियाओं और पद्धतियों का सरलीकरण:** ईज ऑफ डूइंग बिजनेस के तहत प्रणाली को पारदर्शी और त्वरित बनाने की दृष्टि से, स्व–प्रमाणन के आधार पर दस्तावेजों को जमा करने के लिए प्रक्रियाओं और पद्धतियों के सरलीकरण के लिए दिशानिर्देश को 28.02.2020 को जारी किया गया था, जिसके माध्यम से सरकार द्वारा पीएससी अनुबंध के तहत 3 श्रेणियों में 37 प्रक्रियाओं को युक्तिसंगत बनाया था। इन 37 प्रक्रियाओं को और घटाकर 18 कर दिया गया है।
- **विवाद समाधान समिति (2019) से संबंधित अधिसूचना:** दिनांक 16.12.2019 की अधिसूचना के तहत प्रतिष्ठित व्यक्तियों/विशेषज्ञों की एक बाह्य समिति गठित की गई है और विवाद समाधान तंत्र के काम–काज और संरचना को अंतिम रूप दिया गया है।
- **डीजीएच को शक्तियों का प्रत्यायोजन (2018–2020):** पीएससी के तहत संचालन को सुव्यवस्थित करने और अनुमोदन की अतिरिक्त आवश्यकताओं को हटाने के लिए अनुबंध प्रबंधन के लिए कुछ को छोड़कर सभी शक्तियों को डीजीएच को प्रत्यायोजित कर दिया गया है।
- **सिंगल विंडो मंजूरी प्रणाली (2019) का कार्यान्वयन:** एमओपी एण्ड जी की ओर से हाइड्रोकार्बन महानिदेशालय (डीजीएच) ने एक पोर्टल लॉन्च किया है जो अपस्ट्रीम कंपनियों को सरकार की विभिन्न शाखाओं से जोड़ता है और इलेक्ट्रॉनिक फाइलिंग/ऑनलाइन आवेदन जमा करने की सुविधा देता है ताकि विभिन्न मंजूरियों/अनुमोदनों/प्रमाण पत्रों जैसे कि पीईएल/पीएमएल, वेसल मंजूरी, एक्सपैट मंजूरी, पीएससी अनुबंध प्रबंधन प्रक्रियाएं, अनिवार्यता प्रमाण पत्र आदि को प्राप्त किया जा सके।
- **ईएंडपी रोडमैप दस्तावेज का डिजिटलीकरण:** संपूर्ण भारत की ईएण्डपी पारिस्थितिकी तंत्र के सहयोग से, संपूर्ण अपस्ट्रीम मूल्य श्रृंखला में डिजिटलीकरण के अवसरों की पहचान करने और उन्हें सुविधाजनक बनाने के इरादे से सचिव, पीएनजी द्वारा 10 जून, 2021 को 'ईएण्डपी उद्योग के लिए डिजिटलीकरण रोडमैप' जारी किया गया था।
- **प्रदर्शन निगरानी डैशबोर्ड:** विभिन्न प्रमुख ईएंडपी प्रदर्शन संकेतकों की निगरानी के लिए वर्ष 2019 में एक व्यापक डिजिटल निगरानी डैशबोर्ड तैयार किया गया था। इसे 2021 में एमओपीएनजी पोर्टल के साथ एकीकृत किया गया है।

**2.13.1. निवेशक आउटरीच:**

i. 29 अप्रैल 2022 को मुंबई में, 7-8 जुलाई 2022 को लंदन में और 27 तथा 28 सितंबर 2022 को ह्यूस्टन में आयोजित राष्ट्रीय और अंतरराष्ट्रीय कार्यक्रमों/रोड शो के माध्यम से ईएण्डपी समुदाय तक नियमित पहुंचना।

ii. मेगा अपतटीय ओएएलपी बोली दौर-IX: ह्यूस्टन में निवेशक आउटरीच कार्यक्रम के दौरान, 10 अक्टूबर 2022 को सरकार द्वारा मेगा ओएएलपी बोली दौर-IX आरंभ किया गया था, जिसमें अंतरराष्ट्रीय प्रतिस्पर्धी बोली के माध्यम से अन्वेषण और विकास के लिए लगभग 2.23 लाख वर्ग किलोमीटर के क्षेत्र को कवर करने वाले 26 ओपन एकरेज ब्लॉक की पेशकश की गई थी। पेश किए गए ब्लॉक में 15 अत्यधिक गहरे पानी के ब्लॉक, 8 उथले पानी के ब्लॉक और 3 जमीनी ब्लॉक शामिल हैं।

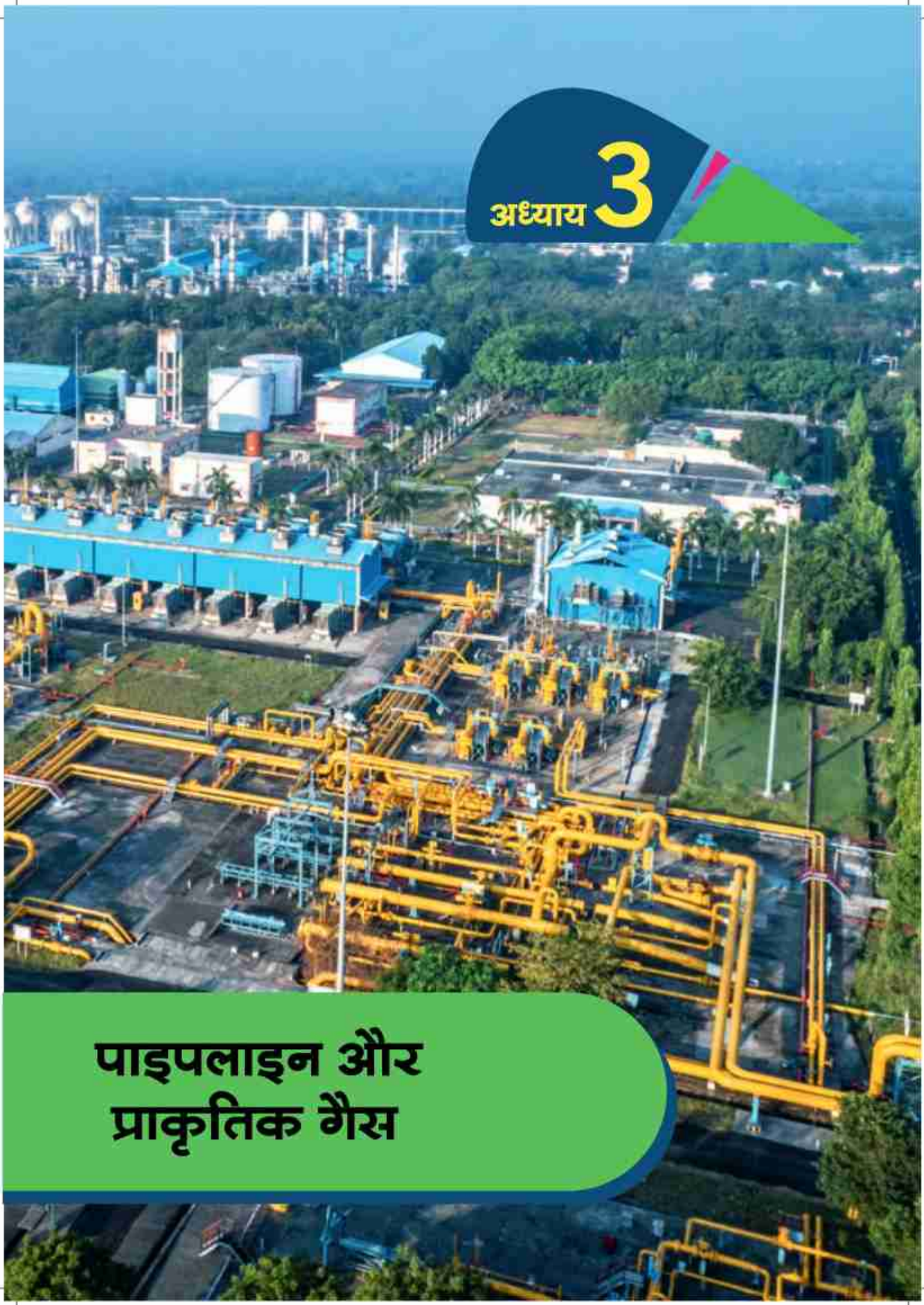
iii. दिनांक 10 अक्टूबर 2022 के विशेष सीबीएम बोली दौर के दूसरे दौर में अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) के माध्यम से 16 सीबीएम ब्लॉक की पेशकश की गई थी। बोली जमा करने की शुरूआत 01.05.2023 को होगी और 31.05.2023 को समाप्त होगी।

iv. ईएंडपी कंपनियों को गुणवत्ता डेटा और एक समर्थक–निवेशक प्रोत्साहन संरचना द्वारा समर्थित, नए खुले ईईजेड में बड़े क्षेत्र लेने के लिए प्रोत्साहित किया जा रहा है। विदेशी निवेशकों तक पहुंचने के लिए, भारत सरकार उनके साथ रोड शो और द्विपक्षीय कार्यक्रमों में सक्रिय रूप से शामिल हो रहा है।

vi. हाल ही में, एक वैश्विक प्रमुख ने भारत के पूर्वी और पश्चिमी तटों में गहरे पानी की खोज के लिए एनओसी के साथ समझौते (एचओए) पर हस्ताक्षर किया है और अन्य दो वैश्विक प्रमुख भारत में अपस्ट्रीम परियोजनाओं के लिए अलग–अलग साझेदारी वार्ता कर रहे हैं।







अध्याय 3

# पाइपलाइन और प्राकृतिक गैस

# 3 पाइपलाइन और प्राकृतिक गैस

भारत न केवल चीन और अमरीका के बाद दुनिया में तीसरा सबसे बड़ा ऊर्जा उपभोक्ता है, बल्कि यह सबसे तेजी से बढ़ने वाले ऊर्जा उपभोक्ताओं में से एक है। वर्ष 2021 में, देश में प्राथमिक ऊर्जा खपत लगभग 839 मिलियन टन तेल समतुल्य (एमटीओई) था और देश के प्राथमिक ऊर्जा मिश्रण में प्राकृतिक गैस की भागीदारी 6.4% थी। आने वाले वर्षों में देश के प्राथमिक ऊर्जा मिश्रण में प्राकृतिक गैस की हिस्सेदारी को मौजूदा स्तर से बढ़ाकर 15% करने की परिकल्पना की गई है।

प्रगति करने के उद्देश्य से, घरेलू गैस उत्पादन को बढ़ाने, तरल प्राकृतिक गैस (एलएनजी) के आयात को प्रोत्साहित करने और एलएनजी आयात क्षमता को बढ़ाने, राष्ट्रीय गैस ग्रिड के कार्य को संपन्न करने और देशभर में नगर गैस वितरण (सीजीडी) नेटवर्क के तीव्र रोल आउट पर बल दिया गया है।

## 3.1. गैस ग्रिड

गैस पाइपलाइन अवसंरचना के माध्यम से गैस स्रोतों और गैस उपभोक्ता बाजारों का जोड़ा जाना प्राकृतिक गैस के परिवहन का आर्थिक रूप से सबसे व्यवहार्य और सुरक्षित तरीका है। गैस पाइपलाइन व्यावहारिक रूप से गैस बाजार की संरचना और उसके विकास को निर्धारित करता है। इसलिए, देश के सभी प्रांतों में प्राकृतिक गैस की पर्याप्त उपलब्धता और समान वितरण सुनिश्चित करने हेतु परस्पर जुड़े हुए राष्ट्रीय गैस ग्रिड की परिकल्पना की गई है। दिसंबर, 2022 तक, देश में लगभग 22,335 किलोमीटर लंबा गैस पाइपलाइन नेटवर्क परिचालन में है और लगभग 12,955 किलोमीटर के पाइपलाइन का निर्माण विभिन्न चरणों में है। गैस ग्रिड को समयबद्ध तरीके से पूरा करने का प्रयास किया जा रहा है।

इसके अलावा, माननीय प्रधान मंत्री श्री नरेंद्र मोदी ने 12 जुलाई 2022 को महत्वपूर्ण प्रधान मंत्री ऊर्जा गंगा परियोजना के तहत बोकारो अंगुल खंड (533 किमी) को देश को समर्पित किया है, जो 'एक देश एक गैस ग्रिड' के निर्माण की दिशा में उठाया गया मील का पत्थर स्वरूप प्रयास था। इस पाइपलाइन का निर्माण गेल (इंडिया) लिमिटेड द्वारा 2,500 करोड़ रुपये के निवेश के साथ किया गया है। इसके अलावा, दिनांक 12 नवंबर, 22 को माननीय प्रधान मंत्री ने श्रीकाकुलम–अंगुल गैस पाइपलाइन की आधारशिला रखी, जो 744 किलोमीटर लंबी गैस पाइपलाइन है और ₹ 2,658 करोड़ के निवेश से गेल द्वारा इसका निष्पादन किया जा रहा है। इस पाइपलाइन का राष्ट्रीय गैस ग्रिड में रणनीतिक महत्व है क्योंकि यह दो महत्वपूर्ण गैस नेटवर्क को जोड़ेगा और आंध्र प्रदेश तथा ओडिशा के कई जिलों में ग्राहकों को सेवा प्रदान करेगी।

देश के पूर्वी हिस्से में गैस पाइपलाइन नेटवर्क का विकास करने के लिए, जगदीशपुर–हल्दिया और बोकारो–धामरा पाइपलाइन (जेएचबीडीपीएल) परियोजना का विकास करने हेतु आर्थिक मामलों संबंधी मंत्रिमंडल समिति (सीसीईए) ने गेल को ₹ 12,940 करोड़ के अनुमानित पूंजीगत लागत के आंशिक पूंजीगत अनुदान का 40 प्रतिशत देने की मंजूरी दी है। यह परियोजना देश के पूर्वी हिस्से को राष्ट्रीय गैस ग्रिड से जोड़ेगी और उत्तर प्रदेश, बिहार, झारखंड, ओडिशा और पश्चिम बंगाल राज्यों में औद्योगिक, वाणिज्यिक, घरेलू और परिवहन क्षेत्रों के लिए स्वच्छ तथा पर्यावरण अनुकूल ईंधन अर्थात प्राकृतिक गैस की उपलब्धता सुनिश्चित करेगी। यह पाइपलाइन परियोजनाएं इस पाइपलाइन परियोजनाओं के मार्ग में आने वाले गोरखपुर, बरौनी और सिंदरी नामक 3 उर्वरक संयंत्रों के पुनरुद्धार में सहायता करेंगी। जेएचबीडीपीएल (प्रधानमंत्री ऊर्जा गंगा परियोजना) के आगमन के बाद उत्तर पूर्व भाग को एनजीजी से जोड़ना अधिक व्यवहार्य हो गया है। पूर्वोत्तर क्षेत्र (एनईआर) को राष्ट्रीय गैस ग्रिड से जोड़ने के लिए जेएचबीडीपीएल के एक अभिन्न अंग के रूप में पाइपलाइन को बरौनी से गुवाहाटी (सिलीगुड़ी और बोंगाईगांव के माध्यम से) तक बढ़ाया जा रहा है।

729 किलोमीटर लंबी बरौनी–गुवाहाटी पाइपलाइन तीन राज्यों बिहार, पश्चिम बंगाल और असम से होकर गुजरती है। कुल 3,384 किलोमीटर लम्बी पाइपलाइन अर्थात् जगदीशपुर–हल्दिया और बोकारो–धामरा और बरौनी–गुवाहाटी को ₹ 15,520 करोड़ के कुल अनुमानित निवेश के साथ निष्पादित किया जा रहा है। इसके अलावा, जेएचबीडीपीएल परियोजना के विस्तार के रूप में 253 किलोमीटर के धामरा–हल्दिया पाइपलाइन खंड को भी गेल को अधिकृत किया गया है। उपरोक्त में से 3,035 किलोमीटर की पाइपलाइन बिछाई जा चुकी है और 1,770 किलोमीटर पाइपलाइन चालू हो चुकी है। पाइपलाइन को जोड़ दिया गया है और 4 उर्वरक संयंत्रों अर्थात एचयूआरएल गोरखपुर, बरौनी, सिंदरी और मैटिक्स उर्वरक में गैस की आपूर्ति शुरू हो गई है। उत्तर प्रदेश, बिहार, झारखंड और पश्चिम बंगाल राज्यों में वाराणसी, पटना, रांची, जमशेदपुर सिटी गैस वितरण और अन्य सीजीडीसेन जो मार्ग में आते हैं उन पाइपलाइनों को भी इससे जोड़ा गया है। इसके अलावा, 326 किलोमीटर

को यांत्रिक रूप से पूरा कर लिया गया है और चालू किया जा रहा है।

तेल और गैस सीपीएसईज अर्थात् गेल, आईओसीएल, ओआईएल, ओएनजीसी और एनआरएल के बीच एक संयुक्त उद्यम कंपनी बनाने के लिए एक समझौता ज्ञापन पर हस्ताक्षर किया गया है जो सिक्किम सहित सभी उत्तर पूर्वी राज्यों की राजधानी को जोड़ने वाली पाइपलाइन बनेगी तदनुसार, 'इंद्रधनुष गैस ग्रिड लिमिटेड' (आईजीजीएल) एक जेवीसी को दिनांक 10.08.2018 को समायोजित किया गया है। यह जेवीसी चरणबद्ध तरीके से सभी पूर्वोत्तर राज्यों असम, सिक्किम, मिजोरम, मणिपुर, अरुणाचल प्रदेश, त्रिपुरा, नागालैंड और मेघालय में ट्रंक पाइपलाइन कनेक्टिविटी विकसित कर रहा है। पीएनजीआरबी ने पूर्वोत्तर गैस पाइपलाइन ग्रिड के विकास के लिए दिनांक 17.11.2020 को आईजीजीएल को अंतिम अधिकृती प्रदान किया। यह परियोजना सिटी गैस परियोजनाओं को विकसित करने में भी मदद करेगी जो पूर्वोत्तर राज्यों के प्रमुख शहरों में घरों में खाना पकाने के स्वच्छ ईंधन और औद्योगिक, वाणिज्यिक तथा परिवहन क्षेत्रों के लिए पर्यावरण अनुकूल ईंधन की उपलब्धता सुनिश्चित करेगी। सीसीईए ने परियोजना की व्यवहार्यता में सुधार करने के लिए 5,559 करोड़ रुपए के पूंजीगत अनुदान (परियोजना लागत का 60%) को मंजूरी दे दी है।

दक्षिणी क्षेत्र में तमिलनाडु राज्य में शेष ~300 किलोमीटर लंबे कोच्चि–कोट्टनाड–बैंगलोर–मंगलुरु (केकेबीएमपीएल) प्राकृतिक गैस पाइपलाइन के निर्माण का कार्य चल रहा है।

आईओसीएल द्वारा तमिलनाडु, आंध्र प्रदेश, कर्नाटक और पुडुचेरी संघ राज्य क्षेत्र में प्रमुख ग्राहकों और सिटी गैस वितरक को प्राकृतिक गैस की आपूर्ति के लिए 35 एमएमएससीएमडी क्षमता की 1,440 किलोमीटर लंबी पाइपलाइन बिछाई जा रही है। इस परियोजना का उद्देश्य गैस आधारित अर्थव्यवस्था बनने के भारत सरकार के विजन के अनुरूप दक्षिण भारत के कुछ हिस्सों में राष्ट्रीय गैस ग्रिड की स्थापना करना है।

इस परियोजना को 3 चरणों में कार्यान्वित किया जा रहा है। परियोजना का चरण 1 (एन्नोर एलएनजी टर्मिनल से मनाली 22.9 किलोमीटर) और चरण 2 (रामनाथपुरम से तूतीकोरिन 143 किलोमीटर) पूरा हो चुका है। चरण 3 में एन्नोर–चेंगलपेट (115 किलोमीटर) और तिरुवल्लुर बैंगलुरु (271 किलोमीटर) खंड का कार्य पूरा हो चुका है जबकि चेंगपेट–रामनाथपुरम खंड यांत्रिक रूप से पूर्ण है तथा नवंबर 2023 तक इसके पूरा होने की उम्मीद की जा रही है।

यह पाइपलाइन हुंडई मोटर्स, सेंट गोबेन ग्लास, हर्षा एक्सिटो इंजीनियरिंग, अल्ट्राग्रीन एंड पिगमेंट्स लिमिटेड और थिरुमलाई केमिकल लिमिटेड जैसे संभावित प्रमुख ग्राहकों को पर्यावरण अनुकूल प्राकृतिक गैस की आपूर्ति के माध्यम से क्षेत्र में औद्योगिक विकास को उत्प्रेरित करने में मदद करेगा। यह पाइपलाइन मैसर्स अटलांटिक गल्फ एंड पैसिफिक कंपनी (एजीपी) के चित्तूर, कोलार और वेल्लोर जीए, मेसर्स गेल के बेंगलुरु अर्बन जीए और आईओसीएल के कृष्णागिरी जीए, टोरेंट गैस के चेन्नई और तिरुवल्लूर जीए और अटलांटिक गल्फ और पैसिफिक कंपनी (एजीपी) के कांचीपुरम जीए को लागत प्रभावी तरीके से प्राकृतिक गैस की आपूर्ति करेगा।

घरेलू, वाणिज्यिक और परिवहन खंड के ग्राहकों को स्वच्छ और हरित ईंधन की आपूर्ति से बेहतर पर्यावरण सुनिश्चित होने के अलावा जीवन की गुणवत्ता में सुधार होगा और जीवनयापन में आसानी होगी।

## 3.2. देश में पुनर्गैसीकरण अवसंरचना

देश ने वर्ष 2004 में दाहेज (गुजरात) में स्थित अपने पहले पुनर्गैसीकरण एलएनजी (आरएलएनजी) टर्मिनल की स्थापना के साथ साथ तरलीकृत प्राकृतिक गैस (एलएनजी) का प्रथम आयात आरंभ किया। एलएनजी का आयात ओपन जनरल लाइसेंस (ओजीएल) मद के रूप में किया जा रहा है। आयातित आरएलएनजी की आपूर्ति संपूर्ण देशभर में आपूर्तिकर्ताओं और क्रेताओं के बीच संविदात्मक समझौते के अनुसार बाजार निर्धारित कीमतों पर की जा रही है। एक बुनियादी ढांचा परियोजना के रूप में एलएनजी टर्मिनलों की स्थापना की अनुमति है और यह 100% प्रत्यक्ष विदेशी निवेश (एफडीआई) की पात्र है।

वर्तमान स्थिति के अनुसार, देश में लगभग 39.2 एमएमटीपीए (140 एमएमएससीएमडी) की क्षमता सहित छह (6) परिचालित एलएनजी पुनर्गैसीकरण टर्मिनल स्थापित हैं। टर्मिनल–वार विवरण निम्नानुसार हैं:

| स्थान | मालिक और ऑपरेटर | क्षमता (एमएटीपीए) |
|---|---|---|
| दाहेज (गुजरात) | पीएलएल | 17.5 |
| हजीरा (गुजरात) | शेल | 5 |
| कोच्चि (केरल) | पीएलएल | 5 |
| धबोल (महाराष्ट्र)* | गेल (केएलपीएल) | 1.7 |
| मुंद्रा (गुजरात) | जीएसपीसी एलएनजी लिमिटेड | 5 |
| एन्नोर (तमिलनाडु) | आईओसीएल | 5 |
| **कुल क्षमता (एमएमटीपीए)** | | **39.2** |

(नोट: *जेम प्लेट की क्षमता 5 एमएमटीपीए है लेकिन ब्रेकवाटर के अभाव में, टर्मिनल केवल 1.7 एमएमटीपीए पर ही काम कर सकता है)

उपरोक्त के अलावा, निम्नलिखित एलएनजी टर्मिनल निर्माणाधीन हैं:

| स्थान | मालिक और ऑपरेटर | क्षमता (एमएम टीपीए) |
|---|---|---|
| धामरा (ओडिशा) | अदानी एलएनजी प्राइवेट लिमिटेड | 5 |
| दाभोल विस्तार | गेल (केएलपीएल) | 3.3 |
| जयगढ़ (महाराष्ट्र) | एच–एनर्जी | 4 |
| जाफराबाद (गुजरात) | हंस एनर्जी | 5 |
| छारा (गुजरात) | एचपीएलएनजी | 5 |
| **कुल क्षमता (एमएमटीपीए)** | | **22.3** |

## 3.3. नगर गैस वितरण (सीजीडी)

एक नगर गैस वितरण (सीजीडी) नेटवर्क घरेलू, औद्योगिक या वाणिज्यिक परिसरों और निर्दिष्ट भौगोलिक क्षेत्र (जीए) में स्थित सीएनजी स्टेशनों को प्राकृतिक गैस की आपूर्ति के लिए पाइपलाइनों का परस्पर जुड़ा नेटवर्क है। सीजीडी नेटवर्क को ट्रंक गैस पाइपलाइन कनेक्टिविटी अथवा गैस स्रोतों की उपलब्धता और जीए में तकनीकी–वाणिज्यिक व्यवहार्यता के आधार पर विकसित किया जा रहा है।

सीजीडी नेटवर्क घरेलू परिवारों को पाइप्ड नेचुरल गैस (पीएनजी) के साथ–साथ कम्प्रेस्ड नेचुरल गैस (सीएनजी) के रूप में परिवहन क्षेत्र को स्वच्छ ईंधन के रूप में पर्यावरण अनुकूल खाना पकाने के ईंधन की आपूर्ति सुनिश्चित करता है। परिवहन क्षेत्र में सीएनजी का उपयोग शहरी क्षेत्र में वाहन उत्सर्जन की रोकथाम में सहायक है और यह वायु गुणवत्ता में सुधार करता है।

- मई 2014 तक, देश के विभिन्न भागों के 66 जिलों (आंशिक/पूर्ण) में फैले लगभग 34 भौगोलिक क्षेत्रों (जीए) तक सीजीडी नेटवर्क उपलब्ध थे।
- वर्ष 2014–17 के दौरान, सीजीडी बोली के 8वें दौर तक 70 जिलों (आंशिक/पूर्ण) में फैले अतिरिक्त 58 जीए को सीजीडी नेटवर्क के लिए कवर किया गया था।
- वर्ष 2019 में 9वें और 10वें सीजीडी बोली दौर के सफल समापन के साथ, सीजीडी नेटवर्क का कवरेज 22 राज्यों और संघ राज्य क्षेत्रों में फैले 174 जिलों (आंशिक/पूर्ण) को कवर करते हुए अतिरिक्त 136 जीए तक बढ़ा दिया गया था।
- वर्ष 2022 में, पीएनजीआरबी ने 11वें और 11ए सीजीडी बोली दौर को पूरा किया और 67 अतिरिक्त जीए को अधिकृत किया। इस दौर के पूरा होने के साथ ही सीजीडी नेटवर्क की संभावित कवरेज भारत के 88- क्षेत्र में फैली देश की लगभग 98% आबादी तक फैल गई है।
- घरेलू परिवारों तक पीएनजी की आपूर्ति 25.4 लाख (मई 2014) के स्तर से बढ़कर 103.93 लाख (31.12.2022 तक) हो गई है। कुल मिलाकर, 5,040 सीएनजी स्टेशन (31.12.2022 तक) देश भर में लगभग 55 लाख सीएनजी वाहनों को स्वच्छ और किफायती परिवहन ईंधन उपलब्ध करा रहे हैं।

शहरी गैस नेटवर्क के विस्तार को बढ़ावा देने और शहरों में प्राकृतिक गैस के उपयोग को बढ़ाने के लिए सरकार द्वारा निम्नलिखित कदम उठाए गए हैं।

i. घरेलू गैस को सीजीडी क्षेत्र के पीएनजी (डी) और सीएनजी (टी) खंडों की संपूर्ण आवश्यकता की पूर्ति करने के लिए आवंटित किया गया है और इसे नो कट श्रेणी के अंतर्गत रखा गया है।

ii. श्रम और रोजगार मंत्रालय (एमओएलई) द्वारा सीजीडी परियोजनाओं को सार्वजनिक उपयोगिता का स्तर प्रदान किया गया।

iii. रक्षा मंत्रालय (एमओडी) द्वारा अपने आवासीय क्षेत्रों/यूनिट लाइनों में पीएनजी के उपयोग के लिए दिशानिर्देश जारी किए गए हैं

iv. सार्वजनिक उद्यम विभाग (डीपीई) द्वारा सार्वजनिक क्षेत्र के उद्यमों (पीएसई) को उनके संबंधित आवासीय परिसरों में पीएनजी के प्रावधान रखने से संबंधित दिशानिर्देश जारी किए गए हैं।

v. आवासन और शहरी कार्य मंत्रालय (एमओएचयूए) द्वारा निम्नलिखित पहलुओं पर राज्य सरकारों के लिए एडवाइजरी जारी की गई है:–

क. स्थानीय परिस्थितियों के अनुसार समयबद्ध अनुमति के साथ साथ सड़क मरम्मत/अनुमति शुल्क का मानकीकरण करना।

ख. कस्बों/शहर के नियोजन स्तर पर सीएनजी स्टेशनों के विकास के लिए भूमि भूखंड का निर्धारण करना और इसे संशोधित मास्टर प्लान में निर्दिष्ट किया जाना चाहिए।

ग. वास्तुशिल्प डिजाइन चरण में आवासीय और वाणिज्यिक भवनों में गैस पाइपलाइन संबंधी बुनियादी ढांचा प्रदान करने के लिए उप–नियमों के निर्माण में प्रासंगिक संशोधन।

vi. इसके अलावा, एमओएचयूए द्वारा सीपीडब्ल्यूडी और एनबीसीसी को सभी सरकारी आवासीय परिसरों में पीएनजी के प्रावधान करने का निर्देश जारी किया गया है।

vii. डीआईपीपी द्वारा मौजूदा ओएमसी आरओ में सीएनजी वितरण संबंधी सुविधाएं स्थापित करने की प्रक्रिया को सुगम बनाने के लिए संशोधित गैस सिलेंडर नियम 2018 को अधिसूचित किया गया है।

## 3.4. किफायती परिवहन के लिए दीर्घकालिक विकल्प (सतत)

एसएटीएटी संबंधी पहल अक्टूबर 2018 में आरंभ की गई थी, जिसमें एमओपीएनजी के तहत तेल और गैस विपणन कंपनियों (ओजीएमसीज) द्वारा संपीडित बायो गैस (सीबीजी) की खरीद के लिए संभावित उद्यमियों से रुचि की अभिव्यक्ति (ईओआई) आमंत्रित की जा रही हैं।

इस पहल के तहत सीबीजी क्षेत्र के विकास के लिए विभिन्न इनेब्लर प्रदान किए गए हैं। भारतीय रिज़र्व बैंक द्वारा प्राथमिक क्षेत्र ऋण के तहत सीबीजी परियोजनाओं को शामिल किया गया है। भारतीय स्टेट बैंक, बैंक ऑफ बड़ौदा, केनरा बैंक और कुछ अन्य बैंकों ने सीबीजी परियोजनाओं के वित्तपोषण के लिए विशेष ऋण उत्पाद विकसित किया है। सीबीजी संयंत्रों से उत्पादित जैव खाद को उर्वरक नियंत्रण आदेश, 1985 के तहत 'किण्वित जैविक खाद' (एफओएम) और तरलीकृत किण्वित जैविक खाद (एफएलओएम) के रूप में कवर किया गया है। उर्वरक विभाग द्वारा उर्वरक कंपनियों को रासायनिक उर्वरकों के साथ एफओएम को एक 'बास्केट दृष्टिकोण' के रूप में अनिवार्यतः उपयोग करने के लिए पत्र जारी किया गया है। इसके अलावा, सीपीसीबी ने मामले दर मामले के आधार पर 'सफेद श्रेणी' की स्थिति के तहत सीबीजी संयंत्र को शामिल किया है। पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय द्वारा सीजीडी नेटवर्क में प्राकृतिक गैस के साथ सीबीजी के एकीकरण के लिए नीतिगत दिशानिर्देश जारी किए हैं ताकी इनका एकसाथ उपयोग किया जा सके। दिनांक 1 जून 2022 से, ओजीएमसी ने सीबीजी खरीद मूल्य को सीएनजी के खुदरा बिक्री मूल्य (आरएसपी) के साथ जोड़ दिया है। एसएटीएटी के तहत न्यूनतम खरीदी मूल्य ₹ 54/– प्रति किलोग्राम प्लस जीएसटी है। इसके अलावा, 1 दिसंबर, 2022 से सीबीजी–सीजीडी सिंक्रोनाइजेशन योजना के तहत गेल ने बायोगैस/सीबीजी खरीदी मूल्य को ₹ 1,082/– एमएमबीटीयू से संशोधित कर ₹1,470/एमएमबीटीयू कर दिया है।

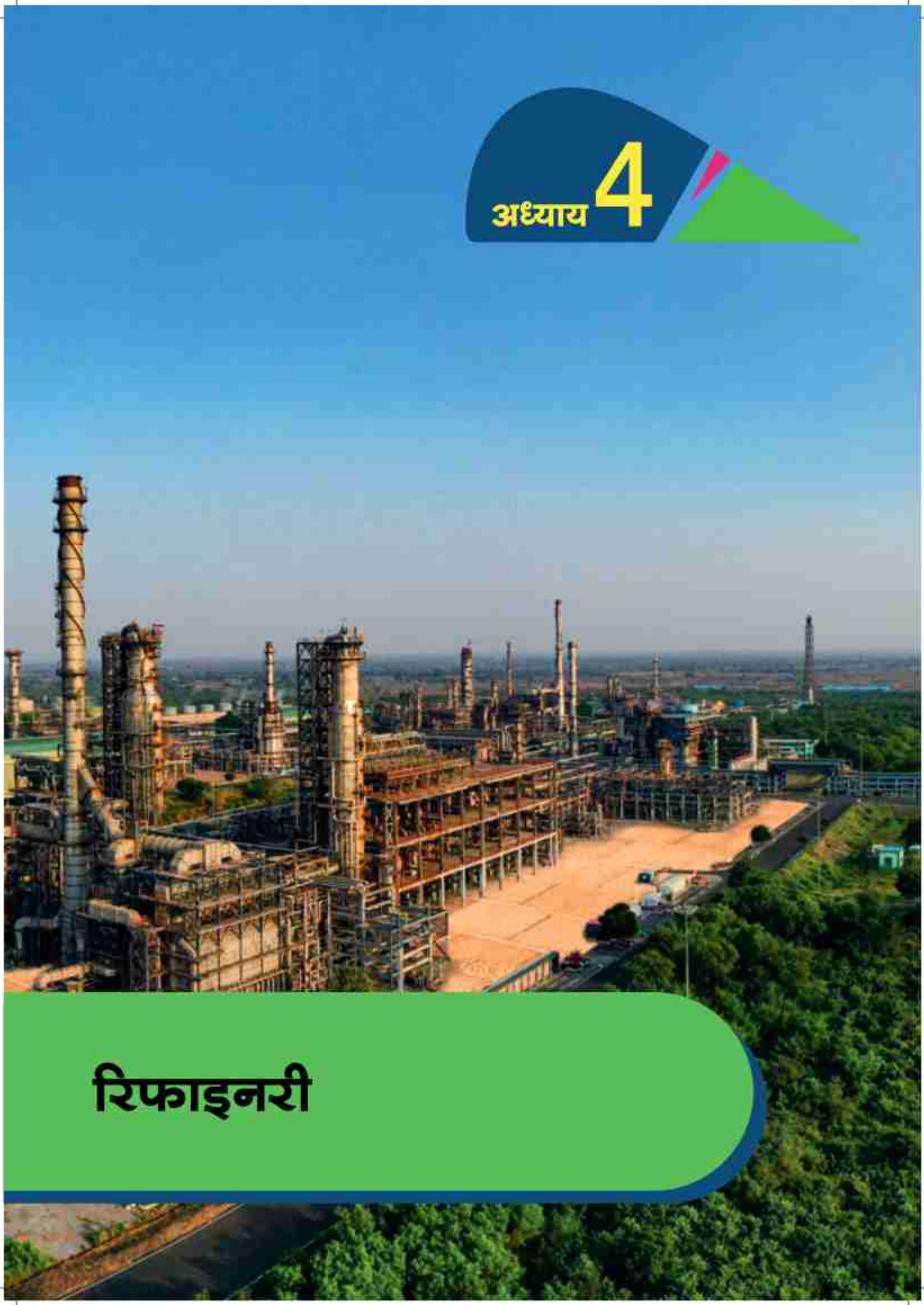
दिसंबर, 2022 तक, एसएटीएटी में भाग लेने वाले ओजीएमसी द्वारा उद्यमियों को 3,826 आशय पत्र जारी किए गए हैं। अब तक ~225 टन प्रति दिन की कुल क्षमता वाले 40 सीबीजी/बायोगैस संयंत्र चालू किए गए है और 97 खुदरा दुकानों से सीबीजी की बिक्री शुरू की गई है। इसके अलावा, सीबीजी–सीजीडी सिंक्रोनाइजेशन योजना के तहत, सीजीडी नेटवर्क के 12 भौगोलिक क्षेत्रों में सीबीजी की बिक्री शुरू कर दी गई है।



विजयपुर, मध्य प्रदेश में गेल का गैस प्रसंस्करण संयंत्र



अध्याय 4



# रिफाइनरी

# 4 रिफाइनरी

**4.1.** भारतीय रिफाइनिंग उद्योग ने स्वयं को विश्व स्तर पर एक प्रमुख खिलाड़ी के रूप में स्थापित किया है। भारत एक रिफाइनरी हब के रूप में उभर रहा है और रिफाइनिंग क्षमता मांग से अधिक है। देश की रिफाइनिंग क्षमता 1998 में 62.0 मिलियन मीट्रिक टन प्रति वर्ष (एमएमटीपीए) से बढ़कर 251.216 एमएमटीपीए हो गई है, जिसमें 23 रिफाइनरियां शामिल हैं– 19 सार्वजनिक क्षेत्र के तहत, 3 निजी क्षेत्र के तहत और 1 संयुक्त उद्यम (जेवी) है।

रिफाइनरियों का क्षमतावार विवरण निम्नानुसार है:

| क्र.सं. | रिफाइनरी का स्थान/ स्थापना का वर्ष | कंपनी का नाम | निर्दिष्ट क्षमता (एमएमटीपीए) |
|---|---|---|---|
| 1 | डिगबोई-1901 # | इंडियन ऑयल कॉर्पोरेशन लिमिटेड | 0.650 |
| 2 | गुवाहाटी-1962 | | 1.000 |
| 3 | बरौनी-1964 | | 6.000 |
| 4 | कोयली-1965 | | 13.700 |
| 5 | बोंगाईगांव-1974 | | 2.7 |
| 6 | हल्दिया-1975 | | 8.000 |
| 7 | मथुरा-1982 | | 8.000 |
| 8 | पानीपत-1998 | | 15.000 |
| 9 | पारादीप-2016 | | 15.000 |
| 10 | मनाली-1965 | चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड | 10.500 |
| 11 | नागपट्टिनम-1993 @ | | 0 |
| | **कुल आईओसीएल समूह** | | **80.55** |
| 12 | मुंबई-1954 | हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड | 9.500 |
| 13 | विशाखापत्तनम-1957 | | 8.300 |
| | **कुल एचपीसीएल** | | **17.800** |
| 14 | मुंबई-1955 | भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड | 12.000 |
| 15 | कोच्चि-1963 | | 15.500 |
| 16 | बीना-2011 | | 7.800 |
| | **कुल बीपीसीएल** | | **35.300** |
| 17 | नुमालीगढ़-2000 | नुमालीगढ़ रिफाइनरी लिमिटेड | 3.000 |
| 18 | मैंगलोर-1996 | मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड | 15.000 |
| 19 | टाटिपाका, एपी-2001 | तेल एवं प्राकृतिक गैस निगम लिमिटेड | 0.066 |
| | **उप–कुल पीएसयू** | | **151.716** |
| 20 | जामनगर, आरआईएल डीटीए,1999 | रिलायंस इंडस्ट्रीज लिमिटेड | 33.000 |
| 21 | आरआईएल एसईजेड, 2008 | रिलायंस इंडस्ट्रीज लिमिटेड | 35.200 |
| 22 | वाडिनार, 2006 | नायरा एनर्जी | 20.000 |
| | **उप–कुल निजी क्षेत्र** | | **88.200** |
| 23 | भटिंडा, एचएमईएल, 2012 | एचपीसीएल मित्तल एनर्जी लिमिटेड | 11.300 |
| | **उप–कुल संयुक्त उद्यम** | | **11.300** |
| | **कुल** | | **251.216** |

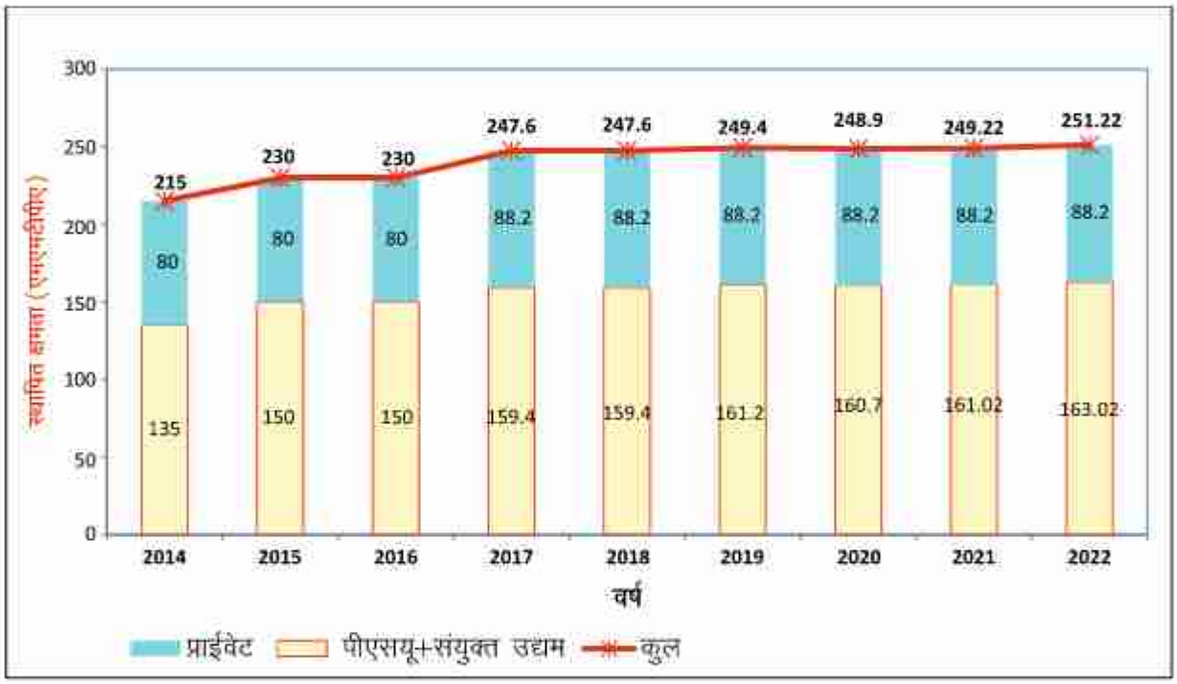
# रिफाइनरी की स्थापना 1901 में डिगबोई में असम तेल कंपनी लिमिटेड द्वारा की गई थी और समयोपरांत इस रिफाइनरी का अधिग्रहण आईओसीएल द्वारा दिनांक 14.10.1981 को कर लिया गया।

@ सीपीसीएल की 1.0 एमएमटीपीए की कावेरी बेसिन रिफाइनरी (सीबीआर) का प्रचालन दिनांक 1.4.2019 से 9 एमएमटीपीए क्षमता की नई रिफाइनरी की परियोजना गतिविधियों को संपन्न करने के लिए बाधाओं के कारण स्थगित कर दिया गया है।

**4.1.1** रिफाइनिंग क्षमता न केवल घरेलू खपत के लिए पर्याप्त है, बल्कि पेट्रोलियम उत्पादों के निर्यात के लिए भी अधिशेष है। 2001–02 से, भारत पेट्रोलियम उत्पादों का शुद्ध निर्यातक बन गया है। वर्ष 2022–2023 (अप्रैल 2022 से जनवरी 2023) के दौरान देश द्वारा 50.2 मिलियन मीट्रिक टन (एमएमटी) (अनंतिम) निर्यात किया है। जो कि अमेरिका के पेट्रोलियम उत्पादों के $ 49.2 बिलियन (अनंतिम) के बराबर है।

## 4.2. इन वर्षों के दौरान रिफाइनिंग क्षमता वृद्धि

**4.2.1.** वर्षों के दौरान रिफाइनिंग क्षमता में वृद्धि का चित्रमय प्रस्तुतीकरण ग्राफ में दर्शाया गया है।




## 4.3. नई रिफाइनरी और मौजूदा रिफाइनरियों का विस्तार

ग्रीन फील्ड रिफाइनरी

| क्र. सं. | कंपनी का नाम | रिफाइनरी का स्थान | अभिलक्षित वर्ष | क्षमता, एमएमटीपीए |
|---|---|---|---|---|
| 1 | एचपीसीएल राजस्थान रिफाइनरी लिमिटेड (एचआरआरएल) | बाड़मेर, राजस्थान | 2025–26 | 9.0 |

वर्ष 2025–26 तक योजनाबद्ध क्षमता विस्तार निम्नानुसार है:

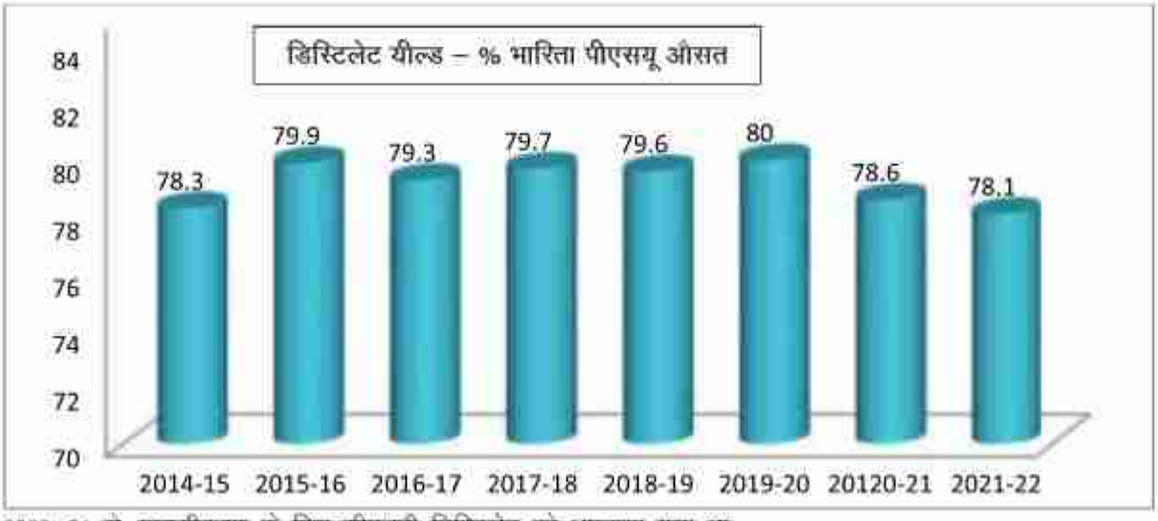
| क्र. सं. | कंपनी का नाम | रिफाइनरी का स्थान | अभिलक्षित वर्ष | क्षमता में वृद्धि, एमएमटीपीए |
|---|---|---|---|---|
| 1 | इंडियन ऑयल कॉरपोरेशन लिमिटेड (आईओसीएल) | गुवाहाटी, असम | 2023–24 | 0.20 |
| 2 | इंडियन ऑयल कॉरपोरेशन लिमिटेड (आईओसीएल) | बरौनी, बिहार | 2024–25 | 3.00 |
| 3 | इंडियन ऑयल कॉरपोरेशन लिमिटेड (आईओसीएल) | डिगबोई, असम | 2025–26 | 0.35 |
| 4 | इंडियन ऑयल कॉरपोरेशन लिमिटेड (आईओसीएल) | कोयली, गुजरात | 2025–26 | 4.30 |
| 5 | इंडियन ऑयल कॉरपोरेशन लिमिटेड (आईओसीएल) | पानीपत, हरियाणा | 2025–26 | 10.0 |
| 6 | हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल) | विशाखापत्तनम, आंध्र प्रदेश | 2023–24 | 6.70 |
| 7 | नुमालीगढ़ रिफाइनरीज लिमिटेड (एनआरएल) | नुमालीगढ़, असम | 2024–25 | 6.00 |
| 8 | आरआईएल–डीटीए | जामनगर, गुजरात | 2024–25 | 7.50 |

## 4.4. रिफाइनरी के प्रदर्शन में सुधार

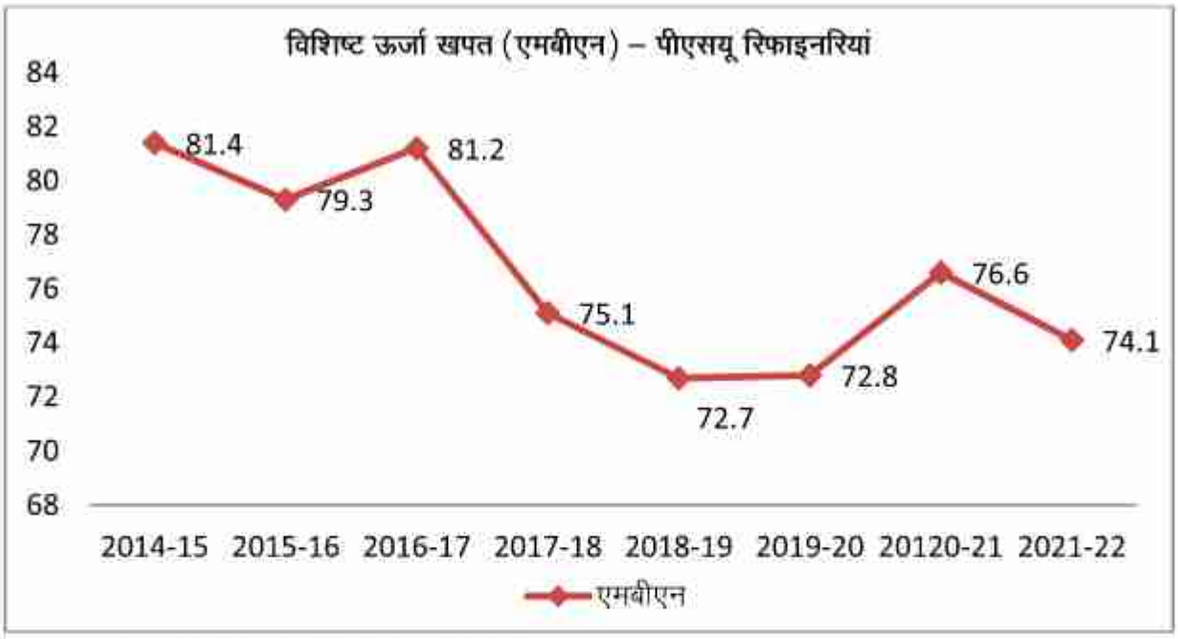
**4.4.1.** भारतीय सार्वजनिक क्षेत्र की रिफाइनरियां आधुनिक तकनीकों से लैस हैं और उन्होंने अंतरराष्ट्रीय प्रवृत्ति के अनुरूप और आवश्यकता के अनुसार प्रौद्योगिकियों को निरंतर उन्नत किया है। भारतीय रिफाइनरियों द्वारा विभिन्न ऊर्जा संरक्षण उपायों के माध्यम से ऊर्जा खपत को कम करने को सर्वोच्च प्राथमिकता दी जाती है।

उच्च प्रौद्योगिकी केन्द्र (सीएचटी) द्वारा वर्ष 2010, 2012, 2014, 2016, 2018 और 2020 के निरंतर चक्रों के लिए मैसर्स सोलोमन एसोसिएट्स के माध्यम से सार्वजनिक क्षेत्र की रिफाइनरियों के प्रदर्शन बेंचमार्किंग का अध्ययन किया गया है। कैलेंडर वर्ष 2022 का अध्ययन वर्ष 2023 में किया जाएगा।

आधुनिक तकनीकों को अपनाने के माध्यम से पीएसयू रिफाइनरियों द्वारा उत्तरोत्तर रूप से डिस्टिलेट प्राप्ति और पेट्रोल/डीजल की गुणवत्ता में सुधार किया गया है। पीएसयू रिफाइनरियों की औसत डिस्टिलेट प्राप्ति (कच्चे तेल पर भारिता) वर्ष 2005–06 में 73.3% से बढ़कर वर्ष 2019–20 में 80% हो गई है। इसी प्रकार, ऊर्जा संरक्षण उपायों द्वारा उद्योग की विशिष्ट ऊर्जा खपत (एमबीएन) को कम करने में सहायता प्रदान की है, जिसे एमबीटीयू/बीबीएल/एनआरजीएफ के संदर्भ में वर्ष 2005–06 से 2019–20 की अवधि के दौरान 26% तक मापा गया है। चूंकि ईंधन और घाटा रिफाइनरी की जटिलता के साथ–साथ भिन्न होते रहते हैं, जटिलता के साथ ईंधन और हानि को अभिग्रहित करने के लिए सीएचटी द्वारा एमबीएन पद्धति विकसित की गई थी। सलाहकारों से प्राप्त सूचनाओं के आधार पर तकनीकी प्रवृत्तियों को प्रतिबिंबित करने के लिए एमबीएन पद्धति को नया रूप दिया गया था और वर्ष 2015–16 से रिपोर्टिंग को नए एमबीएन में परिवर्तित कर दिया गया है।




2020–21 से, मानकीकरण के लिए सीएचटी डिस्टिलेट को अपनाया गया था




2014–15 के बाद से नई एमबीएन पद्धति अपनाई गई

## 4.5. ऑटो ईंधन गुणवत्ता उन्नयन

देश भर में बीएस–IV गुणवत्ता युक्त ईंधन की आपूर्ति दिनांक 01.04.2017 तक चरणों में संपन्न की गई। सरकार द्वार दिनांक 01.01.2019 से देश में बीएस–IV से सीधे बीएस–IV उत्सर्जन मानदंडों में लंबी छलांग लगाने का निर्णय लिया गया। सड़क परिवहन और राजमार्ग मंत्रालय द्वारा अधिसूचना सं. जीएसआर 889(ई) दिनांक 16.09.2016 के तहत बीएस–IV ईंधन के लिए उत्सर्जन मानकों को अधिसूचित किया गया। दिल्ली में प्रदूषण के स्तर में वृद्धि को ध्यान में रखते हुए, सरकार द्वारा दिनांक 01.04.2018 से एनसीटी दिल्ली में, तत्पश्चात 1 अप्रैल, 2019 से एनसीआर के प्रमुख भागों में बीएस–IV लागू कर दिया गया। बीएस–IV गुणवत्ता युक्त ईंधन की राष्ट्रव्यापी आपूर्ति दिनांक 1 अप्रैल, 2020 से आरंभ की गई।



आईओसीएल की पानीपत रिफाइनरी

## 4.6. रिफाइनरी का संक्षिप्त विवरण

### सार्वजनिक क्षेत्र की रिफाइनरियां

### आईओसीएल रिफाइनरियां

#### 4.6.1. डिगबोई रिफाइनरी (असम)–इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)

डिगबोई रिफाइनरी को वर्ष 1901 में बर्मा ऑयल कंपनी लिमिटेड (तत्पश्चात असम ऑयल कंपनी लिमिटेड) द्वारा कमीशन किया गया था। इंडियन ऑयल कॉर्पोरेशन लिमिटेड द्वारा दिनांक 14.10.1981 से असम ऑयल कंपनी लिमिटेड की रिफाइनरी और मार्केटिंग प्रबंधन का अधिग्रहण कर लिया और एक पृथक डिवीजन बनाया गया। इस प्रभाग रिफाइनरी और मार्केटिंग दोनों कार्य निहित थे। डिगबोई रिफाइनरी दुनिया की सबसे पुरानी ऑपरेटिंग रिफाइनरी है और प्रीमियम ग्रेड पैराफिन वैक्स और माइक्रो–क्रिस्टलीय वैक्स का उत्पादन करती है। रिफाइनरी की वर्तमान क्षमता 0.65 एमएमटीपीए है। 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 109.92% था।

#### 4.6.2. गुवाहाटी रिफाइनरी (असम)–इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)

गुवाहाटी रिफाइनरी को 0.75 एमएमटीपीए की डिजाइन क्षमता के साथ जनवरी, 1962 चालू किया गया था। रिफाइनरी की स्थापना रोमानिया के सहयोग से की गई थी। गुवाहाटी रिफाइनरी सार्वजनिक क्षेत्र की पहली रिफाइनरी थी। यह 2003 में भारी सिरों को एलपीजी, मोटर स्पिरिट और डीजल तेल में अपग्रेड करने के लिए आईओसीएल आर एंड डी सेंटर द्वारा विकसित एक नई प्रौद्योगिकी 'इंडमैक्स यूनिट' स्थापित करती पहली रिफाइनरी थी। रिफाइनरी की वर्तमान क्षमता 1.00 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 73.02% था।

#### 4.6.3. बरौनी रिफाइनरी (बिहार) इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)

बरौनी रिफाइनरी जुलाई 1964 में चालू की गई थी। रिफाइनरी की स्थापना तत्कालीन सोवियत संघ के सहयोग से की गई थी। रिफाइनरी, जिसे मूल रूप से स्वदेशी असम क्रूड के प्रसंस्करण के लिए डिज़ाइन किया गया था, का तत्पश्चात पुनःद्धार और विस्तारित किया या था और अब यह आयातित क्रूड के प्रसंस्करण में सक्षम है। रिफाइनरी की वर्तमान क्षमता 6.00 एमएमटीपीए है। रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग वर्ष 2021–22 में 93.66% था।

#### 4.6.4. कोयली रिफाइनरी (गुजरात)–इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)

कोयाली रिफाइनरी अक्टूबर, 1965 में चालू की गई थी। रिफाइनरी की स्थापना पूर्व सोवियत संघ के सहयोग से की गई थी। कोयली रिफाइनरी द्वारा कच्चे तेल के भारी सिरों को उच्च मूल्य युक्त बेहतर गुणवत्ता वाले मिट्टी तेल/एटीएफ और डीजल में परिवर्तित करने के लिए देश की प्रथम हाइड्रोक्रैकर इकाई आरंभ की गई। इसमें विश्व की सबसे बड़ी सिंगल ट्रेन लीनियर अल्काइल बेंजीन (एलएबी) संयंत्र भी स्थापित है, जिसने पेट्रोकेमिकल्स में इंडियन ऑयल के प्रवेश को चिह्नित किया है। रिफाइनरी की वर्तमान क्षमता 13.70 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 98.35% था।

#### 4.6.5. बोंगाईगांव रिफाइनरी (असम)–इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)

बोंगाईगांव रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (बीआरपीएल) को दिनांक 20 फरवरी 1974 को केंद्र सरकार की पूर्ण स्वामित्वाधीन कंपनी के रूप में शामिल किया गया था। मार्च 2001 में बीआरपीएल, इंडियन ऑयल कॉर्पोरेशन लिमिटेड की सहायक कंपनी बन गई। बीआरपीएल को दिनांक 25 मार्च, 2009 से धारक कंपनी इंडियन ऑयल कॉर्पोरेशन लिमिटेड के साथ मिला दिया गया था। बीआरपीएल जो मूल रूप से असम क्रूड का प्रसंस्करण कार्य कर रहा था, अब आयातित क्रूड को संसाधित करने में सक्षम हो गया है। रिफाइनरी की वर्तमान क्षमता को वर्ष 2020–21 में 2.35 से बढ़ाकर 2.70 एमएमटीपीए कर दिया गया है। बीजीआर की क्षमता बढ़ाकर 2.7 एमएमटीपीए की गई। तथापि, बीआर बीजीआर क्रूड पाइपलाइन के विस्तार के पश्चात बढ़ी हुई क्षमता का उपयोग होगा। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 97.72% रहा था।

#### 4.6.6. हल्दिया रिफाइनरी (पश्चिम बंगाल)–इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)

आईओसीएल की हल्दिया रिफाइनरी को जनवरी 1975 में शुरू किया गया था। हुगली और हल्दिया नदी के संगम के पास पश्चिम बंगाल के पुरबा मेदिनीपुर जिले में कोलकाता से 136 किमी नीचे की ओर यह तटीय रिफाइनरी स्थित है। यह जूट बैचिंग ऑयल (जेबीओ) का एकमात्र उत्पादक होने के अलावा ल्यूब ऑयल बेस स्टॉक्स (एलओबीएस) का उत्पादन करने वाले आईओसीएल समूह कंपनियों के दो रिफाइनरियों में से एक है। आरंभ में इसे 2.50 एमएमटीपीए की क्रूड प्रसंस्करण क्षमता के साथ स्थापित किया गया था, बाद में रिफाइनरी की क्षमता चरणों में वर्तमान 8.00 एमएमटीपीए तक बढ़ाई गई थी। वर्ष 2021–22 के दौरान रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 91.25% रहा।

**4.6.7. मथुरा रिफाइनरी (उत्तर प्रदेश)–इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)**

मथुरा रिफाइनरी को जनवरी 1982 में चालू किया गया था। रिफाइनरी की प्राथमिक इकाइयों को तत्कालीन सोवियत संघ द्वारा डिजाइन किया गया था। यह विस्तृत पर्यावरण निगरानी प्रणाली और पारिस्थिति पार्क से सुसज्जित भारत की पहली ग्रीन रिफाइनरी है। इस रिफाइनरी द्वारा एसओ2 उत्सर्जन को नियंत्रित करने के लिए प्राकृतिक गैस का भी उपयोग किया जाता है। रिफाइनरी की वर्तमान क्षमता 8.00 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की 114.03% क्रूड रिफाइनिंग क्षमता का उपयोग हुआ था।

**4.6.8. पानीपत रिफाइनरी (हरियाणा)–इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)**

पानीपत रिफाइनरी को 1998 में चालू किया गया था। पानीपत रिफाइनरी सार्वजनिक क्षेत्र में पहली आधुनिक एकीकृत रिफाइनरी एवं पेट्रोकेमिकल कॉम्प्लेक्स है। यह देश का सबसे बड़ा शुद्ध टेरेपथेलिक एसिड (पीटीए) संयंत्र है। पानीपत नेफ्था क्रैकर यूनिट, मोनो एथिलीन ग्लाइकॉल (एमईजी) यूनिट, पॉली प्रोपलीन (पीपी) यूनिट, लीनियर लो–डेंसिटी पॉली एथिलीन (एलएलडीपीई) और हाई डेंसिटी पॉली एथिलीन (एचडीपीई) यूनिट आदि की कमीशनिंग से इंडियन ऑयल की प्लास्टिक उद्योग में प्रवेश की शुरुआत हुई थी। रिफाइनरी की वर्तमान क्षमता 15.00 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 98.99% था।

**4.6.9. पारादीप रिफाइनरी (ओडिशा)–इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)**

पारादीप रिफाइनरी को माननीय प्रधान मंत्री द्वारा दिनांक 07.02.2016 को राष्ट्र को समर्पित किया गया था। पारादीप रिफाइनरी इंडियन ऑयल की अब तक की सबसे प्रतिष्ठित और पूंजी–गहन परियोजना है और यह पारादीप, ओडिशा में स्थित आईओसीएल के समूह की 11वीं रिफाइनरी है। यह रिफाइनरी सहायक उद्योगों के तत्काल संभावित विकास के माध्यम से क्षेत्र में औद्योगिक विकास के लिए एक आर्थिक प्रोत्साहन के रूप में कार्य करेगी।

यह रिफाइनरी विश्वि भर के विभिन्न प्रौद्योगिकी लाइसेंसकर्ताओं की अत्याधुनिक तकनीकों से युक्त सबसे आधुनिक रिफाइनरी है। रिफाइनरी को 12.2 (वर्तमान 10.8) के समग्र नेल्सन जटिलता कारक के साथ 15.0 एमएमटीपीए कच्चे तेल को संसाधित करने के लिए डिजाइन किया गया है, जो इसे उच्च सल्फर भारी क्रूड सहित कच्चे तेल की व्यापक बॉस्केपट को संसाधित करने में सक्षम बनाता है। रिफाइनरी को एलपीजी, प्रोपलीन, मोटर स्पिरिट, एटीएफ और एचएसडी के उत्पादन के लिए तैयार किया गया है। रिफाइनरी कमीशनिंग से ही यूरो–IV/यूरो–V गुणवत्ता युक्त परिवहन ईंधन उत्पादित करने में सक्षम है। रिफाइनरी की 81.10% डिस्टिलेट प्राप्ति के साथ साथ श्रेणी में सर्वश्रेष्ठ होने की संभावना है जिसमें किसी प्रकार के काले पेट्रोलियम का उत्पादन नहीं किया जाता है। रिफाइनरी की वर्तमान क्षमता 15.00 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 88.12% रहा था।

## एचपीसीएल रिफाइनरियां

**4.6.10. मुंबई रिफाइनरी (महाराष्ट्र) हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल)**

मुंबई रिफाइनरी को पहली बार वर्ष 1952 में स्टैंडर्ड वैक्यूम रिफाइनिंग कंपनी ऑफ इंडिया (स्टैन वैक) के रूप में शामिल किया गया था, जिसे वर्ष 1954 में कमीशन किया गया था। वर्ष 1962 में स्टैन वैक को एस्सो इंडिया लिमिटेड नाम दिया गया था। वर्ष 1969 में, ल्यूब इंडिया लिमिटेड, ल्यूब ऑयल बेस स्टॉक (एल ओ बी एस) के निर्माण से अस्तित्व में आई। दिनांक 15 जुलाई, 1974 को एस्सो और ल्यूब इंडिया लिमिटेड के उपक्रमों का राष्ट्रीयकरण किया गया और हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल) बनाने के लिए इनका विलय कर दिया गया। एचपीसीएल–मुंबई रिफाइनरी एचपीसीएल की एकमात्र रिफाइनरी है जो ल्यूब ऑयल बेस स्टॉक का उत्पादन करती है। रिफाइनरी फूड ग्रेड हेक्सेन, रबर प्रोसेसिंग (आरपीओ), डायना प्रोसेसिंग ऑयल आदि जैसे विशेष उत्पादों का भी उत्पादन करती है। रिफाइनरी की क्षमता 1 अप्रैल, 2022 के प्रभाव से 7.50 से बढ़ाकर 9.50 एमएमटीपीए कर दिया गया है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 74.1% रहा था।

**4.6.11. विशाख रिफाइनरी (आंध्र प्रदेश)–हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल)**

एचपीसीएल की विशाख रिफाइनरी को वर्ष 1957 में कैलटेक्स ऑयल रिफाइनिंग (इंडिया) लिमिटेड द्वारा कमीशन किया गया था। रिफाइनरी को वर्ष 1976 में भारत सरकार द्वारा अधिग्रहित कर लिया गया था और परिणामस्वरूप वर्ष 1978 में इसे एचपीसीएल के साथ समामेलित कर दिया गया था। एचपीसीएल–विशाख रिफाइनरी पूर्वी तट पर स्थित प्रथम तेल रिफाइनरी थी और यह विशाखापत्तनम के प्रथम प्रमुख उद्योगों में से एक थी। वर्ष 2010 में विशाख में सिंगल प्वाइंट मूरिंग (एसपीएम) सुविधा के चालू होने के साथ ही 'वेरी लार्ज क्रूड कैरियर्स' (वीएलसीसी) जो 2 मिलियन बैरल तेल तक ले जाते हैं, अब विशाख रिफाइनरी में प्राप्त किए

जा सकते हैं। आईएसपीआरएल रिफाइनरी के समीप स्थित है। रिफाइनरी की वर्तमान क्षमता 8.30 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 101.32% था।

## बीपीसीएल रिफाइनरी

### 4.6.12. मुंबई रिफाइनरी (महाराष्ट्र)–भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल)

मुंबई में रिफाइनरी को जनवरी 1955 में बर्मा शेल रिफाइनरी लिमिटेड के स्वामित्वाधिकार में चालू किया गया था। बर्मा शेल के सरकारी अधिग्रहण के पश्चात, भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड दिनांक 24 जनवरी 1976 को अस्तित्व में आया। बीपीसीएल–मुंबई रिफाइनरी द्वारा स्वदेशी कच्चे तेल के प्रसंस्करण की शुरूआत की गई और वर्तमान स्थिति के अनुसार 72 प्रकार के कच्चे तेल के प्रसंस्करण के कार्य का निर्वाह किया जा सकता है। रिफाइनरी में पर्यावरण के अनुकूल सुप्त प्रवेस ऑयल के उत्पादन के लिए ल्यूब बेस ऑयल यूनिट भी स्थित है। रिफाइनरी की वर्तमान क्षमता 12.00 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 120.34% था।

### 4.6.13. कोच्चि रिफाइनरी (केरल)–भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल)

कोच्चि रिफाइनरी लिमिटेड (केआरएल) की स्थापना भारत सरकार, संयुक्त राज्य अमरीका की फिलिप्स पेट्रोलियम कंपनी और कलकत्ता के डंकन ब्रदर्स के बीच दिनांक 27 अप्रैल, 1963 गठन संबंधी समझौते के अनुसरण में की गई थी। रिफाइनरी को वर्ष 2006 में भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड के साथ समामेलित कर दिया गया। यह रिफाइनरी वेरी लार्ज क्रूड कैरियर्स (वीएलसीसी) में कच्चा तेल प्राप्त करने के लिए सुसज्जित है। कोच्चि रिफाइनरी द्वारा मूल्यवर्धन के लिए पेट्रोकेमिकल निर्माण में विविधता लाने के प्रयोजन से एक महत्वाकांक्षी योजना आरंभ की गई है। रिफाइनरी की वर्तमान क्षमता 15.50 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 99.36% था।

### 4.6.14. बीना रिफाइनरी भारत ओमान रिफाइनरी लिमिटेड (बीओआरएल) (मध्य प्रदेश)

बीना रिफाइनरी की स्थापना भारत ओमान रिफाइनरी लिमिटेड (बीओआरएल) द्वारा की गई थी, जो मई 2011 में चालू किया गया भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल) और ओमान ऑयल कॉर्पोरेशन लिमिटेड (ओओसीएल) का एक संयुक्त उद्यम था। मार्च 2020 से, यह कंपनी भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड की सहायक कंपनी बन गई है और जुलाई 2021 में, ओक्यू एसएओसी की संपूर्ण शेयरधारिता भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड द्वारा क्रय कर ली थी।

बीना रिफाइनरी भारत के मध्य भाग में स्थित प्रथम रिफाइनरी है और यह मध्य और उत्तरी भारत में पेट्रोलियम उत्पादों की उपलब्धता को संवृद्धि करता है। इसकी अन्य सुविधाओं में सिंगल प्वाइंट मूरिंग सुविधा (एसपीएम), गुजरात के वाडीनार में क्रूड ऑयल स्टोरेज टर्मिनल (सीओटी) और वाडीनार से बीना (वीबीपीएल) तक 935 किलोमीटर लंबी देश पार पाइपलाइन शामिल हैं। रिफाइनरी की वर्तमान क्षमता 7.80 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 94.99% था।

## सीपीसीएल रिफाइनरी

### 4.6.15. मणली रिफाइनरी (तमिलनाडु)–चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड (सीपीसीएल)

चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड (सीपीसीएल), जिसे इससे पूर्व मद्रास रिफाइनरीज लिमिटेड (एमआरएल) के नाम से जाना जाता था, वर्ष 1965 में भारत सरकार (जीओआई) ए एम ओ सी ओ और नेशनल ईरानी ऑयल कंपनी (एनआईओसी) के बीच एक संयुक्त उद्यम के रूप में स्थापित की गई थी। सीपीसीएल 2001 में आईओसीएल की सहायक कंपनी बन गई। सीपीसीएल मनाली रिफाइनरी भारत में ईंधन, ल्यूब, वैक्स और पेट्रोकेमिकल फीडस्टॉक्स उत्पादन सुविधाओं के साथ सबसे जटिल रिफाइनरियों में से एक है। अपनी रिफाइनरी की जल संबंधी आवश्यकताओं को बढ़ाने के लिए 5.8 एम जी डी समुद्री जल विलवणीकरण परियोजना उद्योग में अपने प्रकार की प्रथम परियोजना थी। रिफाइनरी की वर्तमान क्षमता 10.50 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 86.1% था।

### 4.6.16. कावेरी बेसिन रिफाइनरी (नागापट्टिनम तमिलनाडु)–चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड (सीपीसीएल)

1.00 एमएमटीपीए क्षमता युक्त सीपीसीएल की कावेरी बेसिन रिफाइनरी (सीबीआर) का प्रचालन कार्य दिनांक 01.04.2019 से रोक दिया गया है और 9.00 एमएमटीपीए की एक नई रिफाइनरी की योजना बनाई गई है।

## एनआरएल रिफाइनरी

### 4.6.17. नुमालीगढ़ रिफाइनरी (असम)–नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल)

नुमालीगढ़ रिफाइनरी, जिसे 'असम एकॉर्ड रिफाइनरी' के रूप में जाना जाता है, को अक्टूबर, 2000 में चालू किया गया था। एनआरएल का वर्तमान शेयरधारिता पैटर्न यह है: ऑयल इंडिया लिमिटेड (72.15%) और असम सरकार (23.48%) और इंजीनियर्स इंडिया लिमिटेड (4.37%)। डिस्टीलेट प्राप्ति को अधिकतम

करने के लिए एनआरएल पूर्वोत्तर की सबसे बड़ी रिफाइनरी है जो आधुनिक इकाइयों, हाइड्रोक्रेकर और डिलेड कोकर से सुसज्जित है।

रिफाइनरी की वर्तमान क्षमता 3.00 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 87.48% था।

## एमआरपीएल रिफाइनरी

**4.6.18. मैंगलोर रिफाइनरी (कर्नाटक)–मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल)**

मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल) को मार्च 1996 में चालू किया गया था। एमआरपीएल को मूल रूप से एक संयुक्त उद्यम रिफाइनरी के रूप में स्थापित किया गया था। हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल) और आदित्य बोलीला ग्रुप ऑफ कंपनीज द्वारा मार्च, 2003 में प्रवर्तित एमआरपीएल ओएनजीसी की सहायक कंपनी बन गई। रिफाइनरी को 24 से 46 एपीआई गुरुत्वाकर्षण युक्त क्रूड को संसाधित करने के लिए उच्च लचीलेपन से युक्त एक बहुमुखी डिजाइन प्राप्तर हुआ है और इसमें उच्च स्तरीय स्वचालन स्थापित है। एमआरपीएल, भारत की एकमात्र रिफाइनरी है जिसमें प्रीमियम डीजल (हाई सिटेन) का उत्पादन करने के लिए 2 हाइड्रोक्रैकर हैं। यह भारत की एकमात्र रिफाइनरी भी है जिसमें हाई ऑक्टेन के अनलेडेड पेट्रोल का उत्पादन करने के 2 सीसीआर स्थापित हैं। रिफाइनरी की वर्तमान क्षमता 15.00 एमएमटीपीए है। रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग वर्ष 2021–22 में 99.13% था।

## ओएनजीसी रिफाइनरी

**4.6.19. तातीपका रिफाइनरी (आंध्र प्रदेश)–ऑयल एंड नेचुरल गैस कॉरपोरेशन लिमिटेड (ओएनजीसी)**

ओएनजीसी की मिनी रिफाइनरी (चरण–1 ) के रूप में स्थापित इस रिफाइनरी को सितंबर, 2001 में आंध्र प्रदेश के पूर्वी गोदावरी जिले के तातीपका में चालू किया गया था। रिफाइनरी की वर्तमान क्षमता 0.066 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 113.83% था।

## संयुक्त उद्यम रिफाइनरी

**4.6.20. गुरु गोबिंद सिंह रिफाइनरी–एचपीसीएल–मित्तल एनर्जी लिमिटेड (एचएमईएल), बठिंडा (पंजाब)**

एचपीसीएल और मित्तल एनर्जी लिमिटेड के बीच एक संयुक्त उद्यम हिंदुस्तान मित्तल एनर्जी लिमिटेड (एचएमईएल) के स्वामित्वाधिकार युक्त गुरु गोबिंद सिंह रिफाइनरी (जीजीएसआर) को अप्रैल, 2012 में चालू किया गया था। बठिंडा की रणनीतिक स्थिति को ध्यान में रखते हुए तेल और गैस क्षेत्र में यह रिफाइनरी एक सफल सार्वजनिक निजी भागीदारी का प्रमाण है, यह रिफाइनरी भारत के उत्तरी राज्यों की ईंधन आवश्यकताओं की पूर्ति करेगी।

## निजी क्षेत्र की रिफाइनरियां

**4.6.21. रिलायंस इंडस्ट्रीज लिमिटेड (घरेलू टैरिफ क्षेत्र) (आरआईएल-डीटीए) (निजी क्षेत्र), जामनगर (गुजरात)**

इस रिफाइनरी को जुलाई 1999 में चालू किया गया था। आरआईएल–डीटीए देश की प्रथम निजी क्षेत्र की रिफाइनरी थी। आरआईएल–डीटीए विश्व भर की सबसे बड़ी जमीनी स्तर की रिफाइनरी है, जिसमें पैराज़ाइलीन के उत्पादन के लिए एक पेट्रोलियम संयंत्र, पॉलीप्रोपाइलीन के उत्पादन के लिए एक पॉलीमर संयंत्र है। रिफाइनरी की वर्तमान क्षमता 33.00 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 105.32% था।

**4.6.22. रिलायंस इंडस्ट्रीज लिमिटेड–एस ई जेड (आर आई एल एस ई जेड) जामनगर (गुजरात)**

रिफाइनरी को दिसंबर 2008 में चालू किया गया था। एसईजेड रिफाइनरी में 'क्लीन फ्यूल्स' प्रोसेस संयंत्र के साथ साथ एक अद्वितीय डिजाइन और पथ–प्रदर्शक विन्यास स्थापित है। इसकी रूप रेखा को अर्थव्यवस्था के आधार पर ग्रेड बदलने और बाजार की गतिशीलता के आधार पर मार्जिन की प्राप्ति के लिए उच्च स्तरीय लचीलेपन के अनुरूप तैयार डिज़ाइन किया गया है। नवीन एसईजेड रिफाइनरी भारत की प्रथम रिफाइनरी है। जो यूरो–IV ग्रेड के पेट्रोल और डीजल का उत्पादन करती है। रिफाइनरी की वर्तमान क्षमता 35.20 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 90.89% था।

**4.6.23. नायरा एनर्जी लिमिटेड, वाडिनार रिफाइनरी (निजी क्षेत्र), वाडीनार (गुजरात)**

इस रिफाइनरी को नवंबर, 2006 में चालू किया गया था। वाडीनार रिफाइनरी देश की दूसरी सबसे बड़ी रिफाइनरी है। रिफाइनरी की वर्तमान क्षमता 20.00 एमएमटीपीए है। वर्ष 2021–22 में रिफाइनरी की क्रूड रिफाइनिंग क्षमता का उपयोग 100.82 फीसदी था।


MAP OF REFINERIES IN INDIA
Refining Capacity - 251.2 MMTPA
N
BHATINDA (11.3)
PANIPAT (15.0)
MATHURA (8.0)
RAJASTHAN REFINERY BARMER (HRRL) (9.0)
KOYALI (13.7)
BINA (7.8)
NAYARA (20.0)
HPCL (35.2)
RIL (33.0)
JAMNAGAR
MUMBAI (12.0)
MUMBAI (8.5)
BARAUNI (6.0)
SONGAIGAON (2.7)
DIGBOI (0.65)
GUWAHATI (1.0)
NUMALIGARH (3.0)
HALDIA (8.0)
PARADIP (15.0)
VIZAG (8.3)
TATIPAKA (0.07)
MANGALORE (15.0)
CHENNAI (10.5)
KOCHI (15.5)
CAUVERY BASIN REFINERY (CBRPL), NAGAPATTINAM (9.0)
Arabian Sea
Bay of Bengal
Andaman & Nicobar Islands
Lakshadweep
INDIAN OCEAN
(Capacity in MMTPA)
New Refineries (Upcoming)
Map not to Scale



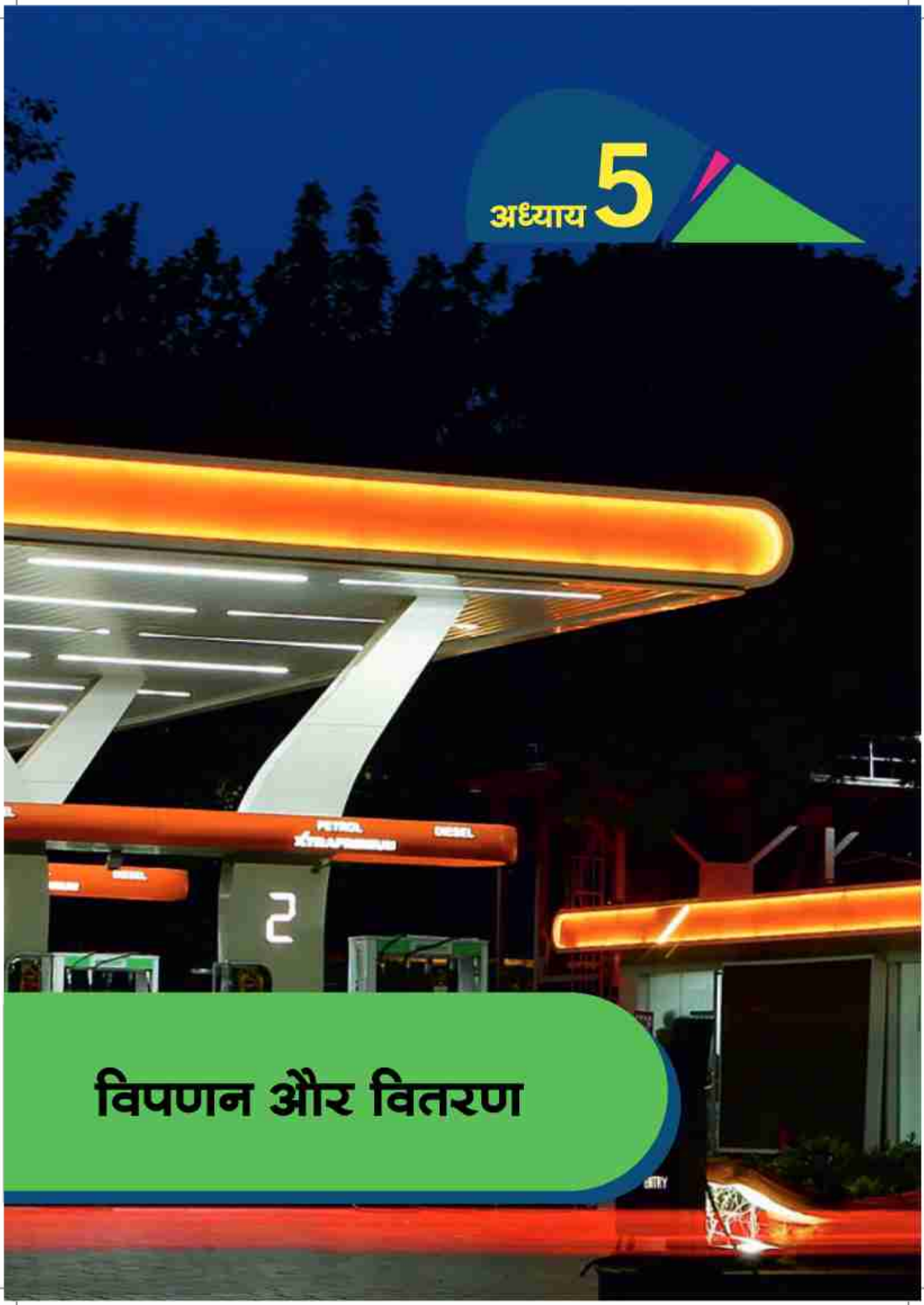
बीपीसीएल की मुंबई रिफाइनरी का एक दृश्य



आईओसीएल की बरौनी रिफाइनरी का एक दृश्य


IndianOil
PETROL
DIESEL

अध्याय 5



# विपणन और वितरण

# 5 विपणन और वितरण

## 5.1. एलपीजी की खुदरा विपणन अवसंरचना

भारत में पेट्रोलियम उत्पादों का खुदरा विपणन सार्वजनिक क्षेत्र की तेल विपणन कंपनियों (ओएमसीज) अर्थात् इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल), हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल), भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल) और निजी कंपनियों जैसे रिलायंस इंडस्ट्रीज, एस्सार, शेल आदि द्वारा किया जाता है। दिनांक 01.01.2023 की स्थिति के अनुसार देश में सार्वजनिक क्षेत्र की तेल विपणन कंपनियों और 25,341 एलपीजी डिस्ट्रीब्यूटरशिप द्वारा संचालित 21,921 टीएमटीपीए की रेटेड बॉटलिंग क्षमता वाले 206 एलपीजी बॉटलिंग संयंत्र हैं। दिनांक 01.01.2023 की स्थिति के अनुसार देश में कुल सक्रिय एलपीजी उपभोक्ता 31.37 करोड़ हैं। अप्रैल–दिसंबर 2022 की अवधि के दौरान, देश में कुल 93 नए एलपीजी डिस्ट्रीब्यूटरशिप दिए गए हैं। इसके अलावा, इस नौ महीने की अवधि के दौरान ओएमसी द्वारा कुल 92.46 लाख नए एलपीजी कनेक्शन जारी किए गए हैं, जिसमें उज्ज्वला 2.0 योजना के तहत 60 लाख कनेक्शन शामिल हैं।

## 5.2. प्रमुख पहलें

### 5.2.1. पहल (डीबीटीएल योजना)




भारत सरकार ने 15.11.2014 को देश के 54 जिलों में एलपीजी उपभोक्ताओं हेतु प्रत्यक्ष लाभ अंतरण (डीबीटीएल) योजना अर्थात् 'पहल' (प्रत्यक्ष हस्तांतरित लाभ) शुरू की। बाद में इस योजना का विस्तार देश के सभी भागों में किया गया और दिनांक 01.01.2023 की स्थिति के अनुसार कुल 29.06 करोड़ एलपीजी उपभोक्ता इस योजना में शामिल हुए हैं।

इस योजना का उद्देश्य राजसहायता को तर्कसंगत बनाना और राजसहायता के अनुचित उपयोग को कम करना है। 'पहल' योजना में शामिल होने वाले एलपीजी उपभोक्ता राजसहायता रहित मूल्य पर एलपीजी रिफिल लेते हैं और एलपीजी राजसहायता (पात्रता अनुसार) सीधे उनके बैंक खातों में चला जाता है। 'पहल' के कार्यान्वयन से, देश में एलपीजी उपभोक्ताओं को सशक्त बनाने के लिए राजसहायता प्रबंधन में पारदर्शिता की नई व्यवस्था लागू की गई है। 'पहल' ने बेनामी खातों, कई खातों और निष्क्रिय खातों की पहचान करने में भी मदद की है। इसके परिणामस्वरूप राजसहायता वाले एलपीजी को वाणिज्यिक उद्देश्यों में उपयोग को नियंत्रित करने में मदद मिली है।

राजसहायता प्रबंधन के एक भाग के रूप में, भारत के माननीय प्रधान मंत्री ने सभी संपन्न एलपीजी उपभोक्ताओं से 'राजसहायता छोड़ने' का अभियान शुरू करके स्वेच्छा से अपनी एलपीजी राजसहायता छोड़ने की अपील की। 'राजसहायता छोड़ने' के अभियान को सामाजिक रूप से प्रतिबद्ध व्यक्तियों से अपार प्रतिक्रिया मिली और इसके परिणामस्वरूप 01.01.2023 तक 1.12 करोड़ से अधिक उपभोक्ताओं ने स्वेच्छा से अपनी एलपीजी राजसहायता छोड़ दी है। सरकार के 'राजसहायता छोड़ने' के अभियान को दुनिया भर से व्यापक प्रशंसा मिली है और यह मनोविज्ञान और व्यवहार अर्थशास्त्र के क्षेत्र से प्रेरित सार्वजनिक नीति में उपयोग किए जाने वाले नज टूल का एक प्रमुख और सबसे पहला उदाहरण है।

### 5.2.2. प्रधान मंत्री उज्ज्वला योजना (पीएमयूवाई)

मई 2016 में, पेट्रोलियम और प्राकृतिक गैस मंत्रालय (एमओपीएनजी) ने प्रधान मंत्री उज्ज्वला योजना (पीएमयूवाई) को एक प्रमुख योजना के रूप में पेश किया, जिसका उद्देश्य ग्रामीण और वंचित परिवारों को एलपीजी के रूप में एक स्वच्छ रसोई ईंधन उपलब्ध कराना था, जो लोग अन्यथा खाना पकाने के पारंपरिक ईंधन जैसे लकड़ी, कोयला, गाय के गोबर के उपले आदि का उपयोग कर रहे थे। खाना पकाने के पारंपरिक ईंधन के उपयोग का ग्रामीण महिलाओं के स्वास्थ्य के साथ–साथ पर्यावरण पर भी हानिकारक प्रभाव पड़ता था।

भारत के माननीय प्रधान मंत्री ने दिनांक 01.05.2016 को इस योजना की औपचारिक शुरूआत की। शुरूआत में, पीएमयूवाई के अंतर्गत वित्त वर्ष 2016–17 से शुरू होकर 3 वर्षों की अवधि में 5 करोड़ कनेक्शन देने का लक्ष्य रखा गया था। बाद में, सरकार द्वारा प्रधान मंत्री उज्ज्वला योजना (पीएमयूवाई) का लक्ष्य बढ़ाकर पांच से आठ कर दिया गया जिसे वित्त वर्ष 2019–20 तक प्राप्त किया जाना था। लक्ष्य में वृद्धि के साथ–साथ, सरकार ने ऐसे गरीब परिवारों को भी पीएमयूवाई का लाभ दिया, जो देश के सभी गरीब परिवारों को कवर करने के लिए एसईसीसी सूची या चिह्नित 7 श्रेणियों में नाम नहीं होने के कारण छूट गए थे। लाभार्थियों की इस विस्तारित सूची में अनुसूचित जाति, अनुसूचित जनजाति, प्रधानमंत्री आवास योजना, अति पिछड़ा वर्ग, अंत्योदय अन्न योजना, चाय और पूर्व चाय बागान जनजातियां, वनवासी, द्वीप और नदी द्वीप के लोग और आवेदक द्वारा 14–सूत्री स्वघोषणा वाले गरीब परिवार शामिल थे।

इस योजना के अंतर्गत, सरकार गरीब परिवारों के वयस्क महिला सदस्यों को निक्षेप रहित एलपीजी कनेक्शन प्रदान करती है। सरकार प्रत्येक नए कनेक्शन हेतु ₹ 1,600 की सिलेंडर और प्रेशर रेग्युलेर, डीजीसीसी कार्ड, सुरक्षा होज और प्रशासनिक/स्थापन प्रतिभूति शुल्क का भार वहन करती है।

पीएमयूवाई योजना के तहत 8 करोड़ एलपीजी कनेक्शन जारी करने का लक्ष्य 31 मार्च, 2020 की लक्ष्य तिथि से 7 महीने पहले 7 सितंबर, 2019 को हासिल किया गया था।

**उज्ज्वला 2.0**



माननीय वित्त मंत्री ने 01.02.2021 को अपने बजट भाषण के दौरान घोषणा की कि उज्ज्वला योजना, जिसने 8 करोड़ परिवारों को लाभान्वित किया है, को 1 करोड़ और लाभार्थियों को कवर करने के लिए विस्तारित किया जाएगा।

तदनुसार, उज्ज्वला 2.0 को उत्तर प्रदेश के महोबा जिले में 10 अगस्त, 2021 को अखिल भारतीय स्तर पर माननीय प्रधान मंत्री की सम्मानित उपस्थिति में शुरू किया गया था ताकि पीएमयूवाई के तहत अतिरिक्त एक करोड़ एलपीजी कनेक्शन प्रदान किए जा सकें।

सीएससी केंद्रों, सहायता पटल और ओएमसी वितरकों आदि जैसे मौजूदा विकल्पों के साथ आवेदकों के लिए पहली बार ऑनलाइन आवेदन विकल्प प्रदान किया गया है। आवेदक योजना वेबसाइट www.pmuy.gov.in का उपयोग करके उज्ज्वला कनेक्शन के लिए ऑनलाइन आवेदन कर सकते हैं।

उज्ज्वला 2.0 के तहत 1.0 करोड़ का लक्ष्य जनवरी 22 तक विधिवत रूप से हासिल कर लिया गया था। इसके अलावा, छूटे हुए परिवारों को कवर करने के लिए, योजना के तहत लक्ष्य को अतिरिक्त 60 लाख कनेक्शनों से बढ़ाकर 1.6 करोड़ कर दिया गया था और इसे दिसंबर 2022 के दौरान हासिल किया गया था। 01.01.2023 तक, उज्ज्वला 2.0 के तहत कुल 1.6 करोड़ एलपीजी कनेक्शन जारी किए गए हैं।

### 5.2.3. नए एलपीजी कनेक्शन

एलपीजी घरेलू कनेक्शन मांग पर आसानी से उपलब्ध होते है और संभावित ग्राहकों को तब जारी किए जाते हैं जब वह संबंधित डिस्ट्रीब्यूटरशिप से संपर्क करता है और केवाईसी औपचारिकताओं को पूरा करता है। ओएमसीज के एलपीजी वितरक नए एलपीजी कनेक्शन के अनुरोध पर तुरंत पंजीकरण करते हैं और कार्यवाही करते हैं।

वित्त वर्ष 2021–22 के दौरान, लगभग 1.58 करोड़ नए एलपीजी कनेक्शन जारी किए गए और वित्त वर्ष 2022–23 में अप्रैल से दिसंबर 2022 की अवधि के दौरान लगभग 92.46 लाख नए एलपीजी कनेक्शन जारी किए गए हैं।

**काउंटर पर एलपीजी कनेक्शन:** इसके अलावा, नए एलपीजी कनेक्शनों को तुरंत जारी करने की सुविधा के लिए, संभावित ग्राहकों को काउंटर पर तुरंत घरेलू, गैर–राजसहायता वाले एलपीजी कनेक्शन प्रदान करने के लिए देश भर में प्रावधान किया गया है।

काउंटर पर कनेक्शन प्राप्त करने के लिए ग्राहक को पहचान प्रमाण (पीओआई) और पता संबंधी प्रमाण (पीओए) सहित केवाईसी ब्योरा देना होता है। यदि ग्राहक के पास कोई अन्य पता प्रमाण दस्तावेज़ उपलब्ध नहीं है तो पते के प्रमाण के स्थान पर एक स्व–घोषणा स्वीकार की जाती है।

आवेदक के नाम पर किसी अन्य एलपीजी कनेक्शन के होने की जांच करने के लिए आधार कार्ड लिया जाता है, जो पहचान प्रमाण भी हो सकता है।

**घरेलू एलपीजी उपभोक्ताओं हेतु पोर्टेबिलिटी**

क. **रिफिल पोर्टेबिलिटी:** उपभोक्ताओं को पोर्टल और मोबाइल ऐप के माध्यम से रिफिल बुक करते समय अपने मूल वितरक के अलावा किसी अन्य वितरक का चयन करने का विकल्प दिया जाता है। उक्त पिन कोड/बाजार में सेवारत सभी वितरकों की सूची स्टार रेटिंग के साथ ग्राहक के लिए प्रदर्शित की जाती है। जुलाई 2021 में 5 शहरों (कोयंबटूर, चंडीगढ़, गुरुग्राम, पुणे, रांची) में प्रयोग रूप में यह सुविधा शुरू की गई थी और सफल प्रयोग के बाद, इसे पूरे देश में विस्तारित किया गया था।

ख. **उपभोक्ताओं के लिए एलपीजी कनेक्शन पोर्टेबिलिटी** उसी क्षेत्र में सेवारत किसी अन्य वितरक को एलपीजी कनेक्शन के ऑनलाइन हस्तांतरण की सुविधा पहली बार संबंधित ओएमसी के वेब-पोर्टलों के साथ-साथ उनके मोबाइल ऐप के माध्यम से एलपीजी ग्राहकों को प्रदान की गई है।

### 5.2.4. नया डिस्ट्रिब्यूटरशिप शुरू करना

वर्तमान में, सभी प्रकार के डिस्ट्रीब्यूटरशिप के लिए चयन प्रक्रिया एलपीजी डिस्ट्रीब्यूटरशिप के चयन के लिए एकीकृत दिशानिर्देशों के तहत की जाती है। वित्त वर्ष 2021-22 में, 214 नए एलपीजी डिस्ट्रीब्यूटरशिप शुरू किए गए। वित्त वर्ष 2022-23 में अप्रैल-दिसंबर, 2022 की अवधि के दौरान देश भर में कुल 93 नए एलपीजी डिस्ट्रीब्यूटरशिप शुरू किए गए हैं।

**सक्रिय एलपीजी घरेलू उपभोक्ताओं की संख्या (करोड़ में)**




| एलपीजी खपत (हजार मिट्रिक टन) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| एलपीजी श्रेणी | 2020-21 | 2021-22 | दिसम्बर | | | अप्रैल–दिसम्बर | | |
| | | | 2021-22 | 2022-23 (पी) | सकल (%) | 2021-22 | 2022-23 (पी) | सकल (%) |
| 1. पीएसयू बिक्री: | | | | | | | | |
| एलपीजी–पैक्ड घरेलू | 25,128.1 | 25,501.6 | 2,235.3 | 2,253.9 | 0.8% | 18,839.5 | 18,891.4 | 0.3% |
| एलपीज–पैक्ड गैर–घरेलू | 1,886.0 | 2,238.8 | 196.6 | 266.4 | 35.5% | 1,624.1 | 1,922.2 | 18.4% |
| एलपीजी–बल्क | 361.9 | 390.9 | 26.4 | 40.3 | 52.7% | 270.6 | 302.9 | 11.9% |
| ऑटो एलपीजी | 118.4 | 122.0 | 11.1 | 9.0 | -18.5% | 91.2 | 82.4 | -9.7% |
| उप–योग (पीएसयू बिक्री) | 27,494.3 | 28,253.3 | 2,469.3 | 2,569.6 | 4.1% | 20,825.4 | 21,198.9 | 1.8% |
| 2. प्रत्यक्ष निजी आयात* | 64.2 | 82.0 | 9.99 | 6.4 | -36.4% | 65.0 | 57.2 | -12.0% |
| **कुल (1+2)** | **27,558.4** | **28,335.3** | **2,479.3** | **2,575.9** | **3.9%** | **20,890.4** | **21,256.1** | **1.8%** |

*स्रोत: डीजीसीआईएस (वाणिज्य जानकारी एवं सांख्यिकी महानिदेशालय) में उपलब्ध आंकड़ें।




## 5.3. परिवहन ईंधन के विपणन के लिए प्राधिकार हेतु दिशानिर्देश

पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय ने दिनांक 08.11.2019 के संकल्प के तहत परिवहन ईंधन के विपणन के लिए प्राधिकार हेतु दिशानिर्देशों को संशोधित किया है, जिसे भारत के राजपत्र में प्रकाशित किया गया है। संशोधित दिशानिर्देश कारोबार सुगमता को बढ़ावा देंगे और खुदरा क्षेत्र में निवेश के लिए निजी कंपनियों को बढ़ावा देंगे। उक्त संकल्प एमओपीएनजी की वेबसाइट पर उपलब्ध है। उक्त दिशानिर्देशों की मुख्य विशेषताएं निम्नलिखित हैं:-

(i) यह प्रस्ताव 'थोक' एवं 'खुदरा' कारोबार हेतु केवल मोटर स्पिरिट और हाई स्पीड डीजल के विपणन के लिए लागू होता है।

(ii) खुदरा या थोक हेतु प्राधिकार प्राप्त करने की इच्छुक कंपनी के पास आवेदन करते समय न्यूनतम निवल मूल्य 250 करोड़ रुपये होना चाहिए। यदि खुदरा और थोक दोनों के लिए प्राधिकार की आवश्यकता होती है, तो न्यूनतम निवल मूल्य ₹ 500 करोड़ होगा।

(iii) खुदरा प्राधिकार के लिए, किसी कंपनी को कम से कम 100 खुदरा आउटलेट स्थापित करनी होगी, जिनमें से 5% प्राधिकार के अनुदान के 5 वर्षों के भीतर अधिसूचित दूरस्थ क्षेत्रों में होना चाहिए। यह सुनिश्चित करने के लिए एक प्रभावी तंत्र (अर्थात बैंक गारंटी) निर्धारित किया गया है ताकि कंपनी दूरस्थ क्षेत्रों में आरओ स्थापित करने की अपनी प्रतिबद्धता को पूरा करे। इसके अलावा, विपणन अनुशासन बनाए रखने के लिए बैंक गारंटी भी प्रस्तुत की जानी अपेक्षित है।

(iv) उक्त संकल्प के अंतर्गत प्राधिकृत कंपनियों को विभिन्न अन्य सांविधिक दिशानिर्देशों का अनुपालन करते हुए कंपनी के अध्यधीन उक्त आउटलेट के शुरू होने के 3 वर्षों के भीतर प्रस्तावित खुदरा बिक्री केंद्रों पर कम से कम एक नई पीढ़ी के वैकल्पिक ईंधन के विपणन के लिए सुविधाएं स्थापित करना आवश्यक है यथा संपीड़ित प्राकृतिक गैस (सीएनजी), जैव ईंधन, तरलीकृत प्राकृतिक गैस (एलएनजी), विद्युत वाहन चार्जिंग प्वाइंट आदि।

उक्त संकल्प के अंतर्गत पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय ने 12 नई कंपनियों को विपणन प्राधिकार प्रदान किया है।

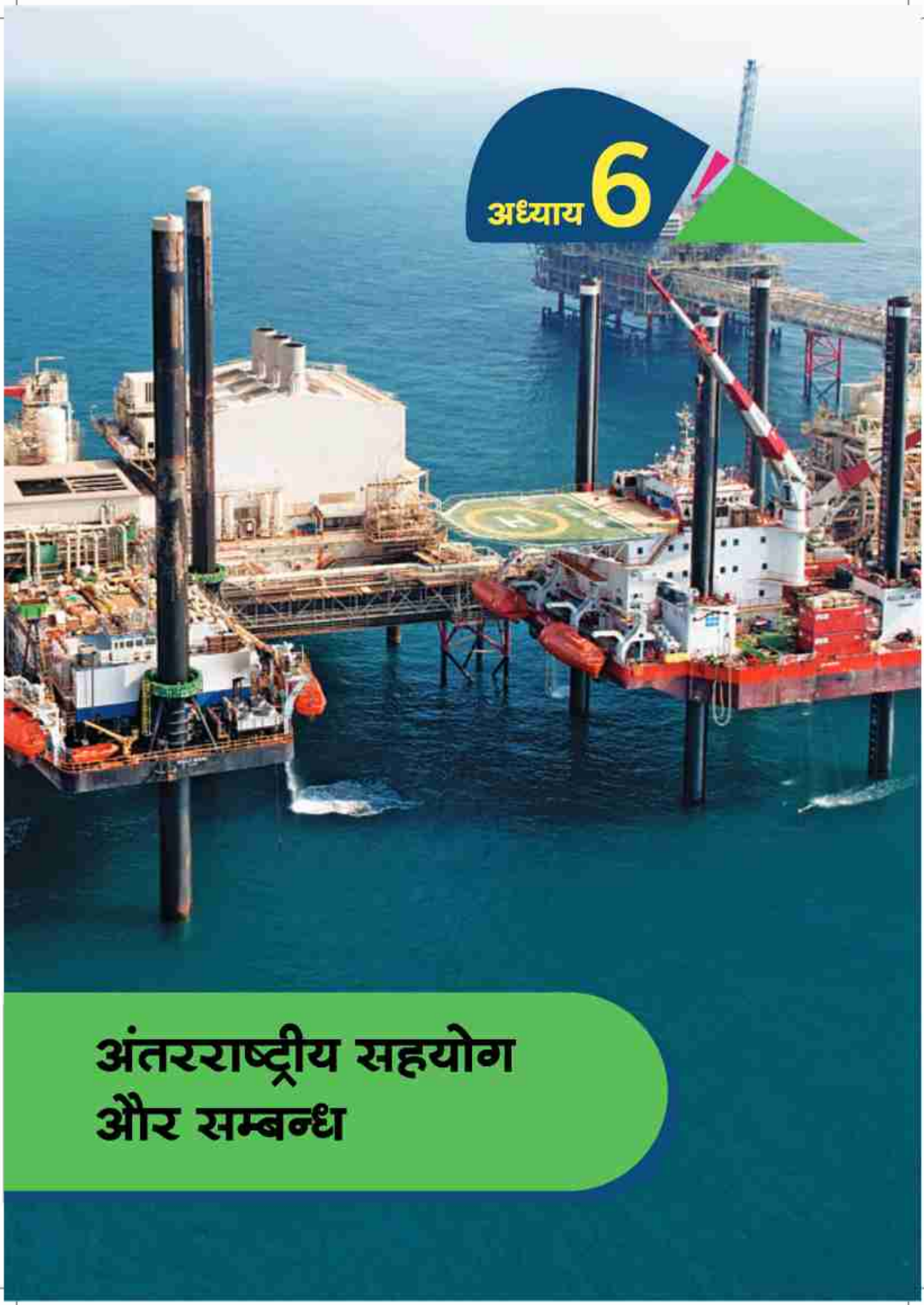
## 5.4. पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय द्वारा शुरू किए गए डिजिटल भुगतान को बढ़ावा देना:

खुदरा दुकानों पर डिजिटल भुगतान बुनियादी ढांचे का महत्वपूर्ण विस्तार हुआ है। 01.01.2023 तक, देश भर में 75,223 पेट्रोल पंपों पर 4,32,761 पीओएस टर्मिनल और 1,03,992 ई–वॉलेट सुविधा प्रदान की गई है, 69,775 खुदरा दुकानों को भीम यूपीआई सक्षम बनाया गया है। सभी एलपीजी वितरक और शहरी गैस वितरण कंपनियां भीम यूपीआई सक्षम हैं।

### 5.4.1. डीजल (एचएसडी) की घर–घर आपूर्ति:

एचएसडी की डोरस्टेप डिलीवरी की दिशा में नई अवधारणा की कल्पना की गई है, जहां तेल कंपनी द्वारा विधिवत अधिकृत कोई भी व्यक्ति ऐसी तेल कंपनी से मोबाइल बोट कंटेनर या डिस्पेंसर के साथ टैंक–ट्रक में केवल विमान, भारी वाहनों या मशीनरी, स्टेशनरी उपकरणों की साइट रिफ्यूलिंग के उद्देश्य से हाई स्पीड डीजल खरीद सकता है। इस पहल का उद्देश्य एचएसडी को सीधे अंतिम उपयोगकर्ताओं के स्टेशनरी उपकरणों में वितरित करना है।


KUOETA 4305



अध्याय 6

# अंतरराष्ट्रीय सहयोग और सम्बन्ध

# 6 अंतरराष्ट्रीय सहयोग और सम्बन्ध

भारत दुनिया के अग्रणी ऊर्जा उपभोक्ताओं में से एक है और इसे व्यापक रूप से पारंपरिक और स्वच्छ ऊर्जा संसाधनों की मांग वाहक के रूप में उभरती ऊर्जा महाशक्ति माना जाता है। नवीनतम विश्व ऊर्जा आंकड़ों के अनुसार, भारत वर्तमान में विश्व का तीसरा सबसे बड़ा ऊर्जा उपभोक्ता, तेल का तीसरा सबसे बड़ा उपभोक्ता, तीसरा सबसे बड़ा एलपीजी उपभोक्ता, चौथा सबसे बड़ा एलएनजी आयातक और चौथा सबसे बड़ा रिफाइनर है।

इस संदर्भ में, यह ध्यान रखना उचित है कि भारत की प्रति व्यक्ति ऊर्जा खपत विश्व औसत का लगभग 1/3 ही है। चूंकि भारत "आत्मनिर्भर भारत" के कारण आर्थिक सुधार और तेज शहरीकरण और औद्योगीकरण की ऊंचाई पर है, इसलिए भारत की ऊर्जा की मांग तेजी से बढ़ना तय है। भारत के विकास पर यह दृष्टिकोण शीर्ष आर्थिक संस्थानों और एजेंसियों द्वारा स्पष्ट रूप से साझा किया गया है।

अंतरराष्ट्रीय ऊर्जा एजेंसी (आईईए) के वर्ल्ड एनर्जी आउटलुक 2022 के अनुसार, भारत की ऊर्जा खपत 2040 तक दोगुनी हो जाएगी। आईईए के अनुसार, भारत की ऊर्जा मांग 1% की वैश्विक विकास दर की तुलना में 2040 तक प्रति वर्ष लगभग 3% की दर से बढ़ने की उम्मीद है। आउटलुक में यह भी अनुमान लगाया गया है कि वैश्विक ऊर्जा मांग में भारत की हिस्सेदारी दोगुनी होकर 11% हो जाएगी– किसी भी देश की उस अवधि में वर्तमान 6% से सबसे बड़ी वृद्धि होगी, और 2030 में भारत कुल ऊर्जा खपत के मामले में यूरोपीय संघ से आगे निकल जाएगा। ओपेक अपने वर्ल्ड ऑयल आउटलुक 2022 में भी इस दृष्टिकोण को दर्शाता है और उसका अनुमान है कि भारत में इस दृष्टिकोण में सबसे अधिक ऊर्जा मांग की वृद्धि होगी, जहां मांग 2021 में 18.6 एमबी/डी से बढ़कर 2045 में 37.7 एमबी/डी होने का अनुमान है।

यह क्षमता आयात पर निर्भरता की पृष्ठभूमि में है। आयातित कच्चे तेल और प्राकृतिक गैस पर हमारी निर्भरता क्रमशः 85% और 48% है। इस बढ़ती मांग और एकल स्रोतों पर अति–निर्भरता को सुरक्षित रखने के लिए, भारत सरकार कच्चे तेल की केंद्रित सोर्सिंग से उत्पन्न होने वाले भू–राजनीतिक जोखिमों को कम करने हेतु दीर्घकालिक समाधानों की दिशा में काम कर रही है।इस कार्यनीति को ऊर्जा सुरक्षा के लिए भारत की चौतरफा कार्यनीति में संक्षेप में प्रस्तुत किया जा सकता है, अर्थात् ऊर्जा आपूर्ति का विविधीकरण, अन्वेषण और उत्पादन फुटप्रिंट में वृद्धि, वैकल्पिक ऊर्जा स्रोतों का उपयोग करना और गैस आधारित अर्थव्यवस्था, हरित हाइड्रोजन और ईवी के माध्यम से ऊर्जा जरूरतों को पूरा करना।

सीओपी 26, ग्लासगो में माननीय प्रधान मंत्री द्वारा हाल ही में व्यक्त साहसिक प्रतिबद्धता, जो जलवायु कार्रवाई के लिए देश के मजबूत कार्रवाई–आधारित संकल्प का संकेत देती है, ने स्वच्छ और हरित ऊर्जा संक्रमण के लिए रूपरेखा तैयार की है। प्रमुख ऊर्जा उपभोक्ता के रूप में, भारत जलवायु परिवर्तन से निपटने की आवश्यकता से पूरी तरह अवगत है और पहले से ही उभरते ईंधन विशेष रूप से जैव–ईंधन और हरित हाइड्रोजन के उपयोग को बढ़ावा देने में नेतृत्व प्रदान कर रहा है। भारत अपनी बढ़ती ऊर्जा मांग को पूरा करने के लिए ऊर्जा के सभी स्रोतों को विकसित करने के साथ–साथ मांग का आधार भार प्रदान करने के लिए तेल और गैस का उपयोग करना जारी रखेगा।

## 6.1. कच्चे तेल और एलएनजी आयात का विविधीकरण

तेल और एलएनजी के निर्यातकों की सीमित संख्या और उनकी भू–राजनीतिक रूप से संवेदनशील भौगोलिक स्थिति के कारण भारत की ऊर्जा सुरक्षा भू–राजनीतिक जोखिमों से ग्रस्त रही है। इस स्थिति के लिए एक सुरक्षा उपाय के रूप में भारत सरकार ने घरेलू तेल उत्पादन बढ़ाने के साथ–साथ अपने कच्चे तेल आयात पोर्टफोलियो के विविधीकरण को प्राथमिकता दी है।

- पिछले पांच वर्षों में, भारत के क्रूड बास्केट में कच्चे तेल के नए आपूर्तिकर्ता यानी यूएसए, रूस, कनाडा, अंगोला, गुयाना और मैक्सिको जोड़े गए हैं। इसी तरह, एलएनजी आयात भी कतर से ऑस्ट्रेलिया, संयुक्त राज्य अमेरिका और रूस में विविधीकृत किया गया है।

- इन प्रयासों के परिणामस्वरूप, ओपेक देशों से भारत का कच्चे तेल का आयात वित्त वर्ष 2019–20 के दौरान 78% की तुलना में वित्त वर्ष 2020–21 के दौरान कुल आयात का 71.0% तक कम हो गया। इसके अलावा, कतर से एलएनजी पर भारत की निर्भरता वित्त वर्ष 2019–20 में 41% से घटकर वित्त वर्ष 2020–21 में 39.8% हो गई है।

- हाल के दिनों में रूस से तेल और गैस से आयात में भी काफी वृद्धि हुई है। हाल ही में, मई 2022 में, इंडियन ऑयल कॉर्पोरेशन लिमिटेड ने रूस के रोसनेफ्ट के साथ मई 2022–मार्च 2023 तक 11 महीनों की अवधि के लिए यूराल ग्रेड कच्चे तेल के प्रति माह 4 मिलियन बैरल (लगभग 6 एमएमटी/पीए) के लिए

दीर्घकालिक सम्बन्ध किया है, जिसमें छूट 12 अमेरिकी डॉलर प्रति बैरल से नीचे आने की स्थिति में पुनर्विचार के लिए एक खंड है, जिसे साल–दर–साल आधार पर 5 साल के लिए नवीनीकृत किया जा सकता है। एक अन्य रूसी कंपनी, गज़प्रोमनेफ्ट ने दीर्घकालिक सम्बन्ध हेतु संधि करने के लिए इंडियनऑयल से संपर्क किया है, और दोनों पक्ष कच्चे तेल के अन्य रूसी ग्रेड के लिए बातचीत कर रहे हैं।

- इस दिशा में अन्य उल्लेखनीय प्रयासों में एक महत्वपूर्ण प्रयास ऊर्जा भागीदार के रूप में संयुक्त राज्य अमेरिका का उभरना शामिल है। 2017–18 और 2021–22 के बीच, 4 साल (2021–22) की छोटी अवधि में, अमेरिका हमारा चौथा सबसे बड़ा कच्चा तेल और दूसरा सबसे बड़ा एलएनजी आपूर्तिकर्ता बन गया है, जो 2017–18 की मात्रा से कच्चे तेल और एलएनजी की आयातित मात्रा में क्रमशः 1,300% और 900% से अधिक की वृद्धि हुई है। आईओसीएल ने पहली बार मार्च, 2021 में गुएना से कच्चे तेल की आयात की और गेल को अक्टूबर, 2021 में रूस के यमल एलएनजी परियोजना से एलएनजी की प्रथम सीधी खेप प्राप्त हुई।

## 6.2. साझेदार देशों के साथ संवर्धित द्विपक्षीय ऊर्जा सम्बन्ध

### 6.2.1. संयुक्त राज्य अमेरिका (यूएसए) के साथ सम्बन्ध

- भारत–अमेरिका रणनीतिक ऊर्जा साझेदारी (एसईपी) की शुरुआत 17 अप्रैल 2018 को नई दिल्ली में पूर्व पेट्रोलियम एवं प्राकृतिक गैस मंत्री श्री धर्मेंद्र प्रधान और पूर्व अमेरिकी ऊर्जा सचिव श्री रिक पेरी ने की थी। एसईपी में मूल रूप से सहयोग के चार प्राथमिक स्तंभ थे: (i) तेल और गैस; (ii) विद्युत और ऊर्जा दक्षता; (iii) नवीकरणीय ऊर्जा; और (iv) सतत विकास।

- 22 अप्रैल 2021 को जलवायु शिखर सम्मेलन में, जिसमें माननीय प्रधान मंत्री और राष्ट्रपति बाइडेन ने भाग लिया, दोनों पक्षों ने भारत–अमेरिका पुनर्गठित रणनीतिक स्वच्छ ऊर्जा साझेदारी (एससीईपी) की घोषणा की। यह अमेरिका–भारत एजेंडा 2030: जलवायु और स्वच्छ ऊर्जा साझेदारी का एक हिस्सा था। एससीईपी की सह–अध्यक्षता माननीय पेट्रोलियम एवं प्राकृतिक गैस मंत्री, भारत सरकार और अमरीकी ऊर्जा मंत्री ने की है।

- 29 मार्च 2021 को, पूर्व पेट्रोलियम एवं प्राकृतिक गैस मंत्री, श्री धर्मेंद्र प्रधान ने मौजूदा भारत–अमेरिका रणनीतिक ऊर्जा सहयोग (एसईपी) की समीक्षा करने के लिए अमेरिकी ऊर्जा सचिव महामहिम जेनिफर ग्रैनहोम के साथ एक परिवर्तनात्मक वर्चुअल बैठक की।

- जलवायु परिवर्तन के लिए अमरीका के विशेष राष्ट्रपति दूत श्री जॉन कैरी की भारत यात्रा के दौरान हमने इन मुद्दों से निपटने के लिए भारत में संबंधित मंत्रालयों के साथ इन मुद्दों से संबंधित चर्चा की।

- इन चर्चाओं के बाद, हमारे पक्ष प्रधानमंत्री नरेंद्र मोदी और राष्ट्रपति जो बाइडेन की नई प्राथमिकताओं को प्रतिबिंबित करने के लिए भारत–अमेरिका एसईपी को संशोधित करने पर सहमत हुए हैं, जिसमें कम कार्बन उपायों के साथ स्वच्छ ऊर्जा को बढ़ावा देने और हरित ऊर्जा सहयोग में तेजी लाने पर ध्यान केंद्रित किया गया है।

- सितंबर 2021 में वर्चुअल मोड के माध्यम से आयोजित एसईपी की मंत्रिस्तरीय बैठक के दौरान, दोनों पक्षों ने निम्न घोषणा की:

  - उभरते ईंधन और प्रौद्योगिकियों पर पांचवें स्तंभ को जोड़ना, जो स्वच्छ ऊर्जा ईंधन को बढ़ावा देने के लिए संयुक्त संकल्प का संकेत देता है।

  - जैव ईंधन क्षेत्र में सहयोग पर काम के दायरे को बढ़ाने के लिए जैव ईंधन पर एक नए भारत–अमेरिका कृतक बल की भी घोषणा की गई।

  - संशोधित एससीईपी के तहत, तेल और गैस स्तंभ को जिम्मेदार तेल और गैस स्तंभ में फिर से नामित किया गया था।

- संशोधित एससीईपी की पहली वास्तविक बैठक 7 अक्टूबर, 2022 को वाशिंगटन डीसी में हुई।



- वाशिंगटन डीसी में, माननीय मंत्री हरदीप सिंह पुरी ने 7 अक्टूबर 2022 को महामहिम सुश्री जेनिफर ग्रैनहोम (एसजेजी), ऊर्जा सचिव, यूएसए के साथ अमेरिका–भारत रणनीतिक स्वच्छ ऊर्जा साझेदारी (यूएसआईएससीईपी) की मंत्रिस्तरीय वार्ता की सह–अध्यक्षता की। उपरोक्त यात्रा के दौरान अन्य कार्यक्रमों में, माननीय मंत्री ने जलवायु–सह शहरी बुनियादी ढांचे पर विश्व बैंक के अधिकारियों के साथ बातचीत की, वाशिंगटन डीसी में यूएसए इंडिया बिजनेस काउंसिल और ह्यूस्टन में यूएसए इंडिया स्ट्रैटेजिक पार्टनरशिप फोरम में दो कार्यकारी गोलमेज बैठकों में भाग लिया तथा अमेरिका स्थित ऊर्जा कंपनियों के सीईओ के साथ चर्चा की।

- एससीईपी बैठक के दौरान दोनों पक्ष स्वच्छ ऊर्जा संक्रमण का समर्थन करने के लिए आवश्यक अक्षय ऊर्जा के बड़े पैमाने पर एकीकरण का समर्थन करने के लिए एक नए ऊर्जा भंडारण कृतक बल के शुभारंभ के माध्यम से स्वच्छ ऊर्जा सहयोग को आगे बढ़ाने तथा वाणिज्यिक सहयोग के लिए अनुकूल वातावरण प्रदान करने में सरकारी सहायता के साथ दोनों देशों के उद्यमियों को एक साथ लाकर हरित हाइड्रोजन के उत्पादन पर ध्यान केंद्रित करने के साथ हरित ऊर्जा गलियारे के विकास पर समझौते के माध्यम से स्वच्छ ऊर्जा सहयोग को आगे बढ़ाने पर सहमत हुए।

### 6.2.2. साऊदी अरब के साथ सम्बन्ध

- भारत ने साऊदी अरब के साथ हाइड्रोकार्बन क्षेत्र के तहत लंबे समय से चले आ रहे सहयोग को बरकरार रखा है। साऊदी अरब भारत के लिए सबसे बड़े व्यापार भागीदारों में से एक है और ऊर्जा का एक प्रमुख स्रोत है। साऊदी अरब 2021–22 में हमारे कच्चे तेल का दूसरा सबसे बड़ा स्रोत और हमारे एलपीजी आयात का तीसरा सबसे बड़ा स्रोत था।

- माननीय पेट्रोलियम एवं प्राकृतिक गैस मंत्री ने 21 अक्टूबर, 2022 को साऊदी अरब के ऊर्जा महामहिम मंत्री प्रिंस अब्दुल अजीज बिन सलमान अल साऊद के साथ एक बैठक की थी। भारत के रणनीतिक पेट्रोलियम रिजर्व कार्यक्रम वेस्ट–कोस्ट रिफाइनरी में निवेश के माध्यम से भारत के रिफाइनिंग क्षेत्र में निवेश के अवसरों पर चर्चा की गई।

### 6.2.3. संयुक्त अरब अमीरात के साथ सम्बन्ध

- भारत और संयुक्त अरब अमीरात घनिष्ठ व्यापार और निवेश भागीदार हैं। परंपरागत रूप से, संयुक्त अरब अमीरात हाइड्रोकार्बन क्षेत्र में भारत के सबसे बड़े भागीदारों में से एक रहा है। साथ में हम कच्चे तेल, एलएनजी, एलपीजी, पेट्रोलियम उत्पादों के व्यापार के साथ–साथ अन्वेषण और उत्पादन गतिविधियों में शामिल है।

- संयुक्त अरब अमीरात के साथ भारत के संबंध हाइड्रोकार्बन क्षेत्र पर ध्यान केंद्रित करने के साथ रणनीतिक साझेदारी तक बढ़ गए हैं।

- वित्त वर्ष 21–22 में, संयुक्त अरब अमीरात कच्चे तेल का तीसरा सबसे बड़ा स्रोत था, एलपीजी का दूसरा सबसे बड़ा स्रोत और तैयार पेट्रोलियम उत्पादों के लिए दूसरा सबसे बड़ा निर्यात गंतव्य था।



- अबू धाबी में एडीआईपीईसी 2022 की अपनी यात्रा के दौरान, माननीय मंत्री श्री हरदीप सिंह पुरी ने उद्योग और उन्नत प्रौद्योगिकी मंत्री डॉ. सुल्तान अहमद अल जाबेर से मुलाकात की और आईएसपीआरएल और एडीएनओसी के बीच गौण समझौते पर हस्ताक्षर किए। माननीय मंत्री ने इस कार्यक्रम के दौरान संयुक्त अरब अमीरात के ऊर्जा और बुनियादी ढांचे के मंत्री महामहिम सुहैल मोहम्मद अल मजरूई के साथ द्विपक्षीय बैठक भी की।

### 6.2.4. रूस के साथ सम्बन्ध

- रूस भारत के लिए दीर्घ काल से और समय की कसौटी पर खरा उतरा साझेदार रहा है। भारत–रूस संबंधों का विकास भारत की विदेश नीति का एक प्रमुख स्तंभ रहा है। अक्टूबर, 2000 में (राष्ट्रपति पुतिन की यात्रा के दौरान) भारत–रूस रणनीतिक साझेदारी पर घोषणा पत्र पर हस्ताक्षर के बाद से भारत–रूस संबंधों ने द्विपक्षीय संबंधों के लगभग सभी क्षेत्रों में सहयोग के बढ़े हुए स्तरों के साथ गुणात्मक रूप से नया रूप लिया है।

- 15.9 बिलियन अमेरिकी डॉलर के निवेश के साथ, रूस भारतीय तेल और गैस कंपनियों के लिए निवेश का सबसे बड़ा गंतव्य है। भारतीय सार्वजनिक क्षेत्र के उपक्रमों ने रूस में 5 उत्पादक ब्लॉकों में भाग लिया है।

- भारत के तेल और गैस क्षेत्र में सबसे बड़े निवेशक के रूप में उभरा है, जिसमें रोसनेफ्ट के नेतृत्व वाले कंसोर्टियम ने नायरा एनर्जी में 13 बिलियन अमेरिकी डॉलर का निवेश किया है और पॉलीप्रोपाइलीन संयंत्र स्थापित करने के लिए अपनी वाडिनार रिफाइनरी की विस्तार योजना के लिए अतिरिक्त 750 मिलियन अमेरिकी डॉलर का निवेश करेगा।

- अंतरराष्ट्रीय कच्चे तेल की कीमतों में अत्यधिक अस्थिरता के मद्देनजर, भारतीय पीएसयू ने रूस से आयात बढ़ाया है।





- प्रधानमंत्री श्री नरेन्द्र मोदी ने शंघाई सहयोग संगठन (एससीओ) की 22वीं बैठक से इतर आज उज्बेकिस्तान के समरकंद में रूस के राष्ट्रपति महामहिम श्री व्लादिमीर पुतिन से मुलाकात की। इस साल दोनों नेताओं की यह पहली बैठक थी, जो राजनयिक संबंधों की स्थापना की 75 वीं वर्षगांठ का प्रतीक है।

- ओएसडी (आईसी), पेट्रोलियम और प्राकृतिक गैस मंत्रालय ने 20 दिसंबर, 2022 को ऊर्जा और ऊर्जा दक्षता संबंधी 24वें भारत–रूस संयुक्त कार्य समूह की अध्यक्षता की, जिसमें दोनों पक्षों ने तेल और गैस क्षेत्र में सहयोग के वर्तमान और भविष्य के क्षेत्रों पर चर्चा की।

### 6.2.5. ब्राजील के साथ सम्बन्ध

- ब्राजील 2021–22 में भारत को कच्चे तेल का 11वां सबसे बड़ा आपूर्तिकर्ता और भारत से पेट्रोलियम उत्पादों के निर्यात के लिए 18वां सबसे बड़ा बाजार था।

- ब्राजील के खान और ऊर्जा मंत्री, महामहिम श्री बेंटो अल्बुकर्क ने भारत गणराज्य के पेट्रोलियम एवं प्राकृतिक गैस मंत्री श्री हरदीप सिंह पुरी के निमंत्रण पर 19–22 अप्रैल, 2022 को भारत गणराज्य की आधिकारिक यात्रा की।

- इन नेताओं ने ऊर्जा के सभी क्षेत्रों में मौजूदा द्विपक्षीय सहयोग की समीक्षा की और देशों के बीच लाभकारी साझेदारी को बढ़ाने के लिए प्रतिबद्धता जताई, और इस संदर्भ में दोनों देशों के बीच रणनीतिक साझेदारी को गहरा करने में द्विपक्षीय ऊर्जा सहयोग की महत्वपूर्ण भूमिका पर संतोष व्यक्त किया।

- दोनों पक्षों ने कम कार्बन भविष्य के लिए वैश्विक संक्रमण के एक महत्वपूर्ण उपाय के रूप में, टिकाऊ जैव ऊर्जा और जैव ईंधन के अंतरराष्ट्रीय उत्पादन और उपयोग को बढ़ाने के लिए दोनों देशों के बीच सहयोग की अपार संभावनाओं को स्वीकार किया। इस संदर्भ में, वे जैव ऊर्जा में द्विपक्षीय सहयोग को मजबूत करने के महत्व पर सहमत हुए। इसके लिए, दोनों पक्ष जैव ऊर्जा और जैव ईंधन के लिए भारत–ब्राजील गठबंधन विकसित करने की दिशा में काम करने पर सहमत हुए।



### 6.2.6. कजाखस्तान के साथ सम्बन्ध

- कजाखस्तान मध्य एशिया में भारत का सबसे बड़ा व्यापारिक साझेदार है। 2021 में हमारा आपसी द्विपक्षीय व्यापार 561 मिलियन अमेरिकी डॉलर था।
- कजाखस्तान गणराज्य के उप प्रधानमंत्री–व्यापार और एकीकरण मंत्री महामहिम श्री बखित सुल्तानोव ने अपने प्रतिनिधिमंडल के साथ व्यापार, आर्थिक, वैज्ञानिक, तकनीकी, औद्योगिक और सांस्कृतिक सहयोग पर भारत–कजाखस्तान अंतर सरकारी आयोग की 14 वीं बैठक के लिए भारत का दौरा किया, जो 3 जून 2022 को हुआ था।




- 1993 में स्थापित भारत–कजाखस्तान अंतर–सरकारी आयोग (आईजीसी) दोनों देशों के बीच व्यापार, आर्थिक, वैज्ञानिक, तकनीकी, औद्योगिक और सांस्कृतिक सहयोग विकसित करने के लिए शीर्ष द्विपक्षीय संस्थागत तंत्र है।

### 6.2.7. गुयाना के साथ सम्बन्ध

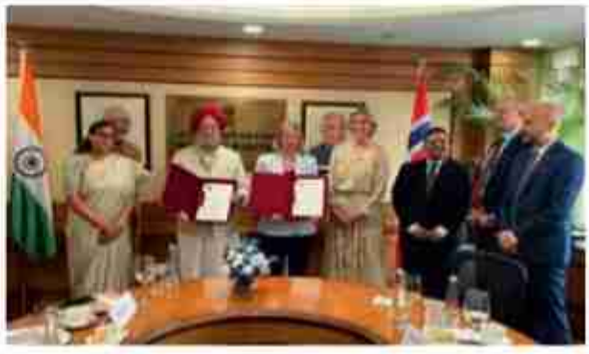
- पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री श्री हरदीप एस पुरी ने 31 अक्टूबर, 2022 को अबू धाबी में एडीआईपीईसी–2022 के मौके पर गुयाना के प्राकृतिक संसाधन मंत्री श्री विक्रम भरत के साथ द्विपक्षीय बैठक की। भारतीय सार्वजनिक उपक्रमों के अधिकारियों ने भी वाणिज्यिक सहयोग के अवसरों का पता लगाने के लिए अगस्त 2022 में गुयाना का दौरा किया था।
- पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री श्री हरदीप एस पुरी ने 12 जनवरी, 2023 को गुयाना सहकारी गणराज्य के राष्ट्रपति डॉ. मोहम्मद इरफान अली की भारत की उनकी आधिकारिक यात्रा के दौरान उनसे मुलाकात की।



- बैठक के दौरान दोनों नेताओं ने समग्र तेल और गैस क्षेत्र में सरकार से सरकार के बीच प्रत्यक्ष सहयोग पर सहमति व्यक्त की, जिसमें दीर्घकालिक उठाव में वृद्धि, गुयाना में अन्वेषण और उत्पादन गतिविधियों में भागीदारी, मिडस्ट्रीम और डाउनस्ट्रीम क्षेत्र में तकनीकी सहयोग और क्षमता निर्माण शामिल है।

### 6.2.8. नॉर्वे के साथ सम्बन्ध

- नॉर्वे उत्तरी समुद्री क्षेत्र में भारत के लिए सबसे बड़ा कच्चा तेल सोर्सिंग गंतव्य है और वैश्विक स्तर पर 14 वां सबसे बड़ा कच्चा तेल सोर्सिंग गंतव्य है।
- माननीय पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री ने नॉर्वे के विदेश मंत्री महामहिम एनिकेन ह्यूटफेल्ट और अग्रणी ऊर्जा कंपनियों के प्रतिनिधियों वाले एक व्यापारिक प्रतिनिधिमंडल से मुलाकात की और हमारी अर्थव्यवस्थाओं, विशेष रूप से ई एवं पी, हरित हाइड्रोजन और नवीकरणीय ऊर्जा के क्षेत्रों के बीच तालमेल पर चर्चा की। दो समझौता ज्ञापनों पर हस्ताक्षर किए गए: एक पूरी ऊर्जा मूल्य श्रृंखला में सहयोग के लिए ओएनजीसी और इक्विनोर के बीच और दूसरा, हाइड्रोजन उत्पादन के लिए एक रिएक्टर के विकास के लिए आईआईटी मद्रास और एसाईआईडी नॉर्वे के बीच।



## 6.3. पड़ोसी देशों के साथ प्रयास

'पड़ोसी देश प्रथम' भारत की विदेश नीति के प्रमुख तत्वों में से एक है। भारत का यह विश्वास है कि अपने पड़ोसियों के साथ ऊर्जा लिंक / गलियारों सहित बेहतर कनेक्टिविटी सभी के लिए समान और संतुलित तरीके से अधिक समृद्धि लाएगी।

### 6.3.1. बांग्लादेश के साथ सम्बन्ध

- बांग्लादेश निकटतम पड़ोस में एक महत्वपूर्ण ऊर्जा भागीदार है। द्विपक्षीय हाइड्रोकार्बन व्यापार में लगातार वृद्धि हुई है। वित्त वर्ष 2021–22 के लिए यह 1.2 बिलियन अमेरिकी डॉलर था, जो वर्ष दर वर्ष वित्त वर्ष 2019–20 की तुलना में 140% से अधिक और 200% से अधिक की वृद्धि है।
- अप्रैल 2017 में बांग्लादेश की प्रधान मंत्री की भारत यात्रा के दौरान भारत–बांग्लादेश मैत्री पाइपलाइन (आईबीएफपीएल) के निर्माण के लिए भारत और बांग्लादेश के बीच अंतर–सरकारी समझौता ज्ञापन पर हस्ताक्षर किए गए थे। आईबीएफपीएल का कार्य तेजी से हो रहा है और यह जल्द ही चालू हो जाएगा। यह भारत–नेपाल सीमा पार पाइपलाइन के बाद दक्षिण एशियाई क्षेत्र में अंतरराष्ट्रीय पेट्रोलियम उत्पादों की दूसरी पाइपलाइन होगी। यह पाइपलाइन बांग्लादेश के लिए हाई–स्पीड डीजल के परिवहन के लिए 129.5 किमी. लंबी (जिसमें से 124.34 किमी बांग्लादेश में और 5.16 किमी. भारत में है) सीमा पार उत्पाद पाइपलाइन है।
- गेल ने पश्चिम बंगाल में भारत–बांग्लादेश सीमा तक गेल की ऊर्जा गंगा पाइपलाइन का विस्तार करके प्राकृतिक गैस की आपूर्ति करने के लिए मैसर्स दीपोन ग्रुप, बांग्लादेश के साथ एक समझौता ज्ञापन पर भी हस्ताक्षर किया है।

### 6.3.2. नेपाल के साथ सम्बन्ध

- भारत 1974 से नेपाल को 100% पेट्रोलियम उत्पाद आवश्यकताओं की आपूर्ति कर रहा है।
- भारत और नेपाल एचएपीएल पाइपलाइन को चितवन तक विस्तारित करने, नेपाल तक एलपीजी और प्राकृतिक गैस पाइपलाइन के निर्माण की संभावना तलाश रहे हैं।

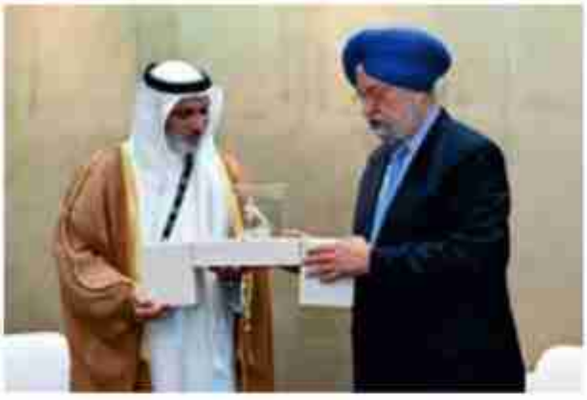
### 6.3.3. श्रीलंका के साथ सम्बन्ध

- भारत और श्रीलंका के बीच अपस्ट्रीम और डाउनस्ट्रीम दोनों क्षेत्रों में एक जीवंत ऊर्जा साझेदारी है। भारत पारंपरिक रूप से श्रीलंका के सबसे बड़े व्यापार साझीदारों में से एक रहा है और श्रीलंका सार्क में भारत के सबसे बड़े व्यापार साझीदारों में से एक है।
- भारत श्रीलंका में प्रत्यक्ष विदेशी निवेश में सबसे बड़े योगदानकर्ताओं में से एक है। भारत की कई प्रमुख कंपनियों ने श्रीलंका में निवेश किया है और अपनी उपस्थिति दर्ज की है।
- श्रीलंका में ऊर्जा संकट के समय, भारत ने श्रीलंका को प्रदान किए गए कुल 4 बिलियन अमरीकी डालर के ऋणों की तुलना में 791 मिलियन अमरीकी डालर मूल्य के पेट्रोलियम उत्पादों (692 टीएमटी) की आपूर्ति करके सहायता प्रदान की।
- भारतीय कंपनियां त्रिंकोमाली क्षेत्र को ऊर्जा केंद्र के रूप में विकसित करने की संभावना तलाश रही हैं जो इस क्षेत्र के लिए श्रीलंका सरकार की योजना के अनुरूप है। एकीकृत डाउनस्ट्रीम क्षेत्र के साथ कच्चे तेल की भंडारण सुविधा होने से न केवल श्रीलंका की ऊर्जा सुरक्षा का निर्माण करने में मदद मिलेगी, बल्कि अतिरिक्त राजस्व, रोजगार, विदेशी निवेश आदि भी उत्पन्न होंगे।
- कई भारतीय कंपनियां अपस्ट्रीम, मिडस्ट्रीम और डाउनस्ट्रीम क्षेत्रों में वाणिज्यिक और रणनीतिक अवसरों की तलाश कर रही हैं।

## 6.4. अंतरराष्ट्रीय संगठनों के साथ सम्बन्ध

### 6.4.1. पेट्रोलियम निर्यातक देशों के संगठन (ओपेक) के साथ सम्बन्ध

- माननीय पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री ने एडीआईपीईसी–2022 के मौके पर ओपेक के महासचिव श्री हैथम अल घैस के साथ बैठक की, जहां दोनों नेताओं ने भारत–ओपेक ऊर्जा वार्ता को आगे बढ़ाने के तरीकों पर चर्चा की।
- भारत लगातार ओपेक के नेतृत्व की भूमिका को तेल के बड़े उत्पादकों को खरीदारों और विक्रेताओं के समग्र हित में अधिक जिम्मेदार मूल्य निर्धारण प्रणाली की ओर बढ़ने के लिए प्रेरित कर रहा है।
- ओपेक ने पहली बार सितंबर 2021 में जारी ओपेक के प्रमुख प्रकाशन "वर्ल्ड ऑयल आउटलुक" 2021 में भारत केंद्रित प्रपत्र पेश किया था।



### 6.4.2. अंतरराष्ट्रीय ऊर्जा एजेंसी (आईईए) के साथ सम्बन्ध

- माननीय पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री ने 11 अप्रैल 2022 को डॉ फतिह बिरोल, ईडी आईईए के साथ बैठक की और भारत एवं आईईए के बीच रणनीतिक साझेदारी पर चर्चा की।
- पेट्रोलियम सचिव ने 6 अप्रैल, 2022 को उप कार्यकारी निदेशक सुश्री मैरी वारलिक के साथ बैठक की और भारत–आईईए के बीच संबंधों को मजबूत करने पर चर्चा की।

### 6.4.3. अंतरराष्ट्रीय ऊर्जा फोरम (आईईएफ) के साथ सम्बन्ध

- माननीय पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री ने आईईएफ के महासचिव श्री जोसेफ मैकमोनिगल के साथ एक बैठक की, जिसमें माननीय मंत्री ने कई कम कार्बन उपायों सहित ऊर्जा क्षेत्र में भारत द्वारा की गई परिवर्तनकारी पहलों के बारे में विस्तार से बताया।



- ओएसडी (आईसी), पेट्रोलियम और प्राकृतिक गैस ने मैड्रिड में 13 जून 2022 को आयोजित पहली आईईएफ कार्यकारी बोर्ड की बैठक में भारत सरकार का प्रतिनिधित्व किया। ओएसडी (आईसी) ने साझा किया कि भारत सरकार अपनी जी20 अध्यक्षता के दौरान कार्यक्रमों की मेजबानी करने के लिए उत्सुक है और बोर्ड को मीथेन में भारत की रुचि और मीथेन पर क्वाड के साथ अपने सम्बन्ध के बारे में जानकारी दी।

## 6.5. भारत की रणनीतिक पेट्रोलियम रिजर्व

- चरण–I के अंतर्गत, भारत ने 5.33 एमएमटी की क्षमता वाले तीन स्थानों –विशाखापत्तनम (1.33 एमएमटी), मंगलौर (1.50 एमएमटी) और पादुर (2.5 एमएमटी) पर रणनीतिक पेट्रोलियम भंडार (एसपीआर) स्थापित किए हैं (जिसका उपयोग वैश्विक कच्चे तेल की आपूर्ति श्रृंखला में गंभीर व्यवधानों की स्थिति में किया जा सकता है)।
- तीन एसपीआर लगभग 9.5 दिनों की राष्ट्रीय मांग को पूरा कर सकते हैं। अप्रैल / मई 2020 में सभी भंडारण सुविधाओं को कच्चे तेल से भर दिया गया है।
- जुलाई 2021 में, मंत्रिमंडल ने (i) एसपीआर कार्यक्रम के चरण–I के अंतर्गत सृजित पेट्रोलियम भंडारों के कुछ भाग का उपयोग व्यावसायीकरण प्रचालनों के लिए करने और (ii) चरण–II के अंतर्गत पीपीपी मॉडल के अंतर्गत दो अतिरिक्त वाणिज्यिक–सह–कार्यनीतिक सुविधाओं को स्थापित करने, जिनकी कुल भंडारण क्षमता 6.5 एमएमटी हो, की मंजूरी दी।
- भारत पादुर–2 (कर्नाटक) और चांदीखोल (ओडिशा) में समर्पित एसपीएम और पीपीपी मोड के तहत संबद्ध पाइपलाइनों में योजनाबद्ध अपने एसपीआर के चरण–2 के तहत विदेशी निवेश आमंत्रित करने पर विचार कर रहा है।
- इस परियोजना से भारत की कच्चे तेल की आवश्यकता के लगभग 12 दिनों के अतिरिक्त कवर प्रदान करने का अनुमान है।
- नवंबर में, भारत ने वैश्विक तेल बाजार को स्थिर करने के लिए संयुक्त राज्य अमेरिका, पीपुल्स रिपब्लिक ऑफ चाइना, जापान और कोरिया गणराज्य सहित अन्य प्रमुख वैश्विक ऊर्जा उपभोक्ताओं के परामर्श से अपने रणनीतिक पेट्रोलियम भंडार से 5 मिलियन बैरल कच्चा तेल जारी करने पर सहमति व्यक्त की है।

## 6.6. पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय द्वारा आयोजित/भाग लिए गए अंतरराष्ट्रीय कार्यक्रम

### 6.6.1. गैसटेक–मिलान 2022

- पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री श्री हरदीप एस पुरी ने गैसटेक मिलान–2022 में भाग लेने के लिए 5–7 सितंबर, 2022 तक मिलान, इटली में एक आधिकारिक और व्यावसायिक प्रतिनिधिमंडल का नेतृत्व किया।




- यात्रा के दौरान मंत्री महोदय ने गैसटेक मिलान–2022 में भाग ले रहे अपने समकक्ष मंत्रियों और वैश्विक ऊर्जा कंपनियों के मुख्य कार्यकारी अधिकारियों के साथ तीन मंत्रिस्तरीय सत्रों और 11 द्विपक्षीय बैठकों में भाग लिया।

- मंत्रिस्तरीय सत्र थे: (1) वैश्विक ऊर्जा बाजारों में व्यापक परिवर्तन के समय में ऊर्जा सुरक्षा और संक्रमण पर एक नया परिप्रेक्ष्य; (2) इंडिया स्पॉटलाइट: भारत के ऊर्जा उद्योग को शक्ति देना– सतत भविष्य के लिए नए रास्ते; और (3) विकासशील राष्ट्रों के लिए एक न्यायसंगत ऊर्जा उपाय। मंत्री महोदय ने द्विपक्षीय बैठकों में भाग लिया।






- गैसटेक 2022 ने ई एंड पी, हरित हाइड्रोजन, जैव ईंधन और गैस आधारित अर्थव्यवस्था के क्षेत्रों में भारत की कई पहलों को उद्धृत करने का एक उत्कृष्ट अवसर प्रदान किया। भारत ने 6 से 8 फरवरी, 2023 तक आयोजित होने वाले अपने प्रमुख कार्यक्रम इंडिया एनर्जी वीक की भी घोषणा की और वैश्विक ऊर्जा क्षेत्रों में सभी प्रमुख हितधारकों से रुचि दिखाई।



### 6.6.2. एडीआईपीईसी–अबू धाबी 2022

- पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री श्री हरदीप एस पुरी ने अबू धाबी अंतरराष्ट्रीय पेट्रोलियम प्रदर्शनी और सम्मेलन (एडीआईपीईसी–2022) में भाग लेने के लिए 31 अक्टूबर 2022 से संयुक्त अरब अमीरात का दौरा किया।

- यात्रा के दौरान, मंत्री ने मेजबान मंत्रियों अर्थात् महामहिम डॉ सुल्तान अहमद अल जबर, उद्योग और उन्नत प्रौद्योगिकी मंत्री, संयुक्त अरब अमीरात, एमडी और ग्रुप सीईओ, एडीएनओसी और महामहिम सुहैल मोहम्मद अल मजरूई–ऊर्जा और बुनियादी ढांचा मंत्री, यूएई और कुछ अन्य मंत्रियों: महामहिम अब्दुल अजीज बिन सलमान अल सऊद–सऊदी अरब के ऊर्जा मंत्री, महामहिम हैथम अल घैस–महासचिव ओपेक, और महामहिम तारेक अल मोला–पेट्रोलियम और खनिज संसाधन मंत्री, मिस्र के साथ एडीआईपीईसी–2022 के उद्घाटन समारोह में अपनी विशेष टिप्पणी दी।




- माननीय मंत्री ने भारत–यूएई रणनीतिक साझेदारी के समग्र ढांचे के अंतर्गत ऊर्जा सहयोग को मजबूत करने के लिए संयुक्त अरब अमीरात के अपने समकक्षों,



ऊर्जा और बुनियादी ढांचे के मंत्री महामहिम सुहैल मोहम्मद फराज अल मजरूई तथा उद्योग और उन्नत प्रौद्योगिकी मंत्री, एमडी और ग्रुप सीईओ, एडीएनओसी के महामहिम डॉ सुल्तान अहमद अल जाबेर के साथ द्विपक्षीय चर्चा में भी भाग लिया।

- माननीय मंत्री ने विभिन्न देशों के अपने समकक्षों और अंतरराष्ट्रीय ऊर्जा संगठनों के प्रमुखों तथा वैश्विक तेल और गैस कंपनियों के सीईओ के साथ भी बैठकें कीं।

## 6.7. विदेशी परिसंपत्तियों का अधिग्रहण

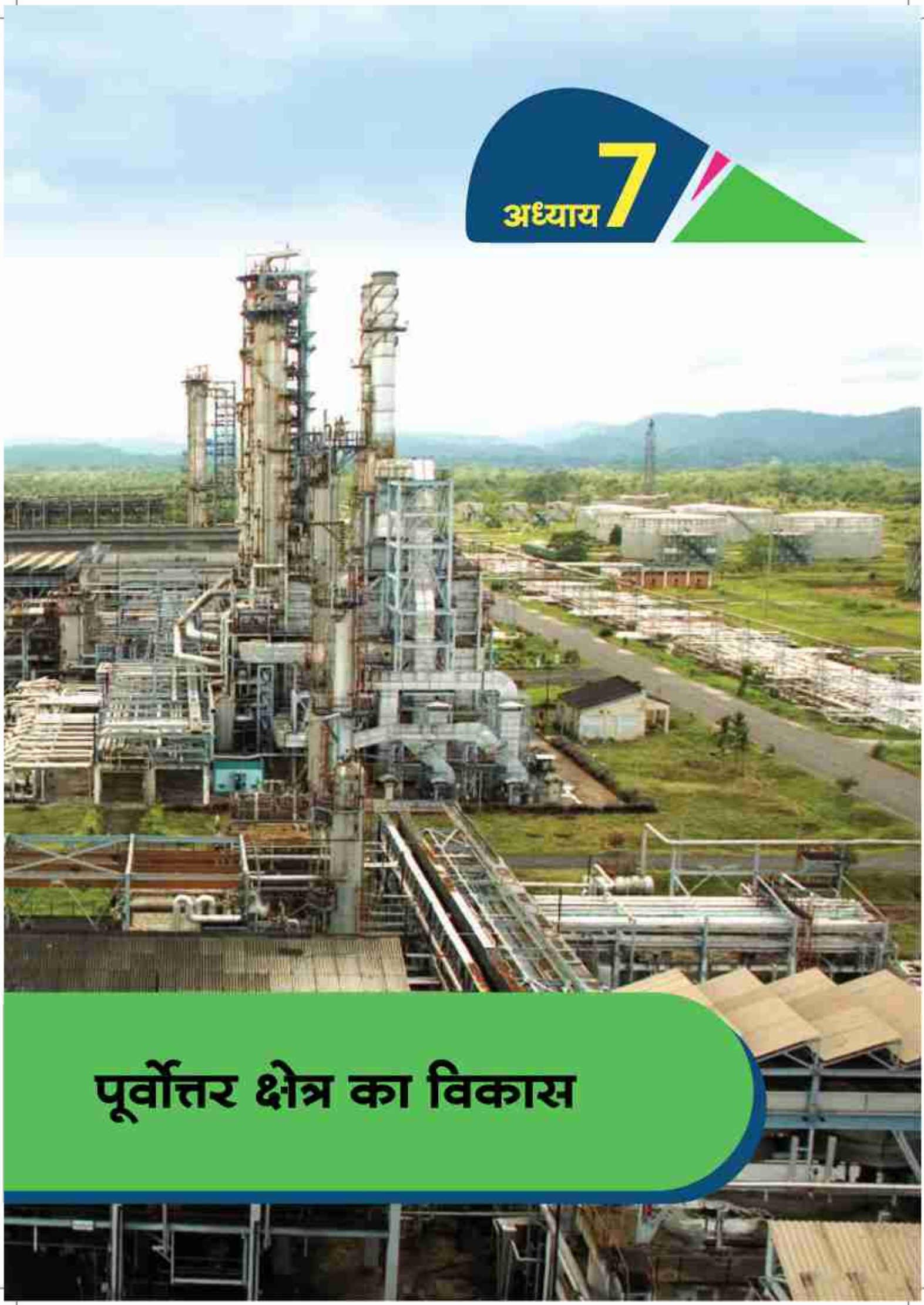
- पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय देश की ऊर्जा सुरक्षा को मजबूत करने के लिए विदेशों में गुणवत्तापूर्ण तेल और गैस परिसंपत्तियों को अधिगृहीत करने के अवसरों पर आक्रामक रूप से कार्य करने के लिए इंडियन ऑयल एंड गैस पीएसयू को सुविधा प्रदान कर रहा है।
- मई 2016 तक, इंडियन ऑयल एंड गैस पीएसयू द्वारा अधिकांश निवेश खोजपूर्ण परियोजनाओं में थे, जिनकी उत्पादन पूर्व अवधि बहुत अधिक है। इसके अलावा, भू–राजनीतिक स्थितियों और आर्थिक प्रतिबंधों के कारण अप्रत्याशित घटना के तहत कुछ देशों में संपत्ति थी।
- 1 अप्रैल 2022 तक, भारतीय पीएसयू के पास 22 देशों में 51 परिसंपत्तियों में भागीदारी हित (पीआई) हैं– जिनमें से 22 उत्पादक परिसंपत्तियां, 21 खोजपूर्ण परिसंपत्तियां, 3 पाइपलाइन और 5 विकास के विभिन्न चरणों में हैं। पिछले 6 वर्षों के दौरान भारतीय कंपनियों ने संयुक्त अरब अमीरात (लोअर जकुम और ऑनशोर ब्लॉक–1), ओमान (मुखाइज़ना) और रूस (वेंकोर्नेफ्ट और तास यूरिख) में परिसंपत्तियों का अधिग्रहण किया है।
- 1 अप्रैल 2022 तक भारतीय पीएसयू ने विभिन्न ई एंड पी विदेशी परिसंपत्तियों में लगभग 37.94 बिलियन अमेरिकी डॉलर का निवेश किया है। वित्त वर्ष 2021–22 के दौरान, इन परिसंपत्तियों से भारतीय पीएसयू के लिए इक्विटी तेल और गैस का हिस्सा लगभग 21.7 एमएमटीओई था, जो भारत के घरेलू उत्पादन का 34.1% है।







अध्याय 7



# पूर्वोत्तर क्षेत्र का विकास

# 7 पूर्वोत्तर क्षेत्र का विकास

## 7.1 पृष्ठभूमि

**7.1.1.** भारत में तेल और गैस की खोज का इतिहास भारत के उत्तर–पूर्वी क्षेत्र में स्थित असम राज्य में 19 वीं शताब्दी से है। तेल निष्कर्षण का पहला कूप 1867 के दौरान मार्गेरिटा के पास माकुम क्षेत्र में मैककिलोप, स्टीवर्ट एंड कंपनी द्वारा ड्रिल किया गया था, 1859 में टाइटसविले, पेंसिल्वेनिया में ड्रेक के कुएं के मुश्किल से 9 साल बाद। इसके बाद, मार्गेरिटा के माकुम और नामडांग क्षेत्रों में कई कुओं की खुदाई की गई और दो दशकों से अधिक समय तक मामूली मात्रा में कच्चे तेल का उत्पादन किया गया। असम रेलवे एंड ट्रेडिंग कंपनी लिमिटेड, जो लकड़ी, कोयला, चाय और रेलवे लाइनों के निर्माण के व्यवसाय में शामिल थी, ने प्रति दिन 200 गैलन के प्रारंभिक उत्पादन के साथ पहला वाणिज्यिक कूप डिगबोई–1 (सितंबर, 1889–नवंबर, 1890– 662 फीट की कुल गहराई) खोदा, जिसने दुनिया के इस हिस्से में तेल की खोज और उत्पादन में एक नया अध्याय शुरू हुआ और भारत के तेल उद्योग की आधिकारिक तौर पर शुरूआत हुई। भारत की स्वतंत्रता पूर्व बाद के वर्षों के दौरान, डिगबोई तेल क्षेत्र को बड़े पैमाने पर विकसित किया गया था और नए तेल क्षेत्रों की खोज जारी रही।

**7.1.2.** पूर्वोत्तर में तेल और गैस की खोज में अन्य महत्वपूर्ण मील के पत्थर मुख्य रूप से स्वतंत्रता के बाद हुए। इनमें असम ऑयल कंपनी (एओसी) द्वारा नहरकटिया और मोरन क्षेत्रों की खोज और ऑयल एंड नेचुरल गैस कॉर्पोरेशन लिमिटेड (ओएनजीसी) द्वारा रुद्रसागर तेल क्षेत्रों की क्रमशः 1953, 1956 और 1960 में खोज शामिल है। इसके बाद ऑयल इंडिया लिमिटेड (ओआईएल) और ओएनजीसी द्वारा असम, अरुणाचल प्रदेश, नागालैंड, त्रिपुरा और मिजोरम के पूर्वोत्तर राज्यों में 100 से अधिक तेल और गैस क्षेत्रों की खोज की गई है, जिनमें जोराजन, कुमचाई, हपाजान, शालमारी, डिकोम, कठलोनी, तेंगाखट, भोगपारा, चाबुआ, बागजान, बारेकुरी, तीथना, गोजालिया, रोखिया, खुबल, होरटोकी जैसे क्षेत्र शामिल हैं।

**7.1.3.** तब से, दोनों राष्ट्रीय तेल कंपनियों अर्थात् ओआईएल और ओएनजीसी का इस क्षेत्र में अन्वेषण और उत्पादन (ई एंड पी) गतिविधियों का एक लंबा इतिहास रहा है। बाद में, इस क्षेत्र को पूर्व–एनईएलपी, एनईएलपी, डीएसएफ और ओएएलपी दौर की निविदाओं के माध्यम से निजी/संयुक्त उद्यम और विदेशी कंपनियों के लिए अन्वेषण के लिए खोल दिया गया। ओआईएल और ओएनजीसी ने पर्याप्त मात्रा में उत्पादन योग्य हाइड्रोकार्बन को सिद्ध किए हैं और उनके पास जटिल जलाशयों के उत्पादन और प्रबंधन की तकनीकी जानकारी तथा पूर्वोत्तर में अपनी उत्पादन परिसंपत्तियों से गैस (ओ + ओईजी) के बराबर तेल और तेल के प्रति वर्ष लगभग 8.99 एमएमटीओई (2021–22) योगदान देते हैं।

**7.1.4.** नए प्राप्त आंकड़ों के आधार पर देश के पूर्वानुमानित हाइड्रोकार्बन संसाधनों का पुनर्मूल्यांकन किया गया है। ऊपरी असम शैल्फ बेसिन के पूर्वानुमानित हाइड्रोकार्बन संसाधनों



आईओसीएल की डिगबोई रिफाइनरी के विरासत स्थल का दृश्य

(ओ+ओईजी) को 3,180 एमएमटी के स्तर से 6,001.2 एमएमटी के क्रम में अपग्रेड किया गया है और असम–अराकान फोल्ड बेल्ट बेसिन के लिए, कुल पूर्वानुमानित हाइड्रोकार्बन संसाधन 1,633 एमएमटी के क्रम में हैं। पूर्वोत्तर क्षेत्र में देश के कुल पूर्वानुमानित हाइड्रोकार्बन संसाधनों का लगभग 18% (7,634 एमएमटी) है। अब तक ईएंडपी कंपनियों द्वारा लगभग 2,246.6 एमएमटी हाइड्रोकार्बन भंडार स्थापित किए गए हैं, जिसका अर्थ है कि लगभग 71% हाइड्रोकार्बन संसाधन की खोज अभी की जाने वाली श्रेणी में हैं।

**7.1.5.** दो राष्ट्रीय तेल कंपनियां नामतः तेल और प्राकृतिक गैस निगम लिमिटेड (ओएनजीसी) और ऑयल इंडिया लिमिटेड (ओआईएल) 60 वर्षों से अधिक समय से तेल और गैस की खोज और दोहन के लिए पूर्वोत्तर क्षेत्र में लगी हुई हैं और बेसिन का एक विशाल भू–वैज्ञानिक डेटाबेस और भूवैज्ञानिक समझ सृजित की है।

## 7.2 प्रतिष्ठापन व्यवस्था के अंतर्गत पूर्वोत्तर क्षेत्र में अन्वेषण कार्य

**7.2.1.** ऑयल इंडिया लिमिटेड (ओआईएल) फरवरी, 1959 में अपनी स्थापना के बाद से असम राज्य में अन्वेषण और विकास गतिविधियों को सक्रिय रूप से आगे बढ़ा रहा है। 1962–65 के दौरान, विभिन्न नई प्रौद्योगिकियों को अपनाया गया जैसे विचलन ड्रिलिंग, दोहरी पूर्णता, दबाव रखरखाव आदि। 1968 में, अरुणाचल प्रदेश के खारसांग में अन्वेषण कार्यक्रम शुरू हुआ और कुसिजान क्षेत्रों, डिगबोई के पश्चिम में हाइड्रोकार्बन खोज की गई।

**7.2.2.** 1969–79 के दौरान, असम और अरुणाचल प्रदेश में व्यापक भूभौतिकीय सर्वेक्षण और विकास प्रयास किए गए, जिसके कारण 1972 में जोराजन क्षेत्र की खोज हुई और 1973 में तेंगाखत (नहरकटिया के पश्चिम) के इओसीन में गैस संसाधनों की स्थापना हुई। 31.12.2022 तक, ओआईएल ने 2डी भूकंपीय डेटा के 25,050.96 जीएलकेएम से अधिक और पूर्वोत्तर में लगभग 9,049.34 वर्ग किलोमीटर में 3 डी भूकंपीय डेटा प्राप्त किया है।

**7.2.3.** नब्बे के दशक के दौरान, गहन अन्वेषण/अन्वेषणात्मक कुएं की ड्रिलिंग और विकास गतिविधियों के परिणामस्वरूप बोगापानी, कुमवाई, हपजन, शालमारी और राजगढ़ जैसे क्षेत्रों की खोज हुई। गहन अन्वेषण: गहरे इओसीन–पैलियोसीन क्षितिज में हाइड्रोकार्बन की खोज के बाद, ऊपरी असम के विभिन्न क्षेत्रों में इन क्षितिजों में अन्वेषण करने के लिए अधिक जोर दिया गया था। इसके परिणामस्वरूप, 1990 के दशक के उत्तरार्ध के दौरान गहरे जलाशयों से उत्पादन उथले जलाशयों (बरैल और टिपम) के उत्पादन से अधिक हो गया। इस कारण बाद में डिकोम–कथालोनी–चबुआ–माटीमखाना के केंद्रीय तहखाने के उच्च क्षेत्रों में 3,550–3,800 मीटर के बीच की गहराई से लेकर ऊपरी असम बेसिन के पूर्वी किनारे की ओर मेचकी क्षेत्रों में 5,500 मीटर से अधिक की गहराई के साथ महत्वपूर्ण खोजें हुईं। 1 जनवरी, 2023 तक, ओआईएल के पास प्रतिष्ठान व्यवस्था के तहत पूर्वोत्तर में 2 अन्वेषण ब्लॉक हैं। ओआईएल के पास पूर्वोत्तर क्षेत्र में 3 एनईएलपी अन्वेषण ब्लॉक भी हैं। ओपन एकरेज लाइसेंस पॉलिसी (ओएएलपी) के तहत, ओआईएल को असम, अरुणाचल प्रदेश, नागालैंड और त्रिपुरा में पूर्वोत्तर में एक ऑपरेटर के रूप में 16 ब्लॉक (ओएएलपी राउंड–1 में 7 ब्लॉक, ओएएलपी राउंड–3 में 3 ब्लॉक और ओएएलपी राउंड–5, 6 और 6 में 2 ब्लॉक) दिए गए थे। ओआईएल को डीएसएफ राउंड–II के तहत दक्षिण त्रिपुरा में 1 ब्लॉक प्रदान किया गया है।

**7.2.4.** ओएनजीसी ने 1956 में असम में अपना अन्वेषण कार्य शुरू किया। भूकंपीय सर्वेक्षण और आउटक्रॉप क्षेत्रों का भूवैज्ञानिक मानचित्रण शुरू किया गया था जबकि गुरुत्वाकर्षण–चुंबकीय सर्वेक्षण 1961 में शुरू हुआ था। ओएनजीसी और पहले के कामगारों द्वारा उत्पन्न आउटक्रॉप मैपिंग डेटा के साथ भूकंपीय डेटा के विश्लेषण ने बेसिन आर्किटेक्चर और इसके विकास को परिष्कृत करने में मदद की।

**7.2.5.** ओएनजीसी का पहला वाइल्ड कैट कूप 1960 में दिसांगमुख संरचना पर ड्रिल किया गया था, हालांकि, पहली वाणिज्यिक तेल खोज उसी वर्ष रुद्रसागर संरचना पर हुई थी। संरचनात्मक संभावनाओं को आगे बढ़ाने में आने वाली प्रारंभिक सफलताओं के परिणामस्वरूप भूकंपीय डेटा के माध्यम से ऐसी संभावनाओं की पहचान पर ध्यान केंद्रित किया गया। पूर्वोत्तर क्षेत्र में, 31.12.2022 की स्थिति के अनुसार, ओएनजीसी ने असम राज्य में 811, त्रिपुरा में 222, मेघालय में 3, मिजोरम में 4 और नागालैंड राज्य में 26 अन्वेषणात्मक कुओं की खुदाई की है।

**7.2.6.** ऊपरी इओसीन से लोअर ओलिगोसीन युग से संबंधित बरैल समूह और ऊपरी मियोसिन युग के टिपम समूह के भंडार सबसे विपुल साबित हुए और अन्वेषणकर्ताओं का ध्यान आकर्षित किया। इस अन्वेषण दर्शन के साथ पानीडीहिंग, दिसांगमुख, लक्वा, लखमनी, सोनारी, गेलेकी, देमुलगांव, अमगुरी और चराली सहित महत्वपूर्ण संख्या में तेल और गैस क्षेत्रों की खोज की गई थी।

**7.2.7.** पिछले लगभग पांच दशकों के दौरान ओएनजीसी का यह प्रयास रहा है कि वह उत्तरी असम शेल्फ के शिवसागर और धनसिरी घाटी के स्थापित हाइड्रोकार्बन धारक क्षेत्रों के विस्तार को साबित करे और साथ ही नए क्षेत्रों का पता लगाए। इस प्रक्रिया में इसने कछार और पड़ोसी राज्यों त्रिपुरा और नागालैंड के संभार रूप से कठिन क्षेत्रों में हाइड्रोकार्बन क्षेत्रों की स्थापना की है।

**7.2.8.** वर्तमान में, ओएनजीसी के पास प्रतिष्ठान व्यवस्था के तहत नागालैंड राज्य में 3 पीईएल ब्लॉक हैं। इसके पास पूर्वोत्तर में 65 पीएमएल ब्लॉक (असम में 46, त्रिपुरा में 18, नागालैंड में 1) हैं, जिसमें दीर्घकालिक और अल्पकालिक दोनों पीएमएलएल शामिल हैं। 01.01.2023 की स्थिति के अनुसार 2022–23 के दौरान, ओएनजीसी ने 2डी का 34.54 एलकेएम, 3 डी भूकंपीय डेटा 53.93 एसकेएम का अधिग्रहण किया और 9 खोजपूर्ण कुओं के ड्रिल किए। पूर्वोत्तर क्षेत्र में और अधिक रकबा प्राप्त करने के लिए और अधिक अन्वेषणात्मक जी एंड जी प्रयास प्रगति पर हैं।

## 7.3 पीएससी व्यवस्था के अंतर्गत पूर्वोत्तर में अन्वेषण कार्य

पीएससी व्यवस्था के अंतर्गत पहली बार वर्ष 1998 में असम राज्य में पूर्व–एनईएलपी दौर की बोली के अंतर्गत अन्वेषण ब्लॉक प्रदान किए गए थे। इसके बाद, एनईएलपी के विभिन्न दौरों के तहत ब्लॉक प्रदान किए गए। 31 प्रदान किए गए ब्लॉक (असम–20, मणिपुर–2, मिजोरम–3, नागालैंड–3 और त्रिपुरा–3) 43,376 वर्ग किमी के क्षेत्र को कवर करते हैं। इनमें से 9 ब्लॉक चालू हैं, 1 ब्लॉक को छोड़ने का प्रस्ताव किया गया है और 21 ब्लॉकों को छोड़ दिया गया है। इसके अतिरिक्त, पीएससी व्यवस्था के अंतर्गत 2 खोजे गए क्षेत्र हैं, अर्थात् इनमें से 9 ब्लॉक प्रचालनरत हैं, 1 ब्लॉक को त्यागने का प्रस्ताव किया गया है और 21 ब्लॉकों को छोड़ दिया गया है। इसके अलावा, पीएससी शासन के तहत 2 खोजे गए क्षेत्र हैं, अर्थात्, अरुणाचल प्रदेश में खरसांग और असम में अमगुरी, जहां उत्पादन हो रहा है। वर्तमान में दोनों क्षेत्र चालू हैं।

## 7.4 पूर्वोत्तर में कच्चे तेल और प्राकृतिक गैस का उत्पादन

**7.4.1.** पूर्वोत्तर राज्यों द्वारा कच्चे तेल के उत्पादन में योगदान कुल उत्पादन का लगभग 13.6% है। वित्त वर्ष 2021–22 में, पूर्वोत्तर में कच्चे तेल का उत्पादन लगभग 4.04 मिलियन मीट्रिक टन (एमएमटी) था। पिछले 5 वर्षों में कच्चे तेल के उत्पादन की राज्य–वार और कंपनी–वार प्रवृत्ति नीचे दी गई है:

### तेल उत्पादन (एमएमटी में)

| कंपनी | आस्ति | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल–दिस. 2022) |
|---|---|---|---|---|---|---|---|
| ओआईएल प्रतिष्ठापन | अरुणाचल प्रदेश | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 |
| | असम | 3.37 | 3.28 | 3.08 | 2.90 | 2.96 | 2.33 |
| **ओआईएल कुल** | | **3.38** | **3.29** | **3.10** | **2.92** | **2.98** | **2.35** |
| ओएनजीसी प्रतिष्ठापन | असम | 0.97 | 0.99 | 0.99 | 0.96 | 0.99 | 0.75 |
| | त्रिपुरा | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.002 |
| **ओएनजीसी कुल** | | **0.97** | **0.99** | **0.99** | **0.96** | **0.99** | **0.75** |
| करार व्यवस्था | अरुणाचल प्रदेश | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 |
| | असम | 0.00 | 0.03 | 0.03 | 0.03 | 0.04 | 0.03 |
| **करार व्यवस्थाकुल** | | **0.04** | **0.06** | **0.06** | **0.06** | **0.07** | **0.05** |
| **कुल योग** | | **4.39** | **4.34** | **4.15** | **3.94** | **4.04** | **3.15** |

**7.4.2.** उपरोक्त तालिका से, यह देखा जा सकता है कि वित्त वर्ष 2021–22 में पूर्वोत्तर में कच्चे तेल के उत्पादन में ओआईएल की हिस्सेदारी 74% है, इसके बाद ओएनजीसी की हिस्सेदारी, 25% है। कच्चे तेल के उत्पादन में निजी/संयुक्त उद्यम कंपनियों का हिस्सा लगभग ~2% है।

**7.4.3.** वित्त वर्ष 2021–22 में पूर्वोत्तर राज्यों द्वारा प्राकृतिक गैस उत्पादन में योगदान कुल उत्पादन का लगभग 14.6% है। 2021–22 में पूर्वोत्तर में प्राकृतिक गैस का उत्पादन लगभग 4.95 बिलियन स्टैंडर्ड क्यूबिक मीटर (बीसीएम) है। पिछले 5 वर्षों में प्राकृतिक गैस उत्पादन की राज्य–वार और कंपनी–वार प्रवृत्ति नीचे दी गई है:

### गैस उत्पादन (बीसीएम में)

| कंपनी | आस्ति | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल–दिस. 2022) |
|---|---|---|---|---|---|---|---|
| तेल प्रतिष्ठापन | अरुणाचल प्रदेश | 0.01 | 0.01 | 0.04 | 0.05 | 0.05 | 0.04 |
| | असम | 2.66 | 2.48 | 2.38 | 2.24 | 2.62 | 2.12 |
| **ओआईएल कुल** | | **2.67** | **2.49** | **2.42** | **2.29** | **2.67** | **2.16** |
| ओएनजीसी प्रतिष्ठापन | असम | 0.51 | 0.48 | 0.46 | 0.39 | 0.37 | 0.27 |
| | त्रिपुरा | 1.44 | 1.55 | 1.47 | 1.63 | 1.53 | 1.24 |
| **ओएनजीसी कुल** | | **1.95** | **2.03** | **1.93** | **2.02** | **1.90** | **1.51** |
| पीएससी | अरुणाचल प्रदेश | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 |
| | असम | 0.05 | 0.32 | 0.30 | 0.37 | 0.38 | 0.30 |
| **पीएससी कुल** | | **0.07** | **0.34** | **0.31** | **0.37** | **0.38** | **0.30** |
| **कुल योग** | | **4.69** | **4.86** | **4.66** | **4.68** | **4.95** | **3.97** |

**7.4.4.** उपरोक्त तालिका से, यह देखा जा सकता है कि वित्त वर्ष 2021–22 में ओआईएल का पूर्वोत्तर में प्राकृतिक गैस उत्पादन में ~54% का हिस्सा है, उसके बाद ओएनजीसी की हिस्सेदारी ~38% है। प्राकृतिक गैस उत्पादन में निजी/संयुक्त उद्यम कंपनियों का हिस्सा लगभग ~8% है।

**7.4.5.** देश में भूमि तेल उत्पादन में पूर्वोत्तर राज्यों का योगदान ~14% है। असम देश के पूर्वोत्तर राज्यों (वित्त वर्ष 2021–22) से कुल तेल उत्पादन का ~99% और देश के कुल तेल उत्पादन (वित्त वर्ष 2021–22) में 13% योगदान देता है। अरुणाचल प्रदेश देश के पूर्वोत्तर राज्यों (वित्त वर्ष 2021–22) में से कुल तेल उत्पादन का ~1% और देश के कुल तेल उत्पादन (वित्त वर्ष 2021–22) में 0.2% योगदान देता है। त्रिपुरा देश के पूर्वोत्तर राज्यों (वित्त वर्ष 2021–22) से कुल तेल उत्पादन का ~0.1% और देश के कुल तेल उत्पादन (वित्त वर्ष 2021–22) का 0.01% योगदान देता है।

## राज्य–वार तेल उत्पादन (एमएमटी में)

| राज्य | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल–दिस. 2022) |
|---|---|---|---|---|---|---|
| अरुणाचल प्रदेश | 0.05 | 0.04 | 0.05 | 0.05 | 0.05 | 0.03 |
| असम | 4.34 | 4.30 | 4.10 | 3.89 | 3.99 | 3.12 |
| त्रिपुरा | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.002 |
| कुल–एनईआर | 4.40 | 4.34 | 4.15 | 3.94 | 4.04 | 3.15 |
| कुल–देश | 35.66 | 34.20 | 32.17 | 30.49 | 29.69 | 22.08 |
| एनईआर योगदान | 12.3 % | 12.7 % | 12.9 % | 12.9 % | 13.6 % | 14.3 % |

**7.4.6.** देश में भूमि गैस उत्पादन में पूर्वोत्तर राज्यों का योगदान ~15% है। असम देश के पूर्वोत्तर राज्यों से कुल गैस उत्पादन का ~68% और देश के कुल गैस उत्पादन का 9.9% योगदान देता है। अरुणाचल प्रदेश देश के पूर्वोत्तर राज्यों से कुल गैस उत्पादन का ~1% और देश के कुल गैस उत्पादन का 0.2% योगदान देता है। त्रिपुरा देश के पूर्वोत्तर राज्यों से कुल गैस उत्पादन का ~31% और देश के कुल गैस उत्पादन का 4.5% योगदान देता है।

## राज्य–वार तेल उत्पादन (एमएमटी में)

| राज्य | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल–दिस. 2022) |
|---|---|---|---|---|---|---|
| अरुणाचल प्रदेश | 0.03 | 0.03 | 0.05 | 0.05 | 0.05 | 0.04 |
| असम | 3.22 | 3.28 | 3.14 | 3.00 | 3.37 | 2.69 |
| त्रिपुरा | 1.44 | 1.55 | 1.47 | 1.63 | 1.53 | 1.24 |
| कुल–एनईआर | 4.69 | 4.86 | 4.66 | 4.68 | 4.95 | 3.97 |
| कुल–देश | 32.64 | 32.87 | 31.18 | 28.67 | 34.02 | 25.87 |
| एनईआर योगदान | 14.4% | 14.8% | 14.9% | 16.3% | 14.6% | 15.3% |

## 2021–22 के लिए पूर्वोत्तर राज्यों से कंपनी वार तेल और गैस उत्पादन:

| कंपनी का नाम | कुल तेल उत्पादन का % | कुल गैस उत्पादन का % | कुल तेल और गैस उत्पादन का % |
|---|---|---|---|
| ओआईएल (प्रतिष्ठापन) | ~74% | ~54% | ~63% |
| ओएनजीसी (प्रतिष्ठापन) | ~25% | ~38% | ~32% |
| करार व्यवस्था के अंतर्गत निजी और संयुक्त उद्यम कंपनियां | ~2% | ~8% | ~5% |

## 7.5 खोजी गयी लघु क्षेत्र नीति:

पूर्वोत्तर में अन्वेषण और उत्पादन गतिविधियों में तेजी लाने के लिए, भारत सरकार ने पूर्वोत्तर में खोजी गई लघु क्षेत्र नीति के पहले, दूसरे और तीसरे दौर के तहत 18 खोजे गए क्षेत्रों को सौंपा है। इन ब्लॉकों का ब्यौरा निम्नानुसार है:

| स्थिति | बेसिन | डीएसएफ बोली दौर | राज्य/स्थान | करार क्षेत्र | आपरेटर |
|---|---|---|---|---|---|
| सक्रिय | असम–अराकान फोल्ड बेल्ट | डीएसएफ–II | त्रिपुरा | एए/ओएनडीएसएफ/ तुलामारा/ 2018 | ऑयल इंडिया लिमिटेड |
| | असम शेल्फ | एए/ओएनडीएसएफ-I | असम | एए/ओएनडीएसएफ/ बारसिल्ला/ 2016 | रान्वाना इस्पात प्रा.लि. एवं महेन्द्रा इफ्राटेक प्रा. लि. |
| | | | | एए/ओएनडीएसएफ/ चराईदेव /2016 | ऑयल मैक्स एनर्जी प्राइवेट लिमिटेड |
| | | | | रान्वाना इस्पात प्रा. लि. एंड पिपलाइनिंग/ 2016 | महेन्द्रा इंफ्राटेक प्रा. लि |
| | | | | एए/ओएनडीएसएफ/ दुरमाघा/2016 | एंटीलोप्स एनर्जी प्राइवेट लिमिटेड |
| | | | | एए/ओएनडीएसएफ/ लक्ष्मीजन/2016 | मेघा इंजीनियरिंग एंड इंफ्रास्ट्रक्चर्स लिमिटेड |
| | | डीएसएफ-II | असम | एए/ओएनडीएसएफ/ दिसाईजन/2018 | इंवेनाइर एनर्जी प्राइवेट लिमिटेड |
| | | | | एए/ओएनडीएसएफ/ हजारीगांव/ 2018 | वेदांता लिमिटेड |
| | | | | एए/ओएनडीएसएफ/ उमातारा /2018 | इंडियन ऑयल कार्पोरेशन लिमिटेड |
| पीएमएल नहीं दिया गया | असम–अराकान फोल्ड बेल्ट | डीएसएफ-III | असम | एए/ओएनडीएसएफ/ पथारिया/ 2021 | वेदांता लिमिटेड |
| | | | | एए/ओएनडीएसएफ/तुकबई /2021 | वेदांता लिमिटेड |
| | असम शेल्फ | डीएसएफ-I | अरुणाचल प्रदेश | एए/ओएनडीएसएफ/खेरेम/2016 | एथओईसी लिमिटेड, प्राइज पेट्रोलियम |
| | | डीएसएफ-II | असम | एए/ओएनडीएसएफ/टिफुक/2021 | ऑयल मैक्स एनर्जी प्राइवेट लिमिटेड |
| छोड़ दिया गया | असम शेल्फ | डीएसएफ-I | असम | एए/ओएनडीएसएफ/ जेराईपाथर /2016 | इंडियन ऑयल कार्पोरेशन लिमिटेड |
| रद्द किया गया | असम–अराकान फोल्ड बेल्ट | डीएसएफ-I | असम | एए/ओएनडीएसएफ/हिलारा/2016 | प्राइज पेट्रोलियम कंपनी लिमिटेड |
| | | | | एए/ओएनडीएसएफ/ पथारिया /2016 | विजयाश्री भास्कर इंडस्ट्रीज प्राइवेट लिमिटेड |
| | असम शेल्फ | डीएसएफ-II | असम | एए/ओएनडीएसएफ/ मधाकाली /2018 | आर्श कार्पोरेट सनवस प्रा. लि. (दुगाता) |
| | | | | एए/ओएनडीएसएफ/ तिफुक/2018 | शांति जी. बी. इस्पात एंड पावर प्रा. लि. |

## 7.6 पूर्वोत्तर में वैकल्पिक हाइड्रोकार्बन स्रोत :

**7.6.1. शेल गैस:** पारंपरिक तेल/गैस अन्वेषण से उपलब्ध आंकड़ों के आधार पर ऐसा प्रतीत होता है कि असम अराकान बेसिन सहित कुछ तलछटी बेसिन शेल गैस के दृष्टिकोण से संभावित हो सकते हैं। अक्टूबर, 2013 में सरकार ने प्रतिष्ठापन क्षेत्र में एनओसी द्वारा शेल तेल एवं गैस के अन्वेषण और दोहन के लिए दिशा–निर्देश जारी किए हैं जिसके अंतर्गत ओएनजीसी और ओआईएल ने क्रमश 50 ब्लॉकों और 6 ब्लॉकों की पहचान की है। 55 ब्लॉकों में से ओएनजीसी द्वारा प्रचालित 3 ब्लॉक और ओआईएल द्वारा प्रचालित 4 ब्लॉक असम राज्य में हैं। अब तक ओएनजीसी ने 2 कूपों (नामती एमएल ब्लॉक में जीकेवीओ और लकवा में एलडीजी) की खुदाई की है। ओआईएल ने राजस्थान में जैसलमेर पीएमएल, असम के डिब्रूगढ़, दमदुमा और चबुआ पीएमएल से पारंपरिक चार मुख्य कूप हासिल किए हैं। मूल्यांकन परिणाम इन स्थानों पर खराब संभावना दिखाते है क्योंकि शेल प्रारंभिक तेल उत्पादन विंडों में दर्ज किए जाते हैं। अरुणाचल प्रदेश में ओआईएल ने शेल गैस/तेल संभाव्यता की स्थापना के लिए क्रमशः ऊपरी टिकक पार्टबैट और डिसांग शेल्स के लक्षित शेल की तुलना में व्यापक मात्रा में परम्परागत कोर प्राप्त करने के लिए दो स्थानों अर्थात् जयरामपुर एक्सटन पीईएल और देवमाली पीईएल की पहचान की है।

अरुणाचल प्रदेश में ओआईएल ने शेल गैस/तेल संभाव्यता की स्थापना के लिए क्रमशः ऊपरी टिकक पार्टबैट और डिसांग शेल्स के लक्षित शेल की तुलना में व्यापक मात्रा में परम्परागत कोर प्राप्त करने के लिए दो स्थान अर्थात् जयरामपुर एक्सटन पीईएल और देवमाली पीईएल की पहचान की है।

## 7.7 पूर्वोत्तर विजन 2030

**7.7.1.** पूर्वोत्तर विजन दस्तावेज पूर्वोत्तर क्षेत्र के लोगों को लाभ पहुंचाने के लिए एक साझा और साझा आकांक्षा विकसित करने के लिए एक केंद्रित और परामर्शी कार्य रहा है। विभिन्न हितधारकों, उद्योगों और राज्य सरकारों की भागीदारी और इनपुट के साथ, विजन दस्तावेज में न केवल क्षेत्र के लिए महत्वाकांक्षा शामिल है, बल्कि एक कार्रवाई योग्य रोडमैप भी शामिल है।

**7.7.2.** योजना का उद्देश्य क्षेत्र की हाइड्रोकार्बन क्षमता का लाभ उठाना, स्वच्छ ईंधन तक पहुंच बढ़ाना, पेट्रोलियम उत्पादों की उपलब्धता में सुधार करना, आर्थिक विकास की सुविधा प्रदान करना और आम लोगों को इस क्षेत्र में आर्थिक गतिविधियों से जोड़ना है। इसमें अरुणाचल प्रदेश, असम, मणिपुर, मेघालय, मिजोरम, नागालैंड, सिक्किम और त्रिपुरा शामिल हैं। मंत्रालय ने विजन दस्तावेज का मसौदा तैयार करते समय राज्य सरकारों के साथ कई परामर्श भी किए।

**7.7.3.** यह विजन पांच स्तम्भों पर टिका है यथा लोगों, नीति, साझेदारी, परियोजनाओं और उत्पादन पर। लोगों के लिए, यह कौशल विकास और स्थानीय समुदाय की भागीदारी को बढ़ावा देने के साथ–साथ घरों में स्वच्छ ईंधन पहुंच की उम्मीद करता है। नीतिगत फोकस क्षेत्रों में क्षेत्र के विशिष्ट भू–भाग और मौसम की स्थिति के आलोक में सुधार के साथ –साथ नई परियोजनाओं के लिए निधि नियोजन सुनिश्चित करना शामिल है। जहां तक साझेदारी का सवाल है, योजना और कार्यान्वयन में राज्य सरकारों की अधिक भागीदारी और पड़ोसी देशों के साथ व्यापार को बढ़ावा देने पर जोर दिया जा रहा है। परियोजनाओं में, तरलीकृत पेट्रोलियम गैस (एलपीजी), प्राकृतिक गैस, और पेट्रोलियम उत्पादों, तेल और स्नेहक (पीओएल) को ढोने के लिए पाइपलाइन कनेक्टिविटी; रिफाइनरियों और आयात लिंक का निर्माण; और संपीड़ित प्राकृतिक गैस (सीएनजी) राजमार्गों और शहरी गैस वितरण नेटवर्क का विकास पर ध्यान केंद्रित किया गया है। उत्पादन पक्ष पर जोर देने में उत्पादन वृद्धि सम्बन्ध, प्रौद्योगिकी तैनाती और फास्ट–ट्रैक क्लीयरेंस और सेवा प्रदाता हब का विकास शामिल है।

**7.7.4.** उत्पादन से परे, फोकस क्षेत्रों में बांग्लादेश, म्यांमार, नेपाल और भूटान के साथ हाइड्रोकार्बन लिंकेज और व्यापार अवसरों की खोज; इस क्षेत्र में 'मेक इन इंडिया' का कार्यान्वयन; स्वास्थ्य और चिकित्सा सुविधाओं का विकास; औद्योगिक नीति और बुनियादी ढांचे से संबंधित कार्य बिंदु, इस क्षेत्र में कौशल विकास और रोजगार सृजन की आवश्यकता पर ध्यान केंद्रित करना शामिल है। विजन विवरण में अपस्ट्रीम, मिडस्ट्रीम और डाउनस्ट्रीम सेगमेंट को कवर करते हुए संपूर्ण हाइड्रोकार्बन मूल्य श्रृंखला के लिए एक विस्तृत रोडमैप तैयार किया गया है। इस रिपोर्ट में उद्देश्यों को प्राप्त करने में मदद करने के लिए तत्काल, मध्यम अवधि और दीर्घकालिक पहलों की एक कार्य योजना शामिल है।

**7.7.5.** विजन का उद्देश्य 2030 तक तेल और गैस उत्पादन को दोगुना करना, स्वच्छ ईंधन को सुलभ बनाना, परियोजनाओं में तेजी लाना, रोजगार के अवसर पैदा करना और पड़ोसी देशों के साथ सहयोग को बढ़ावा देना है।

विजन 2030 के अंतर्गत परिकल्पित प्रमुख लक्ष्यों में से एक को पूरा करने के लिए, सरकार ने पूर्वोत्तर क्षेत्र में प्रचालनात्मक ब्लॉकों के लिए अन्वेषण अवधि में 2 वर्ष के विस्तार और मूल्यांकन अवधि में 1 वर्ष के विशेष वितरण की अनुमति दी है। सरकार ने पूर्वोत्तर क्षेत्र में भविष्य में उत्पादित प्राकृतिक गैस के लिए विपणन और मूल्य निर्धारण स्वतंत्रता भी प्रदान की है। इससे तेल और गैस संसाधनों के विकास में निवेश बढ़ने की संभावना है।

**7.7.6.** नॉर्थ ईस्ट विजन 2030 के तहत ओएनजीसी ने पूर्वोत्तर क्षेत्र में असम शेल्फ और फोल्ड बेल्ट क्षेत्रों में भूकंपीय डेटा अधिग्रहण और खोजपूर्ण कूपों की ड्रिलिंग के लिए एक अन्वेषण योजना की कल्पना की है। हाल ही में, विभिन्न बेसिनों की अन्वेषणात्मक प्राथमिकताओं को ध्यान में रखते हुए, 2022–23 से 2024–25 की अवधि के लिए तीन वर्षीय कार्य योजना तैयार की गई है। इस योजना के अंतर्गत, तदनुरूप अवधि के दौरान पूर्वोत्तर क्षेत्र में व्यय किए जाने के लिए प्रस्तावित अन्वेषणात्मक निविष्टियां नीचे सारणीबद्ध की गई हैं:

| ब्योरा | | 2022-23 | 2023-24 | 2024-25 | कुल |
|---|---|---|---|---|---|
| असम और असम आराकान | 2डी (एलकेएम) | 254 | 377 | 200 | 831 |
| | 3डी (एसकेएम) | 320 | 455 | 470 | 1245 |
| | अन्वेषण कुएं (संख्या) | 21 | 23 | 24 | 68 |

**7.7.7.** चालू वर्ष (2022–23) में ओएनजीसी ने असम–अराकान फोल्ड बेल्ट में 339 एलकेएम 2डी और 300 एसकेएम 3डी भूकंपीय डेटा और असम शेल्फ में 2डी के 10 एलकेएम और 3डी भूकंपीय डेटा के 75 एसकेएम का अधिग्रहण करने की योजना बनाई है। इसमें असम शेल्फ और असम–अराकान फोल्ड बेल्ट में क्रमशः 12 और 14 खोजपूर्ण कुओं को ड्रिल करने की भी योजना बनाई है। 01.01.2023 तक, ओएनजीसी ने 2डी के 34.54 एलकेएम, 3डी भूकंपीय डेटा के 53.93 एसकेएम के अधिग्रहण कार्य को पूरा कर लिया और इस क्षेत्र में 9 खोजपूर्ण कुओं की खुदाई की है।

## 7.8 हाइड्रोकार्बन अन्वेषण और लाइसेंसिंग नीति (एचईएलपी) के अंतर्गत पूर्वोत्तर क्षेत्र में नए अन्वेषण ब्लॉक

तेल ई एंड पी कंपनियां पूर्वोत्तर क्षेत्र में गहरी रुचि दिखा रही हैं। रिथति सहित 31 दिसंबर 2022 तक पूर्वोत्तर क्षेत्र में सौंपे गए अन्वेषण ब्लॉकों का विवरण निम्नानुसार है:

| क्र.सं. | ओएएलपी दौर | ब्लॉक नाम | कंपनी का नाम (आपरेटर) | बेसिन नाम | राज्य सक्रिय/अक्रिय) | ब्लॉक स्थिति | मूल करार क्षेत्र वर्ग किमी.) |
|---|---|---|---|---|---|---|---|
| 1 | ओएएलपी–I | एए–ओएनएचपी–2017/1 | वेदांता लिमिटेड | असम शेल्फ | असम | सक्रिय | 714.71 |
| 2 | ओएएलपी–I | एए–ओएनएचपी–2017/10 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | सक्रिय | 543.28 |
| 3 | ओएएलपी–I | एए–ओएनएचपी–2017/11 | वेदांता लिमिटेड | असम शेल्फ | असम | सक्रिय | 784.55 |
| 4 | ओएएलपी–I | एए–ओएनएचपी–2017/12 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | सक्रिय | 489.06 |
| 5 | ओएएलपी–I | एए–ओएनएचपी–2017/13 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | सक्रिय | 840.69 |
| 6 | ओएएलपी–I | एए–ओएनएचपी–2017/14 | वेदांता लिमिटेड | असम अराकान फोल्ड बेल्ट | असम | सक्रिय | 1719.17 |
| 7 | ओएएलपी–I | एए–ओएनएचपी–2017/15 | वेदांता लिमिटेड | असम शेल्फ | असम | सक्रिय | 1367.38 |
| 8 | ओएएलपी–I | एए–ओएनएचपी–2017/16 | ऑयल इंडिया लिमिटेड | असम शेल्फ | अरुणाचल प्रदेश | सक्रिय | 361.49 |
| 9 | ओएएलपी–I | एए–ओएनएचपी–2017/17 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | सक्रिय | 309.07 |
| 10 | ओएएलपी–I | एए–ओएनएचपी–2017/18 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | सक्रिय | 1711.1 |

| क्र.स. | ओएएलपी दौर | ब्लॉक नाम | कंपनी का नाम (आपरेटर) | बेसिन नाम | राज्य सक्रिय/अक्रिय) | ब्लॉक स्थिति | मूल करार क्षेत्र वर्ग किमी.) |
|---|---|---|---|---|---|---|---|
| 11 | ओएएलपी–I | एए–ओएनएचपी–2017/19 | एचओईसी | असम अराकान फोल्ड बेल्ट | असम | सक्रिय | 79.21 |
| 12 | ओएएलपी–I | एए–ओएनएचपी–2017/2 | वेदांता लिमिटेड | असम अराकान फोल्ड बेल्ट | अरूणाचल प्रदेश | सक्रिय | 73.19 |
| 13 | ओएएलपी–I | एए–ओएनएचपी–2017/20 | ऑयल इंडिया लिमिटेड | असम अराकान फोल्ड बेल्ट | असम | सक्रिय | 125.08 |
| 14 | ओएएलपी–I | एए–ओएनएचपी–2017/3 | वेदांता लिमिटेड | असम अराकान फोल्ड बेल्ट | असम | सक्रिय | 267.94 |
| 15 | ओएएलपी–I | एए–ओएनएचपी–2017/4 | वेदांता लिमिटेड | असम शेल्फ | असम | सक्रिय | 839.33 |
| 16 | ओएएलपी–I | एए–ओएनएचपी–2017/5 | वेदांता लिमिटेड | असम शेल्फ | असम | सक्रिय | 758.23 |
| 17 | ओएएलपी–I | एए–ओएनएचपी–2017/6 | वेदांता लिमिटेड | असम अराकान फोल्ड बेल्ट | त्रिपुरा | सक्रिय | 278.79 |
| 18 | ओएएलपी–I | एए–ओएनएचपी–2017/8 | वेदांता लिमिटेड | असम शेल्फ | असम | सक्रिय | 610.54 |
| 19 | ओएएलपी–I | एए–ओएनएचपी–2017/9 | वेदांता लिमिटेड | असम शेल्फ | असम | सक्रिय | 18.32 |
| 20 | ओएएलपी–III | एए–ओएनएचपी–2018/1 | वेदांता लिमिटेड | असम शेल्फ | असम | सक्रिय | 248.87 |
| 21 | ओएएलपी–III | एए–ओएनएचपी–2018/2 | ऑयल इंडिया लिमिटेड | असम अराकान फोल्ड बेल्ट | नागालैंड | अक्रिय | 2526.74 |
| 22 | ओएएलपी–III | एए–ओएनएचपी–2018/3 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | सक्रिय | 1234.42 |
| 23 | ओएएलपी–III | एए–ओएनएचपी–2018/4 | ओएनजीसी लिमिटेड | असम अराकान फोल्ड बेल्ट | त्रिपुरा | सक्रिय | 44.01 |
| 24 | ओएएलपी–III | एए–ओएनएचपी–2018/5 | ऑयल इंडिया लिमिटेड | असम अराकान फोल्ड बेल्ट | त्रिपुरा | सक्रिय | 207.74 |
| 25 | ओएएलपी–V | एए–ओएनएचपी–2019/1 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | सक्रिय | 1278.27 |
| 26 | ओएएलपी–V | एए–ओएनएचपी–2019/2 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | सक्रिय | 2405.12 |
| 27 | ओएएलपी–VI | एए–ओएनएचपी–2020/1 | ऑयल इंडिया लिमिटेड | असम अराकान फोल्ड बेल्ट | त्रिपुरा | सक्रिय | 557.33 |
| 28 | ओएएलपी–VI | एए–ओएनएचपी–2020/2 | ओएनजीसी लिमिटेड | असम अराकान फोल्ड बेल्ट | त्रिपुरा | सक्रिय | 50.41 |
| 29 | ओएएलपी–VI | एए–ओएनएचपी–2020/3 | ऑयल इंडिया लिमिटेड | असम अराकान फोल्ड बेल्ट | त्रिपुरा | सक्रिय | 219.37 |
| 30 | ओएएलपी–VI | एए–ओएनएचपी–2021/1 | ओएनजीसी लिमिटेड | असम अराकान फोल्ड बेल्ट | त्रिपुरा | सक्रिय | 37.68 |
| 31 | ओएएलपी–VI | एएस–ओएनएचपी–2021/1 | ओएनजीसी लिमिटेड | असम शेल्फ | असम | अक्रिय | 24.64 |
| 32 | ओएएलपी–VII | एए–ओएनएचपी–2021/2 | ओएनजीसी लिमिटेड | असम बेल्ट अराकान फोल्ड | त्रिपुरा | सक्रिय | 382.05 |
| 33 | ओएएलपी–VII | एएस–ओएनएचपी–2021/2 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | अक्रिय | 2445.03 |
| 34 | ओएएलपी–VII | एएस–ओएनएचपी–2021/3 | ऑयल इंडिया लिमिटेड | असम शेल्फ | असम | अक्रिय | 1840.87 |

## 7.9 भूकंप संबंधी राष्ट्रीय कार्यक्रम :

हाइड्रोकार्बन कार्यकलापों को गति प्रदान करने के लिए सरकार ने राष्ट्रीय भूकंपीय कार्यक्रम (एनएसपी) के अंतर्गत भारत के सभी तलछटी बेसिनों के गैर मूल्यांकित क्षेत्रों में 48,243 एलकेएम के 2डी भूकंपीय डेटा अधिग्रहण, प्रसंस्करण और व्याख्या (एपीआई) आयोजित करने की योजना तैयार की है। एनएसपी को केन्द्रीय बजट द्वारा वित्तपोषित किया जा रहा है ताकि भारत के उन सभी तलछटी बेसिनों में उक्त कार्य किए जा सकें जहां कोई/अल्प आंकडे उपलब्ध नहीं हैं। एनएसपी के तहत, ओआईएल को 7408 एलकेएम के 2 डी भूकंपीय एपीआई को करने के लिए सौंपा गया है, जिसे बाद में 6032 एलकेएम (भूकंपीय डेटा का 5162 एलकेएम और एयरबोर्न जियोफिजिकल सर्वे (एजीएस) के 870 एलकेएम) तक संशोधित किया गया क्योंकि नागालैंड सरकार ने राज्य में भूकंपीय सर्वेक्षण करने की अनुमति देने से इनकार कर दिया था। दुर्गम भू-भाग और प्रतिकूल वातावरण के कारण जिन क्षेत्रों में भूकंपीय सर्वेक्षण नहीं किया जा सका है, वर्तमान में एयरबोर्न भूभौतिकीय सर्वेक्षण करके मूल्यांकन के लिए लिया जा रहा है। ओआईएल ने मई 2022 तक 5,245.80 एलकेएम (5,162 एलकेएम के संशोधित लक्ष्य का 101.62%) का भूकंपीय एपीआई पूरा कर लिया। 31.12.2022 की स्थिति के अनुसार एनडीआर को प्रस्तुत क्षेत्र-वार/राज्य-वार उपलब्धि और आंकड़े निम्नानुसार हैं:

| क्षेत्र/ सेक्टर | नाम | लक्ष्य (एलकेएम) | उपलब्धि (एलकेएम) |
|---|---|---|---|
| ए1एस1 | असम–अरूणाचल | 2414 | 2416.20 |
| ए1एस2 | अरूणाचल–असम | 738 | 743.70 |
| ए2एस2 | मणिपुर | 0 | 4.74 |
| ए2एस3 | कारबी–आंगलांग और उत्तर काचर पहाड़ी | 885 | 719.10 |
| ए2एस4 | मिजोरम–त्रिपुरा | 1125 | 1143.48 |
| | **कुल (ओआईएल)** | **5,162** | **5,245.80** |

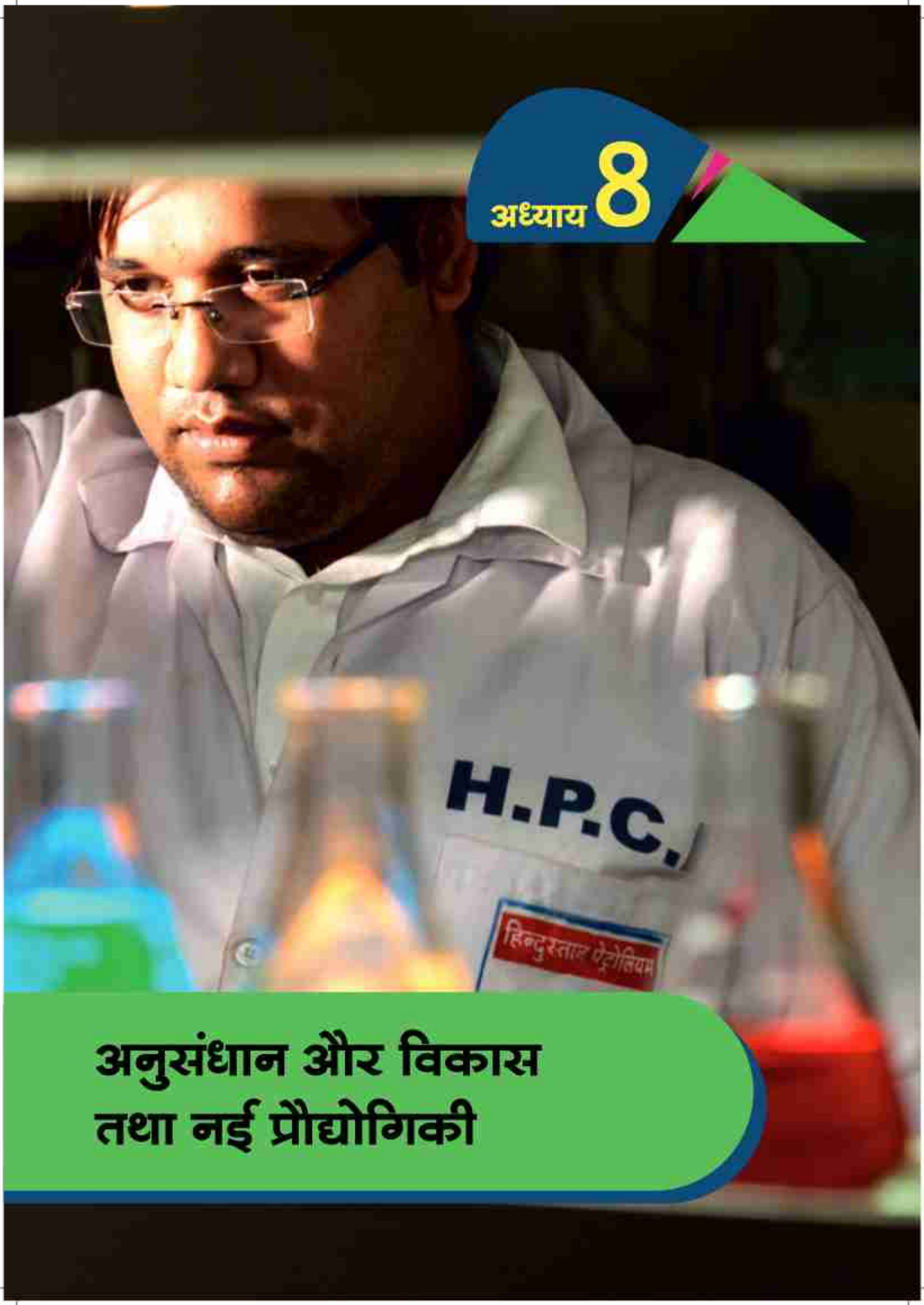
एपीआई– अधिग्रहण, प्रसंस्करण और व्याख्या।



एनआरएल के नुमालीगढ़ रिफाइनरी का एक दृश्य








अध्याय 8

# अनुसंधान और विकास तथा नई प्रौद्योगिकी

# 8 अनुसंधान और विकास तथा नई प्रौद्योगिकी

## 8.1. भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल)

**8.1.1.** भारत पेट्रोलियम का अनुसंधान और विकास नई प्रौद्योगिकियों को विकसित करने और ग्राहकों एवं हितधारकों को अभिनव तकनीकी समाधान प्रदान करने में महत्वपूर्ण भूमिका निभाता है। ग्रेटर नोएडा, उत्तर प्रदेश स्थित कॉर्पोरेट अनुसंधान और विकास केंद्र (सीआरडीसी) और मुंबई स्थिति उत्पाद और अनुप्रयोग विकास केंद्र (पी एंड एडी) अनुसंधान गतिविधियों के माध्यम से व्यवसायों के लिए मूल्य संवर्धन में सक्रिय रूप से शामिल हैं। 'आत्मनिर्भर भारत' के एक भाग के रूप में, सीआरडीसी ने विभिन्न नवीन और आला उत्पादों/प्रक्रियाओं को विकसित किया है और उनके व्यावसायीकरण के लिए आक्रामक रूप से काम कर रहा है। इस संदर्भ में, अप्रैल–दिसंबर 2022 के दौरान निम्नलिखित गतिविधियां की गईं:

- नवाचार के प्रति निरंतर उत्साह और 'आत्मनिर्भर भारत' पहल को बढ़ावा देने के लिए, बीपीसीएल की आर एंड डी टीम ने सुपरएब्जॉर्बेंट पॉलिमर (एसएपी) की रासायनिक प्रक्रिया में महारत हासिल की है, जिसमें इन–हाउस ऐक्रेलिक एसिड को फीडस्टॉक के रूप में उपयोग किया गया, जिसका उपयोग डायपर और अन्य असंयम उत्पादों जैसे विभिन्न स्वच्छता उत्पादों में किया जाता है क्योंकि इसकी उत्कृष्ट क्षमता अपने वजन से कई गुना पानी को अवशोषित करने की उत्कृष्ट क्षमता होती है। आज, भारत में एसएपी की मांग 100% आयात के माध्यम से पूरी की जाती है। इसे ध्यान में रखते हुए, आंतरिक प्रक्रिया के आधार पर बीपीसीएल ने कोच्चि रिफाइनरी में 200 टन/वर्ष (शुष्क आधार) सतत मोड पायलट संयंत्र चालू किया है। बीपीसीएल द्वारा विकसित उत्पाद अंतरराष्ट्रीय बेंचमार्क के सभी महत्वपूर्ण मापदंडों को पूरा करता है और अब भारत में इसका विपणन किया जाता है। प्राप्त अनुभव के आधार पर, अब कोच्चि रिफाइनरी में वाणिज्यिक संयंत्र स्थापित करने का लक्ष्य रखा गया है।

  ईंधन की खपत को अनुकूलित करने के माध्यम से देश की आयात निर्भरता को कम करने के लिए, बीपीसीएल की आर एंड डी टीम ने बेहतर दक्षता के साथ एलपीजी बर्नर विकसित किया है। नया ऊर्जा कुशल एलपीजी खाना पकाने का स्टोव–'भारत हाई–स्टारो' में 74 + 1% (बीईई स्टार 2' रेटिंग) तक थर्मल दक्षता है, जो बाजार में उपलब्ध स्टोव की तुलना में 6–7% अधिक दक्ष है। इससे हर साल प्रति परिवार लगभग एक सिलेंडर की बचत होने का अनुमान है।इस प्रौद्योगिकी के लिए 15 एलपीजी स्टोव निर्माताओं को लाइसेंस दिया गया है। पूरे भारत में बीपीसीएल एलपीजी स्टोव वितरकों के माध्यम से बाजार में 70,000 से अधिक इकाइयां पहले से ही बेची जा चुकी हैं। भारत हाई–स्टार ने कई प्रतिष्ठित पुरस्कार जीते हैं जिनमें सीआईआई नेशनल अवार्ड फॉर एक्सीलेंस इन एनर्जी मैनेजमेंट 2022, इकोनॉमिक टाइम्स एसेंट नेशनल अवार्ड फॉर एक्सीलेंस 2022 शामिल हैं।

- बॉयलर फीड वाटर (बीएफडब्ल्यू) के कुशल वितरण के लिए भारत हाईजी डीरेशन टेक्नोलॉजी विकसित की गई थी। अनुसंधान एवं विकास केंद्र में पायलट स्केल (50 टीपीडी) प्रदर्शन के बाद, मुंबई रिफाइनरी के सीडीयू 4 संयंत्र में 150 टीपीडी क्षमता की एक वाणिज्यिक इकाई चालू की गई थी। 5 पीपीबी से कम की घुलित ऑक्सीजन (डीओ) तत्व को ऑक्सीजन स्कैवेंजर को शामिल किए बिना हाइगी आउटलेट जलधारा में दर्ज किया गया था, जिससे स्टीम डिएरेटर के लिए कुल इनलेट भाप का लगभग 10–15% बचाया गया था। इस तथ्य को ध्यान में रखते हुए, आमतौर पर, 2,500 टीपीडी (बीएफडब्ल्यू क्षमता) डीरेटर के लिए, यह अनुमान लगाया जाता है कि 16–24 टीपीडी भाप को बचाया जा सकता है। इससे प्रति वर्ष 5,000 टन की $CO_2$ (कार्बन डाईआक्साइड) की बचत हो सकती है।

- बायो–रिफाइनरी उपोत्पाद धारा का मूल्यीकरण: टायर उद्योग अनुप्रयोग के लिए बॉयलर राख से अवक्षेपित सिलिका: बीपीसीएल के अंतर्गत चल रहे बारगढ़ 2 जी संयंत्र से उत्पादित बॉयलर राख को मूल्यांकित करने के लिए, प्रयोगशाला पैमाने पर ~70% की दक्षता के साथ चावल की भूसी राख से अवक्षेपित सिलिका उत्पादन के लिए एक इन–हाउस प्रक्रिया विकसित की गई है। वर्तमान में, टायर विनिर्माण अनुप्रयोग के लिए उत्पादित सिलिका के प्रदर्शन का मूल्यांकन किया जा रहा है।

- स्वच्छ ईंधन: इथेनॉल मिश्रित डीजल को इन–हाउस विकसित एडिटिव्स का उपयोग करके तैयार किया जाता है और परीक्षण प्रोटोकॉल के अनुसार मूल्यांकन किया जाता है। अशोक लिलैंड इंजन परीक्षण सुविधा में विस्तृत लक्षण वर्णन और सफल इंजन परीक्षणों के आधार पर, उत्पाद (ईडी 5) लॉन्च किया गया है। सेना भवन, सेना मुख्यालय

के परामर्श से सेना के ट्रकों के साथ क्षेत्र कार्य निष्पादन मूल्यांकन की योजना बनायी गयी है।

- डिजिटल उपकरण: के मॉडल बीपीसीएल आर एंड डी द्वारा विकसित एक वेब–आधारित सॉफ्टवेयर पेटेंट प्रौद्योगिकी है जो विभिन्न क्रूड के लिए प्रयोगों द्वारा आवश्यक हफ्तों के समय की तुलना में मिनटों के भीतर कच्चे तेल की संगतता और अनुकूलन की त्वरित और सटीक भविष्यवाणी के लिए विकसित की गई है। सॉफ्टवेयर (https://www.bpcl.kmodel.in) इंटरनेट पर उपलब्ध कराया गया है और यह तेजी से परिणामों की भविष्यवाणी करता है। के मॉडल वास्तविक समय के आधार पर अर्थशास्त्र, उपलब्धता और प्रसंस्करण व्यवहार्यता के आधार पर एक इष्टतम मिश्रण पर पहुंचने में सक्षम बनाता है, जिससे त्वरित समय में कई कच्चे मिश्रण विकल्पों के एक साथ मूल्यांकन को बढ़ावा मिलता है और अधिक सूचित निर्णय लिए जाते हैं। यह उपकरण स्वास्थ्य, सुचारू संचालन, ऊर्जा की बचत और कार्बन फुटप्रिंट को कम करने के लिए रिफाइनरी को संगत कच्चे तेल के मिश्रण पहुंचाने की सुविधा भी प्रदान करता है।
- बीपीएमएआरआर को (एक कुशल सॉफ्टवेयर टूल) का उपयोग करके रिफाइनरी संचालन का वास्तविक समय अनुकूलन उत्पाद की गुणवत्ता क्षरण को रोकने, मार्जिन, सुरक्षा और अनुपालन को अधिकतम करने के लिए किया गया था।
- शून्य उत्सर्जन के कॉर्पोरेट विजन को प्राप्त करने के लिए, बीपीसीएल आर एंड डी ने हरित हाइड्रोजन उत्पादन के लिए स्वदेशी क्षारीय जल इलेक्ट्रोलिसिस प्रौद्योगिकी को बढ़ाने के लिए बीएआरसी के साथ सहयोग किया है। जानकारी के आधार पर, बीपीसीएल आर एंड डी इलेक्ट्रोलाइजर के लिए आवश्यक विनिर्माण पारिस्थितिकी तंत्र के विकास में शामिल है। एक प्रौद्योगिकी प्रदर्शन संयंत्र भी डिजाइन किया जा रहा है।इसके अलावा, बीपीसीएल–आर एंड डी में वाणिज्यिक इलेक्ट्रोलाइजर प्रौद्योगिकियों (अर्थात् क्षारीय और पीईएम) के बेंचमार्किंग और मूल्यांकन के लिए अपेक्षित बुनियादी ढांचा स्थापित किया जा रहा है।

**8.1.2. उसी प्रकार पीएंडएडी–सेवरी का आरएंडडी विंग ने अद्वितीय स्नेहक उत्पादों को विकसित किया है यथा:**

- अत्यधिक निम्न उत्सर्जन बीएस–6 संगत भारी भरकम ट्रकों और बसों के लिए इंजन तेल इंजन तेल निकासी अंतराल का विस्तार करने और ईंधन की खपत को बचाने की क्षमता रखता है।
- बेहतर इंजन सुरक्षा और चुनौतीपूर्ण प्रदर्शन आवश्यकताओं को प्रदान करने के लिए उच्च सीसी स्कूटर के लिए प्रीमियम उच्च प्रदर्शन इंजन तेल।
- प्रीमियम हेवी ड्यूटी फाइनल ड्राइव एक्सल ऑयल (एफडीएओ) जिसे ऑफ–हाईवे ट्रकों और उपकरणों के अंतिम ड्राइव, एक्सल, बेवेल गियर और डिफरेंशियल्स के लिए डिजाइन किया गया है, विशेष रूप से उच्च भार और अत्यधिक तापमान के तहत काम करने वाले के लिए।
- बेहतर ईंधन दक्षता के साथ अल्ट्रा लॉन्ग ड्रेन एक्सल ऑयल। यह उत्पाद वाणिज्यिक वाहनों के रियर एक्सल्स और लाइव फ्रंट एक्सल्स में उपयोग के लिए है।
- संपीड़ित प्राकृतिक गैस (सीएनजी) पर चलने वाली बसों और ऑन–हाईवे लाइट और भारी–भरकम ट्रकों के लिए विस्तारित नाली अंतराल के साथ उच्च प्रदर्शन मोबाइल गैस इंजन तेल।
- कार्बन फुटप्रिंट को कम करने और सर्कुलर अर्थव्यवस्था में योगदान करने के लिए, सभी प्रकार के हाइड्रोलिक सिस्टम में उपयोग के लिए, पुनः परिष्कृत बेस ऑयल के साथ प्रीमियम गुणवत्ता एंटी–वियर हाइड्रोलिक तेल इको–डिज़ाइन किया गया है।
- बैटरी इलेक्ट्रिकल वाहनों (बीईवी) और आंतरिक दहन इंजन (आईसीई) के लिए अप्रत्यक्ष शीतलन के लिए प्रीमियम शीतलक।

## 8.2. इंजीनियर्स इंडिया लिमिटेड (ईआईएल)

### 8.2.1. इंजीनियर्स इंडिया लिमिटेड द्वारा अनुसंधान एवं विकास

ईआईएल का अनुसंधान और विकास प्रभाग 1970 से कार्य कर रहा है। प्रारंभ में यह प्रभाग डेस्क–टॉप अनुसंधान, प्रक्रिया मॉडलिंग और सिमुलेशन के माध्यम से प्रक्रिया इंजीनियरिंग सेवाओं के लिए इन–हाउस क्षमता निर्माण में लगा हुआ था। गुड़गांव में अनुसंधान एवं विकास केंद्र एमओपी एंड एनजी और वैज्ञानिक सलाहकार समिति की सिफारिश पर स्थापित किया गया था और 1988–89 में काम करना शुरू कर दिया था। अनुसंधान एवं विकास केंद्र उपकरण उन्मुख अनुसंधान के लिए और प्रौद्योगिकियों के अवशोषण और अनुकूलन की सुविधा के लिए एक राष्ट्रीय सुविधा है। इसके अलावा, सहयोगी अनुसंधान करने के लिए, कार्यप्रणाली को विकसित करने और हार्डवेयर परीक्षण और नैदानिक सेवाएं प्रदान करने के लिए भी अभिप्रेत थे।

इन प्रयासों के परिणामस्वरूप महत्वपूर्ण हार्डवेयर डिजाइनों के साथ 40 से अधिक प्रक्रिया प्रौद्योगिकियों का विकास हुआ है। अनुसंधान एवं विकास केंद्र भारत

सरकार की पहलों जैसे मेक इन इंडिया और आत्मनिर्भर भारत के साथ अच्छी तरह से संरेखित है, जिसका उद्देश्य राष्ट्र को तकनीकी केंद्र बनने की दिशा में प्रेरित करना है। ईआईएल–आर एंड डी हमेशा अपने गुरुग्राम आर एंड डी केंद्र में प्रौद्योगिकियों के विकास के माध्यम से तेल, गैस और ऊर्जा के क्षेत्र में भारत को आत्मनिर्भर बनाने के लिए अग्रणी रहा है। ऊर्जा संक्रमण के इस युग में, ईआईएल आरएंडडी ने नवीकरणीय और टिकाऊ ऊर्जा क्षेत्रों को आगे बढ़ाने और 2070 तक नेट–जीरो कार्बन की दिशा में देश में ले जाने के लिए एक मार्ग तैयार करने के लिए पहल की है, साथ ही कंपनी के लिए नए व्यावसायिक अवसर सुनिश्चित किए हैं।

### 8.2.2. दिसम्बर, 2022 तक वर्तमान वर्ष के दौरान प्रौद्योगिकी वाणिज्यिकीकरण प्रयास

सहयोग से विकसित विभिन्न आंतरिक विकसित प्रौद्योगिकियों/प्रौद्योगिकियों के व्यावसायीकरण के लिए काफी प्रयास किए जा रहे हैं। इनमें निम्न शामिल हैं

- एमआरपीएल में डेमो–स्केल बायो एटीएफ संयंत्र के लिए बीईडीपी, डीएफआर और परियोजना–पूर्व गतिविधियां।
- एनटीपीसी के साथ इलेक्ट्रोलाइजर से उत्पादित कार्बन डाइऑक्साइड और हाइड्रोजन का उपयोग करते हुए 10 टीपीडी एथेनॉल उत्पादन इकाई के लिए डीपीआर।
- ईआईएल–बीपीसीएल डीसाल्टर प्रौद्योगिकी का उपयोग करते हुए बीपीसीएल–कोच्चि रिफाइनरी में सीडीयू–3 डीसाल्टर प्रणाली का पुनरुद्धार।
- एनआरएल में डीसीयू पुनरुद्धार के तहत एलपीजीटीयू के लिए बुनियादी इंजीनियरिंग डिजाइन पैकेज (बीईडीपी) की आपूर्ति।
- एचएमईएल के लिए ईएनजीआरटी–एचटीआर[TM] सॉफ्टवेयर के माध्यम से सीडीयू हीटर के प्रदर्शन सुधार के लिए परामर्श सेवाएं।

### 8.2.3. प्रौद्योगिकी संबंधों को मजबूत बनाने के लिए की गई पहलें

ईआईएल ने सदैव अनुसंधान संगठनों, शैक्षिक संस्थानों और अन्य कॉर्पोरेट के अनुसंधान विंग के साथ सहक्रियात्मक क्षमता की खोज की है। सहयोगी प्रयासों के परिणामस्वरूप कई प्रौद्योगिकियों का विकास हुआ है और इनके सफल कार्यान्वयन हुए हैं।

निम्नलिखित नए टाई–अप को औपचारिक रूप दिया गया:

- एनआरएल में अमोनिया युक्त खट्टी गैसों से जलीय अमोनिया के उत्पादन के लिए विकास और प्रदर्शन प्रौद्योगिकी हेतु नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल) के साथ समझौता ज्ञापन (एमओए) पर हस्ताक्षर किए गए।
- वैश्विक स्तर पर ग्राहकों के लिए ईआईएल की टीजीटीयू प्रौद्योगिकी पेशकशों के संभावित उपयोग के लिए यूओपी एलएलसी, यूएसए के साथ समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए गए।
- विभिन्न प्रौद्योगिकियों के सहयोगात्मक विकास के लिए आईआईटी–कानपुर के साथ समझौता ज्ञापन पर हस्ताक्षर करने के लिए गतिविधियां शुरू की गईं।
- प्राकृतिक गैस से हीलियम निकालने के लिए संयुक्त प्रौद्योगिकी विकास के लिए सीएसआईआर–आईआईपी और ओईसीटी के साथ समझौता ज्ञापन पर हस्ताक्षर करने के लिए गतिविधियां शुरू की गईं।
- मेम्ब्रेन प्रौद्योगिकियों के क्षेत्रों में प्रौद्योगिकियों के संयुक्त विकास के लिए पर्मियोनिक्स मेम्ब्रेन प्राइवेट लिमिटेड (पीएमपीएल) के साथ समझौता ज्ञापन पर हस्ताक्षर करने के लिए उन्नत चरणों संबंधी गतिविधियां।

**ईआईएल प्रसिद्ध वैश्विक संघों में भी भागीदारी करता है:**

- प्रोसेस साइंस टेक्नोलॉजी सेंटर (पीएसटीसी), टेक्सास विश्वविद्यालय, यूएसए द्वारा शुरू किया गया एक उद्योग–अकादमिक सहयोगी अनुसंधान कार्यक्रम।
- फ्रैक्शनेशन रिसर्च इनकॉर्पोरेटेड (एफआरआई), ओक्लाहोमा, यूएसए में स्थित एक गैर–लाभकारी सहकारी अनुसंधान संगठन।
- प्रोसेस इंटेग्रेशन रिसर्च कंसोर्टियम (पीआईआरसी), मैनचेस्टर यूके विश्वविद्यालय।

### 8.2.4. शुरू की गई प्रौद्योगिकी विकास परियोजना

अनुसंधान एवं विकास प्रभाग उभरती हुई प्रौद्योगिकी रूपरेखा की लगातार निगरानी कर रहा है और प्रौद्योगिकी विकास के क्षेत्र में नई पहल कर रहा है।

शुरू की गई और चल रही परियोजनाओं में से कुछ इस प्रकार हैं:

- सीएसआईआर–आईआईपी और ओईसीटी के साथ प्राकृतिक गैस से हिलियम गैस निकालने के लिए संयुक्त प्रौद्योगिकी विकास।

- अशुद्धियों की उपस्थिति में फ्लु गैसों से कार्बन डाईआक्साइड निकालने के लिए सॉल्वेंट का विकास।
- बीपीसीएल के सहयोग से एसएपी (सुपर एब्जॉर्बेंट पॉलिमर) उत्पादन के लिए प्रौद्योगिकी का विकास।
- हीट एक्सचेंजर्स में हेलिकल बैफल्स का विकास।
- नुमालीगढ़ रिफाइनरी लिमिटेड में रिफाइनरी खट्टी गैसों से जलीय अमोनिया के उत्पादन के लिए बीईडीपी तैयार करने से संबंधित कार्यकलाप।
- कोयले सेमेथनॉल के लिए डीपीआर तैयार करना।

### 8.2.5. ईआईएल ने पेटेंट और ट्रेडमार्क रूप में आईपीआर सृजित किया है

दिसम्बर, 22 तक 32 प्रत्यक्ष पेटेंट और 35 आवेदन लंबित अनुदान हैं। पेटेंट पोर्टफोलियो का मुख्य आकर्षण यह है कि लगभग 60% दायर पेटेंट का व्यावसायीकरण किया गया है। इसके अलावा, 21 ट्रेडमार्क के साथ–साथ 4 लंबित अनुदान आईआर ताकत को संवर्धित करते हैं।

पहले दायर किए गए निम्नलिखित पेटेंट इस वर्ष प्रदान किए गए:

- क्रॉस फ्लो रिएक्टर
- डिसाल्टर सिस्टम का डिजाइन
- सौर ऊर्जा का उपयोग करके गर्म पानी, ठंडा पानी और बिजली के उत्पादन के लिए एक प्रक्रिया।

**वर्ष के दौरान 22 दिसम्बर तक निम्नलिखित नए पेटेंट दायर किए गए हैं:**

- औद्योगिक अपशिष्ट गैसों को शुद्ध करने और दुर्गन्धित करने के लिए उपकरण और विधि।
- एक प्रक्रिया फायर्ड हीटर की एक नाली सहायक संरचना।
- एक सिस्टम का उपयोग करके फायर हीटर को अनुकूलित करने के लिए विधि।
- वैक्यूम आसवन इकाई का एक बेहतर विन्यास और कम कच्चे तेल के घटकों को अलग करने की प्रक्रिया।

### 8.2.6. स्टार्ट–अप पहल

ईआईएल भी आरएंडडी ईआईएल की स्टार्ट–अप पहल 'एंजीएसयूआई' को संचालित करके भारत के भीतर स्टार्ट–अप इको सिस्टम को पोषित करने के लिए भारत सरकार के फ्लैगशिप कार्यक्रम के लिए पूरी तरह से प्रतिबद्ध है।

इंगएसयूआईके तहत, ईआईएल स्टार्ट–अप को बौद्धिक, अवसंरचनात्मक और वित्तीय सहायता प्रदान कर रहा है। ईआईएल हाइड्रोकार्बन, आईटी और आईआईओटी, नवीकरणीय ऊर्जा और भंडारण, नैनो–सामग्री, अपशिष्ट से ऊर्जा, स्वास्थ्य सुरक्षा और पर्यावरण के क्षेत्र में काम करने वाली स्टार्ट–अप परियोजनाओं को वित्त पोषित करता है। 7 आईआईटी और 4 एनआईटी ने ईआईएल के स्टार्टअप इंडिया इनिशिएटिव में पंजीकरण कराया है। अब तक 5 दौरों में कुल 29 परियोजनाओं का वित्तपोषण किया गया है। हाल ही में प्रस्तावों का छठा दौर शुरू किया गया है।

## 8.3. गेल (इंडिया) लिमिटेड

### 8.3.1. आरएंडडी और नई प्रौद्योगिकी

तेल और गैस पीएसयू को एक चुनौतीपूर्ण भूमिका निभाना पड़ता है, जिसके लिए उन्हें दुनिया भर में उपभोक्ताओं और ग्राहकों को सुरक्षित, सस्ती ऊर्जा प्रदान करने की आवश्यकता होती है, जबकि नेट–शून्य पहल के माध्यम से उभरते जलवायु परिवर्तन की समस्या को दूर करने की महत्वपूर्ण आवश्यकता पर जोर दिया जाता है। इन चुनौतियों का सामना करने के लिए, सभी तेल और गैस पीएसयू स्वच्छ ऊर्जा स्रोतों और अपशिष्ट न्यूनीकरण में संक्रमण के लिए नवीकरणीय ऊर्जा परियोजनाओं में निवेश कर रहे हैं। इसमें कोर ऑपरेशन में हस्तक्षेप किए बिना उनके संचालन को डीकार्बोनाइज करना और वृत्तीय अर्थव्यवस्था आदि के प्रति अपशिष्ट मूल्यीकरण शामिल है। देश के आर्थिक विकास के लिए ऊर्जा स्रोतों का एक व्यापक, अधिक टिकाऊ मिश्रण प्रदान करने के लिए इन ऊर्जा संक्रमण और संसाधन संरक्षण अवसरों का लाभ उठाने में आर एंड डी महत्वपूर्ण भूमिका निभाता है। इस दिशा में, गेल सहयोगी अनुसंधान एवं विकास कार्यों पर लगातार जोर देता है और तदनुसार अपशिष्ट मूल्यीकरण और अपशिष्ट जल पुनर्चक्रण, कार्बन डाईआक्साइड पृथक्करण, पाइपलाइन अखंडता प्रबंधन स्वदेशी उत्प्रेरक विकास और हाइड्रोजन पहल आदि पर ध्यान केंद्रित करते हुए निम्नलिखित अनुसंधान विषयों में अनुसंधान कार्यों को आगे बढ़ाता है।

- **अपशिष्ट मूल्यीकरण और अपशिष्ट जल पुनर्चक्रण**

  इस पहल के तहत, गेल हाइड्रो थर्मल सह–गैसीकरण प्रक्रिया विकसित कर रहा है जिसमें

पेट्रोकेमिकल संयंत्र से अपशिष्ट जल के साथ बायोमास को हाइड्रोजन समृद्ध मीथेन और नैनोमेटल युक्त कार्बन हाइड्राइड के लक्षित उत्पादन के लिए सह–गैसीकृत किया जाता है। परिणामी नैनोमेटल हाइड्राइड उपोत्पाद का उपयोग ईंधन सेल, बैटरी अनुप्रयोगों में इलेक्ट्रोकेटेलिस्ट के रूप में किया जा सकता है। यह परिणाम कीमती वस्तुओं की प्राप्ति करते समय औद्योगिक अपशिष्ट जल के उपचार के लिए एक व्यवहार्य समाधान प्रदान कर सकता है। इस परियोजना को आईआईटी रुड़की के सहयोग से आगे बढ़ाया जा रहा है।

इसके अलावा, गेल ने आईआईटी–मद्रास के सहयोग से गैस हाइड्रेट बनाने की प्रक्रिया का उपयोग करके संयंत्र में इसके पुनः उपयोग/पुनर्चक्रण के लिए बहिस्स्राव जल के शुद्धिकरण के लिए एक प्रयोगशाला पैमाने की प्रक्रिया विकसित की है, जिसे 'हरित प्रक्रिया' माना जाता है क्योंकि यह न्यूनतम कीचड़ पैदा करता है और ऊर्जा–कुशल भी है। लैब स्केल प्रक्रिया ने लगभग 75–90% पृथक्करण दक्षता प्रदर्शित की है और अब प्रक्रिया को निरंतर बेंच स्केल मोड में परीक्षण किया जा रहा है।

- **कार्बन डाईआक्साइड का पृथक्करण:**

गेल मिश्रित मैट्रिक्स झिल्ली पर आधारित एक नवीन उच्च प्रदर्शन कार्बन डाईआक्साइड पृथक्करण झिल्ली विकसित कर रहा है जिसमें धातु कार्बनिक ढांचा सामग्री और पॉलीएथर सुफोन में ग्राफीन ऑक्साइड होता है, जिसमें कार्बन डाईआक्साइड के प्रति उच्च चयनात्मकता और पारगम्यता होती है। उच्च कार्बन डाईआक्साइड पृथक्करण दक्षता के साथ कुशल झिल्ली का विकास जो थर्मल, रासायनिक और यांत्रिक रूप से स्थिर है, प्राकृतिक गैस/बायोगैस के आसान संवर्धन को सक्षम बना सकता है। इस परियोजना को आईआईटी–गुवाहाटी के सहयोग से किया जा रहा है।

इस पहल के तहत प्रारंभिक चरण में उच्च उत्प्रेरक गतिविधि वाले इमाइन लिगेंड के साथ एक क्रोमियम–कॉम्प्लेक्स को संश्लेषित किया जाता है। इसके अलावा, अनुसंधान कार्य उपरोक्त सजातीय उत्प्रेरक के हेटरोजेनाइजेशन और इसकी थर्मल स्थिरता में सुधार के लिए कार्बनिक लिंकर के संशोधन पर ध्यान केंद्रित करते हैं।

- **हाइड्रोजन पहल:**

हरित हाइड्रोजन के उपयोग को बढ़ावा देने के लिए "राष्ट्रीय हाइड्रोजन ऊर्जा मिशन" में भारत सरकार की पहल का समर्थन करने के लिए गेल ईआईएल और आईआईटी–कानपुर के सहयोग से सीजीडी नेटवर्क में हरित हाइड्रोजन के इंजेक्शन और प्राकृतिक गैस पाइपलाइन में इसके प्रभाव के मूल्यांकन पर एक पायलट परियोजना भी चला रहा है। हाइड्रोजन मिश्रित प्राकृतिक गैस की आपूर्ति एचपीसीएल के साथ गेल के संयुक्त उद्यम में से एक अवंतिका गैस लिमिटेड को की जाएगी, ताकि ऑटोमोबाइल को सीएनजी की खुदरा बिक्री की जा सके और घरों में पाइप युक्त प्राकृतिक गैस (पीएनजी) की आपूर्ति की जा सके। वर्तमान में, 2% हाइड्रोजन मिश्रित किया जा रहा है और जल्द ही इसे 3% तक बढ़ाया जाएगा। इसके अलावा, गेल मध्य प्रदेश के गुना में पीईएम वाटर इलेक्ट्रोलाइजर (भारत में सबसे बड़ा) पर आधारित 10 मेगावाट हरित हाइड्रोजन संयंत्र स्थापित करने की प्रक्रिया में है। चालू होने पर, यह संयंत्र प्रति दिन लगभग 4.3 मीट्रिक टन हरे हाइड्रोजन का उत्पादन करेगा।

लिए पोरट–मेटलोसीन आधारित एकल साइट उत्प्रेरक के स्वदेशी विकास पर सीएसआईआर–एनसीएल के सहयोग से एक अनुसंधान परियोजना पर कार्य कर रहा है।

- **तेल, गैस और ऊर्जा में उत्कृष्टता (सीओई–ओजीई):**

गेल ने अन्य तेल और गैस पीएसयू के साथ मिलकर उद्योग से संबंधित अनुसंधान एवं विकास कार्यों को पूरा करने के लिए आईआईटी–बम्बई में तेल, गैस और ऊर्जा (सीओई–ओजीई) में उत्कृष्टता केंद्र स्थापित किया है। इस पहलू में, अनुसंधान और विकास प्रयासों को बढ़ाने के लिए गेल इस क्षेत्र में अन्य तेल और गैस पीएसयू के सहयोग से मिशन मोड की 5 परियोजनाओं; पी/एल प्रणाली की संरचनात्मक स्वास्थ्य निगरानी, लिथियम–आयन बैटरी को विकासित करने, तेल और गैस पाइपलाइन निगरानी के लिए डीकार्बोनाइजेशन और टूल चेन पर विचार करते हुए पेट्रोलियम रिफाइनरियों/पेट्रोकेमिकल इकाइयों का जीवन चक्र मूल्यांकन करने में भाग ले रहा है।

- **पेटेंट:**

  वित्त वर्ष 2022–23 में, गेल ने 5 अनंतिम भारतीय पेटेंट आवेदन दायर किए हैं और अब तक, गेल को अभिनव उत्पादों, प्रक्रिया और अवधारणाओं के लिए 19 पेटेंट (16 भारतीय + 3 विदेशी) प्रदान किए गए हैं।

## 8.4. हिंदुस्तान पेट्रोलियम कार्पोरेशन लिमिटेड (एचपीसीएल)

**8.4.1.** एचपीसीएल ने 2016 में बेंगलुरु में अपना प्रतिष्ठित एचपी ग्रीन आर एंड डी सेंटर (एचपीजीआरडीसी) स्थापित किया है, जिसका मुख्य उद्देश्य नवाचार के माध्यम से ऊर्जा और रसायनों को सभी के लिए सुलभ बनाना है। एचपीजीआरडीसी अत्याधुनिक अनुसंधान करने के लिए सभी उन्नत उपकरणों, पायलट संयंत्रों और सुविधाओं के साथ अत्याधुनिक प्रयोगशालाओं से लैस है। अनुसंधान के फोकस क्षेत्रों में रिफाइनिंग प्रौद्योगिकियों, उत्पादों और उत्प्रेरकों, पेट्रोकेमिकल्स और पॉलिमर, स्नेहक और एडिटिव्स, कम मूल्य धाराओं का उन्नयन, नई पृथक्करण प्रौद्योगिकियां, प्रक्रिया गहनता, कार्बन कैप्चर, नवीकरणीय ऊर्जा और वैकल्पिक ऊर्जा शामिल हैं। एचपीजीआरडीसी रिफाइनरी इकाइयों कच्चे तेल के मूल्यांकन, उत्प्रेरक परीक्षण और चयन, सल्फर प्रजातिकरण, धारा अध्ययन पर उत्प्रेरक समय आदि के लिए परेशानी निवारण सेवाओं के माध्यम से भारत और विदेशों में विभिन्न रिफाइनरियों को उन्नत तकनीकी सहायता भी प्रदान करता है। इसके अतिरिक्त, एचपीजीआरडीसी 5 नई प्रयोगशालाओं (अर्थात, हाइड्रोजन, सौर ऊर्जा, बिटुमेन, जल और दहन अनुसंधान) और एक वैश्विक प्रौद्योगिकी केंद्र की स्थापना कर रहा है।

केंद्र ने अब तक भारत और विदेशों में कुल 416 पेटेंट दायर किए हैं और 152 पेटेंट प्राप्त किए हैं। वर्ष 2022–23 के दौरान अब तक 63 पेटेंट दायर किए गए हैं और 26 पेटेंट प्रदान किए गए हैं।

इसी अवधि के दौरान, एचपीजीआरडीसी ने व्यावसायिक रूप से 11 नए उत्पादों/प्रौद्योगिकियों का प्रदर्शन किया है (इसकी प्रौद्योगिकियों और उत्पादों की संख्या 47 तक पहुंच गई है), जिसका विवरण नीचे दिया गया है:

- **एचपी थर्म–α**: एचपीजीआरडीसी ने एचपी थर्म–α, थर्मिक द्रव विकसित किया जो आदर्श रूप से तरल चरण ताप हस्तांतरण प्रणालियों में 370 डिग्री सेल्सियस (698 डिग्री फारेनहाइट) तापमान तक उच्च तापमान गर्मी रिकवरी अनुप्रयोगों के लिए उपयुक्त है। ताप हस्तांतरण द्रव, एचपी थर्म–α, उत्कृष्ट थर्मल और ऑक्सीकरण स्थिरता और बेहतर संक्षारण गुणों सहित 370 डिग्री सेल्सियस (698 डिग्री फारेनहाइट) तक उत्कृष्ट उच्च तापमान प्रदर्शन प्रदान करता है।
- **एचपी थर्म–γ**: एचपीजीआरडीसी ने एचपी थर्म–γ विकसित किया, जो उच्च तापमान गर्मी हस्तांतरण अनुप्रयोगों के लिए थर्मिक द्रव है जिसमें वाष्प और तरल चरणों में संचालित करने की क्षमता के कारण लगातार प्रदर्शन के लिए कम चिपचिपाहट और उच्च थर्मल स्थिरता है। यह तरल चरण गर्मी हस्तांतरण प्रणालियों में 380 डिग्री सेल्सियस (720 डिग्री फारेनहाइट) तक तापीय रिकवरी अनुप्रयोगों के लिए आदर्श रूप से अनुकूल है। इस थर्मिक द्रव का लाभ यह है कि यह उत्कृष्ट थर्मल और ऑक्सीकरण स्थिरता और बेहतर संक्षारण गुणों सहित 380 डिग्री सेल्सियस (720 डिग्री फारेनहाइट) तक उत्कृष्ट उच्च तापमान प्रदर्शन प्रदान करता है।
- **एचपी फिल्मगैक्स एचटी**: एचपीजीआरडीसी ने हाइड्रोट्रीटिंग इकाइयों के लिए फिल्मांकन संक्षारण अवरोधक विकसित किया है। आमतौर पर, हाइड्रोट्रीटिंग यूनिट में संक्षारण हाइड्रोडेसल्फराइजेशन और डीहाइड्रोहॉलोजनेशन के दौरान बने हाइड्रोजन सल्फाइड और हाइड्रोजन क्लोराइड के कारण होता है। अमाइन फॉर्मूलेशन बनाने वाली किसी भी फिल्म की प्रमुख वांछनीय विशेषताओं में संक्षारण शमन और मजबूत फिल्म बनना शामिल हैं। हाइड्रो प्रोसेसिंग इकाइयों डीएचटी और डीएचडीएस के लिए संक्षारण अवरोधक को इस अवधारणा के आधार पर विकसित किया गया था। वीआर में एचपी–फिलममैक्स का प्रदर्शन बूट वाटर में खुराक और आयरन सामग्री के मामले में संतोषजनक पाया गया।
- **एचपी हाइथर्म–ω**: एचपीजीआरडीसी ने एचपी थर्म–ω विकसित किया, जो तरल या वाष्प चरण प्रणालियों और अप्रत्यक्ष गर्मी हस्तांतरण की मांगों को पूरा करने के लिए डिजाइन किया गया एक उच्च प्रदर्शन सिंथेटिक गर्मी हस्तांतरण तरल पदार्थ है। तरल चरण प्रणालियों में 20 डिग्री सेल्सियस से 240 डिग्री सेल्सियस (59 से 464 डिग्री फारेनहाइट) के ऑपरेटिंग तापमान और निम्न फ्रीज बिंदु 15 डिग्री सेल्सियस (68 डिग्री फारेनहाइट) के साथ वाष्प चरण प्रणालियों में 241 से 300 डिग्री सेल्सियस (465 से 572 डिग्री फारेनहाइट) के ऑपरेटिंग तापमान के साथ, एचपी हाइथर्म–ω गर्मी हस्तांतरण द्रव प्रणालियों में उपयोग के लिए उत्कृष्ट है, जिसके लिए वाष्प चरण में संचालित करने की अपनी क्षमता के कारण सटीक तापमान नियंत्रण की आवश्यकता होती है।

- **एचपी बीसीए:** एचपी–बॉटम्स क्रैकिंग एडिटिव (एचपी–बीसीए) एफसीसीयू में उन्नत बॉटम रूपांतरण के लिए डिज़ाइन किया गया है। एडिटिव को कच्चे माल की अम्लता, पहुंच और एट्रिशन को फाइन ट्यूनिंग के आधार पर डिज़ाइन किया गया था। योजक के लिए कोई कच्चा माल आयात नहीं किया गया था। विकसित योजक को 25 टन तक बढ़ाया जाता है और पीआर–एफसीसी इकाई में प्रदर्शित किया जाता है। बेस केस की तुलना में एचपी– बीसीए ~0.6% बॉटम रूपांतरण कम हो गया है और इसकी गतिविधि बेंचमार्क एडिटिव्स के बराबर है।

- **एचपी शाइन प्रो:** एक प्रीमियम हाई–ग्लॉस थिनर जो प्रीमियम बेहतर फिनिश प्रदान करता है। इसमें उत्कृष्ट पेंट घुलनशीलता है, जो तेजी से सूखता है और इसका उपयोग किसी भी तेल घुलनशील पेंट के साथ किया जा सकता है।

- **एचपी ईजीन:** एचपी–ईजीन (इथेनॉल भंडारण और गैसोहोल संक्षारण आईएनहिबिटर) एक लागत प्रभावी उच्च निष्पादनकारी संक्षारण अवरोधक है जिसका उपयोग स्वच्छ इथेनॉल और इथेनॉल मिश्रित ईंधन के भंडारण, मिश्रण और परिवहन के दौरान संक्षारण के मुद्दों को कम करने के लिए बेहतर प्रदर्शन के साथ किया जाता है। एनएसीई टीएम–01–72 का उपयोग करके प्रदर्शन मूल्यांकन अध्ययन कार्बन स्टील धातु विज्ञान के लिए बी++ रेटिंग दिखाते हैं। एचपी– ईजीआईएन गैसोलीन के किसी भी गुण को नहीं बदलता है और इसका उपयोग विभिन्न विपणन और वितरण क्षेत्रों में किया जा सकता है।

- **पावर 95:** एमएस के आरओएन को 95 तक बढ़ाने के लिए एक योजक है। पावर 95 इंजन से बेहतर प्रदर्शन निकालने वाले दहन चक्र के दौरान उच्च संपीड़न अनुपात का सहन कर सकता है। पावर 95 एक पर्यावरण के अनुकूल गैर–धातु योजक है जो इंजन की दस्तक को कम करता है और उत्सर्जन, थ्रस्ट पावर आउटपुट में सुधार करता है। इसके अतिरिक्त, यह इंजन दक्षता में सुधार करता है, ईंधन की खपत को कम करता है और बीएस –6 ग्रेड गैसोलीन के लिए आईएस 2796: 2017 विनिर्देशों का पालन करता है।

- **एचपी डीएके:** गंधहीन केरोसिन (एचपी–डीएके) केरोसिन रेंज हाइड्रोकार्बन फीड स्टॉक से गंधहीन हाइड्रोकार्बन सॉल्वैंट्स का उत्पादन करता है। ये गंधहीन हाइड्रोकार्बन सॉल्वैंट्स कई अनुप्रयोगों में उपयोगी हैं जैसे ड्रिलिंग तरल पदार्थ, चिपकने वाली वस्तु, एरोसोल, क्लिनिंग एजेंट, डिटर्जेंट, धातु वस्तुओं की सफाई आदि। वर्तमान में एचपीसीएल मुंबई रिफाइनरी में 52 केटीपीए क्षमता की एचपी–डीएके प्रदर्शन इकाई स्थापित कर रहा है।

- **एचपी–थर्मोप्रो (डब्ल्यू):** रिफाइनरी प्रक्रिया उपकरणों की फाउलिंग एक आम समस्या है जिसके परिणामस्वरूप गंभीर आर्थिक दंड लगता है। एंटीफॉलेंट को उन्हें छितरी हुई स्थिति में रखकर और प्रीहीट एक्सचेंजर सतहों पर जमाव को रोककर फाउलिंग को कम करने की आवश्यकता होती है। एचपी थर्मोप्रो–डब्ल्यू एक लागत प्रभावी एंटीफॉल एंट सूत्रीकरण है, विशेष रूप से वैक्सी क्रूड प्रसंस्करण इकाइयों में फाउलिंग को कम करने के लिए होता है। एचपीसीएल मुंबई रिफाइनरी में फील्ड परीक्षण सफलतापूर्वक पूरा किया गया और उसके बाद उत्पाद निरंतर उपयोग में है।

- **एचपी लॉन्ड्री सैनिटाइज़र:** एचपीजीआरडीसी ने स्वच्छ रूप से साफ कपड़े धोने के लिए कीटाणुरहित समाधान विकसित किया है। यह पर्यावरण के अनुकूल, सौंदर्यवादी रूप से मनभावन और लागत प्रभावी है। एचपी–लॉन्ड्री सैनिटाइज़र ने बाजार में प्रसिद्ध वाणिज्यिक उत्पाद (99.7%) की तुलना में बेहतर एंटी–माइक्रोबियल प्रदर्शन (99.95%) का प्रदर्शन किया। उत्पाद को आर एंड डी कर्मियों को वितरित किया गया था और प्रतिक्रिया सकारात्मक थी।

**8.4.2.** इसके अलावा, वर्ष 2022–23 के दौरान अब तक, 14 ल्यूब उत्पादों को लॉन्च और व्यावसायीकृत किया गया है जैसे एचपी नियोसिंथ एस 5 डब्ल्यू 30, एचपी नियोसिंथ एस 10 डब्ल्यू 30, एचपी सिंजीयर 75 डब्ल्यू 70 (टी), एचपी गियर ऑयल एक्सपी 80 डब्ल्यू –90, एचपी गियर ऑयल एक्सपी 140, एचपी एनक्लो ईई हाइडारुलिक ऑयल, एचपी एनक्लो एचवीआई प्लस 32, एचपी एनक्लो एफआरपीएस 46, एचपी क्रूज प्रीमियम एस 20 डब्ल्यू 50, रक्षक इंजन ऑयल सीआई 4 10 डब्ल्यू 30, एचपी एनक्लो एचएलपी 32, एचपी एनक्लो एचएलपी 46, एचपी एनक्लो एचएलपी 68 और नोवेल सिंथेटिक कॉपर ड्राइंग ऑयल।

## 8.5. इंडियन ऑयल कार्पोरेशन लिमिटेड (आईओसीएल)

**8.5.1.** आत्मनिर्भरता पैदा करने की दिशा में पिछले 50 वर्षों के अथक काम के अपने शानदार इतिहास में इंडियन ऑयल आर एंड डी इन–हाउस अनुसंधान और विकास के माध्यम से आत्मनिर्भर भारत के लिए प्रौद्योगिकियों / उत्पादों के आयात को बदलने, वाणिज्यिक और पर्यावरणीय रूप से टिकाऊ व्यावसायिक समाधानों के माध्यम से कार्बन–आधारित ऊर्जा विकल्पों को अनुकूलित, स्थानीयकृत और प्रतिस्थापित करके ऊर्जा

संक्रमण की तैयारी करने जैसी प्रमुख चुनौतियों का पालन करने की दिशा में काम कर रहा है जो। शैक्षिक संस्थानों के सहयोग से विकास चक्र में तेजी लाकर, मार्जिन की रक्षा के लिए उत्पाद विभेदन के माध्यम से यूएसपी का निर्माण करके और निगम को पहला लाभ प्रदान करके और पेटेंटिंग और लाइसेंसिंग के माध्यम से ज्ञान की सुरक्षा और व्यावसायीकरण करके बाजार की चुनौतियों का सामना कर रहा है।

ईंधन और स्नेहक, रिफाइनिंग प्रौद्योगिकियों और उत्प्रेरक, पेट्रोकेमिकल और पॉलिमर जैसे विशेषज्ञता के इनके मुख्य क्षेत्रों में अत्याधुनिक अनुसंधान किया जाता है। नैनो प्रौद्योगिकी, सौर, जैव ऊर्जा, हाइड्रोजन, ईंधन सेल और ऊर्जा भंडारण जैसे उभरते क्षेत्रों में अनुसंधान और विकास प्रयास भविष्य की बहुत आवश्यक दिशा प्रदान करते हैं।वर्तमान में, जनवरी 2023 तक 1,514 प्रभावी पेटेंट के साथ 1,615 दायर पेटेंट के विशाल पोर्टफोलियो के साथ, इंडियनऑयल आर एंड डी सेंटर पिछले 5 वर्षों में अपने स्वीकृत पेटेंट पोर्टफोलियो को दोगुना करने में सक्षम है। वर्ष 22–23 के दौरान, इंडियनऑयल आर एंड डी केंद्र द्वारा किए गए कार्य की प्रमुख विशेषताएं इस प्रकार हैं:

**8.5.2.** उत्प्रेरक और प्रक्रिया प्रौद्योगिकियों के विकास के लिए इंडियन ऑयल आर एंड डी सेंटर के काम ने विशेष रूप से बहुराष्ट्रीय कंपनियों के प्रभुत्व वाले प्रतिस्पर्धी और लाइसेंस–नियंत्रित क्षेत्रों में 'आत्मनिर्भर भारत' की दिशा में महत्वपूर्ण प्रभाव डाला है। 2022–23 में जनवरी 2023 तक प्रमुख विकास हैं:

- आईएस विनिर्देशों को पूरा करने वाले एटीएफ के उत्पादन के लिए बरौनी रिफाइनरी में 400 केटीए ग्रास–रूट इंडजेट® इकाई और इन–हाउस उत्प्रेरक का उपयोग करके गुवाहाटी रिफाइनरी में क्रैक गैसोलीन डीसल्फराइजेशन के लिए 80 केटीए ग्रास–रूट इंडसेलेक्टजी® इकाई का सफल कार्यान्वयन।
- क्षमता विस्तार परियोजना के दौरान अतिरिक्त भारी वीआर को संभालने के लिए डिगबोई रिफाइनरी में डीसीयू को 170 से 220 केटीए तक सुधारने के लिए इन–हाउस विकसित इंड–कोकर एटी प्रौद्योगिकी का चयन किया गया।
- 22–23 जनवरी के दौरान 23 तक ₹ 13.77 करोड रुपये की रॉयल्टी अर्जन के साथ विभिन्न भारतीय रिफाइनरियों को 2,395 मीट्रिक टन इन–हाउस उत्प्रेरक और एडिटिव्स एवं अधिशोषक की आपूर्ति की गई।
- सांख्यिकीय मशीन लर्निंग एल्गोरिथ्म का उपयोग करके डीएचडीटी इकाई के लिए विकसित एक नया उत्प्रेरक अवशिष्ट जीवन मूल्यांकन मॉडल बदलती प्रक्रिया और फीड चर के साथ उत्प्रेरक जीवन को ट्रैक करने के लिए रिफाइनरों को उत्प्रेरक जीवन का विस्तार करने के लिए परिचालन समायोजन पर निर्णय लेने में मदद करता है।

**8.5.3.** आईओसीएल आर एंड डी के निरंतर प्रयासों ने न केवल घरेलू आवश्यकताओं में आत्मनिर्भरता प्राप्त करने में मदद की है, बल्कि 2022–23 के दौरान केंद्र ने ग्राहकों की जरूरतों को पूरा करने और आयात प्रतिस्थापन प्रदान करने के लिए लंबे जीवन, ऊर्जा कुशल स्नेहक और ग्रीस के विकास पर ध्यान केंद्रित किया है। अप्रैल, 22 से जनवरी, 2023 तक 112 स्नेहक फार्मूले जारी किए गए।

**8.5.4.** आत्मनिर्भरता की दिशा में काम कर रही आईओसीएल आरएंडडी ने माननीय प्रधानमंत्री के दृष्टिकोण के अनुरूप एक असाधारण कदम उठाते हुए एवीजीएएस 100 एलएल फॉर्मूलेशन विकसित किया है, जो पिस्टन इंजन के प्रत्यागामी टर्बोचार्ज्ड विमानों में उपयोग के लिए विमानन गैसोलीन की घरेलू मांग को पूरा करने के लिए गुजरात रिफाइनरी में भारत में निर्माण करने के लिए अग्रणी है।




एवीजी 100 एलएल को शुरू किया गया

बीएस–6 एचएसडी और जेएसएस विनिर्देशों को पूरा करते हुए उत्कृष्ट शीत प्रवाह गुणों को स्थापित करने के लिए कारगिल में सेना द्वारा अधिक ऊंचाई वाले क्षेत्रों के लिए इन–हाउस विकसित आर्मी विंटर ग्रेड डीजल का फील्ड ट्रायल 22–23 में पूरा हुआ। आईओसी अनुसंधान एवं विकास ने असम के तिनसुकिया में पेट्रोलियम और प्राकृतिक गैस के केंद्रीय राज्य मंत्री द्वारा एम 15 परीक्षण के शुभारंभ के लिए ईंधन की गुणवत्ता, स्थिरता और योजक फॉर्मूलेशन पर व्यापक अध्ययन के साथ समर्थन किया। सिक्किम और लेह में सेना के स्थान पर इन–हाउस तैयार कम सल्फर कम गंध वाला (एलएसएलए) मिट्टी के तेल का उपयोग करके सफल क्षेत्र परीक्षणों को कम तीखी गंध, कम धुएं और 60% कम कार्बन निक्षेप का लाभ देने के लिए पूरा किया गया।एक्सल, गियर और इंजन तेलों के अभिनव स्नेहक समाधान के साथ भारी शुल्क वाहनों के लिए ग्रीन कॉम्बो समाधान यानी एक्सट्रा ग्रीन डीजल प्रमुख

एसटीयू, टाटा और सरकारी मत्स्यपालन विभाग द्वारा ~9–10% ईंधन अर्थव्यवस्था सुधार प्रदान करने के लिए प्रमाणित है। दोहरे ईंधन (डीएमई और डीजल) दोस्त वाहन को आईआईटी दिल्ली और मेसर्स अशोक लेलैंड के सहयोग से डीएसटी से आंशिक वित्त पोषण के साथ विकसित किया गया है।



एम 15 शुरू किया गया

**8.5.5.** आयात प्रतिस्थापन की दिशा में काम करना 28'' और 8'' व्यास के सबसे बड़े और सबसे छोटे आईपीआईजी उपकरणों का सफल डिजाइन और निर्माण। आईओसीएल के पास अब 9 आकार के स्वदेशी उपकरण हैं जो कच्चे तेल और उत्पाद पाइपलाइनों के इनलाइन निरीक्षण के लिए 95% से अधिक कैप्टिव मांग को पूरा करते हैं। स्वदेशी रूप से विकसित आईएनडीस्कैन® आईपीआईजी उपकरण जुलाई 2022 में स्थापना के बाद से ~1,000 किलोमीटर निरीक्षण के लिए उपयोग किए जाते हैं। "वाष्प रिकवरी प्रणाली" के लिए एक इन–हाउस डिजाइन विकसित किया गया है, जिसमें 95% तक की बेहतर वसूली और सक्रिय चारकोल बेड के उच्च चक्र जीवन के साथ बढ़ी हुई अवशोषण दक्षता के दोहरे लाभ हैं।

**8.5.6.** बदलती बाजार जरूरतों और गैर–जीवाश्म ईंधन ऊर्जा विकल्पों की ओर बदलाव को ध्यान में रखते हुए, इंडियन ऑयल आरएंडडी केंद्र रिफाइनरियों की पेट्रोकेमिकल तीव्रता बढ़ाने हेतु तकनीकी समाधान विकसित करने के लिए काम कर रहा है। इसके लिए, आर एंड डी सेंटर आला उत्पादों के विकास, मौजूदा उत्पाद बास्केट की गुणवत्ता और सीमा में सुधार और उत्पादन उत्प्रेरक के इन–हाउस विकास जैसे कई मोर्चों पर काम कर रहा है। जेडएन उत्प्रेरक के विकास के हिस्से के रूप में, आरएंडडी केंद्र ने इन–हाउस पीपी उत्प्रेरक विकसित किया है और इसे 22–23 में 100 किलोग्राम के स्तर तक सफलतापूर्वक बढ़ाया गया है। पानीपत नेफ्था क्रैकर में वाणिज्यिक परीक्षण पूरा हो गया, जिसमें आईओसीएल के उत्प्रेरक के साथ मौजूदा वाणिज्यिक उत्प्रेरक की तुलना में उच्च गतिविधि देखी गई। इन–हाउस विकसित और पेटेंट किए गए ड्रैग रिड्यूसिंग एडिटिव (डीआरए) प्रौद्योगिकी का लाभ उठाते हुए, जिसे पिछले साल मैसर्स डोफॉ केटल केमिकल्स को लाइसेंस दिया गया था, आईओसीएल, एचपीसीएल, बीपीसीएल और एचपीसीएल–मित्तल पाइपलाइनों के लिए ~10 मिलियन अमेरिकी $ मूल्य के >1,700 केएल डीआरए का निर्माण और आपूर्ति की गई है।

22–23 में, इन–हाउस विकसित ऑक्टेमैक्स उत्प्रेरक के स्केल–अप और व्यावसायीकरण के लिए मेसर्स आयन एक्सचेंज इंडिया लिमिटेड के साथ समझौता ज्ञापन पर हस्ताक्षर किए गए हैं। उत्प्रेरक को सफलतापूर्वक 2,000 एल के पूर्व–वाणिज्यिक पैमाने तक बढ़ाया गया है।

**8.5.7.** इंडियन ऑयल आरएंडडी केंद्र नवीकरणीय ऊर्जा समाधान जैसे कृषि–अपशिष्ट से 2जी एथेनॉल, ऑटोमोबाइल के लिए ईंधन सेल प्रौद्योगिकी, कार्बन डाइआक्साइड से जैव–डीजल उत्पादन, सौर ऊर्जा और ऊर्जा भंडारण उपकरण आदि प्रदान करने के लिए अथक रूप से काम कर रहा है।

- जैव–ईंधन के क्षेत्र में, ऑनसाइट एंजाइम उत्पादन के साथ इन–हाउस विकसित 2जी एथेनॉल प्रौद्योगिकी के लिए पानीपत में 10 टीपीडी प्रदर्शन संयंत्र पूरा होने के अग्रिम चरणों में है। इन–हाउस विकसित 'आईबीजी–मैक्स' प्रौद्योगिकी का उपयोग करके सीबीजी उत्पादन बैठक विनिर्देश के लिए जयपुर में 100 टीपीडी बायोमेथनेशन संयंत्र चालू किया गया।
- सीबीजी संयंत्र से प्रीमियम गुणवत्ता वाली खाद/जैव उर्वरक उत्पादन के लिए एग्री–एलीट प्रौद्योगिकी, इन–हाउस परीक्षण के साथ और जीबी पंत कृषि विश्वविद्यालय, पंतनगर में जैविक एफओएम के साथ अकार्बनिक उर्वरक के 25% प्रतिस्थापन का उपयोग करके उपज में 22% वृद्धि के साथ चावल पर सफल रूप से मान्य है। इसके अलावा, जैव–सहायता प्राप्त फसल अवशेष डीकंपोजर, स्टब बोरस, 2022 के धान की कटाई के मौसम के दौरान हरियाणा और पंजाब में 10 एकड़ खेतों में सफलतापूर्वक प्रदर्शित किया गया है। आईओसीएल रिफाइनरियों में कार्यान्वयन के लिए रिफाइनरी ईटीपी के जैविक खंड के निरंतर और निर्बाध संचालन के लिए नई योजना 'ईबायोएटी' विकसित की गई। ईटीपी के जैविक स्वास्थ्य की निगरानी के लिए दो आईओसीएल रिफाइनरियों में विकसित और मान्य रिफाइनरी बहिस्त्राव उपचार संयंत्र (ईटीपी) के वातन टैंक के लिए विशिष्ट रोगाणुओं का पता लगाने और परिमाणीकरण के लिए 'एएसपी किट– माइक्रोबायोलॉजिकल'।
- सूर्यानूतन, आईओसी आरएंडडी सेंटर द्वारा विकसित खाना पकाने की एक इनडोर सौर प्रणाली, एक स्थिर, रिचार्जेबल और हमेशा रसोई से जुड़ा खाना पकाने का इनडोर समाधान है जो भारतीय घरों की खाना पकाने की जरूरतों को पूरा करने में सक्षम है। यह खाना पकाने का एक क्रांतिकारी समाधान है जो सौर और सहायक ऊर्जा स्रोतों दोनों पर एक साथ काम करता है, जिससे यह भारत के लिए खाना पकाने का एक विश्वसनीय समाधान बन जाता है।





माननीय प्रधानमंत्री द्वारा इनडोर सौर कुकिंग प्रणाली की वाणिज्यिक शुरूआत

हाल ही में, माननीय प्रधान मंत्री ने इंडियन ऑयल के इंडोर सोलर कुकिंग सिस्टम के ट्विन–कुकटॉप मॉडल को समर्पित किया और बेंगलुरु में इंडिया एनर्जी वीक 23 के हिस्से के रूप में इसके वाणिज्यिक रोल–आउट को भी हरी झंडी दिखाई।

पिछले साल, केंद्रीय पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री श्री एच एस पुरी ने इंडियन ऑयल आर एंड डी स्वर्ण जयंती समारोह के हिस्से के रूप में सूर्यानुतन की प्रायोगिक शुरूआत की। भारत के 5 अलग–अलग शहरों (यानी लेह, लक्षद्वीप, ग्वालियर, उदयपुर और दिल्ली–एनसीआर) में अलग–अलग सौर विकिरण तीव्रता और खाना पकाने की आदतों के साथ किए गए 50 सूर्यानुतन पायलट परीक्षण के माध्यम से एकत्र किए गए फील्ड प्रदर्शन डेटा। प्राप्त प्रतिक्रिया के आधार पर, एक ट्विन–कुकटॉप इंडोर सोलर कुकिंग सिस्टम उपयोगकर्ताओं को अधिक लचीलापन और आसानी प्रदान करने के लिए डिज़ाइन किया गया है।



माननीय पेट्रोलियम एवं प्राकृतिक गैस तथा आवासन और शहरी कार्य मंत्री द्वारा प्रायोगिक शुरूआत

व्यापक पैमाने पर व्यावसायीकरण के लिए, इंडियनऑयल ने अब उत्पाद की वाणिज्यिक शुरूआत के लिए विनिर्माण, विपणन, स्थापना और बिक्री पश्चात सेवा प्रदान करने के लिए 10 भारतीय विक्रेताओं को सूचीबद्ध किया है।

- सौर इलेक्ट्रोलिसिस, बायोमास गैसीकरण और बायो–मीथेनेशन जैसे मार्गों के माध्यम से स्वदेशी रूप से उपलब्ध संसाधनों के आधार पर कई हाइड्रोजन उत्पादन मार्गों का आकलन करने की परियोजना के आसपास, प्रक्रियाओं और ईंधन सेल प्रौद्योगिकी की प्रभावकारिता, दक्षता और स्थिरता स्थापित करने के लिए 15 ईंधन सेल बसों में प्रदर्शन के लिए उपयोग की जाने वाली ग्रीन टोटल हाइड्रोजन उत्पादन क्षमता = ~1 टन प्रति दिन स्थापित करने के लिए काम पूरे जोरों पर है। बसों का पहला सेट मार्च 2023 के अंत से पहले आने की उम्मीद है। इंडियनऑयल ने गुजरात रिफाइनरी में भारत का पहला ईंधन सेल ग्रेड हाइड्रोजन वितरण स्टेशन भी चालू किया है। टाटा मोटर्स द्वारा प्रदान की गई दो प्रोटोटाइप ईंधन सेल बसों को गुजरात रिफाइनरी में नई कमीशन सुविधा में ईंधन दिया जा रहा है और वडोदरा शहर में सड़क परिवहन और राजमार्ग मंत्रालय अनुमोदित मार्गों पर चल रहा है।



हाईड्रोजन बाइक का उपयोग करते हुए पेट्रोलियम और प्राकृतिक गैस मंत्रालय के सचिव

- वर्ष के दौरान, एल्यूमीनियम एयर बैटरी 4 वाट (टाटा टियागो) और 3 वाट (महेंद्र ट्रायो) और ई–रिक्शा के साथ एकीकृत की गई। पायलट परीक्षण महिंद्रा ई–ऑटो पर पूरा हो गया, जबकि टाटा टियागो और ई–रिक्शा में और परीक्षण की योजना बनाई गई।

**8.5.8.** पॉटहोल पैचवर्क के लिए रेडीमेड बिटुमिनस मिक्स किसी भी मौसम में उपयोग के लिए विकसित किया गया है और जिसकी >6 महीने की शेल्फ लाइफ है और जिसमें कैनेनिक बिटुमेन इमल्शन और अनुकूलित बिटुमेन इमल्शन के पैकेज का उपयोग किया गया है। लखनऊ और मुंबई में सड़कों पर सफलतापूर्वक परीक्षण किया गया। पारंपरिक उत्पादों के समान प्रदर्शन विशेषताओं के साथ 2 जी अवशेष–आधारित बायो–रीआरएमबी को सफलतापूर्वक विकसित किया। उत्पाद को प्रदर्शित करने के लिए अनुसंधान एवं विकास केंद्र के भीतर परीक्षण सड़क की योजना बनाई गई।

**8.5.9.** इंडियनऑयल आर एंड डी सेंटर विभिन्न उत्पाद प्लेटफार्मों पर नैनो प्रौद्योगिकी क्षेत्र में काम कर रहा है ताकि एक्सट्रा–तेज और इंडेन नैनोकट जैसे उत्पादों के विकास और वाणिज्यिक लॉन्च के माध्यम से बेहतर प्रदर्शन विशेषताओं को प्राप्त किया जा सके। वर्ष 22–23 के दौरान मैसर्स राजा उद्योग प्राइवेट लिमिटेड, कोलकाता में नैनो एडिटाइज्ड इंडेन एक्स्ट्रा–तेज के औद्योगिक परीक्षण से खपत में 7–8% की पर्याप्त बचत हुई है। इंडियनऑयल आर एंड डी सेंटर ने पायलट लॉन्च के लिए एलपीजी में 5% डीएमई मिश्रण की दिशा में काम के हिस्से के रूप में डीएमई/एलपीजी मिश्रण के साथ इलास्टोमर्स की संगतता का परीक्षण करने के लिए समर्थन दिया है।

**8.5.10.** इंडियन ऑयल आर एंड डी सेंटर स्टार्ट–अप वित्तपोषण योजना का नेतृत्व करता है, जिसमें वित्त पोषण के पहले 2 दौर में 24 स्टार्ट–अप का इनक्यूबेशन देखा गया है। इंडियन ऑयल अवधारणा के प्रमाण की प्राप्ति तक आंतरिक प्रक्रिया मालिकों द्वारा साथ मिलकर स्टार्ट–अप को सलाह देने में शामिल है। 22–23 में समाप्त हुए तीसरे दौर में, ₹ 17.98 करोड़ के प्रतिबद्ध फंड वैल्यू के साथ 12 स्टार्टअप को वित्तपोषण और इनक्यूबेशन के लिए चुना गया। आईओएसयूएस के तहत अब तक कुल 50+ आईपीआर (45 पेटेंट, 6 कॉपीराइट, 6 ट्रेडमार्क और 3 डिजाइन) सृजित हुए। इंडियन ऑयल इनक्यूबेटेड स्टार्टअप्स (1 और 2 दौर) का संयुक्त मूल्यांकन तीसरे पक्ष के मूल्यांकन के अनुसार ₹ 2,565 करोड़ है।




## 8.6. नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल)

### 8.6.1. आरएंडडी कार्यकलाप

कंपनी का विशेष रासायनिक प्रभाग अकादमिक और अनुसंधान संगठनों के साथ साझेदारी के माध्यम से संगठन की अनुसंधान और विकास क्षमता को मजबूत करने में सक्रिय रूप से आवश्यक भूमिका निभा रहा है। एनआरएल द्वारा वर्तमान में किए जा रहे अनुसंधान एवं विकास कार्यकलाप निम्नानुसार हैं:

- **इंजीनियर्स इंडिया लिमिटेड के साथ अनुसंधान सहयोग**

  पीएसयू के बीच सहयोगी अनुसंधान और विकास (आरएंडडी) पर भारत सरकार के दिशानिर्देशों के अनुसार, एनआरएल और ईआईएल ने वैज्ञानिक ज्ञान का आदान–प्रदान करने, हाइड्रोकार्बन, पेट्रोकेमिकल्स, ऊर्जा प्रौद्योगिकी के क्षेत्र में संयुक्त अनुसंधान को प्रोत्साहित करने और ऐसी संयुक्त रूप से विकसित प्रौद्योगिकियों के व्यावसायीकरण के लिए 31.03.2022 को समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए हैं। दोनों पक्षों ने पहले ही अपनी प्रौद्योगिकी के संयुक्त विकास के लिए परियोजनाओं की एक सूची की पहचान कर ली है, जिसमें अलग–अलग समझौता ज्ञापन हैं, जिसमें परिभाषित उद्देश्य, कार्य का दायरा, विभिन्न पक्षों की भूमिकाएं, वितरण, लागत और रॉयल्टी साझाकरण आदि शामिल हैं।

- **सीएसआईआर के साथ आरएंडडी सहयोग: एनईआईएसटी**

  एनआरएल ने माइक्रोबियल उपचार, मृदा रसायन विज्ञान, निम्न श्रेणी/भार हाइड्रोकार्बन के कार्यात्मककरण और बाद में विशेष क्षेत्रों में वैज्ञानिकों, प्रौद्योगिकीविदों और अधिकारियों के उन्नयन, प्रशिक्षण से संबंधित महत्वपूर्ण अनुसंधान क्षेत्रों की पहचान के लिए सीएसआईआर: एनईआईएसटी के साथ एक रूपरेखा सहयोग पर हस्ताक्षर किया। इस सहयोग के हिस्से के रूप में, एक परियोजना "सॉवर और स्ट्रिप वाटर से फिनोल को हटाना, इसका पुनः उपयोग और मूल्य संवर्धन" को वाटर फुट प्रिंट को कम करने और मूल्य वर्धित रसायनों का उत्पादन करने के उद्देश्य से लिया गया है।

- **आईआईटी–गुवाहाटी में सतत सामग्री के लिए एनआरएल उत्कृष्टता केंद्र**

  एनआरएल ने विभिन्न रिफाइनरी और जैव रिफाइनरी धाराओं से पर्यावरणीय रूप से टिकाऊ सामग्री के विकास के लिए अनुसंधान एवं विकास गतिविधियों को शुरू करने के लिए आईआईटी गुवाहाटी में 'एनआरएल सेंटर ऑफ एक्सीलेंस फॉर सस्टेनेबल मैटेरियल' की स्थापना की थी। वर्तमान में यह केंद्र "तेल और जैव–रिफाइनरी धाराओं से बायोडिग्रेडेबल प्लास्टिक के विकास" पर अनुसंधान कार्य कर रहा है।

इस परियोजना का उद्देश्य एक कुशल और पर्यावरण–अनुकूल दृष्टिकोण के माध्यम से तेल और बांस आधारित जैव–रिफाइनरी धाराओं जैसे तैलीय मृदा, मोम और फरफ्युरल दोनों से ब्लोन–फिल्म ग्रेड बायोडिग्रेडेबल प्लास्टिक (पॉली ε–कैप्रोलैक्टोन) का पायलट पैमाने पर विकास और उत्पादन करना है।

- **सीएसआईआर आईआईपी देहरादून के साथ आरएंडी सहयोग**

"नुमालीगढ़ रिफाइनरी विस्तार परियोजना के अंतर्गत आगामी एबुलेटेड बेड (ईबी) रेसिड हाइड्रोक्रैकर से उत्पन्न यूको स्ट्रीम के कुशल उपयोग के लिए अध्ययन" नामक एक परियोजना शुरू की गई है ताकि अपरिवर्तित तेल (यूको) को बिटुमेन जैसे मूल्य वर्धित उत्पादों या विशेषता उत्पादों में परिवर्तित करने के लिए अध्ययन किया जा सके।

- **संत एडमंड महाविद्यालय, शिलांग में अनुसंधान परियोजना**

एनआरएल ने कच्चे तेल, हाइड्रोकार्बन भंडारण टैंक निम्न मृदा और ईटीपी हाइड्रोकार्बन कीचड़ और इसके पर्यावरणीय जैव प्रौद्योगिकी निहितार्थों के बायोरेमेडिएशन में साइनोबैक्टीरिया के उपयोग पर शोध अध्ययन के लिए संत एडमंड महाविद्यालय, शिलांग को शामिल किया है।

### 8.6.2. उपर्युक्त आरएंडी कार्यों के परिणामस्वरूप व्युत्पन्न/आशयित लाभ

1. ओवरग्राउंड सल्फर सील संबंधी संयुक्त प्रौद्योगिकी विकासः एनआरएल और ईआईएल उपरोक्त ग्राउंड सल्फर सील प्रौद्योगिकी के संयुक्त विकास और व्यावसायीकरण के लिए समझौता ज्ञापन (एमओए) पर हस्ताक्षर कर रहे हैं।

2. सॉवर वाटर से फिनोल को हटाने की प्रौद्योगिकीः सॉवर और स्ट्रिप वाटर से फिनोल को हटाने के लिए स्वदेशी प्रौद्योगिकी के विकास से पानी के फुट प्रिंट में कमी आएगी और मूल्य वर्धित रसायनों का उत्पादन होगा। इस परियोजना के तहत, फिनोल हटाने के लिए प्रयोगशाला पैमाने का प्रदर्शन सफलतापूर्वक पूरा हो गया है और पायलट संयंत्र का डिजाइन और निर्माण एनआरएल साइट पर प्रदर्शन के लिए तैयार है।

3. बायोडिग्रेडेबल प्लास्टिक का उत्पादनः बायोडिग्रेडेबल प्लास्टिक के उत्पादन के लिए स्वदेशी प्रौद्योगिकी का विकास गैर–बायोडिग्रेडेबल पॉलीथिलीन आधारित पैकेजिंग को प्रतिस्थापित करने में मदद करेगा और ठोस अपशिष्ट से प्रदूषण को कम करने में योगदान देगा। बायोडिग्रेडेबल प्लास्टिक बायो रिफाइनरी के लिए एक मूल्यवर्धित स्ट्रीम होगी।परियोजना का उद्देश्य एबीआरपीएल के उप–उत्पादों में से एक 'फर्फुरल' को बायोडिग्रेडेबल पॉलिमर "पॉलीकैप्रोलैक्टोन (पीसीएल)" में परिवर्तित करना है। इस परियोजना के तहत, पॉलिमर सामग्री पर अनुसंधान अध्ययन के लिए एक पायलट संयंत्र एनआरएल–सीओई, आईआईटीजी में स्थापित किया गया है।

4. अपरिवर्तित तेल (यूको) को मूल्य वर्धित उत्पादों में बदलने के लिए प्रौद्योगिकीः यूको से मूल्य वर्धित विशेषता उत्पादों का उत्पादन करने के लिए स्वदेशी प्रौद्योगिकी का विकास। अधिकतम यूसीओ को नियोजित करके वांछनीय वीजी ग्रेड बिटुमेन तैयार करने के लिए व्यापक आर एंड डी अध्ययन ने अब तक सकारात्मक परिणाम नहीं दिया है। वैक्यूम टॉवर बॉटम एल–398 (यूसीओ) से वीजी बिटुमेन की अपेक्षित विशेषताओं को प्राप्त करने के लिए आगे नए प्रयोगों की परिकल्पना की जा रही है; जिसमें अत्यधिक सुगंधित कटर का उपयोग करना, जैसे एफसीसी अवशेष या किसी अन्य सुगंधित समृद्ध स्ट्रीम का उपयोग करना विस्तार के बाद एनआरएल पर उपलब्ध होने की संभावना है।

5. साइनोबैक्टीरियल कल्चर के माध्यम से बायो–रेमेडिएशनः इस परियोजना का उद्देश्य कच्चे तेल, हाइड्रोकार्बन स्टोरेज टैंक बॉटम मृदा और ईटीपी हाइड्रोकार्बन मृदा के बायोरेमेडिएशन में साइनोबैक्टीरिया का उपयोग है। इस परियोजना के तहत, एनआरएल से एकत्र किए गए साइनोबैक्टीरिया नमूनों की संस्कृति पर महत्वपूर्ण विकास हासिल किया गया है और हाइड्रोकार्बन मृदा पर कल्चर्ड बैक्टीरिया के साथ जैव–संचय अध्ययन की जांच की जा रही है।

## 8.7 तेल और प्राकृतिक गैस निगम (ओएनजीसी)

### 8.7.1 ओएनजीसी द्वारा आरएंडडी

ओएनजीसी ने अन्वेषण, ड्रिलिंग, जलाशय प्रबंधन उत्पादन प्रौद्योगिकी, महासागर इंजीनियरी और स्वास्थ्य, सुरक्षा और पर्यावरण (एचएसई) प्रबंधन के प्रमुख क्षेत्रों में विशिष्ट गतिविधियों को शुरू करने के लिए अलग–अलग अनुसंधान एवं विकास संस्थानों की स्थापना की है। इन संस्थानों को सहायता प्रदान करने के लिए ओएनजीसी की विभिन्न परिसंपत्तियों और बेसिनों में क्षेत्रीय प्रयोगशालाएं भी स्थापित की गई हैं। ओएनजीसी अपने अनुसंधान एवं विकास संस्थानों के माध्यम से अनुकूलन/ग्राहकीकरण और अनुप्रयुक्त अनुसंधान कर रही है। पनवेल, नवी मुंबई में गैस हाइड्रेट अनुसंधान एवं प्रौद्योगिकी केन्द्र (जीएचआरटीसी) गैस हाइड्रेट्स के मूल सिद्धांतों को पूरा करता है, गैस हाइड्रेट्स की खोज और संभावित दोहन के लिए अनुसंधान, तकनीकी–अर्थशास्त्र और सुरक्षित और पर्यावरण अनुकूल तरीके से गैस हाइड्रेट्स का व्यावसायीकरण किया जा रहा है।

वर्ष 2022–23 में भी ओएनजीसी ने अपने विभिन्न संस्थानों में पारंपरिक और गैर–पारंपरिक हाइड्रोकार्बन के लिए कई अनुसंधान एवं विकास अध्ययन किए।

### 8.7.2. उद्योग–शिक्षाविद् भागीदारी

ओएनजीसी ने हाइड्रोकार्बन और ऊर्जा के वैकल्पिक स्रोतों की खोज और दोहन को बढ़ाने हेतु स्वदेशी प्रौद्योगिकियों के विकास के लिए एक सामूहिक अनुसंधान एवं विकास कार्यक्रम की दिशा में काम करने हेतु 19 जनवरी, 2015 को नई दिल्ली में पैन आईआईटी के साथ सहयोग ज्ञापन (एमओसी) पर हस्ताक्षर किए हैं। पैन आईआईटी सात प्रमुख भारतीय प्रौद्योगिकी संस्थानों अर्थात् आईआईटी–खड़गपुर, आईआईटी–कानपुर, आईआईटी–मद्रास, आईआईटी–मुंबई, आईआईटी–दिल्ली, आईआईटी–गुवाहाटी और आईआईटी–रुड़की का एक संघ है। यह सतत अनुसंधान, विकास और क्षमता निर्माण के लिए एक दीर्घकालिक पहल है। इस कार्यक्रम के तहत ओएनजीसी संस्थानों/अनुसंधान एवं विकास केन्द्रों ने ओएनजीसी और आईआईटी खड़गपुर (सात आईआईटी की ओर से) के बीच हस्ताक्षरित सहयोग ज्ञापन के तहत 4 चरणों में 40 अनुसंधान एवं विकास परियोजनाएं शुरू की हैं। अनुसंधान एवं विकास कार्यक्रम का हाइड्रोकार्बन के अन्वेषण और दोहन को बढ़ाने के लिए स्वदेशी प्रौद्योगिकियों को विकसित करने का एक निश्चित उद्देश्य है। 31.12.2022 तक, 35 परियोजनाएं पूरी हो चुकी हैं और 5 परियोजनाएं प्रगति पर हैं।

### 8.7.3. आईओआर/ईओआर कार्यकलापों के क्षेत्र में ओएनजीसी द्वारा अनुसंधान एवं विकास पहल:

ओएनजीसी क्षेत्रों के निष्पादन विश्लेषण के लिए सतत आधार पर प्रयास करती है और निष्पादन और रिकवरी में सुधार के लिए उपयुक्त सुधारात्मक उपाय किए जाते हैं। वास्तव में, रिकवरी फैक्टर को 40% तक सुधारना ओएनजीसी के रणनीतिक लक्ष्यों में से एक है। ओएनजीसी द्वारा प्रचालित क्षेत्रों की निष्कर्षण दक्षता या रिकवरी कारक अंतरराष्ट्रीय मानकों के साथ तुलनीय है; हालांकि, इसके सुधार के लिए और प्रयास किए जा रहे हैं। रिकवरी कारक को बढ़ाने के लिए प्रमुख अनुसंधान एवं विकास उपाय निम्नानुसार हैं:

- **मुंबई हाई साउथ फील्ड में कम लवणता जल बाढ़ (एलएसडब्ल्यूएफ) पायलट:** एमएचएसआरडी चरण–4 के तहत बोर्ड द्वारा परियोजना को मंजूरी दे दी गई है। इसके अलावा, एलएसडब्ल्यूएफ स्क्रीनिंग रिपोर्ट को जून–2019 में डीजीएच द्वारा अनुमोदित किया गया था। प्रायोगिक परियोजना का कार्यान्वयन किया जा रहा है। अंतःक्षेपण मई, 2022 में शुरू हुआ था। इसमें 2035 तक वृद्धिशील रिकवरी में 0.8% की वृद्धि करने की परिकल्पना है।
- **झलोरा फील्ड के के–4 पे में एएसपी परियोजना का व्यवसायीकरण:** एएसपी परियोजना का क्रियान्वयन 22 मार्च से माना जाता है। इस परियोजना में ₹ 125.24 करोड़ के कैपेक्स की परिकल्पना की गई है। परियोजना के कार्यान्वयन में 2036–37 तक 0.774 एमएमटी के वृद्धिशील तेल की परिकल्पना की जाएगी।
- **बोरहोला क्षेत्र में इम्मिसिबल गैस अंतःक्षेपण:** इस योजना में 37% की रिकवरी और ₹ 64 करोड़ के कैपेक्स के साथ 0.30 एमएमटी के वृद्धिशील तेल की परिकल्पना की गई है। यह प्रक्रिया पायलट पैमाने पर दिसंबर 2016 में दो कुओं के माध्यम से शुरू हुई थी। यह पहली बार है जब ईओआर को असम में सफलतापूर्वक लागू किया गया है। परियोजना अगस्त 2022 से शुरू हुई।
- **कसोमारीगांव क्षेत्र में गैस असिस्टेड ग्रेविटी ड्रेनेज:** इस योजना में 33% की रिकवरी और ₹ 75 करोड़ के कैपेक्स के साथ 0.31 एमएमटी के वृद्धिशील तेल की परिकल्पना की गई है। एफआर अनुमोदित है और परियोजना कार्यान्वयनाधीन है। 2022–23 की चौथी तिमाही तक पूरा होने की संभावना है।
- **खोराघाट क्षेत्र में ग्रेविटी असिस्टेड इम्मिसिबल गैस इंजेक्शन (ईओआर):** योजना में 23% की रिकवरी और ₹ 157 करोड़ के कैपेक्स के साथ 0.15 एमएमटी के वृद्धिशील तेल की परिकल्पना की गई है। एफआर अनुमोदित है और परियोजना कार्यान्वयनाधीन है। 2022–23 की चौथी तिमाही तक पूरा होने की संभावना है।
- **संथाल में डाउन डिप एयर इंजेक्शन:** 6 एयर इंजेक्टर और 3 नए उत्पादकों के साथ 2 पैटर्न को मंजूरी दे दी गई है और कार्यान्वयन के अधीन है। परिकल्पित वृद्धिशील तेल 0.222 एमएमटी है।
- **बेचराजी क्षेत्र में पूर्ण क्षेत्र पॉलिमर बाढ़:** क्षेत्र कार्यान्वयन समय को कम करने के लिए पायलट परिणामों से पहले पूर्ण क्षेत्र पॉलिमर बाढ़ अध्ययन किया गया। वृद्धिशील लाभ 13 महीनों में 5,057 एम3 है, जबकि एफआर 4,960 एम 3 की परिकल्पना की गई है। योजना का पूर्ण आवेदन अनुमोदित कर दिया गया है और कार्यान्वयनाधीन है इस योजना में 2045–46 तक ~1.8 एमएमटी के वृद्धिशील तेल के साथ 63 नए विकास स्थानों (तेल उत्पादक: 35 और पॉलिमर इंजेक्टर: 28) की ड्रिलिंग की परिकल्पना की गई है।
- **संथाल फील्ड:** मौजूदा आईएससी योजना को अनुकूलित करने और पैटर्न एयर इंजेक्शन द्वारा 940 मीटर एमएसएल कंटूर से नीचे डाउन डिप ऑयल को लक्षित करने के लिए सिमुलेशन अध्ययन किया गया। इनपुट 15 अतिरिक्त एयर इंजेक्टर एफआर (एयर इंजेक्शन 7 से 13 एलसीएमडी तक बढ़ने के लिए) पर विचार किया गया। इसमें 2.6 एमएमटी (बीएयू पर ~5%) और 2035 तक रिकवरी

43% के वृद्धिशील तेल लाभ की परिकल्पना की गई है। डाउन डिप एयर इंजेक्शन अनुमोदित है और कार्यान्वयन के अधीन है।

- **साणंद में एएसपी पायलट:** ईआर समिति द्वारा अनुमोदित। परिकल्पित वृद्धिशील तेल 6,450 एम 3 (क्यूबिक मीटर)।
- **नवागम में उच्च दबाव एयर इंजेक्शन पायलट:** ईआर समिति द्वारा अनुमोदित। पहली बार हल्के तेल में एयर इंजेक्शन का परीक्षण किया जाएगा। परिकल्पित वृद्धिशील तेल 37,000 मी 3।
- **गंधार क्षेत्र में कार्बन कैप्चर, उपयोग और भंडारण (सीसीयूएस) के रूप में सीओ2 ईओआर:** यह भारत में सीसीयूएस के लिए पहला सीओ2 ईओआर होगा। गंधार क्षेत्र में सीसीयूएस के रूप में सीओ2–ईओआर का व्यवहार्यता अध्ययन किया गया। अध्ययन में 2025–26 से सीओ2 इंजेक्शन और 2026–27 से उत्पादन की परिकल्पना की गई है। इस परियोजना में 20 वर्षों के लिए 75 नए कुओं की खुदाई और 1500 टीपीडी की दर से सीओ2 इंजेक्शन की परिकल्पना की गई है। वृद्धिशील उत्पादन 2045–46 तक ओ + ओईजी का ~4.2 एमएमटी होने की परिकल्पना की गई है (तेल ~3.2 एमएमटी + गैस ~1 बीसीएम)। परियोजना के जीवन के दौरान लगभग 6.5 एमएमटी सीओ2 को अनुक्रमित किए जाने की उम्मीद है।

### 8.7.4. ओएनजीसी द्वारा पंजीकृत आरएंडडी पेटेंट

अनुसंधान एवं विकास किसी भी देश की उत्पादकता और आर्थिक विकास के प्रमुख वाहकों में से एक है। ओएनजीसी ने भी भारत के सामाजिक, सांस्कृतिक और आर्थिक विकास में योगदान देने के उद्देश्य से अपने व्यापक अनुसंधान एवं विकास कार्यक्रम के माध्यम से रचनात्मकता और नवाचार को हमेशा प्रोत्साहित किया है। ओएनजीसी में बौद्धिक संपदा (आईपी) सृजन ज्यादातर अपने कई संस्थानों और कार्य केंद्रों में किए गए अनुसंधान और विकास का परिणाम है, जिनमें से प्रत्येक अन्वेषण और उत्पादन मूल्य श्रृंखला में अपनी विशेषज्ञता के लिए समर्पित है। चालू वर्ष 2022–23 के दौरान दिसंबर, 2022 तक ओएनजीसी ने 10 पेटेंट प्राप्त किए हैं, 8 पेटेंट दायर किए हैं। इसके अलावा, इसने 1 कॉपीराइट पंजीकृत किया है और 1 कॉपीराइट के लिए आवेदन किया है।

इनके ब्योरे निम्नवत हैं:

**क. ओएनजीसी द्वारा प्राप्त पेटेंट:**

- हाइड्रोकार्बन अन्वेषण हेतु खोज की माइक्रोबायोलॉजिकल पद्धति।
- फ्रैक्चरिंग द्रव की तैयारी के लिए संरचना और विधि।
- गैस के पृथक्करण के लिए नवीन उपकरण।
- हाइड्रोजन सल्फाइड को हटाने और अपशिष्ट गैस से कार्बन डाइऑक्साइड को लाभप्रद रूप से पुनर्प्राप्त करने की एक प्रक्रिया।
- तेल और गैस कुओं के लिए बेहतर गुणों के साथ सीमेंट संरचना।
- साइक्लोपेंटाइल मिथाइल ईथर का उपयोग करके गैस हाइड्रेट्स का उत्पादन करने की विधि।
- अत्यधिक कम तापमान वाले भारतीय जलाशयों को तोड़ने के लिए उपयुक्त अभिनव कम तापमान वाली ब्रेकर प्रणाली।
- फंगल पूर्वशोधन द्वारा लिग्नाइट बायोमेथेनेशन की रणनीतिक वृद्धि।
- ईंधन गैस प्रयोजन के लिए हीटर ट्रीटर गैस की प्राप्ति।
- गैस हाइड्रेट्स के पृथक्करण की एक विधि।

**ख. ओएनजीसी द्वारा दायर पेटेंट:**

- कच्चे तेल की तापीय परिपक्वता के मात्रात्मक आकलन के लिए एक प्रणाली और विधि (पीसीटी अनुप्रयोग)।
- बेसमेंट जलाशयों में हाइड्रोकार्बन प्रभाव क्षेत्रों की पहचान करने की एक विधि।
- उच्च गतिविधि और दीर्घकालिक स्थिरता और प्रक्रिया वाले सीओ2 मेथेनेशन प्रतिक्रिया के लिए उत्प्रेरक (04 देशों– यूके, जापान, जर्मनी, यूएस में दायर)।
- अत्यधिक उच्च दबाव और उच्च तापमान अनुप्रयोगों में उपयोग के लिए पूर्णता द्रव हेतु संरचना।
- तलछटी चट्टानों के डायजेनेसिस के दौरान फिजियो–रासायनिक स्थितियों और घटनाओं का मूल्यांकन करने की विधि।

**ग. ओएनजीसी द्वारा पंजीकृत कॉपीराइट**

- एसएएस (सकर रॉड पंप का प्रणाली विश्लेषण)।

**घ. ओएनजीसी द्वारा दायर कॉपीराइट:**

- तेल क्षेत्र के लिए डेटा विश्लेषण के लिए "ऑयल फील्ड एनालाइजर (ओएफए)" सॉफ्टवेयर।

### 8.7.5. ओएनजीसी में शामिल नई प्रौद्योगिकियां

उद्योग की आवश्यकता के अनुसार ओएनजीसी में प्रौद्योगिकी के उन्नयन और समावेशन के लगातार ठोस प्रयास किए जा रहे हैं। वर्ष 2022-23 के दौरान मूल्यांकन/शामिल की गई प्रौद्योगिकियों की मुख्य विशेषताएं नीचे दी गई हैं:

- **गामा डिटेक्टर सिस्टम (जीडीएस):** इस नई प्रणाली का उपयोग हाल ही में स्थापित एआर-एआर डेटिंग सुविधा के लिए विकिरणित नमूनों की गामा गतिविधि के माप के लिए किया जाएगा। इसके साथ, लैब पूरी तरह से एआर-एआर डेटिंग काम लेने के लिए सुसज्जित है।
- **स्पेक्टर ऑल:** एक फील्ड पोर्टेबल स्पेक्ट्रोरेडियोमीटर के रूप में रिमोट सेंसिंग और जियोमैटिक्स डोमेन के हिस्से के रूप में एक और अत्याधुनिक अनुसंधान सुविधा जोड़ी गई है। यह सुविधा कई नई पहल करने में मदद करेगी और मानक लाइब्रेरी स्पेक्ट्रा की मदद से वर्तमान में किए जा रहे वर्णक्रमीय वर्गीकरण के व्याख्यात्मक विश्वास का लाभ उठाएगी।
- **एक्सप्लोर-इंटीग्रेटेड डेटा प्लेटफॉर्म में नए मॉड्यूल:** एक्सप्लोर (कॉपीराइटी 2018) एक अभिनव, एकीकृत और एकीकृत अन्वेषण डेटा प्रबंधन प्लेटफार्म है जो 2016 से पूरी अन्वेषण मूल्य श्रृंखला की सेवा प्रदान कर रहा है। वर्ष के दौरान, कॉर्पोरेट, बेसिन और फॉरवर्ड बेस स्तरों पर आधारित हितधारकों के अनुभव को समृद्ध करने के लिए एक्सप्लोर-जियो मैप और एक्सप्लोर-इनसाइट्स जैसे दो नए शक्तिशाली मॉड्यूल प्रकाशित किए गए थे।
  - ✓ **एक्सप्लोर-जियोमैप** का उद्देश्य बहुभुज डेटा से संबंधित प्रत्येक इकाई को आकार या जियो जेएसओएन प्रारूपों, पॉइंट डेटा जैसे स्थान और कुओं, भू-संदर्भित छवियों आदि के संदर्भ में विजुअलाइज करना है जो मानचित्र परत पर एक्सप्लोर पारिस्थितिकी तंत्र में उपलब्ध है। यह उपयोगकर्ताओं को एक एकीकृत वातावरण में उनके डेस्कटॉप वेब ब्राउज़र पर एक इंटरैक्टिव, तेज और अत्याधुनिक मैपिंग सेवा की सुविधा प्रदान करेगा, जिसमें विभिन्न संस्थाओं से संबंधित जानकारी केवल कुछ ही क्लिक के साथ उपलब्ध है।
  - ✓ **एक्सप्लोर-इनसाइट्स** प्रावधान इंटरैक्टिव, सहज ज्ञान युक्त, शक्तिशाली और ड्रिल-थ्रो डैशबोर्ड एक्सप्लोर प्लेटफॉर्म में उपलब्ध डेटा के शीर्ष पर बनाए गए हैं, जिसका उद्देश्य अन्वेषण डेटा विश्लेषण का है ताकि एक एकल स्रोत और एक सच संस्करण हो। एकरेज, लोकेशन, कूप (डीजीआर और ईडब्ल्यूआईपी), खोज, अधिग्रहण जैसी संस्थाओं के लिए डैश बोर्ड में इंटरैक्टिव चार्ट शामिल हैं जो सारणीबद्ध डेटा द्वारा पूरक हैं। वर्तमान में बेसिन और ओएनजीसी स्तरों पर डेटा की कल्पना की जा रही है और इसका निर्माण किया जा रहा है ताकि जानकारी युक्त निर्णय लेने में सहायता के लिए शक्तिशाली अंतर्दृष्टि और अधिगम को प्राप्त किया जा सके।
- **रिजर्व अल्टिमा (पीआरएमएस):** बेसिन और फील्ड स्तरों के लिए एक्रेशन पैटर्न रिपोर्ट नामक एक अत्यधिक जटिल और मांगी गई रिपोर्ट को स्वयं तैयार किया गया और आरईसी समूह को केवल एक क्लिक के साथ इसे सृजित करने की अनुमति देने के लिए इन-हाउस सॉफ्टवेयर के साथ एकीकृत किया गया। ओएनजीसी के सभी क्षेत्रों के लिए 1995 से फील्ड स्तर के आरईसी डेटा को सफलतापूर्वक नए पीआरएमएस शिकायत डेटाबेस मॉडल में स्थानांतरित कर दिया गया है। इन-हाउस विकसित सॉफ्टवेयर में बिजनेस इंटेलिजेंस बीआई विजुअलाइजेशन को सफलतापूर्वक शामिल किया। इसके अलावा, विजुअलाइजेशन के माध्यम से कई इंटरैक्टिव, सहज और ड्रिल का निर्माण किया गया है जैसे कि इन प्लेस और ईयूआर के संदर्भ में क्षेत्र विकास, क्षेत्र-वार स्थिति आदि ताकि इस पर विहंगम दृष्टि डाली जा सके।

### 8.7.6. आरएंडडी अध्ययनों के माध्यम से प्राप्त लाभ

ओएनजीसी द्वारा शुरू की गई सभी अनुसंधान एवं विकास परियोजनाओं ने ओएनजीसी की तेज और प्रभावी ईएंडपी गतिविधियों को सुविधाजनक बनाया। संस्थानों द्वारा किए गए अनुसंधान एवं विकास कार्यकलापों ने कंपनी में उपलब्ध अत्याधुनिक प्रौद्योगिकी का उपयोग करते हुए मौजूदा पेट्रोलियम प्रांतों में नए तेल की खोज के माध्यम से भंडार में वृद्धि सहित उच्च सफलता-अनुपात सुनिश्चित करके कंपनी के विकास को बढ़ाने में मदद की है। अनुसंधान एवं विकास गतिविधियों ने रिकवरी फैक्टर में सुधार, वृद्धिशील तेल लाभ, फ्रंटियर बेसिनों, गहरे पानी के ब्लॉकों में अन्वेषण की जटिल चुनौतियों को कम करने और गैर-पारंपरिक ऊर्जा संसाधनों का दोहन करने में भी मदद की है।



अध्याय 9



# जैव ईंधन

# 9 जैव ईंधन

## 9.1. गैर परंपरागत ऊर्जा

भारत दुनिया की सबसे तेजी से बढ़ती अर्थव्यवस्थाओं में से एक है। विकास का उद्देश्य का फोकस आर्थिक विकास, समानता और मानव कल्याण पर है। ऊर्जा सामाजिक–आर्थिक विकास के लिए एक महत्वपूर्ण इनपुट है। किसी देश की ऊर्जा कार्यनीति का उद्देश्य दक्षता तथा सुरक्षा और पहुंच प्रदान करना है जो पर्यावरण के अनुकूल हो और ऊर्जा उत्पादन के लिए प्राथमिक संसाधनों का इष्टतम मिश्रण हो। अगले कुछ दशकों में हमारे देश में ऊर्जा परिदृश्य में जीवाश्म ईंधन एक प्रमुख भूमिका निभाते रहेंगे। तथापि, पारंपरिक या जीवाश्म ईंधन संसाधन सीमित, गैर–नवीकरणीय, प्रदूषणकारी हैं और इसलिए, विवेकपूर्ण रूप से इन्हें उपयोग करने की आवश्यकता है। दूसरी ओर, नवीकरणीय ऊर्जा संसाधन स्वदेशी, गैर–प्रदूषणकारी और लगभग न समाप्त होने वाली हैं। भारत प्रचुर मात्रा में नवीकरणीय ऊर्जा संसाधनों से संपन्न है। इसलिए, उनके उपयोग को हर संभव तरीके से प्रोत्साहित किया जाना चाहिए। जैव ईंधन नवीकरणीय बायोमास संसाधनों से प्राप्त होते हैं और इसलिए, सतत विकास को बढ़ावा देने एवं उच्च आर्थिक विकास से जुड़े परिवहन ईंधन के लिए तेजी से बढ़ती आवश्यकताओं को पूरा करने के साथ–साथ भारत की विशाल ग्रामीण आबादी की ऊर्जा आवश्यकताओं को पूरा करने में पारपरिक ऊर्जा स्रोतों के पूरक के लिए एक रणनीतिक लाभ प्रदान करते हैं।

## 9.2. एथेनॉल मिश्रित पेट्रोल (ईबीपी) कार्यक्रम

सरकार तेल विपणन कंपनियों (ओएमसी) के माध्यम से एथेनोल मिश्रित पेट्रोल (ईबीपी) कार्यक्रम कार्यान्वित कर रही है जिसके अंतर्गत ओएमसीज 10% तक एथेनोल के साथ एथेनोल मिश्रित पेट्रोल बेचती हैं। 2001 में, भारत सरकार ने दो महाराष्ट्र में और एक उत्तर प्रदेश में केवल अपने संबंधित आपूर्ति क्षेत्रों के तहत खुदरा दुकानों को एथेनॉल मिश्रित पेट्रोल की आपूर्ति करने के लिए तीन पायलट परियोजनाएं शुरू कीं। पायलट परियोजनाओं के माध्यम से उपर्युक्त क्षेत्र परीक्षणों के अलावा, अनुसंधान एवं विकास अध्ययन भी एक साथ किए गए थे। पायलट परियोजनाएं और अनुसंधान एवं विकास अध्ययन दोनों सफल रहे और पेट्रोल के साथ 5% तक एथेनॉल का मिश्रण और वाहनों में एथेनॉल मिश्रित पेट्रोल का उपयोग शुरू किया।

तदनुसार, भारत सरकार ने दिनांक 01.01.2003 से 5% एथेनॉल मिश्रित पेट्रोल की बिक्री के लिए नौ राज्यों और चार संघ राज्य क्षेत्रों में एथेनॉल मिश्रित पेट्रोल की आपूर्ति करने का संकल्प लिया है।

इस कार्यक्रम का उद्देश्य कई परिणामों को प्राप्त करना है जैसे:

- पर्यावरण संबंधी चिंताओं को दूर करना,
- आयात निर्भरता को कम करना, और
- कृषि क्षेत्र को बढ़ावा देना,

एथेनॉल की आपूर्ति बढ़ाने के लिए सरकार ने 10 दिसंबर, 2014 को पेट्रोकेमिकल मार्ग सहित सेल्यूलोसिक और लिग्नो–सेल्यूलोसिक सामग्री जैसे शीरे के अलावा अन्य गैर–खाद्य फीडस्टॉक से उत्पादित एथेनॉल की खरीद करने का निर्णय लिया। ईबीपी कार्यक्रम के तहत एथेनॉल की कीमत को प्रशासित करने का भी निर्णय लिया गया।

ईएसवाई 2018–19 में एथेनॉल उत्पादन के लिए पहली बार चीनी और चीनी सिरा की अनुमति दी गई थी ताकि उद्योग को अपने अतिरिक्त स्टॉक को समाप्त करने में सहायता मिल सके। इसके अलावा, ईएसवाई 2020–21 में, एथेनॉल के उत्पादन के लिए भारतीय खाद्य निगम (एफसीआई) के पास उपलब्ध अधिशेष चावल और मक्का को भी अनुमति दी गई है।

इन निर्णयों से, ईबीपी कार्यक्रम के लिए एथेनॉल की उपलब्धता में काफी वृद्धि होने की उम्मीद है।

एथेनॉल आपूर्ति वर्ष (ईएसवाई) 2021–22 (01.12.2021–30.11.2022) के दौरान पेट्रोल में 433.6 करोड़ लीटर एथेनॉल मिश्रित किया गया, जिसके परिणामस्वरूप पीएसयू ओएमसी द्वारा 10.02% का मिश्रण प्रतिशत था, जो ईबीपी कार्यक्रम के तहत अब तक का सबसे अधिक है। सार्वजनिक क्षेत्र की ओएमसीज ने नवंबर, 2022 की लक्षित तिथि से बहुत पहले जून, 2022 में पेट्रोल में एथेनॉल के 10% मिश्रण का लक्ष्य हासिल कर लिया।

मंत्रिमंडल के अनुमोदन से, 01 नवंबर 2023 से एथेनॉल आपूर्ति वर्ष (ईएसवाई) को एक वर्ष के 01 नवंबर से अगले वर्ष के 31 अक्टूबर तक एथेनॉल आपूर्ति अवधि के रूप में फिर से परिभाषित किया गया है।

ईएसवाई 2022–23 के लिए, सरकार ने निम्नानुसार उपयोग किए गए कच्चे माल के आधार पर एथेनॉल खरीद के लिए एक बढ़ा हुआ लाभकारी मूल्य निर्धारित किया है:

| एथेनॉल का कच्चा माल | ₹/लीटर में एक्स–मिल मूल्य |
|---|---|
| सी भारी शीरा | 49.41 |
| बी भारी शीरा | 60.73 |
| ईख रस / चीनी / चीनी सिरप | 65.61 |

ईएसवाई 2022–23 के लिए, सार्वजनिक क्षेत्र की ओएमसीज ने निम्नानुसार उपयोग किए गए कच्चे माल के आधार पर एथेनॉल खरीद के लिए एक बढ़ा हुआ लाभकारी मूल्य निर्धारित किया है:

| कच्चा माल | ₹/लीटर में एक्स–मिल मूल्य |
|---|---|
| क्षति खाद्यान्न | 55.54 |
| एफसीआई द्वारा जारी अधिशेष चावल | 58.50 |
| मक्का | 56.35 |

*इन मूल्यों पर जीएसटी और परिवहन शुल्क देना होता है।

**9.2.1.** मंत्रालयी समिति द्वारा भारत में एथेनॉल मिश्रण 2020–25 के लिए एक रूपरेखा तैयार की गयी और विश्व पर्यावरण दिवस यानी 5 जून, 2021 को सार्वजनिक डोमेन में रखा गया। यह रूपरेखा सभी हितधारकों को एक साथ लाकर पेट्रोल में 20% एथेनॉल मिश्रण के लक्ष्य को प्राप्त करने के लिए मार्गदर्शन प्रदान करती है। इसके अलावा, जैव ईंधन संबंधी राष्ट्रीय नीति–2018 को जून, 2022 में संशोधित किया गया था जिसमें अन्य बातों के साथ–साथ निम्नलिखित शामिल हैं:

i) जैव ईंधन के उत्पादन के लिए अधिक फीडस्टॉक की अनुमति देना,

ii) ईएसवाई 2025–26 के लिए पेट्रोल में एथेनॉल के 20% मिश्रण के एथेनॉल मिश्रण लक्ष्य को 2030 से बढ़ाना।

iii) विशेष आर्थिक क्षेत्रों (एसाईजेड) / निर्यातोन्मुख इकाइयों (ईओयू) में स्थित इकाइयों द्वारा मेक इन इंडिया कार्यक्रम के अंतर्गत देश में जैव ईंधनों के उत्पादन को बढ़ावा देना; और

iv) विशिष्ट मामलों में जैव ईंधन के निर्यात के लिए अनुमति प्रदान करना।

**9.2.2.** ईएसवाई 2025–26 के दौरान 20% मिश्रण प्राप्त करने के लिए एथेनॉल की अनुमानित आवश्यकता लगभग 1016 करोड़ लीटर होगी, जिसके लिए आसवन क्षमता को मौजूदा 722 करोड़ लीटर प्रति वर्ष से बढ़ाकर 1500 करोड़ लीटर प्रति वर्ष (ईबीपी के लिए 1,016 करोड़ लीटर प्रति वर्ष की आवश्यकता है) करने की आवश्यकता है। तदनुसार, ओएमसी ने एथेनॉल की कमी वाले राज्यों में नए एथेनॉल संयंत्र स्थापित करने के इच्छुक संभावित परियोजना प्रस्तावकों के साथ समझौतों पर हस्ताक्षर करने के लिए रुचि की अभिव्यक्ति (ईओआई) प्रकाशित की। इस ईओआई के लिए, सार्वजनिक क्षेत्र की ओएमसीज ने 431 करोड़ लीटर प्रति वर्ष की उत्पादन क्षमता वाले समर्पित एथेनॉल संयंत्रों की स्थापना के लिए 131 परियोजना प्रस्तावकों के साथ दीर्घकालिक उठान करार (एलटीओए) पर हस्ताक्षर किए हैं।

## 9.3. जैव डीजल कार्यक्रम और प्रयुक्त खाद्य तेल (यूसीओ) से जैव डीजल

अप्रैल से दिसंबर, 2022 की अवधि के दौरान, ओएमसीज ने डीजल के साथ मिश्रण के लिए लगभग छह करोड़ लीटर जैव डीजल की खरीद की है।

ओएमसीज यूसीओ से उत्पादित जैव डीजल की खरीद के लिए नियमित रूप से रुचि पत्र (ईओआई) जारी कर रही हैं।

## 9.4. बायो–जेट (एटीएफ)

सरकार ने देश में सतत विमानन ईंधन (एसएएफ) / जैव–विमानन टरबाइन ईंधन (बायो–एटीएफ) कार्यक्रम को आगे बढ़ाने के लिए जून 2021 में एक समिति का गठन किया था। समिति ने व्यापक तरीके से देश में जैव–एटीएफ कार्यक्रम के विभिन्न पहलुओं की जांच की जिसमें अन्य बातों के साथ–साथ कच्चे माल की उपलब्धता, एटीएफ की मांग, एसएएफ उत्पादन के लिए प्रौद्योगिकियां, अंतरराष्ट्रीय विमानन के लिए कार्बन ऑफसेटिंग और न्यूनीकरण योजना (सीओआरएसआईए), भारतीय मानक ब्यूरो (बीआईएस), इंजन निष्पादन पर एसएएफ के प्रभाव, मिश्रण प्रतिशत, सर्वोत्तम अंतरराष्ट्रीय पद्धतियां आदि शामिल हैं ताकि भारत में एसएएफ / जैव–एटीएफ कार्यक्रम को आगे बढ़ाया जा सके। समिति ने सरकार को प्रतिवेदन प्रस्तुत कर दिया है। हितधारकों के साथ समिति के प्रतिवेदन पर विचार–विमर्श शुरू कर दिया गया है। एसएएफ के उपयोग / इसे अपनाने से ग्रीन हाउस गैस (जीएचजी) उत्सर्जन में कमी लाने में मदद मिलती है।

## 9.5. दूसरी पीढ़ी (2जी) का एथेनॉल

2018 में घोषित जैव ईंधन संबंधी राष्ट्रीय नीति का उद्देश्य 2025–26 तक पेट्रोल में एथेनॉल के 20% मिश्रण और 2030 तक डीजल में जैव डीजल के 5% मिश्रण को प्राप्त करने के सांकेतिक लक्ष्यों के साथ जैव ईंधन को तेजी से बढ़ावा देना है। इसलिए, पेट्रोल के साथ मिश्रण के उद्देश्य से देश में एथेनॉल के अधिकतम उत्पादन के लिए, एथेनॉल उत्पादन को बढ़ाने के लिए अन्य विकल्पों/मार्गों का पता लगाने की आवश्यकता है। सरकार ने पेट्रो रसायन माध्यम सहित सेल्यूलोसिक और लिग्नो–सेल्यूलोसिक सामग्री जैसे शीरे के अलावा अन्य गैर–खाद्य फीडस्टॉक से उत्पादित एथेनॉल की खरीद की अनुमति पहले ही दे दी है।

लिग्नो–सेल्यूलोसिक बायोमास को ईबीपी कार्यक्रम के लिए एथेनॉल की बढ़ती मांग को पूरा करने के लिए दूसरी पीढ़ी (2 जी) एथेनॉल के संभावित स्रोत के रूप में माना जा रहा है। विज्ञान और प्रौद्योगिकी विभाग के तहत एक स्वायत्त संगठन, टेक्नोलॉजी इंफॉर्मेशन, फोरकास्टिंग एंड असेसमेंट काउंसिल (टीआईएफएसी) की रिपोर्ट के अनुसार, देश भर में अधिशेष बायो–मास की उपलब्धता है जिसे आम तौर पर किसानों द्वारा अपशिष्ट निपटान गतिविधि के रूप में जलाया जा रहा है जो पर्यावरण प्रदूषण में भी योगदान दे रहा है।

एथेनॉल उत्पादन के लिए वैकल्पिक मार्ग अर्थात दूसरी पीढ़ी (2 जी) मार्ग खोलने के बाद, पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के प्रशासनिक नियंत्रण के तहत सार्वजनिक क्षेत्र की तेल विपणन कंपनियां देश के विभिन्न हिस्सों में 2 जी जैव–रिफाइनरियां स्थापित कर रही हैं। एचपीसीएल द्वारा बठिंडा (पंजाब), बीपीसीएल द्वारा बारगढ़ (ओडिशा) और एनआरएल द्वारा नुमालीगढ़ (असम) परियोजनाएं निर्माण के उन्नत चरण में हैं। पानीपत में 2जी एथेनॉल जैव रिफाइनरी को माननीय प्रधानमंत्री द्वारा पहले ही राष्ट्र को समर्पित किया जा चुका है।

2जी जैव–रिफाइनरियों की स्थापना को प्रोत्साहित करने के लिए सरकार ने लिग्नो–सेल्यूलोसिक बायो–मास और अन्य नवीकरणीय फीडस्टॉक का उपयोग करते हुए एकीकृत जैव–एथेनोल परियोजनाओं को वित्तीय सहायता प्रदान करने के लिए प्रधानमंत्री जी–वन (जैव ईंधन–वातावरण अनुकूल फसल निवारण) योजना नामक एक योजना शुरू की है। इस योजना में, 2018–19 से 2023–24 की अवधि के लिए ₹ 1,969.50 करोड़ के कुल वित्तीय परिव्यय के साथ लिग्नो–सेल्यूलोसिक बायोमास और अन्य नवीकरणीय फीडस्टॉक का उपयोग करके बारह एकीकृत जैव–एथेनॉल परियोजनाओं सहित दस डेमो परियोजनाओं को वित्तीय सहायता प्रदान की जाएगी।

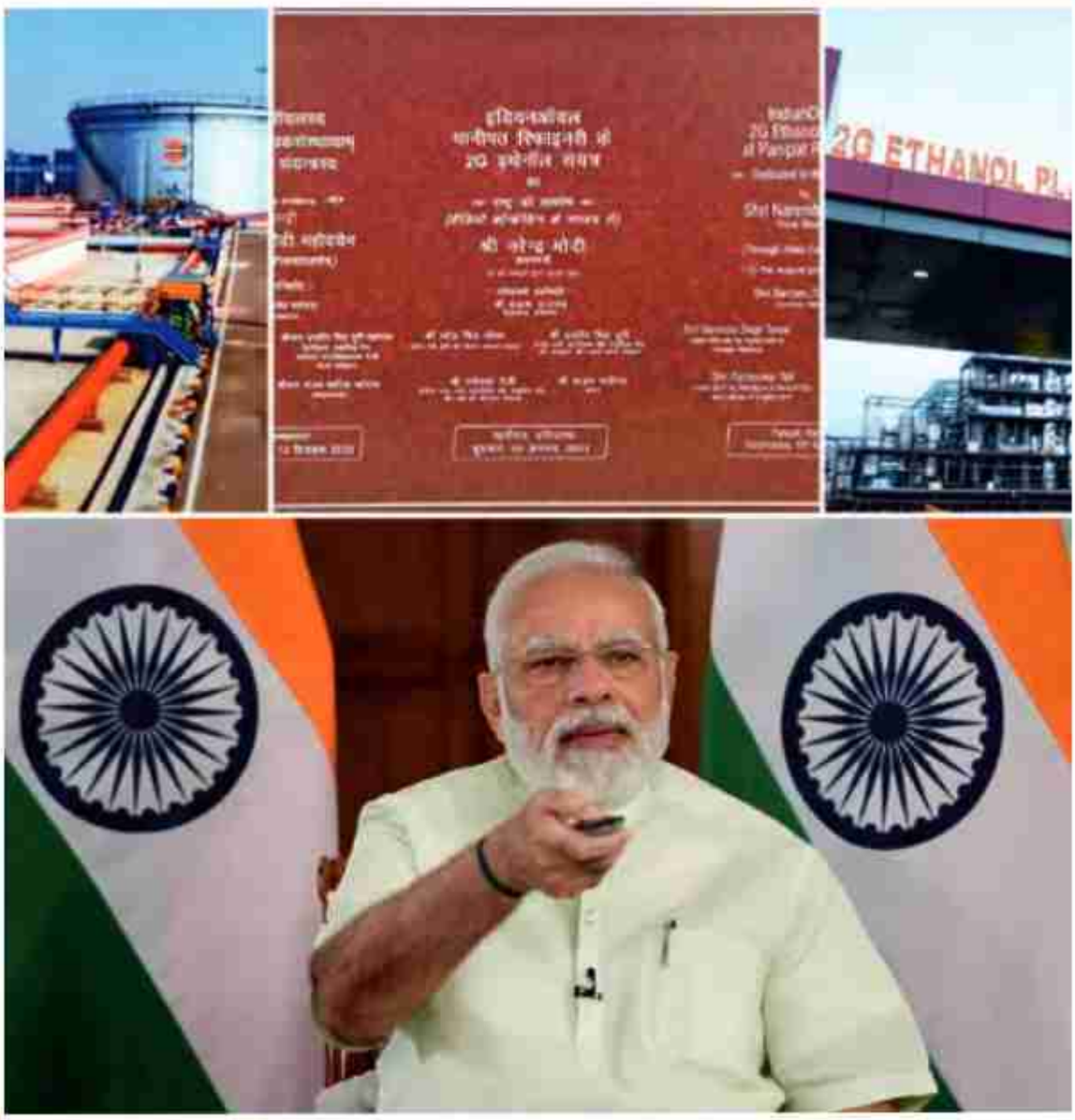
पीएम जी–वन योजना के तहत आईओसीएल, बीपीसीएल, एचपीसीएल, एनआरएल, एमआरपीएल और शेल इंडिया मार्केट प्राइवेट लिमिटेड की छह वाणिज्यिक परियोजनाओं तथा आईओसीएल, एचपीसीएल और चेमपोलिस इंडिया प्राइवेट लिमिटेड की तीन प्रदर्शन परियोजनाओं के लिए वित्तीय सहायता को मंजूरी दी गई है।

## 9.6. विश्व जैव ईंधन दिवस

पारंपरिक जीवाश्म ईंधन के विकल्प के रूप में गैर–जीवाश्म ईंधन के महत्व के बारे में जागरूकता पैदा करने और जैव ईंधन क्षेत्र में सरकार द्वारा किए गए विभिन्न प्रयासों को उद्धृत करने के लिए हर साल 10 अगस्त को विश्व जैव ईंधन दिवस मनाया जाता है।

विश्व जैव ईंधन दिवस–2022 का विषय "कार्बन न्यूट्रल वर्ल्ड की ओर जैव ईंधन" था। विश्व जैव ईंधन दिवस के अवसर पर, पेट्रोलियम और प्राकृतिक गैस मंत्रालय ने जैव ईंधन के प्रचार और प्रसार पर चर्चा करने के लिए एक वेबिनार का आयोजन किया। इस दिन, माननीय प्रधान मंत्री द्वारा पानीपत में 2 जी एथेनॉल जैव–रिफाइनरी राष्ट्र को समर्पित की गई थी।

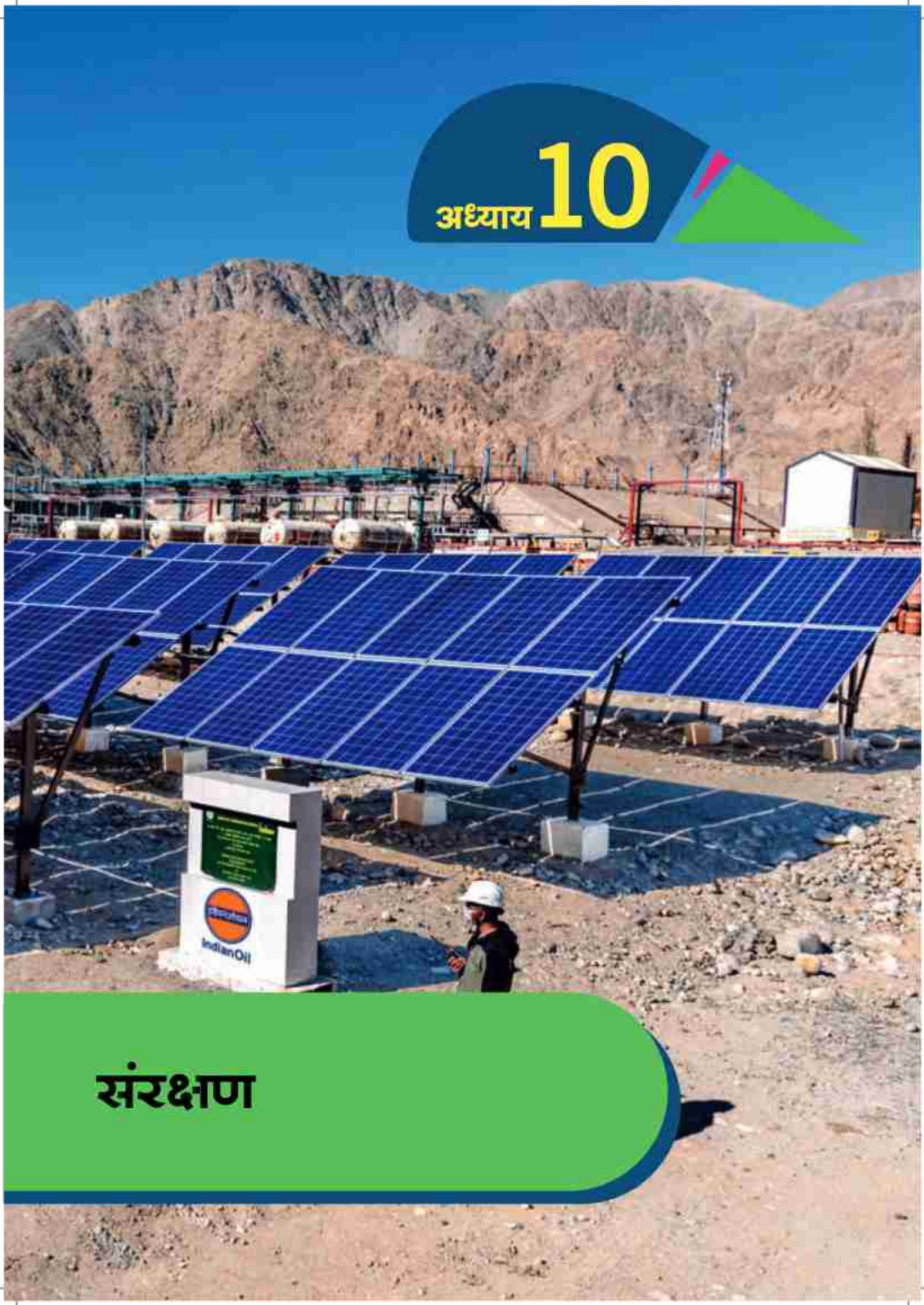





विश्व जैव ईंधन दिवस के अवसर पर माननीय प्रधानमंत्री जी ने पानीपत, हरियाणा में दूसरी पीढ़ी (2जी) के एथेनॉल संयंत्र को समर्पित किया।



अध्याय 10




# संरक्षण

# 10 संरक्षण

**10.1.** पेट्रोलियम संरक्षण अनुसंधान संघ (पीसीआरए) भारत सरकार के पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के तहत एक पंजीकृत सोसायटी है। पीसीआरए एक गैर–लाभकारी राष्ट्रीय सरकारी एजेंसी है जो अर्थव्यवस्था के विभिन्न क्षेत्रों में ऊर्जा दक्षता के लिए अभियान चलाती है। यह तेल पर देश की अत्यधिक निर्भरता को कम करने के लक्ष्य के साथ पेट्रोलियम संरक्षण के लिए नीतियों और प्रस्तावों को तैयार करने में सरकार की सहायता करता है। यह ईंधन–कुशल उपकरणों और उपकरणों के विकास के लिए अनुसंधान और विकास गतिविधियों हेतु निधि प्रदान करता है और ईंधन कुशल प्रौद्योगिकियों को अपनाने के प्रयासों का समर्थन करता है। बहु–आयामी क्षेत्र गतिविधियों के माध्यम से, यह पेट्रोलियम उत्पादों के संरक्षण की आवश्यकता के बारे में सार्वजनिक जागरूकता भी बढ़ाता है। पीसीआरए अपने लक्षित दर्शकों तक अपने संरक्षण संदेश की पहुंच को अधिकतम करने के लिए सोशल मीडिया की शक्ति का भी लाभ उठाता है। पीसीआरए के संरक्षण प्रयासों पर विभिन्न ईंधन–बचत सिफारिशों और अपडेट के अलावा, दर्शकों को शामिल करने के लिए समय–समय पर विभिन्न प्रकार की लोगों से जुड़ी गतिविधियां आयोजित की जाती हैं। पीसीआरए ने तेल संरक्षण और ईंधन दक्षता को बढ़ावा देने के लिए विभिन्न भाषाओं में कई फिल्में, रेडियो जिंगल्स और मुद्रित साहित्य तैयार किए हैं।

## 10.2. क्षेत्रीय कार्यकलाप

पीसीआरए के पास विभिन्न क्षेत्रों जैसे घरेलू, औद्योगिक, परिवहन और कृषि में ईंधन के संरक्षण के लिए दर्शन का प्रचार करने के उद्देश्य से एक सुपरिभाषित क्षेत्र की खोज का एक अच्छी सेट है। इसके तहत पीसीआरए ऊर्जा लेखा परीक्षा, पीएटी (एमईए और एम एंड वी) और अनुपालन लेखा परीक्षा, चालक प्रशिक्षण कार्यक्रम, एसटीयू डिपो के लिए ईंधन दक्षता सुधार कार्यक्रम, किसानों के लिए कृषि कार्यशालाएं और किसान मेले, एलपीजी उपयोगकर्ताओं के लिए कार्यशाला, छात्रों के लिए जागरूकता अभियान, युवा कार्यक्रम आदि जैसी गतिविधियों का आयोजन करता है। इसके अलावा, उद्योग कार्मिकों के लिए तकनीकी संगोष्ठियों और कार्यशालाओं और प्रशिक्षण कार्यक्रमों के माध्यम से ऊर्जा वकालत और योग्यता निर्माण अभ्यास किए जाते हैं।

### 10.2.1 औद्योगिक क्षेत्र

**(i) ऊर्जा लेखा परीक्षा:**

पीसीआरए पीएटी (प्रदर्शन, उपलब्धि और व्यापार) व्यवस्था में अनिवार्य ऊर्जा लेखा परीक्षा और निगरानी एवं सत्यापन लेखा परीक्षा करके ऊर्जा कुशल उद्योगों को सहायता प्रदान करता है। पीएटी (प्रदर्शन, उपलब्धि और व्यापार) जलवायु परिवर्तन संबंधी राष्ट्रीय कार्य योजना (एनएपीसीसी) के तहत बढ़ी हुई ऊर्जा दक्षता (एनएमईईई) से संबंधित राष्ट्रीय मिशन का हिस्सा है, जिसका उद्देश्य भारत में बड़े ऊर्जा–कुशल उद्योगों में ऊर्जा दक्षता को बढ़ाना है।

**(ii) तकनीकी सम्मेलन/सेमीनार/संस्थागत प्रशिक्षण कार्यक्रम:**

पीसीआरए औद्योगिक क्षेत्र में ऊर्जा दक्षता बढ़ाने के लिए जागरूकता और तकनीकी जानकारी के प्रसार के लिए संस्थागत प्रशिक्षण कार्यक्रम, औद्योगिक कार्यशालाएं, सेमिनार/तकनीकी बैठकें आयोजित करता रहा है।

### 10.2.2. परिवहन क्षेत्र

परिवहन क्षेत्र में ऊर्जा की भारी बचत की संभावना है। इसका लाभ उठाने के लिए, पीसीआरए राज्य परिवहन उपक्रमों (एसटीयू), निजी फ्लीट ऑपरेटरों, निजी और सार्वजनिक क्षेत्र के संगठनों के लिए विभिन्न प्रकार के कार्यक्रम आयोजित करता है ताकि बेहतर रखरखाव प्रथाओं, बेहतर ड्राइविंग आदतों, उत्सर्जन जागरूकता कार्यक्रमों के माध्यम से पेट्रोल, डीजल, स्नेहक और ग्रीस के कुशल उपयोग को बढ़ावा दिया जा सके।

**(i) चालक प्रशिक्षण कार्यक्रम (डीटीपी) और ईंधन दक्षता सुधार कार्यक्रम (एफईआईपी)**

एसटीयू, सेना, वायु सेना, अर्ध सैन्य बलों, तेल कंपनियों और निजी फ्लीट ऑपरेटरों के ड्राइवरों को उनके ड्राइविंग कौशल में सुधार करने के लिए प्रशिक्षण दिया जाता है। पीसीआरए का ड्राइवर प्रशिक्षण कार्यक्रम केएमपीएल को बेहतर बनाने के लिए सबसे प्रभावी और महत्वपूर्ण माध्यमों में से एक के रूप में उभरा है।

ईंधन दक्षता सुधार कार्यक्रम (एफईआईपी) लक्षित बसों के लक्षित चालक और रखरखाव को प्रशिक्षित करने का एक एकीकृत कार्यक्रम है। डिपो के विस्तृत मासिक आंकड़ा विश्लेषण के आधार पर, कम प्रदर्शन करने वाले ड्राइवरों और बसों का चयन किया जाता है और 3 चरणों में उनके प्रदर्शन का मूल्यांकन किया जाता है।

### 10.2.3. कृषि क्षेत्र

कृषि क्षेत्र के सभी हितधारक पेट्रोलियम उत्पादों के संरक्षण में महत्वपूर्ण भूमिका निभाते हैं। पीसीआरए कृषि कार्यशालाओं और किसान मेलों में भाग लेता है जिसमें किसानों को ट्रैक्टरों के उचित चयन, संचालन और रखरखाव, लिफ्ट सिंचाई पंप, इंजन ड्राइव, पैर वाल्व, पाइप और फिटिंग के माध्यम से डीजल के संरक्षण के तरीकों और साधनों के बारे में शिक्षित किया जाता है।

## 10.3. संरक्षण क्षमता महोत्सव (सक्षम) –2022

हर साल, पीसीआरए, पीएसयू तेल और गैस कंपनियों के सहयोग से, अपनी ईंधन संरक्षण गतिविधियों को बढ़ावा देने और व्यापक पैमाने पर दृश्यता प्रदान करने के लिए एक महीने की अवधि वाला "सक्षम" नामक एक देशव्यापी जन–केंद्रित जन जागरूकता अभियान आयोजित करता है।

सक्षम–2022 निम्न विषय के साथ 11–30 अप्रैल, 2022 के दौरान आयोजित किया गया:

**हरित और स्वच्छ ऊर्जा अपनाएं, आजादी का अमृत महोत्सव मनाए**
**Azadi Ka Amrit Mahotsav through Green & Clean Energy**



सक्षम–2022 के उद्घाटन कार्यक्रम में पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के सचिव समय उत्तर भारत में पीसीआरए प्रचार वैनों को झंडा दिखाते हुए।



सक्षम–2022 के दौरान नई दिल्ली में ई–वाहन रैली






सक्षम–2022 के दौरान भित्ति चित्रण और वॉल पेंटिंग प्रतियोगिता

## 10.4. आजादी का अमृत महोत्सव समारोह

पीसीआरए द्वारा आजादी का अमृत महोत्सव मनाने के लिए कार्यकलापों की एक श्रृंखला शुरू की गई है।

i. **पीसीआरए संरक्षण प्रश्नोत्तरी:** संरक्षण प्रश्नोत्तरी 05 जून 2021 से 5 सितंबर 2022 तक www.mygov.in में ऑनलाइन आयोजित किए गए थे। इसके तहत प्रश्नोत्तरी की श्रृंखला चलाई गई। प्रत्येक प्रश्नोत्तरी श्रृंखला 3 सप्ताह तक जारी रही और हर हफ्ते ₹ 5,000/– नकद पुरस्कार के साथ एक विजेता घोषित किया गया।

ii. **साइक्लोथॉन:** 2021–22 में आयोजित संस्मारक साइक्लोथॉन की श्रृंखला को जारी रखते हुए, 2022–23 में बेंगलुरु, चंडीगढ़, झांसी, सूरत, गुरुग्राम में पांच साइक्लोथॉन आयोजित किए गए, जिसमें प्रत्येक कार्यक्रम में बच्चों सहित नागरिकों की उत्साहपूर्ण भागीदारी "आजादी का अमृत महोत्सव" का संदेश दी जा रही थी और जनता के लिए परिवहन के प्रदूषण मुक्त साधनों के महत्व पर जोर दिया गया था।

## 10.5. आरएंडडी परियोजनाएं

पीसीआरए, अपने अनुसंधान एवं विकास विभाग के माध्यम से, पेट्रोलियम संरक्षण और पर्यावरण संरक्षण के उद्देश्य से अनुसंधान, विकास और तैनाती प्रयासों को बढ़ावा देने का प्रयास करता है और ईंधन कुशल प्रौद्योगिकियों को अपनाने और प्रसार के प्रयासों को प्रोत्साहित और समर्थन करता है। इस संबंध में यह प्रतिष्ठित अनुसंधान संस्थानों, तकनीकी संस्थानों, सीएसआईआर प्रयोगशालाओं आदि से अनुसंधान और विकास परियोजनाओं को आमंत्रित और प्रायोजित करता है। पीसीआरए ईंधन एडिटिव्स पर विक्रेताओं के दावे की सत्यता की जांच करने के लिए एक राष्ट्रीय निकाय के रूप में भी काम कर रहा है।

पीसीआरए ने ईंधन एडिटिव्स की जांच और प्रमाणन के लिए एक वेब पोर्टल–आधारित पारदर्शी प्रणाली बनाई है। पीसीआरए प्रमाणित परीक्षण संस्थानों से परीक्षण रिपोर्ट के आधार पर इच्छुक विक्रेताओं को आवश्यक प्रमाणीकरण जारी करता है। पीसीआरए मान्यता 5 साल के लिए वैध है, बशर्ते उत्पाद के तकनीकी और ईंधन विनिर्देशों में कोई बदलाव न हो।

**चल रही परियोजनाओं का ब्योरा:**

| क्र.सं. | चल रही परियोजना का नाम | अनुसंधान संगठन |
|---|---|---|
| 1. | ईंधन के रूप में पाइपयुक्त प्राकृतिक गैस (पीएनजी) वाले घरेलु रसोई गैस के लिए नई ऊर्जा कुशल छिद्रिल बर्नर का विकास | आईआईटी–खड़गपुर |
| 2. | घरेलु और सामुदायिक रसोई अनुप्रयोगों के लिए ईंधन लचीला बर्नर का डिजाइन और विकास | आईआईटी–हैदराबाद |
| 3. | एकीकृत स्पाउटेड बेड रोस्टर का डिजाइन और विकास | सीएसआईआर–सीएफटीआरआई, मैसूर |
| 4. | वाहनों के खराब होने के मामले में ट्रैफिक पर सबसे अधिक प्रभाव वाले सबसे महत्वपूर्ण स्थानों की पहचान | सीएसआईआर–सीआरआरआई दिल्ली |
| 5. | इनलाइन बायो–मीथेन संवर्धन और कार्बन डाईआक्साइड पृथक्करण प्रणाली का डिजाइन और विकास | सीएसआईआर–सीएमईआरआई–सीओईएफएम, लुधियाना |
| 6. | एमएसएमई में दहन प्रणालियों के कार्यनिष्पादन में सुधार करने के लिए हस्तक्षेप | आईआईटी दिल्ली |
| 7. | बायो गैस एकीकृत अर्द्ध पारदर्शी फोटोवोल्टिक थर्मल (एसपीवीटी) संग्राहक (बाई–एसपीवीटी) का कार्यनिष्पादन मूल्यांकन | आरजीआईपीटी, अमेठी |
| 8. | सड़क अनुप्रयोगों हेतु एनकेप्सुलेटेड एसफाल्ट–रबर पेवमेंट (ईएआरपीएवीई) उत्पाद का विकास | आईआईटी तिरुपति |
| 9. | बायो गैस पर कार्यरत माइक्रो टर्बाइन कम्बसर का डिजाइन और विकास | आईआईटी जोधपुर और आईआईपी देहरादून |

## 10.6. नीतिगत उपाय

ईंधन दक्षता और संरक्षण के संबंध में कई नीतिगत पहल की गई हैं/शुरू की गई हैं जिनमें भारी, मध्यम और हल्के वाहनों के लिए ईंधन दक्षता मानदंड, ट्रैक्टरों और टायरों के लिए मानक और लेबलिंग कार्यक्रम, उच्च तापीय दक्षता पाइप्ड नेचुरल गैस (पीएनजी) बर्नर का विकास, एलपीजी स्टोवों के लिए अनिवार्य बीआईएस प्रमाणन आदि शामिल हैं। उनमें से कुछ निम्नानुसार सूचीबद्ध हैं:

क) भारी वाहनों (एचडीवी) के लिए ईंधन दक्षता (एफई) मानदंड

ख) हल्के और मध्यम वाणिज्यिक वाहनों के लिए ईंधन दक्षता (एफई) मानदंड

ग) टायरों के मानक और लेबलिंग

घ) कृषि ट्रैक्टरों की स्टार लेबलिंग

ङ) उच्च तापीय दक्षता पीएनजी बर्नर का विकास

च) घरेलू एलपीजी स्टोव के लिए मानक और लेबलिंग (एस एंड एल) कार्यक्रम

छ) वीईसीटीओ (वाहन ऊर्जा खपत गणना उपकरण) प्रकार सिमुलेशन टूल के समान भारत ऊर्जा कुशल उपकरण (बीईईटी) का विकास

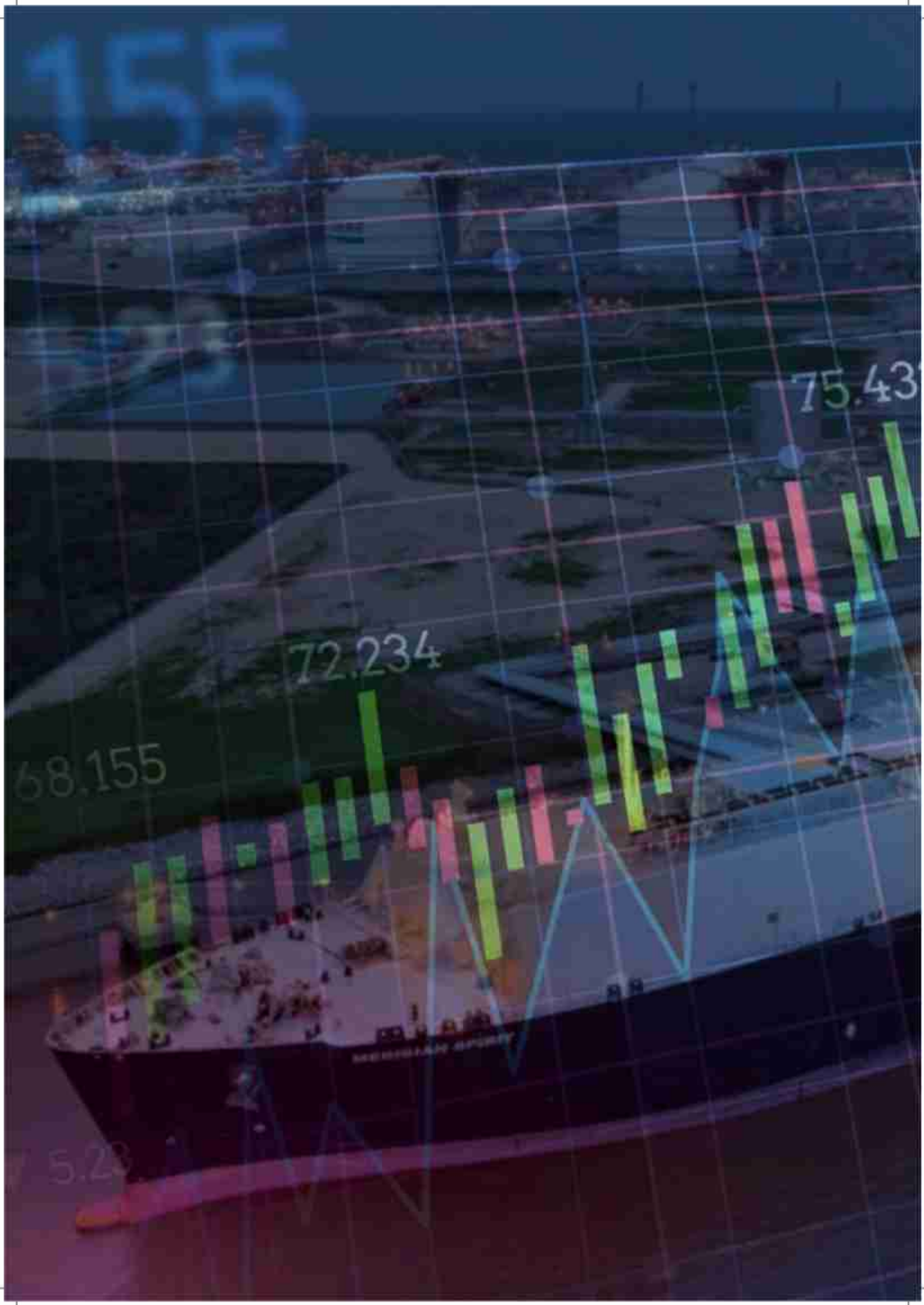
## 10.7. घरेलू क्षेत्र

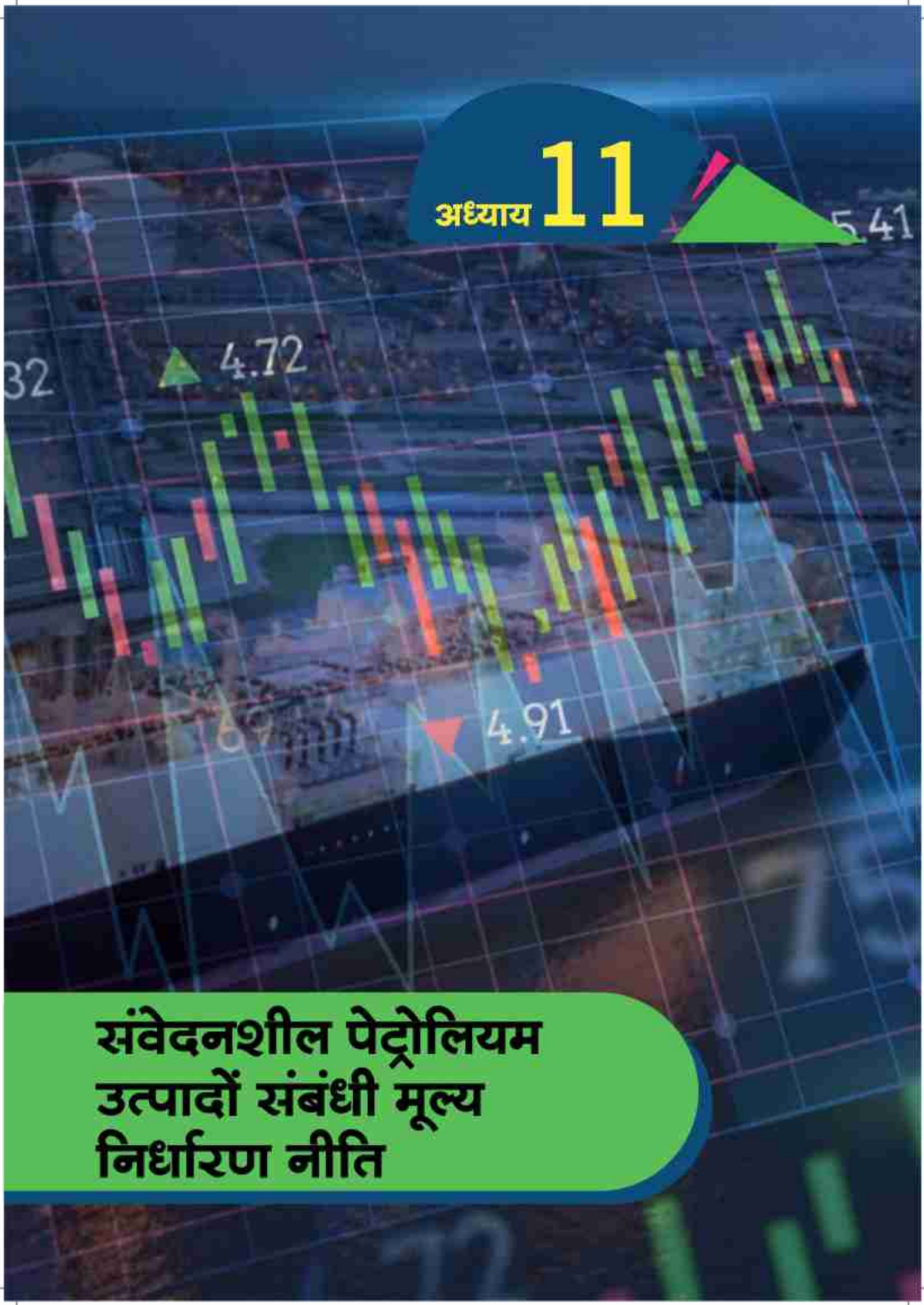
पीसीआरए घरेलू क्षेत्र में घरेलू कार्यशाला और युवा कार्यक्रम आयोजित करता है जिसमें गृहिणियों, छात्रों और युवाओं को शामिल किया जाता है। लक्षित दर्शकों को ईंधन और ऊर्जा संरक्षण संबंधी विभिन्न पहलुओं जैसे ईंधन कुशल खाना पकाने की आदतों, आईएसआई–चिह्न वाले उत्पादों और स्टार रेटेड एलपीजी स्टोव का उपयोग करने के लागत लाभों और रेफ्रिजरेटर, एयर कंडीशनर, माइक्रोवेव ओवन, प्रकाश व्यवस्था आदि जैसी घरेलू वस्तुओं पर ऊर्जा संरक्षण युक्तियों के बारे में शिक्षित किया जाता है। पीसीआरए ऊर्जा के वैकल्पिक स्रोतों जैसे सीएनजी, बायोगैस, सौर ऊर्जा आदि के उपयोग को भी प्रोत्साहित करता है।

पीसीआरए इको क्लबों के माध्यम से ऊर्जा संरक्षण संबंधी शिक्षा जागरूकता कार्यक्रम भी प्रदान करता है। 9 वीं से 12 वीं कक्षाओं के छात्रों को ऊर्जा संरक्षण पर एक शिक्षा जागरूकता कार्यक्रम के लिए लक्षित किया जाता है। ये कार्यक्रम देश भर में राज्य नोडल एजेंसियों (एसएनए) के माध्यम से आयोजित किए जाते हैं।

ईंधन संरक्षण और ईंधन दक्षता पर उपरोक्त गतिविधियों ने तेल आयात को कम करने की दिशा में सरकार के लक्ष्य की दिशा में योगदान दिया है और आत्मनिर्भर भारत की दिशा में हमारी यात्रा में मदद की है।




72.234
68.155




# संवेदनशील पेट्रोलियम उत्पादों संबंधी मूल्य निर्धारण नीति

# 11 संवेदनशील पेट्रोलियम उत्पादों संबंधी मूल्य निर्धारण नीति

## पृष्ठभूमि

**11.1.** पेट्रोलियम उत्पादों के मूल्य निर्धारण को जुलाई, 1975 से प्रभावी प्रशासित मूल्य तंत्र (एपीएम) के अंतर्गत लाया गया था जब पेट्रोलियम उत्पादों के मूल्य निर्धारण को आयात समता सिद्धांतों से लागत संबंधी सिद्धांतों में स्थानांतरित कर दिया गया था। एपीएम (1975 से 2002) के तहत विभिन्न तेल पूल खातों को इस उद्देश्य से बनाए रखा गया था कि (i) बिक्री मूल्य में स्थिरता सुनिश्चित किया जा सके; (ii) उपभोक्ताओं को अंतरराष्ट्रीय मूल्यों में उतार–चढ़ाव से बचाया जा सके, और (iii) पेट्रोल, विमानन टर्बाइन ईंधन (एटीएफ) आदि जैसे अन्य उत्पादों से क्रॉस राजसहायता द्वारा सार्वजनिक वितरण के लिए मिट्टी तेल और घरेलू एलपीजी जैसे कतिपय उत्पादों के उपभोक्ता मूल्य में राजसहायता दी जा सके।

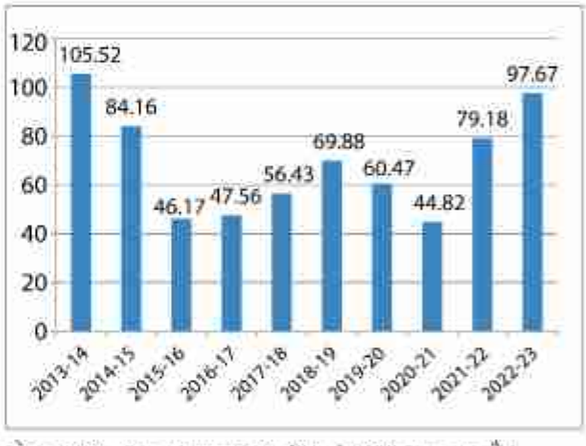
**11.2.** दिनांक 01–04–2002 से एपीएम को समाप्त कर दिया गया और सरकार ने विनिर्दिष्ट फ्लैट दरों पर पीडीएस मिट्टी तेल और घरेलू एलपीजी की बिक्री पर राजसहायता प्रदान करने का निर्णय लिया। इन बजटीय राजसहायता को प्रशासित करने के लिए सरकार ने 'पीडीएस मिट्टी तेल और घरेलू एलपीजी, 2002' तैयार किया। इस योजना के तहत, यह निर्णय लिया गया था कि इन राजसहायता को 3–5 वर्षों में समाप्त कर दिया जाएगा।

**11.3.** वर्ष 2004 के बाद से अंतरराष्ट्रीय बाजारों में तेल और पेट्रोलियम उत्पादों की कीमतों में तीव्र वृद्धि और अस्थिरता वैश्विक चिंता का विषय बन गई। कच्चे तेल की भारतीय बास्केट, जो मार्च 2002 में एपीएम के विघटन के समय लगभग 23 डॉलर प्रति बैरल और मई 2004 में 36 डॉलर प्रति बैरल थी, 2010–11 के दौरान 85.09 डॉलर प्रति बैरल के औसत तक पहुंच गई। कच्चे तेल के भारतीय बास्केट का औसत मूल्य वर्ष 2011–12 के दौरान और बढ़कर 111.89 अमरीकी डालर प्रति बैरल हो गया।

**11.4.** तीन वर्षों से अधिक समय तक लगातार 100 डॉलर प्रति बैरल से ऊपर रहने के बाद, वर्ष 2014 की दूसरी छमाही के दौरान कच्चे तेल की कीमतों में तेजी से गिरावट शुरू हुई। इसके परिणामस्वरूप, 2015–16, 2016–17 और 2017–18 के दौरान भारतीय कच्चे तेल बास्केट की औसत कीमत क्रमशः 46.17 डॉलर प्रति बैरल, 47.56 डॉलर प्रति बैरल और 56.43 डॉलर प्रति बैरल दर्ज की गई थी। 2018–19 के दौरान कीमत बढ़कर 69.88 डॉलर प्रति बैरल हो गई और 2019–20 में गिरकर 60.47 डॉलर प्रति बैरल हो गई और कोविड–19 के प्रभाव के कारण 2020–21 के दौरान और गिरकर 44.82 डॉलर प्रति बैरल हो गई। कीमतें कोविड–19 के प्रभाव से उबर गईं और 2021–22 में बढ़कर 79.18 डॉलर प्रति बैरल हो गईं।

**11.5.** फरवरी 2022 के अंतिम सप्ताह में यूक्रेन में रूस के सैन्य अभियान और वैश्विक तेल बाजार पर आपूर्ति चिंताओं के बाद तेल की कीमतों में काफी वृद्धि हुई। चालू वित्त वर्ष 2022–23 (28 दिसंबर, 2022 तक) के दौरान कच्चे तेल के भारतीय बास्केट की औसत कीमत बढ़कर 97.67 डॉलर प्रति बैरल हो गई। वर्ष 2002–03 से 2022–23 के दौरान 28.12.2022 तक कच्चे तेल की भारतीय बास्केट की प्रवृत्ति नीचे दी गई है:

कच्चे तेल का रुख: भारतीय बास्केट $/बैरल




नोट: 2022–23 का मूल्य 28/12/2022 तक का है।

## कच्चे तेल का मूल्य निर्धारण

कच्चे तेल का भारतीय बास्केट पिछले वर्ष के तत्काल पूर्व मीठे कच्चे तेल और खट्टे कच्चे तेल के वास्तविक प्रसंस्करण के अनुपात में भारतीय रिफाइनरियों द्वारा संसाधित कच्चे तेल के औसत दर्शाता है। मीठे कच्चे तेल की कीमत के लिए, बेंचमार्क कच्चे तेल 'ब्रेंट' के लिए दैनिक प्लैट्स आकलन पर विचार किया जाता है। खट्टे कच्चे तेल के लिए बेंचमार्क कच्चे तेल "दुबई" और "ओमान" हेतु औसत प्लेट मूल्यांकन पर विचार किया जाता है। वर्ष 2020–21 के दौरान भारतीय रिफाइनरियों ने 75.62 प्रतिशत खट्टे कच्चे तेल और 24.38 प्रतिशत मीठे कच्चे तेल का प्रसंस्करण किया। इसलिए, 2021–22 के लिए, कच्चे तेल की भारतीय बास्केट ने प्लैट्स द्वारा 'दुबई' और 'ओमान' (खट्टा कच्चा तेल) और 'ब्रेंट' (मीठा कच्चा तेल) के बेंचमार्क अंतर्गत औसत के लिए 75.62: 24.38 के अनुपात में दैनिक मूल्य दर्शाया।

घरेलू कच्चे तेल उत्पादक कंपनियों को अंतरराष्ट्रीय कच्चे तेल की कीमतों की भी पेशकश की जाती है जो अंतरराष्ट्रीय कच्चे तेल के लिए बेंचमार्क हैं जो उनके कच्चे तेल की कसौटी से मेल खाती हैं। कच्चे तेल का आयात अंतरराष्ट्रीय मूल्यों पर होता है।

## पेट्रोल और डीजल

1. पेट्रोल और डीजल के मूल्य क्रमशः 26 जून, 2010 और 19 अक्तूबर, 2014 से बाजार निर्धारित किए जाते हैं और तब से उनके मूल्यों का निर्धारण सरकारी क्षेत्र की तेल विपणन कंपनियों (ओएमसीज) नामतः इंडियन आयल कार्पोरेशन लिमिटेड, हिन्दुस्तान पेट्रोलियम कार्पोरेशन लिमिटेड और भारत पेट्रोलियम कार्पोरेशन लिमिटेड द्वारा अंतरराष्ट्रीय बाजार मूल्यों और अन्य बाजार दशाओं में परिवर्तन के अनुरूप किया जा रहा है।

2. सरकारी क्षेत्र की तेल विपणन कंपनियों (ओएमसी) ने 16 जून, 2017 से पूरे देश में पेट्रोल और डीजल के खुदरा बिक्री मूल्य में दैनिक संशोधन लागू किया। पेट्रोल और डीजल के दैनिक मूल्य संशोधन खुदरा कीमतों को वर्तमान बाजार स्थितियों के प्रति अधिक प्रतिबिंबित करते हैं, जिससे पेट्रोल और डीजल के खुदरा बिक्री मूल्य में अस्थिरता कम हो जाती है। इसके अलावा, इससे प्रणाली में पारदर्शिता बढ़ती है और रिफाइनरी/डिपो से खुदरा दुकानों तक उत्पादों के सुचारू प्रवाह को सक्षम बनाता है।

## घरेलू एलपीजी

1. अंतरराष्ट्रीय तेल मूल्यों में वृद्धि के प्रभाव से आम आदमी को बचाने के लिए, सरकार घरेलू एलपीजी के उपभोक्ताओं के लिए प्रभावी मूल्य (प्रत्येक परिवार के लिए प्रति वर्ष 12 सिलेंडरों की सीमा तक) को घटाना जारी रखे हुए है। तथापि, गैर–राजसहायता प्राप्त घरेलू एलपीजी के मूल्यों का निर्धारण ओएमसीज द्वारा अंतरराष्ट्रीय बाजारों में परिवर्तनों के अनुरूप किया जाता है।

2. 1 जनवरी 2015 से "पहल (डीबीटीएल) योजना 2014" पूरे देश में लागू की गई है, जिसमें घरेलू एलपीजी पर राजसहायता पात्र उपभोक्ताओं को सीधे उनके बैंक खातों में हस्तांतरित की जा रही है। इसके अलावा, 21 मई, 2022 से, सरकार ने वर्ष 2022–23 के लिए प्रधानमंत्री उज्ज्वला योजना (पीएमयूवाई) लाभार्थियों के लिए प्रति वर्ष 12 रिफिल के लिए 200 रुपये प्रति 14.2 किलोग्राम सिलेंडर की लक्षित राजसहायता की घोषणा की है।

## पीडीएस मिट्टी का तेल

1 मार्च, 2020 से प्रभावी पीडीएस मट्टी का तेल का खुदरा बिक्री मूल्य अखिल भारतीय आधार पर शून्य अंडर–रिकवरी स्तर पर बनाए रखा जा रहा है।

## राजसहायता

पिछले 5 वर्षों और चालू वर्ष के दौरान पेट्रोलियम उत्पादों और प्राकृतिक गैस पर कुल राजसहायता/अंडर रिकवरी निम्नानुसार है:

₹ करोड़ में

| विवरण | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|---|
| **मिट्टी का तेल** | | | | | |
| पीडीएस मट्टी का तेल पर कुल कम–रिकवरी | 4,672 | 5,950 | 1,833 | - | - |
| **एलपीजी** | | | | | |
| एलपीजी (डीबीएलटी) राजसहायता (ए) के लिए प्रत्यक्ष लाभ अंतरण | 20,905 | 31,539 | 22,726 | 3,658 | 242 |
| प्रधान मंत्री उज्ज्वला योजना (पीएमयूवाई) राजसहायता (बी) | 2,559 | 5,670 | 1,446 | 76 | 1,569 |
| प्रधान मंत्री गरीब कल्याण पैकेज (पीएमजीकेपी) राजसहायता (सी) | - | - | - | 8,162 | - |
| **घरेलु एलपीजी पर कुल राजसहायता (ए+बी+सी)** | **23,464** | **37,209** | **24,172** | **11,896** | **1,811** |

सरकारी क्षेत्र की तेल विपणन कंपनियों को घरेलू एलपीजी की बिक्री पर भारी नुकसान उठाना पड़ा है। इन नुकसानों की भरपाई के लिए सरकार ने हाल ही में ओएमसीज को ₹ 22,000 करोड़ का एकबारगी मुआवजा अनुमोदित किया है। तथापि, गैर–राजसहायता प्राप्त घरेलू एलपीजी के मूल्यों का निर्धारण ओएमसीज द्वारा अंतरराष्ट्रीय बाजारों में परिवर्तनों के अनुरूप किया जाता है।





अध्याय 12

# अनुसूचित जातियों, अनुसूचित जनजातियों, अन्य पिछड़ा वर्गों एवं दिव्यांगजनों का कल्याण

# 12 अनुसूचित जातियों, अनुसूचित जनजातियों, अन्य पिछड़ा वर्गों एवं दिव्यांगजनों का कल्याण

**12.1.** कार्मिक एवं प्रशिक्षण विभाग, लोक उद्यम विभाग, सामाजिक न्याय और अधिकारिता मंत्रालय तथा जनजातीय कार्य मंत्रालय द्वारा समय–समय पर अनुसूचित जातियों, अनुसूचित जनजातियों, अन्य पिछड़े वर्गों और दिव्यांगजनों के लिए आरक्षण के संबंध में जारी दिशा–निर्देश पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय और इस मंत्रालय के प्रशासनिक नियंत्रणाधीन सार्वजनिक क्षेत्र के उपक्रमों (पीएसयू) में कार्यान्वित किए जा रहे हैं। इस मंत्रालय का एससीटी प्रकोष्ठ मंत्रालय के साथ–साथ इस मंत्रालय के प्रशासनिक क्षेत्राधिकार के अंतर्गत आने वाले सार्वजनिक क्षेत्र के उपक्रमों और अन्य संगठनों में आरक्षण नीतियों के कार्यान्वयन की निगरानी करता है। सार्वजनिक क्षेत्र के उपक्रमों ने अनुसूचित जातियों, अनुसूचित जनजातियों, अन्य पिछड़े वर्गों, ईडब्ल्यूएस, ईएसएम और दिव्यांग व्यक्तियों (पीडब्ल्यूडी) कर्मचारियों के हितों की रक्षा करने और उनकी शिकायतों का निवारण करने के लिए अपने मुख्य संपर्क अधिकारियों / संपर्क अधिकारियों की देखरेख में कार्यान्वयन प्रकोष्ठों का भी गठन किया है। सार्वजनिक क्षेत्र के उपक्रमों के संपर्क अधिकारी राष्ट्रपति के निर्देशों के कार्यान्वयन के साथ–साथ इस विषय पर समय–समय पर जारी भारत सरकार के विभिन्न आदेशों के कार्यान्वयन को सुनिश्चित करने के लिए उत्तरदायी हैं। संसद सदस्यों, राष्ट्रीय अनुसूचित जातियों और अनुसूचित जनजातियों के आयोग तथा राष्ट्रीय अन्य पिछड़े वर्ग आयोग के माध्यम से प्राप्त सार्वजनिक क्षेत्र के उपक्रमों के अनुसूचित जातियों, अनुसूचित जनजातियों, अन्य पिछड़े वर्गों, ईडब्ल्यूएस, ईएसएम और दिव्यांग कर्मचारियों की शिकायतों पर उपचारात्मक कार्रवाई की जाती है। मंत्रालय द्वारा अ.जा., अ.ज.जा., अपिव, ईडब्लूएस और दिव्यांग व्यक्तियों की नियुक्ति की स्थिति की निगरानी पीएसयू द्वारा दी गई रिपोर्ट के माध्यम से की जाती है।

**12.2.** सेवारत अनुसूचित जातियों / अनुसूचित जनजातियों के लिए आरक्षण वाली कल्याण संबंधी संसदीय समिति की टिप्पणियों के अनुसरण में, इस मंत्रालय के मुख्य संपर्क अधिकारी के नेतृत्व में एक दल सार्वजनिक क्षेत्र के उपक्रमों की इकाइयों द्वारा रखे जाने वाले आरक्षण रोस्टरों का वार्षिक रूप से निरीक्षण करता है।

**12.3.** अनुसूचित जाति / अनुसूचित जनजाति / अन्य पिछड़ा वर्ग / पीडब्ल्यूडी कर्मचारियों पर विशेष ध्यान देते हुए मंत्रालय के अधीन तेल एवं गैस पीएसयू द्वारा विभिन्न कार्यकलाप शुरू किए गए हैं, सीएसआर पहल / योजनाओं में अनुसूचित जाति / अनुसूचित जनजाति / अन्य पिछड़ा वर्ग समुदाय को प्रभावी ढंग से ध्यान में रखा जा रहा है।

**12.4.** दिव्यांग (पीडब्ल्यूडी) के लिए विशेष भर्ती अभियान।

माननीय उच्चतम न्यायालय ने दिनांक 28.04.2015 को नेशनल फेडरेशन ऑफ ब्लाइंड द्वारा सीए संख्या 9096 / 2013 में दायर अवमानना याचिका संख्या 499 / 2014 में दिव्यांग व्यक्तियों के पदों को भरने का आदेश दिया। इस मामले की निगरानी डीओपीटी द्वारा की जा रही है। पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय और इस मंत्रालय के प्रशासनिक नियंत्रण के तहत पीएसयू में 359 पदों की पहचान की गई थी। 31.12.2022 तक दिव्यांग व्यक्तियों के लिए रिक्तियों को भरने की स्थिति निम्नानुसार है:

| क्र.सं. | चरण–वार ब्योरा | पद |
|---|---|---|
| 1 | माननीय उच्चतम न्यायालय को सूचित मंत्रालय और तेल पीएसयू में पदों की संख्या | 359 |
| 2. | पहले से भरे गए पदों की संख्या | 320 |
| 3. | 31.12.2022 तक भरे जाने वाले शेष पद | 39 |

## 31.12.2022 की स्थिति के अनुसार मंत्रालय के प्रशासनिक नियंत्रणाधीन तेल कंपनियों में अ.जा./अ.ज.जा./अपिव/विक्लांग हेतु बैकलॉग

| | अ.जा., अ.ज.जा., अपिव और दिव्यांग के संबंध में बैकलॉग रिक्तियों (सीधी भर्ती) की संख्या | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| पीएसयू | समूह क | | | | समूह ख | | | | समूह ग* | | | | समूह घ* | | | |
| | अ.जा | अ.ज.जा | अपिव | दिव्यांग | अ.जा | अ.ज.जा | अपिव | दिव्यांग | अ.जा | अ.ज.जा | अपिव | दिव्यांग | अ.जा | अ.ज.जा | अपिव | दिव्यांग |
| पेट्रो. एवं प्राकृ. गैस म. | इस मंत्रालय में इसका ब्यौरा नहीं रखा जाता है | | | | शून्य | शून्य | शून्य | शून्य | 0 | 2 | 0 | 0 | लागू नहीं | | | |
| सीपीसीएल | शून्य | शून्य | शून्य | शून्य | शून्य | 1$ | शून्य | शून्य | 1 | शून्य | 2 | 6 | शून्य | शून्य | शून्य | शून्य |
| एमआरपीएल | - | 1 | 4 | 4 | * | * | * | * | 3 | 2 | - | 8 | * | * | * | * |
| एचपीसीएल | 0 | 0 | 0 | 28 | - | - | - | - | 0 | 0 | 0 | 0 | - | - | - | - |
| बीपीसीएल | -10 | -8 | शून्य | -11 | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य |
| ईआईएल | 6 | 5 | 6 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| ओआईएल | 1 | - | 2 | 2 | - | - | - | 1 | 12 | 07 | 11 | 24 | 01 | 06 | 03 | शून्य |
| आईओसीएल | 12 | 19 | 23 | 32 | समूह 'ख' में कोई भर्ती नहीं हुई | | | | 3 | 4 | 14 | 7 | 3 | 2 | 3 | 28 |
| आरजीआईपीटी*** | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | लागू नहीं | लागू नहीं | लागू नहीं | लागू नहीं |
| ओआईडीबी | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| एनआरएल | -3 | -3 | -5 | -7 | - | - | - | - | -2 | 3 | 9 | -2 | 1 | 4 | 1 | 1 |
| ओएनजीसी* | 166 | 71 | 273 | 174 | - | - | - | - | 77 | 101 | 210 | 175 | 6 | 2 | 14 | 11 |
| गेल | 31 | 19 | 33 | 31 | 0 | 3 | 5 | 6 | 24 | 18 | 26 | 14 | - | - | - | - |
| आईआईपीई | वर्तमान में सीधी भर्ती के लिए आईआईपीई में कोई बैकलॉग रिक्तियां नहीं है | | | | | | | | | | | | | | | |
| बीएलएल | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य | शून्य |

नोट:

ओएनजीसी*: (i) ओएनजीसी में कोई बैकलॉग रिक्तियां नहीं हैं। पिछली भर्ती प्रक्रिया में भरी नहीं गई रिक्तियों को बाद की भर्ती प्रक्रिया में आगे बढ़ाया जाता है।

(ii) उपर्युक्त रिक्तियां 2022 की आगे की रिक्तियां और नई रिक्तियां हैं, जिन्हें अधिसूचित किया गया है और भर्ती प्रक्रियाधीन है।

(iii) समूह ग और घ की क्रमश: 63 और 11 रिक्तियां आंध्र प्रदेश की हैं जो 2014–15 से अदालती मामले के कारण रुकी हुई हैं।

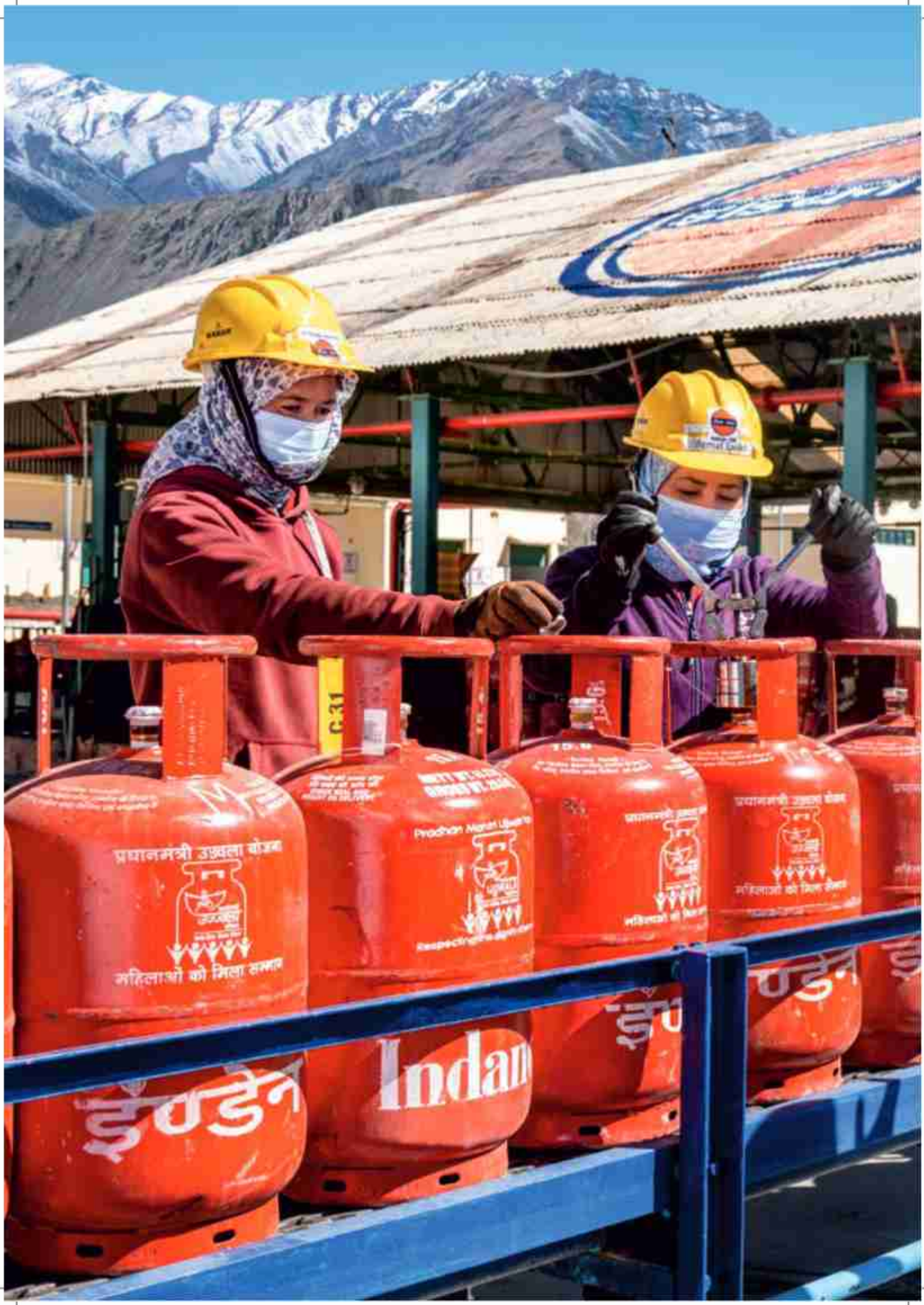
सीपीसीएल: $ – पीडब्ल्यूबीडी के लिए भी आरक्षित। (भर्ती पूरी हो गई है और उम्मीदवारों के जल्द ही शामिल होने की संभावना है)।

बीपीसीएल: 2019–2021 से समूह क में न्यूनतम भर्ती की गई। पिछले 3 वर्षों (2019–2021) के लिए बिना किसी महत्वपूर्ण भर्ती के अ.जा. के लिए 17% और अ.ज.जा. के लिए 6% की औसत दर पर पृथक्करण। बीपीसीएल 2023 में बैकलॉग को पूरा करने का प्रयास करता है।

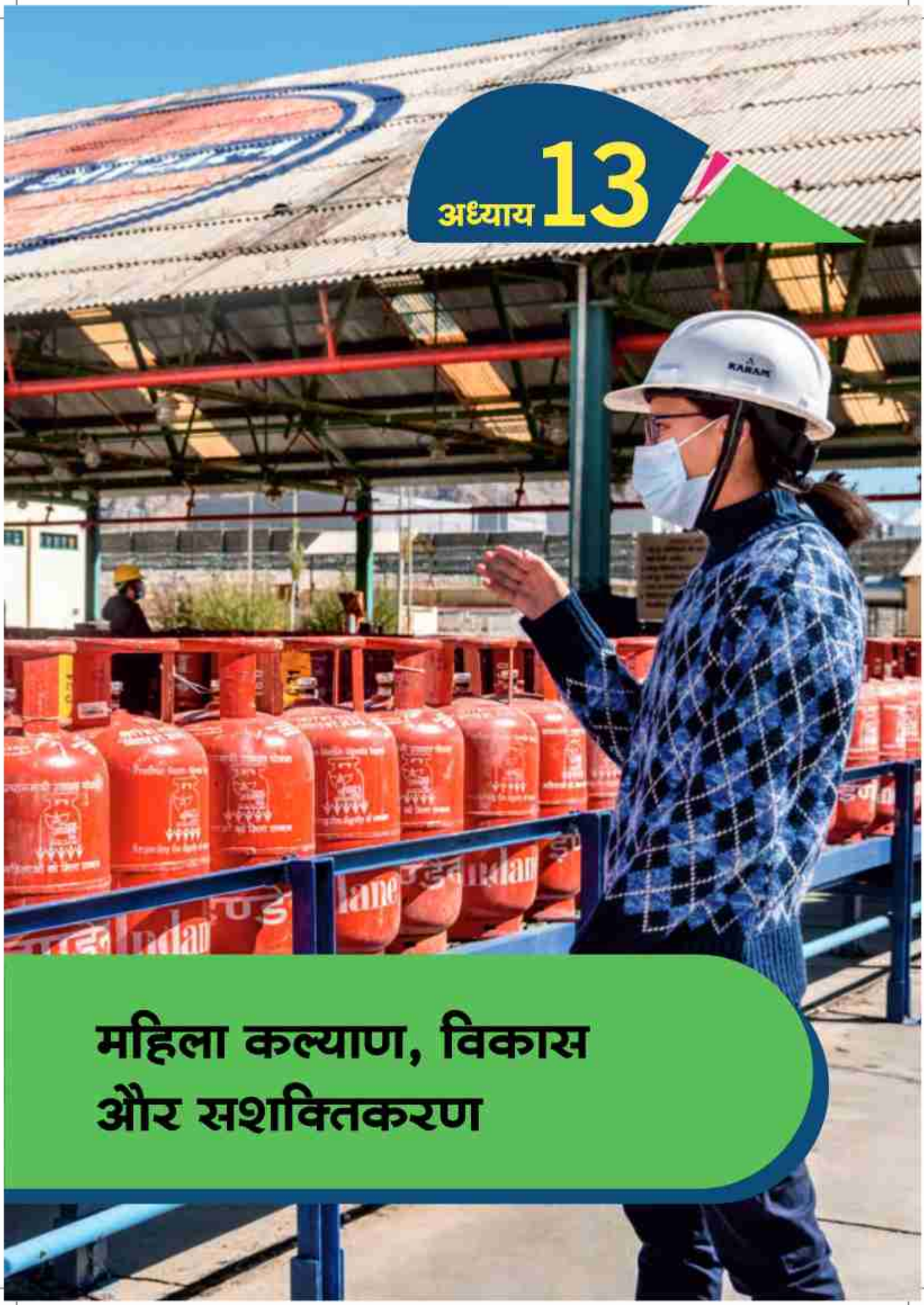
ईआईएल: ऊपर दिखाए गए रिक्त पद आरक्षित श्रेणियों अप्रत्यक्ष भर्ती में कमी हैं।

आरजीआईपीटी: *** केवल व्यवस्थापक कर्मचारी संवर्ग।

एचपीसीएल: समूह 'ख' और 'घ' के तहत वर्गीकृत कोई पद नहीं है क्योंकि गैर–प्रबंधन ग्रेड में प्रविष्टि को समूह 'ग' में फिर से वर्गीकृत किया गया है।


प्रधानमंत्री उज्ज्वला योजना
महिलाओं को मिला सम्मान
Indane
इंडेन

अध्याय 13



# महिला कल्याण, विकास और सशक्तिकरण

# 13 महिला कल्याण, विकास और सशक्तिकरण

**13.1.** पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय तथा इस मंत्रालय के प्रशासनिक नियंत्रणाधीन सार्वजनिक क्षेत्र के उपक्रम/संगठन महिला कर्मचारियों के कल्याण और सशक्तिकरण की दिशा में कई पहल कर रहे हैं। स्त्री–पुरुष संवेदनशीलता से निपटने और महिला सशक्तिकरण को बढ़ावा देने की दृष्टि से, उनके व्यावसायिक विकास और कल्याण गतिविधियों पर ध्यान केंद्रित करते हुए विशेष कार्यक्रम आयोजित किए जाते हैं। इनमें बाह्य और आंतरिक प्रशिक्षण, महिला स्वास्थ्य संबंधी कार्यक्रम, सार्वजनिक क्षेत्र में महिलाओं के मंच की राष्ट्रीय बैठक में भाग लेने के लिए उन्हें प्रायोजित करना आदि शामिल हैं।

महिला कर्मचारियों के हितों को देखने के लिए पीएसयू में महिला मंच का गठन किया गया है। राष्ट्रीय महिला आयोग द्वारा तैयार की गई 'क्या करें' और 'क्या न करें' की सूची सभी कर्मचारियों के ध्यानार्थ परिचालित की गई। कार्यस्थलों पर यौन उत्पीड़न की शिकायतों के निवारण के लिए समितियों का गठन किया गया है।

## तेल पीएसयू में 31.12.2022 की स्थिति के अनुसार कुल कर्मचारियों की संख्या की तुलना में महिला कर्मचारियों की संख्या:

| क्र. सं. | पीएसयू का नाम | कर्मचारियों की कुल संख्या | महिला कर्मचारियों की कुल संख्या |
|---|---|---|---|
| 1 | पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय | 212 | 46 |
| 2. | आईआईपीई | 49 | 6 |
| 3. | सीपीसीएल | 1455 | 76 |
| 4. | एमआरपीएल | 2572 | 228 |
| 5. | एचपीसीएल | 8643 | 890 |
| 6. | बीपीसीएल | 8815 | 648 |
| 7. | ईआईएल | 2653 | 312 |
| 8. | ओआईएल | 6807 | 488 |
| 9. | आईओसीएल | 31225 | 2731 |
| 10. | आरजीआईपीटी | 43 | 6 |
| 11. | ओआईडीबी | 12 | 4 |
| 12. | एनआरएल | 974 | 68 |
| 13. | ओएनजीसी | 26413 | 2043 |
| 14. | गेल | 4862 | 312 |
| 15. | बॉमर लॉरी | 889 | 97 |

**13.2.** विशाखा बनाम राजस्थान राज्य के मामले में माननीय उच्चतम न्यायालय द्वारा निर्धारित दिशा–निर्देशों और कार्मिक एवं प्रशिक्षण विभाग/महिला एवं बाल विकास मंत्रालय द्वारा जारी आदेशों के अनुरूप कामकाजी महिलाओं के यौन उत्पीड़न की शिकायतों की रोकथाम और निवारण के लिए मंत्रालय में एक आंतरिक शिकायत समिति (महिला प्रकोष्ठ) का गठन किया गया है। वर्तमान में श्रीमती सुजाता शर्मा, संयुक्त सचिव, पेट्रोलियम और प्राकृतिक गैस मंत्रालय इस समिति की अध्यक्ष हैं, जिसमें एनजीओ के एक सदस्य सहित चार अन्य सदस्य हैं। समिति नियमित अंतराल पर अपनी बैठकें आयोजित करती है।
















ऑयल इंडिया लिमिटेड
(भारत सरकार का उद्यम)
**Oil India Limited**
(A Government of India Enterprise)




एक नवरत्न कंपनी













SINCE 1867

अध्याय 14







गेल (इंडिया) लिमिटेड







# उपक्रम/संगठन

# 14 उपक्रम/संगठन

## 14.1. महारत्न कंपनी

### 14.1.1. इंडियन ऑयल कार्पोरेशन लिमिटेड (आईओसीएल)



इंडियन ऑयल भारत की एक ऐसी ऊर्जा है जो तेल, गैस, पेट्रो रसायन और वैकल्पिक ऊर्जा स्रोतों की लगभग सभी धाराओं को समाहित करने वाली विविधीकृत, एकीकृत ऊर्जा प्रमुख है। यह जो इंडियन ऑयल ब्रांड है इसका लक्ष्य उच्च क्षमता वाले लोगों और अत्याधुनिक तकनीकों का लाभ उठाना है ताकि ऊर्जा के सभी रूपों को सबसे महत्त्वपूर्ण तरीके से दोहन किया जा सके और उन्हें उपभोक्ताओं तक किफायती रूप से पहुंचाया जा सके। यह फॉर्च्यून ग्लोबल 500–2022 सूची (रैंक 142) में भारत का सर्वोच्च रैंक वाला ऊर्जा पीएसयू है।

इंडियन ऑयल के व्यावसायिक रूचि में रिफाइनिंग से लेकर संपूर्ण हाइड्रोकार्बन मूल्य श्रृंखला, कच्चे तेल और गैस की खोज और उत्पादन के लिए पाइपलाइन परिवहन और विपणन, पेट्रोरसायन, गैस विपणन, वैकल्पिक ऊर्जा स्रोतों और अनुप्रवाह संचालन के वैश्वीकरण शामिल है। इस ब्रांड की वैश्विक आकांक्षाओं को श्रीलंका, मॉरीशस, संयुक्त अरब अमीरात और अन्य देशों में इंडियन ऑयल के व्यापारिक प्रयासों के माध्यम से पूरा किया जाता है।

#### 14.1.1.1. वित्तीय निष्पादन:

इंडियनऑयल का कारोबार (परिचालन से राजस्व) अप्रैल 21–दिसंबर 21 के दौरान ₹ 5,21,988 करोड़ की तुलना में अप्रैल 22–दिसंबर 22 के दौरान 35.7% (₹ 1,86,473 करोड़) बढ़कर ₹ 7,08,461 करोड़ हो गया। इंडियन ऑयल को अप्रैल 21–दिसंबर 21 के दौरान ₹ 18,162 करोड़ के निवल लाभ की तुलना में अप्रैल 22–दिसंबर 22 के दौरान ₹ 1,817 करोड़ का निवल घाटा (कर पश्चात लाभ) हुआ था। जीआरएम अप्रैल, 21–दिसम्बर, 21 के दौरान 8.52 अमरीकी $ प्रति बैरल की तुलना में अप्रैल 22–दिसम्बर, 22 के दौरान 21.08 अमरीकी $ प्रति बैरल रहा।

#### 14.1.1.2. राजकोष में योगदान:

पिछले कुछ वर्षों में, इंडियन ऑयल शुल्क, करों और लाभांश के रूप में सरकारी खजाने में सबसे बड़ा योगदानकर्ता रहा है। अप्रैल 21 से दिसंबर 2021 के दौरान ₹ 1,89,460 करोड़ की तुलना में अप्रैल 22 से दिसंबर 2022 के दौरान सरकारी खजाने में ₹ 1,72,208 करोड़ का भुगतान किया गया था। अप्रैल 21–दिसंबर 21 के दौरान केंद्रीय राजकोष और राज्य के राजकोष को क्रमशः ₹ 1,10,586 करोड़ और ₹ 78,874 करोड़ के भुगतान की तुलना में अप्रैल 22 से दिसंबर 22 के दौरान केंद्रीय राजकोष को ₹ 81,246 करोड़ और राज्य के राजकोष को ₹ 90,962 करोड़ का भुगतान किया गया था।

#### 14.1.1.3. रिफाइनरी से संबंधित निष्पादन:

अप्रैल–दिसंबर, 2022 के दौरान वर्तमान वित्त वर्ष के लिए आईओसीएल रिफाइनरियों ने संचयी रूप से 53.2 एमएमटी कच्चे तेल और 1.4 एमएमटी नेफ्था का प्रसंस्करण किया है। कच्चे तेल का प्रसंस्करण पिछले वर्ष (इसी अवधि के लिए 49.4 एमएमटी) से अधिक है। आईओसीएल रिफाइनरियों की डिस्टिलेट उपज रिफाइनरियों से मारपोल की बढ़ती मांग के साथ–साथ उच्च एनजी कीमतों से नेफ्था और डिस्टिलेट में हुई उच्च आंतरिक खपत के कारण पिछले वर्ष की 79.5% से घटकर 78.7% हो गई।

प्रचालनात्मक उपलब्धता के संबंध में आईओसीएल की स्थिति 98.3% (पिछले वर्ष 96.9%) है और जहां तक एमबीएन (विशिष्ट ऊर्जा खपत– कम एमबीएन उच्च ऊर्जा दक्षता को दर्शाता है) का संबंध है, आईओसीएल रिफाइनरियों ने अप्रैल–दिसम्बर, 22 की अवधि के दौरान 69.0 एमबीएन (पिछले वर्ष 75.2) प्राप्त किए हैं।

इंडियन ऑयल ने हल्दिया रिफाइनरी में एक नया वेट सल्फ्यूरिक एसिड संयंत्र, बरौनी रिफाइनरी में इंड जेट यूनिट, गुवाहाटी रिफाइनरी में इंडसेलेक्ट जी यूनिट और बोंगाईगांव रिफाइनरी में एक नई सल्फर रिकवरी यूनिट शुरू की है। गुजरात रिफाइनरी में लैब पुनरुद्धार और पानीपत नेफ्था क्रैकर में एनसीयू धरण–1 का पुनरुद्धार को सफलतापूर्वक पूरा कर लिया गया है।

इंडियन ऑयल और भारत की हरित यात्रा के इतिहास में ऐतिहासिक अवसर और स्मरणीय दिवस वाला दिन उस वक्त आया, जब माननीय प्रधान मंत्री ने दिनांक 10 अगस्त, 2022 को विश्व जैव ईंधन दिवस पर पानीपत रिफाइनरी एंड पेट्रोकेमिकल्स कॉम्प्लेक्स में इंडियन ऑयल की दूसरी पीढ़ी के एथेनॉल राष्ट्र को समर्पित किया। अपनी तरह का

एकलौता और एशिया का पहला नई जैव ऊर्जा प्रौद्योगिकी अत्याधुनिक स्वदेशी प्रौद्योगिकी पर आधारित है, जो भारत की अपशिष्ट से धन पहल में निर्णायक की भूमिका निभा सकता है। 2 लाख टन चावल की भूसी का उपयोग करते हुए यह संयत्र सालाना 3 करोड़ लीटर एथेनॉल उत्पन्न करेगा जिसे भारत सरकार की 20% एथेनॉल मिश्रण के लक्ष्य को पूरा करने के लिए एमएस (पेट्रोल) के साथ मिश्रित किया जाएगा।

इंडियन ऑयल ने हिंडल और फुर्सतगंज एएफएस में खपत के लिए दिनांक 21 सितम्बर, 2022 को गुजरात रिफाइनरी द्वारा उत्पादित एवीगैस 100 एलएल का पहला बैच शुरू किया। एवीगैस 100 एलएल का उत्पादन भारत का एकलौता और प्रधानमंत्री के आत्मनिर्भर भारत के सपने को साकार करने की दिशा में एक प्रमुख कदम है।

ऊर्जा सुरक्षा के राष्ट्रीय परिदृश्य और पेरिस समझौते के अनुरूप इंडियन ऑयल जलवायु परिवर्तन से निपटने के लिए उत्सर्जन शमन उपकरण के रूप में अपनी विभिन्न रिफाइनरियों से कार्बन कैप्चर, उपयोगिता और भंडारण (सीसीयूएस) परियोजनाओं से संबंधित संभावित दिशा में काम कर रहा है।

### 14.1.1.4. प्राकृतिक गैस एकीकरण:

चरणबद्ध तरीके से सभी रिफाइनरियों में ईंधन के रूप में रीगैसिफाइड एलएनजी का उपयोग किया जाएगा। जगदीशपुर–हल्दिया और बोकारो–धामरा पाइपलाइन (जेएचबीडीपीएल) के रास्ते धामरा टर्मिनल से आने वाले प्राकृतिक गैस का उपयोग बरौनी, पारादीप, हल्दिया, बोंगाईगांव और गुवाहाटी रिफाइनरियों में किया जाएगा। प्राकृतिक गैस का अवसंरचना विकास परियोजनाएं कार्यान्वयन के विभिन्न चरणों में हैं और वित्त वर्ष 2024–25 तक शुरू होने की उम्मीद है। मथुरा, पानीपत और गुजरात रिफाइनरी में प्राकृतिक गैस का एकीकरण पहले ही पूरा हो चुका था और यह अब उपयोग में है।

### 14.1.1.5. हरित ऊर्जा:

संयुक्त उद्यम कंपनी के गठन के लिए इंडियन ऑयल और एनटीपीसी के बीच निबंधन पत्र पर हस्ताक्षर दिनांक 18 जुलाई, 2022 को इंडियन ऑयल के कॉर्पोरेट कार्यालय, नई दिल्ली में संपन्न हुई थी, जिससे निवल–शून्य प्रतिबद्धताओं के प्रति भारत के संकल्प को मजबूत करने के लिए दोनों संगठनों की ताकत का लाभ उठाया गया। इंडियन ऑयल ने इस संयुक्त उद्यम के माध्यम से 650 मैगावाट की अधिकतम सीमा तक चौबीसों घंटे नवीकरणीय ऊर्जा का उपयोग करके अपनी रिफाइनरियों की अतिरिक्त बिजली आवश्यकता को पूरा करने की योजना बनाई है, जिससे संयुक्त उद्यम कंपनी / विशेष उद्देश्य तंत्र को शामिल करके नवकरणीय ऊर्जा संयंत्रों की स्थापना हेतु दोनों कंपनियों के लिए भावी मार्ग प्रशस्त होगा और रिफाइनरियों की बिजली की आवश्यकता को पूरा करने के लिए उपयुक्त किफायती समाधान भी तलाशे जाएंगे।

भारत का पहला और दुनिया का तीसरा ग्रीन कूलिंग टॉवर (जीसीटी) दिनांक 20 मई, 2022 को बरौनी रिफाइनरी में शुरू किया गया था। यह पारंपरिक कूलिंग टॉवर के विकल्प के रूप में ऊर्जा दक्षता और पर्यावरण के अनुकूल है। कूलिंग टॉवर के पंखे को चलाने के लिए उपयोग किया गया हाइड्रो–टरबाइन की शुरूआत से इलेक्ट्रिक मोटर का दौर समाप्त हो जाएगा। पारंपरिक कूलिंग टॉवर की तुलना में मोटर, स्विचगियर और अन्य बिजली की अवसंरचना को समाप्त करने से अनुरक्षण लागत काफी घटेगा।

इंडियन ऑयल भारत सरकार के राष्ट्रीय हरित हाइड्रोजन मिशन के अंतर्गत भारत से संबंधित अभियान का नेतृत्व कर रहा है। हरित हाइड्रोजन के उपयोग की प्रतिबद्धता के रूप में पानीपत रिफाइनरी में 60 मेगावाट इलेक्ट्रोलाइजर क्षमता वाले 7 केटीपीए संयत्र की योजना तैयार की गई है।

### 14.1.1.6. पाइपलाइन संबंधी निष्पादन:

इंडियन ऑयल ने वर्ष के दौरान अपने पाइपलाइन नेटवर्क का विस्तार करना जारी रखा और कच्चे तेल और उत्पाद पाइपलाइनों के लिए 108.0 मिलियन टन प्रति वर्ष और गैस पाइपलाइनों के लिए 48.73 एमएमएससीएमडी की संयुक्त प्रवाह क्षमता सहित 17,047 किमी का एक और उपलब्धि हासिल की है।

अप्रैल 22–दिसम्बर, 2022 के वर्ष के दौरान कच्चे तेल की पाइपलाइनों ने अप्रैल, 21 से दिसम्बर, 21 में 35.8 एमएमटी की तुलना में 39.5 एमएमटी का प्रवाह क्षमता प्राप्त किया और उत्पाद पाइपलाइनों ने अप्रैल, 21–दिसंबर, 21 के दौरान 25.4 एमएमटी की तुलना में 30.6 एमएमटी प्रवाह क्षमता हासिल किया था। इसके अतिरिक्त, गैस पाइपलाइनों ने अप्रैल, 21–दिसंबर 21 के दौरान 2,330 एमएमएससीएम की तुलना में 2,293 एमएमएससीएम का प्रवाह क्षमता हासिल किया था।

### 14.1.1.7. विपणन संबंधी निष्पादन:

घरेलू पीओएल बिक्री इसी अवधि के लिए पिछले वर्ष 2021–22 में 54.81 एमएमटी की तुलना में वर्ष 2022–23 (अप्रैल–दिसंबर) के दौरान 64.19 एमएमटी (सीएनजी सहित) दर्ज की गई थी। इंडियन ऑयल ने अपने खुदरा दुकानों पर प्रतिदिन लगभग 2.88 करोड़ ग्राहकों को सेवा प्रदान की और भारत के नागरिकों की ऊर्जा आवश्यकता को पूरा करने के लिए अप्रैल–दिसंबर 2022 की अवधि के दौरान प्रति दिन लगभग 26.0 लाख घरेलू एलपीजी सिलेंडर वितरित किए। अप्रैल–दिसंबर, 2022 की अवधि के दौरान, इंडियन ऑयल ने 1,071 खुदरा बिक्री केन्द्रों (आरओ) को शुरू किया था, जो किसी भी ओएमसीज से सर्वाधिक है। ईंधन भरने के नए चलन को बढ़ावा देने के लिए, इंडियन ऑयल ने इस अवधि के दौरान डीजल के लिए 90 घर–घर तक वितरण मोबाइल डिस्पेंसर भी शुरू किए हैं, जिसकी कुल संख्या 1,131 हो गई है।

31 दिसंबर 2022 तक की स्थिति के अनुसार, एक्स्ट्राग्रीन डीजल उत्पाद पूरे भारत में 4,256 आरओ के माध्यम से बेचा जा रहा है। एक्स्ट्राग्रीन डीजल ईंधन अर्थव्यवस्था में सुधार करता है, कार्बन डाइऑक्साइड और कार्बन मोनोऑक्साइड उत्सर्जन को कम करता है, एनओएक्स उत्सर्जन को कम करता है, सेटेन की मात्रा बढ़ाता है, चिकनापन में सुधार करता है, इंजन में होने वाली आवाज को कम करता है और इसमें उत्कृष्ट संक्षारण सुरक्षा (एनएसीई)है।

100 ऑक्टेन मूल्य सहित भारत का पहला सुपर प्रीमियम पेट्रोल एक्सपी100 दिनांक 31. दिसम्बर, 2022 की स्थिति के अनुसार 89 शहरों में 178 आरओ के माध्यम से बेचा जा रहा है। साथ ही एक्सपी 95 (95 ऑक्टेन प्रीमियम पेट्रोल) पूरे भारत में 9,163 आरओ के माध्यम से बेचा जा रहा है।

वैकल्पिक ईंधन को बढ़ावा देने के लिए, इंडियन ऑयल ने अप्रैल–दिसंबर 2022 की अवधि के दौरान 212 नए सीएनजी, 13 कंप्रेस्ड बियोगैस (सीबीजी), 1,505 इलेक्ट्रिक वाहन (ईवी) चार्जिंग और 23 बैटरी स्वैपिंग स्टेशनों को शामिल किया है। इंडियन ऑयल देश में 1,697 सीएनजी, 39 सीबीजी, 3,647 ईवी चार्जिंग और 55 बैटरी स्वैपिंग स्टेशनों का परिचालन कर रही है।

इंडियन ऑयल ने अप्रैल–दिसंबर, 22 की अवधि के दौरान 10.17 एमएमटी की कुल एलपीजी बिक्री करने की उपलब्धि हासिल की है और उज्ज्वला 2.0 योजना के अंतर्गत 30 लाख सहित 44 लाख से अधिक नए एलपीजी कनेक्शन दिए है। सेवाओं में ग्राहकों की पहुंच और ग्राहक संतुष्टि में सुधार के लिए इंडियनऑयल ने 44 नए एलपीजी वितरण केन्द्र शुरू किया है, जिससे दिनांक 31.12.2022 तक की स्थिति के अनुसार उनकी कुल संख्या 12,841 हो गई। "छोटू" [5 किलो निःशुल्क व्यापार एलपीजी (एफटीएल) सिलेंडर ने अप्रैल–दिसंबर 2022 की अवधि के दौरान 11.0 टीएमटी से अधिक की बिक्री सहित 33% की वृद्धि दर्ज की है। इसके अतिरिक्त, दिसंबर 2022 तक, ग्राहकों को 2 लाख से अधिक इंडेन संमिश्रित सिलेंडर भी बेचे गए जिससे ग्राहकों को नए युग और हल्के एलपीजी सिलेंडर की पेशकश करने हेतु 5 किलोग्राम और 10 किलोग्राम इकाइयों में सिलेंडर शुरू किया गया था।

विमानन क्षेत्र में भी इंडियन ऑयल ने अप्रैल–दिसम्बर 2022 की अवधि के दौरान 61.6% की बाजार हिस्सेदारी सहित अपनी अग्रणी स्थिति बनाई रखी। वर्ष के दौरान होलोंगी (अरूणाचल प्रदेश), देवघर (झारखंड) और रामनाद (तमिलनाडु) में तीन नए विमानन ईंधन स्टेशन (एएफएस) शुरू किए गए और दिनांक 31.12.2022 तक की स्थिति के अनुसार देश में इंडियन ऑयल द्वारा स्थापित एएफएस की संख्या 130 हो गई है।

**14.1.1.8. अनुसंधान और विकास (आरएंडडी):**

ईंधन और स्नेहक, रिफाइनिंग प्रौद्योगिकियों और उत्प्रेरक, पेट्रोरसायन और पॉलिमर जैसी विशेषज्ञता के मुख्य क्षेत्रों में अत्याधुनिक अनुसंधान किया जाता है। नैनो प्रौद्योगिकी, सौर, जैव ऊर्जा, हाइड्रोजन, ईंधन सेल और ऊर्जा भंडारण प्रदाता जैसे उभरते क्षेत्रों में अनुसंधान और विकास का प्रयास आवश्यक भावी दिशा प्रदान करते हैं। वर्तमान में, जनवरी 2023 तक 1,514 प्रभावी पेटेंट सहित 1,615 दायर पेटेंट के विशाल पोर्टफोलियो से इंडियन ऑयल आर एंड डी सेंटर को पिछले 5 वर्षों में अपने स्वीकृत पेटेंट पोर्टफोलियो को दोगुना होने में काफी मदद मिली है। माननीय प्रधान मंत्री ने बेंगलुरु में इंडियनऑयल के इंडोर सोलर कुकिंग सिस्टम के दिवन–कुकटॉप मॉडल को समर्पित किया और भारत ऊर्जा सप्ताह 23 के अंश के रूप में इसके वाणिज्यिक रोल–आउट को भी हरी झंडी दिखाई। वर्ष के दौरान, पायलट परीक्षण के लिए एल्यूमीनियम एयर बैटरी को 4 डब्ल्यू (टाटा टियागो) और 3 डब्ल्यू (महिंद्रा ट्रायो) और ई रिक्शा के साथ एकीकृत किया गया है। महिंद्रा ई–ऑटो पर पायलट परीक्षण पूरा किया गया, जबकि टाटा टियागो और ई रिक्शा में परीक्षण की योजना बनाई गई है।

**14.1.1.9. पेट्रोरसायन संबंधी निष्पादन:**

इंडियनऑयल देश की दूसरी सबसे बड़ी पेट्रोरसायन कंपनी है जो पॉलिमर, लीनियर एल्काइल बेंजीन (एलएबी), प्यूरीफाइड टेरेफ्थेलिक एसिड (पीटीए), ग्लाइकोल्स और ब्यूटाडीन की पेशकश करती है। प्रोपेल ब्रांड, भारतीय पेट्रोरसायन बाजार में अग्रणी ब्रांड है।

वर्ष 2022–23 (अप्रैल 22–दिसंबर 22) के दौरान निर्यात सहित पेट्रोरसायन बिक्री वर्ष 2020–21 (अप्रैल 21–दिसंबर 21) में 2.14 एमएमटी की तुलना में 1.465 एमएमटी हुई है। विभिन्न नियोजित अनुरक्षण शटडाउन से हुई उत्पादन नुकसान के कारण इंडियनऑयल के पेट्रोरसायन व्यवसाय में मंदी देखी गई ।

'साइक्लोप्लास्ट'–इंडियन ऑयल से पुनर्नवीनीकरण किए गए पॉलिमर ब्रांड को दिनांक 01.09.2022 को इंडियनऑयल दिवस के शुभ अवसर पर शुरू किया गया था।

पेट्रोरसायन ब्रांड 'प्रोपेल' की वैश्विक उपस्थिति स्थापित करने के उद्देश्य से आईओसीएल नेपाल, बांग्लादेश, श्रीलंका और वियतनाम आदि सहित कई देशों को उत्पादों का निर्यात कर रहा है। दिनांक 06 अक्टूबर, 22 को इस समूह ने मॉरीशस को इंडियन ऑयल की पहली पेट्रोरसायन खेप भेजी।

**14.1.1.10. प्राकृतिक गैस :**

इंडियन ऑयल ने अप्रैल 21–दिसंबर 21 में 3.8 एमएमटी की तुलना में अप्रैल 22–दिसंबर 22 में 3.3 एमएमटी की बिक्री (आंतरिक खपत सहित) की है, इस अवधि के दौरान असामान्य उच्च आयात एलएनजी कीमतों के कारण बिक्री में गिरावट हुई है। 31 दिसंबर, 2022 की स्थिति के अनुसार इंडियन ऑयल ने 7 नए औद्योगिक ग्राहक शामिल किए हैं। अप्रैल–दिसंबर, 2022 के दौरान इंडियन ऑयल एलएनजी के माध्यम से बिक्री सबसे कम हुई और यह अप्रैल–दिसंबर 2021 के दौरान 83.0 टीएमटी से घटकर 50.7 टीएमटी हो गई। दिनांक 24.02.2023 की स्थिति के अनुसार वर्ष 2022–23 के दौरान, 18 एलएनजी कार्गो आयात किए गए थे, जिनमें से 5 अल्पकालीक कार्गो थे, जबकि 13 दीर्घकालिक संविदा के थे।

**14.1.1.11. नगर गैस वितरण (सीजीडी):**

गैस आधारित अर्थव्यवस्था की ओर बढ़ने में इंडियनऑयल का महत्वपूर्ण योगदान है। संयुक्त उद्यमों के साथ–साथ, इंडियनऑयल ने 105 जिलों सहित कुल 49 जीए को प्राधिकार दिया है, जो ओएमसी में सबसे अधिक जीए सहित देश की सबसे बड़ी सीजीडी कंपनी के रूप में स्वयं को स्थापित किया है।

**14.1.1.12. अन्वेषण और उत्पादन (ईएंडपी):**

भारतीय ऑयल भागीदारी हितों (पीआई), संयुक्त उद्यमों और पूर्ण स्वामित्व वाली सहायक कंपनियों के माध्यम से ईएंडपी क्षेत्र में व्यावसायिक पहलूओं का अन्वेषण जारी रखता है। वर्तमान में इंडियन ऑयल के ऊर्ध्व प्रवाह पोर्टफोलियो में 16 घरेलू और 11 विदेशी परिसम्पत्तियां शामिल हैं, जो विभिन्न चरणों में हैं अर्थात 8 उत्पादन, 6 विकासाधीन, 4 ब्लॉक खोज में, 1 मूल्यांकन के अधीन और 8 अन्वेषण के अंतर्गत 3.5% से 100% तक सक्रिय (पीआई) सीमा में है।

अप्रैल–दिसंबर, 2022 की अवधि के दौरान इंडियन ऑयल की अपनी उत्पादक परिसम्पत्तियों से उत्पादन की हिस्सेदारी वर्ष 2021 में इसी अवधि के दौरान 3.207 एमएमटीओई की तुलना में 3.214 एमएमटी तेल समकक्ष (एमएमटीओई) थी। तदनुसार, अपनी परियोजनाओं से लाभांश / राजस्व में इंडियन ऑयल की हिस्सेदारी अप्रैल–दिसंबर (2021–22) के दौरान 358.3 मिलियन अमेरिकी $ से 25% बढ़कर अप्रैल–दिसंबर (2022–23) में $ 448.3 मिलियन अमेरिकी $ हो गई।

इंडियन ऑयल की घरेलू उत्पादक परिसम्पत्ति ब्लॉक एएपी–ओएन–94 / 1 में, दिरोक गैस बिक्री से असम की राजस्व आय अप्रैल–दिसंबर (2022–23) के दौरान पिछले वर्ष की इसी अवधि के दौरान 12.28 मिलियन अमेरिकी $ से बढ़कर 25.27 मिलियन अमेरिकी $ हो गई।

इस अवधि के दौरान, रूसी परिसम्पत्ति, तास एंड वांकोर ने 188 मिलियन अमेरिकी डॉलर (लगभग 1,513 करोड़) की उच्चतम लाभांश आय की सूचना दी।

डिस्कवर्ड स्मॉल फील्ड राउंड–III (डीएसएफ) बोली प्रतिस्पर्धी दौर के अंतर्गत इंडियन ऑयल–ओएनजीसी संघ, मुंबई (अपतटीय) और कृष्णा गोदावरी (अपतटीय) में दो–दो ब्लॉकों में विजेता बनकर उभरा। दोनों ब्लॉकों में इंडियन ऑयल की 30% पीआई है और दोनों ब्लॉकों के लिए राजस्व हिस्सेदारी संबंधी संविदा दिनांक 09.09.2022 को निष्पादित किए गए थे।

देश की ऊर्जा मांग और आपूर्ति और स्वदेशी उत्पादों को बढ़ाने से संबंधित व्यवधान को दूर करने के लिए इंडियन ऑयल ने वर्तमान वर्ष के दौरान, ओएएलपी बोली राउंड–III और वी में ऑयल को दिए गए पांच ओएएलपी ब्लॉकों में फार्म किया और इसके परिणामस्वरूप दिनांक 20.07.2022 को इन ब्लॉकों में 30% पीआई को इंडियन ऑयल में अंतरित करने के लिए ओआईएल और इंडियनऑयल के बीच फार्म–आउट करार किए गए थे। ये ब्लॉक राजस्थान, असम और त्रिपुरा में स्थित हैं।

पहली बार, इंडियन ऑयल ने असम में स्थित दो ओएएलपी–1 अन्वेषण ब्लॉकों के लिए इंडियन ऑयल को 30% हिस्सेदारी अंतरित करने हेतु दिनांक 27.12.2022 को देश की सबसे बड़ी निजी ऊर्ध्वप्रवाह तेल और गैस कंपनी, वेदांता (केयर्न एनर्जी) लिमिटेड के साथ फार्म–इन फार्म–आउट करार भी किया।

वर्तमान वर्ष के दौरान, इंडियन ऑयल ने अबू धाबी में अपनी पहली विदेशी प्रचालित परिसम्पत्ति, ब्लॉक तटीय–1 में तीन कुओं के अन्वेषण ड्रिलिंग अभियान को उत्साहजनक परिणामों सहित सफलतापूर्वक पूरा किया (इंडियन ऑयल: 50%; बीपीआरएल के साथ संयुक्त परवालन), जबकि चौथे कुएं की ड्रिलिंग प्रगति पर है।

**14.1.1.13. वैकल्पिक ऊर्जा :**

हरित अर्थव्यवस्था के लिए कार्बन उत्सर्जन को कम करने के लिए इंडियन ऑयल नवीकरणीय ऊर्जा का दोहन करने की दिशा में तेजी से प्रगति कर रहा है। दिनांक 31.12.2022 तक की स्थिति के अनुसार इंडियन ऑयल की नवीकरणीय ऊर्जा की स्थापित क्षमता 238.40 मेगावाट है, जिसमें 167.60 मेगावाट पवन ऊर्जा क्षमता और 70.80 मेगावाट सौर ऊर्जा क्षमता शामिल है। इन परियोजनाओं ने अप्रैल 22 से दिसंबर 22 के दौरान 288.78 जीडब्ल्यूएच उत्पन्न किया, जिसके परिणामस्वरूप 235.3 हजार मीट्रिक टन के समान कार्बन डाइऑक्साइड ('00000 एमटीसीओ2–ईक्यू') का उत्सर्जन कम हुआ। अप्रैल 22 से दिसंबर 2022 के दौरान, इंडियन ऑयल ने

855 खुदरा दुकानों (आरओ) को सौर ऊर्जा से रोशन किया है। दिनांक 31.12.2022 तक, 20,357, इंडियन ऑयल के आरओ को लगभग 118.5 मेगावाट की संचयी स्थापित क्षमता सहित सौर ऊर्जा प्रणालियों द्वारा संचालित किए गए। इससे अप्रैल 22–दिसंबर 22 के दौरान लगभग 114.53 जीडब्ल्यूएच ऊर्जा उत्पन्न हुआ, जिसके परिणामस्वरूप 93.34 हजार मीट्रिक टन के समान कार्बन–डाइऑक्साइड (टीएमटीसीओ2 ई) का उत्सर्जन कम हुआ।

इंडियन ऑयल 'इंडिग्रीन' ब्रांड के अंतर्गत 9 राज्यों में 39 आरओ के माध्यम से सीबीजी बेच रहा है। इंडियन ऑयल ने सस्ती परिवहन की ओर संधारणीय विकल्प (एसएटीएटी) पहल के अंतर्गत लगभग 7.8 एमएमटीपीए सीबीजी के उत्पादन और आपूर्ति के लिए 3,000 से अधिक संयंत्रों को आशय पत्र जारी किया है। सितंबर 2019 से दिसंबर 2022 तक सीबीजी की संचयी बिक्री 9,472 टन थी।

**14.1.1.14. संधारणीय विकास:**

इंडियन ऑयल अपने प्रतिष्ठानों में सभी पारंपरिक लाइटों को एलईडी से बदल रहा है। अप्रैल 22–दिसम्बर 22 के दौरान लगभग 30,000 एलईडी लाइटें लगाई गई थी। पेपर रीसाइक्लिंग इंडियन ऑयल के लिए एक गंभीर विषय है। वर्ष के दौरान, लगभग 196 टन अपशिष्ट कागज को निर्दिष्ट रीसायकलरों के माध्यम से पुनर्नवीनीकरण किया गया था।

अप्रैल 22–दिसंबर 22 के दौरान, वृक्षारोपण अभियान के अंश के रूप में देश भर में लगभग 3.84 लाख पौधे लगाए गए थे।

**14.1.1.15. कार्पोरेट सामाजिक उत्तरदायित्व (सीएसआर):**

1964 में अपनी स्थापना के बाद से, इंडियन ऑयल राष्ट्रव्यापी अनगिनत सामाजिक कल्याण और सामुदायिक विकास कार्यक्रमों का समर्थन कर रहा है। इंडियन ऑयल ने अपने सीएसआर कार्यसूची को अपनी व्यावसायिक पेशकशों के साथ सफलतापूर्वक शामिल किया है। इंडियन ऑयल की सीएसआर परियोजनाएं मुख्यत विभिन्न समुदायों में जीवन–यापन की गुणवत्ता में सुधार लाने के लिए शुरू की जाती हैं, जिसमें समाज के दूर–दराजों / वंचित वर्गों को हमेशा शामिल किया जाता है। पिछले लगातार 5 वित्तीय वर्षों से, इंडियन ऑयल ने संपूर्ण सीएसआर बजट आवंटन व्यय किया है, जिससे आबंटित बजट का 100% उपयोग किया गया है। पिछले 5 वर्षों में, इंडियन ऑयल ने अपने सीएसआर बजट का बड़ा हिस्सा स्वास्थ्य देखभाल, शिक्षा, कौशल विकास और पर्यावरणीय संधारणीयता में निवेश किया है और प्रतिवर्ष 75 लाख से अधिक लाभार्थियों को मदद पहुंचाया है।

इंडियन ऑयल भुवनेश्वर में कौशल विकास संस्थान (2016 से) और रसायन प्रौद्योगिक संस्थान–एलओसीएल परिसर (2018 से), डिगबोई में असम ऑयल डिवीजन अस्पताल (1906 से) और असम ऑयल स्कूल ऑफ़ नर्सिंग (1986 से), मथुरा में स्वर्ण जयंती सामुदायिक अस्पताल (1999 से), इंडियन ऑयल आरोग्यम (स्वास्थ्य सेवा योजना) और इंडियनऑयल ज्ञानोदय (छात्रवृत्ति योजना) (2018 से) जैसी विभिन्न प्रमुख परियोजनाएं चल रही है।

**14.1.1.16. कुछ प्रमुख पुरस्कार और सम्मान:**

- कॉर्पोरेट सामाजिक उत्तरदायित्व के माध्यम से खेलों को प्रोत्साहित करने के लिए इंडियन ऑयल कॉर्पोरेशन लिमिटेड को वर्ष 2021 के लिए राष्ट्रीय खेल प्रोत्साहन पुरस्कार प्रदान किया गया।
- इंडियन ऑयल के अध्यक्ष श्री एस. एम. वैद्य को गवर्नेंस नाउ 8 वें पीएसयू पुरस्कार में सीएमडी लीडरशिप पुरस्कार से सम्मानित किया गया।
- इंडियन ऑयल ने कोविड प्रबंधन और वर्ष के नए उत्पाद के लिए प्रतिष्ठित एशियाई तेल और गैस पुरस्कार जीता।
- इंडियनऑयल ने स्पोर्ट्सस्टार एसेस 2022 में खेल पुरस्कार को बढ़ावा देने के लिए सर्वश्रेष्ठ पीएसयू पुरस्कार जीता।
- इंडियन ऑयल को एशिया कॉर्पोरेट उत्कृष्टता और संधारणीय (एसीईएस) पुरस्कार 2022 मिला।
- डन और ब्रैडस्ट्रीट द्वारा इंडियन ऑयल को सर्वश्रेष्ठ पीएसयू 2021 घोषित किया गया।
- इंडियन ऑयल ने बड़े नियोक्ता श्रेणी के अंतर्गत वैश्विक स्वस्थ कार्यस्थल पुरस्कार–2021 जीता। इस पुरस्कार को 'डब्ल्यूएचओ स्वस्थ कार्यस्थल रूपरेखा' पर आधारित वैश्विक स्वस्थ कार्यस्थल केन्द्र (जीसीएचडब्ल्यू) द्वारा स्थापित किया गया था।
- इंडियन ऑयल ने 7वां सीआईआई औद्योगिक उत्कृष्ट संपदा पुरस्कार 2021 जीता।
- मथुरा रिफाइनरी को भारतीय उद्योग परिसंघ (सीआईआई) द्वारा वर्ष 2020–2 के दौरान अपने ऊर्जा निष्पादन के लिए उत्कृष्ट ऊर्जा दक्षता इकाई के रूप में मान्यता दी गई थी। मथुरा रिफाइनरी ने वर्ष 2019–20 में भी यह पुरस्कार जाता था।
- इंडियन ऑयल पानीपत नेफ्था क्रैकर ने सीएचटी द्वारा आयेजित 'सर्वश्रेष्ठ ऊर्जा दक्षता संबंधी मामलों का अध्ययन' जीता।
- पाराद्वीप रिफाइनरी को राष्ट्रीय सुरक्षा सम्मेलन, भुवनेश्वर में प्रतिष्ठित कलिंगा सुरक्षा उत्कृष्ट पुरस्कार–2020 के लिए स्वर्ण पदक मिला ।
- इंडियन ऑयल को 'मधुर मुस्कान' पहल के लिए 19वीं एफआईसीसीआई सीएसआर पुरस्कार मिला।
- इंडियन ऑयल को शिक्षण और विकास में उत्कृष्टता के रूप में विजेता घोषित किया गया;

एसएचआरएम एचआर उत्कृष्टता पुरस्कार, 2021 में कल की नेतृत्व विकास श्रेणी में उत्कृष्टता के रूप में विजेता घोषित किया गया और सामुदायिक प्रभाव में उत्कृष्टता के लिए विशेष रूप से उल्लेख किया गया।

- कर्मचारी के प्रतिभा विकास को प्रदर्शित करने से संबंधित प्रतिभा विकास संघ द्वारा 2022 उत्कृष्ट पुरस्कार में इंडियन ऑयल को विश्व स्तर पर शीर्ष 20 विजेताओं की सूची में रखा गया था।
- "उभरते प्रौद्योगिकी को अपनाने में उत्कृष्टता" के अंतर्गत ई–शासन के लिए इंडियन ऑयल की ईपीआईसी परियोजना को भारत सरकार की 24वीं राष्ट्रीय पुरस्कार मिला।

### 14.1.2. तेल और प्राकृतिक गैस निगम लिमिटेड (ओएनजीसी)



तेल और प्राकृतिक गैस निगम लिमिटेड (ओएनजीसी) को दिनांक 23.06.1993 को संसद के अधिनियम के माध्यम से तेल और प्राकृतिक गैस आयोग नामक सांविधिक आयोग को सार्वजनिक क्षेत्र की कंपनी में बदलने और दिनांक 01.02.1994 से आयोग का कार्य संभालने के उद्देश्य से निगमित किया गया था। तेल और प्राकृतिक गैस निगम लिमिटेड एक ऐसा वैश्विक ऊर्जा कंपनी है जो संपूर्ण ऊर्जा मूल्य–श्रृंखला में एकीकृत है। तेल और प्राकृतिक गैस निगम लिमिटेड पेट्रोलियम और प्राकृतिक गैस मंत्रालय के प्रशासनिक नियंत्रण के अंतर्गत ईएंडपी क्षेत्र में सूचीबद्ध महारत्न सीपीएसई के अनुसूची–'क' में शामिल कंपनी है जिसके पास इसकी 58.91% हिस्सेदारी है।

#### 14.1.2.1. वर्ष 2022–23 के लिए दिसंबर, 2022 तक की विशेषताएं/पहलें

क) राष्ट्र को समर्पित दो प्रमुख परियोजनाएं: माननीय पेट्रोलियम और प्राकृतिक गैस और आवासन और नगर कार्य के मंत्री ने दिनांक 23.04.2022 को पश्चिमी अपतट में राष्ट्र को ₹ 6,000 करोड़ की निम्नलिखित दो प्रमुख परियोजनाएं समर्पित कीं।

1. एमएचएसआरडीपी–IV परियोजना का एनडब्ल्यूआईएस–आर मंच: प्रोफाइल अवधि में 3.20 एमएमटी तेल और 0.571 बीसीएम गैस के वृद्धिशील लाभ सहित 3,740 करोड़ का कुल पूंजीगत व्यय हुआ।
2. क्लस्टर–8 सीमांत क्षेत्र विकास परियोजना: प्रोफाइल अवधि में 4.38 एमएमटी तेल और 0.464 बीसीएम गैस के वृद्धिशील उत्पादन सहित ₹ 2,292.46 करोड़ का कुल पूंजीगत व्यय हुआ।

ख) मुंबई हाई में प्रसिद्ध तेल ड्रिलिंग मंच सागर सम्राट को एक बार फिर से सेवा में वापस लाया गया है, इस बार इसे एक छोटा अपतटीय उत्पादन इकाई (एमओपीयू) के रूप में शामिल किया गया। दिनांक 23 दिसंबर 2022 को एमओपीयू के शुरू होने के बाद, डब्ल्यूओ#16 डब्ल्यूएचपी के कुओं 4 और 5 से प्रसंस्करण प्रणालियों में पहला तेल 13:00 घंटे प्रवाहित हुआ, जिसने अब तक की यात्रा में एक नए युग की शुरुआत की।

ग) माननीय प्रधान मंत्री ने ओएनजीसी के पर्बतपुर गैस संग्रह स्टेशन की आधारशिला रखी: माननीय प्रधान मंत्री ने 12 जुलाई 2022 को झरिया ब्लॉक के अंतर्गत ओएनजीसी के पर्बतपुर गैस संग्रह स्टेशन (जीसीएस) की आधारशिला रखी। पर्बतपुर जीसीएस झारखंड और उसके पड़ोसी राज्यों में 'गैस–आधारित अर्थव्यवस्था' को उत्प्रेरित करने में मदद करेगा। इस परियोजना में ₹ 224 करोड़ रुपये निवेश होने का अनुमान है तथा इसे 2024 की शुरुआत तक पूरी कर ली जाएगी।

घ) ओएनजीसी ने घरेलू गैस के लिए ई–नीलामी शुरू की: ओएनजीसी के गैस विपणन में एक बड़ा बदलाव देखा गया है क्योंकि ओएनजीसी ने डीजीएच सूचीबद्ध एजेंसी, मेसर्स एमजंक्शन सर्विसेज लिमिटेड के सहयोग से बोली पोर्टल विकसित किया है, जिसमें गतिशील नीलामी प्रक्रिया के माध्यम से गैस बेची जा रही है। दिनांक 23 फरवरी, 2022 को त्रिपुरा से संबंधित परिसम्पत्ति के खुबल क्षेत्र से 0.1 एमएमएससीएम गैस की बिक्री के लिए दिनांक 01 अप्रैल 2024 से उपलब्ध होने वाली गैस नीलामी से संबंधित कार्रवाई पूरी कर ली गई है।

ङ) दिनांक 21 दिसंबर 2019 की मध्यरात्रि में बीएंडएस परिसम्पति द्वारा पन्ना–मुक्ता प्रक्रिया

मंच और पीएमटी–जेवी भागीदारों (मेसर्स बीजीईपीआईएल, मेसर्स आरआईएल और ओएनजीसी–जेवी समूह) से निर्बाध रूप से क्षेत्र लेने के बाद पन्ना–मुक्ता ने परिचालन के तीन साल पूरे कर लिए हैं और तेल उत्पादन में गिरावट को रोका है। भारत सरकार ने दिनांक 21 दिसंबर 2019 को उत्पादन हिस्सेदारी संविदा की समाप्ति पर नामांकन के आधार पर बीएंडएस परिसम्पत्ति, ओएनजीसी को पन्ना–मुक्ता क्षेत्र सौंपा था। पन्ना मुक्ता क्षेत्र ने अधिग्रहण के बाद से पिछले तीन वर्षों में एलटीजीओपी में 0.925 एमएमटी तेल और 3.245 बीसीएम गैस की तुलना में 1.143 एमएमटी तेल और 3.737 बीसीएम गैस उत्पादन किया है और उत्पादन की गिरावट को 19% (पीएमटी–जेवी) के स्तर से 10% (ओएनजीसी द्वारा अधिग्रहण के बाद) पर रोका है।

च) क्लस्टर–8 योजना के अंतर्गत सीमांत क्षेत्र संबंधी अन्वेषण के विकास ने मुंबई हाई के परिसम्पत्ति उत्पादन में वृद्धि की: त्वरित ड्रिलिंग और कुओं के पूरा होने से क्लस्टर–7 और 8 क्षेत्र का उत्पादन 1 अप्रैल 2021 को 5,700 बीओपीडी से बढ़कर 28 जनवरी 2022 को 16,800 बीओपीडी हो गया है। इन कुओं (क्लस्टर–8) से प्राप्त वास्तविक उत्पादन व्यवहार्यता रिपोर्ट में परिकल्पित प्रोफाइल से अधिक है।

छ) ओएनजीसी ने ईएंडपी, स्वच्छ ऊर्जा पर सहयोग करने के लिए नॉर्वे के इक्विनोर के साथ समझौता ज्ञापन पर हस्ताक्षर किए: तेल और प्राकृतिक गैस निगम लिमिटेड (ओएनजीसी) ने कार्बन कैप्चर उपयोग और पृथक्करण (सीसीयूएस) सहित ऊर्ध्वप्रवाह अन्वेषण और उत्पादन, मध्यप्रवाह, अनुप्रवाह और स्वच्छ ऊर्जा विकल्पों के क्षेत्रों में सहयोग और साझेदारी के लिए दिनांक 26 अप्रैल 2022 को नई दिल्ली में नॉर्वेजियन राष्ट्र के स्वामित्व वाली बहुराष्ट्रीय ऊर्जा कंपनी इक्विनोर एएसए के साथ एक समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए। माननीय पेट्रोलियम और प्राकृतिक गैस और आवासन और नगर कार्य मंत्री श्री हरदीप सिंह पुरी की उपस्थिति में नॉर्वे के विदेश मंत्री एनीकेन ह्यूटफेल्ट के नेतृत्व में एक उच्च स्तरीय प्रतिनिधिमंडल की भारत यात्रा के दौरान समझौता ज्ञापन पर हस्ताक्षर किए थे।

ज) ओएनजीसी अपने अन्वेषण कार्यक्रमों को और तेज करेगी: ओएनजीसी अपने अन्वेषण अभियानों को और तेज करने के लिए एक व्यापक दिशा–निर्देश तैयार किया है और इसके लिए वित्त वर्ष 2022–23, वित्त वर्ष 2023–24 और वित्त वर्ष 2024–25 के दौरान लगभग ₹ 31,000 करोड़ का पूंजीगत व्यय आवंटित किया है। यह पिछले तीन वित्त वर्षों में उसके ₹ 20,670 करोड़ के अन्वेषण व्यय का 150% है। ओएनजीसी प्रतिष्ठित वैश्विक बड़ी कंपनियों के साथ अंतरराष्ट्रीय सहयोग का लाभ उठा रही है।

झ) ओएनजीसी ने आईजीएक्स में घरेलू गैस का व्यापार शुरू किया: ओएनजीसी ने भारतीय गैस विनिमय (आईजीएक्स) में घरेलू रूप से उत्पादित गैस का व्यापार शुरू किया है। आईजीएक्स में ओएनजीसी की 5% इक्विटी हिस्सेदारी है और गैस के व्यापार के लिए मालिकाना सदस्यता भी है।

ञ) ओएनजीसी, एचओईसी ने प्रथम अपतटीय डीएसएफ क्षेत्र के लिए टीएंडपी समझौते पर हस्ताक्षर किए: एचओईसी, बी–80 का प्रथम अपतटीय डीएसएफ क्षेत्र को एचओईसी द्वारा 03 जून, 2022 को मुंबई में एनबीपी ग्रीन हाइट्स में ओएनजीसी के साथ टोलिंग एंड प्रसंस्करण (टीएंडपी) समझौते पर हस्ताक्षर करने के बाद उत्पादन में रखा गया है।

ट) ओएनजीसी, ओटीबीएल ने जमीन पर तेल रिसाव को हल करने वाले जैव उपचार के लिए संविदा पर हस्ताक्षर किए: ओएनजीसी और ओएनजीसी टेरी बायोटेक लिमिटेड (ओटीबीएल) ने तेल रिसाव क्षेत्रों की बहाली और तीन वर्ष की अवधि के लिए तेल दूषित मिट्टी के पूर्व–सीटू, जैव–उपचार के लिए दिनांक 1 जून, 2022 को एक केंद्रीकृत दर संविदा पर हस्ताक्षर किए।

ठ) ओएनजीसी विदेश ने कोलंबिया में नई अन्वेषण की घोषणा की: ओएनजीसी विदेश लिमिटेड (ओवीएल), ओएनजीसी की पूर्ण स्वामित्व वाली सहायक कंपनी और विदेशी कंपनी ने कोलंबिया में लानोस बेसिन के ब्लॉक सीपीओ–5 में स्थित उर्राका–IX में तेल की खोज की है। प्रारंभिक परीक्षण के दौरान, तरल पदार्थ लगभग 600 बीबीएल/दिन प्रवाहित हुआ, जिसमें लगभग 40–50% पानी की कटौती और 16 डिग्री एपीआई तेल पाया गया। निचले मिराडोर में तेल की खोज ब्लॉक के उत्तरी भाग में भावी खोज के लिए नए क्षेत्रों को ध्यान केन्द्रित करती है।

ङ) पेट्रोलियम और प्राकृतिक गैस मंत्री ने अपतटीय रिग प्लेटिनम अन्वेषक संबंधी दौरा किया: माननीय केंद्रीय पेट्रोलियम और प्राकृतिक गैस मंत्री श्री हरदीप सिंह पुरी ने दिनांक 12 जून 2022 को कंजी–डीडब्ल्यू एन–98/2 क्लस्टर–11 क्षेत्रों में कुओं पर काम कर रहे प्लेटिनम अन्वेषक संबंधी रिग का दौरा किया। ओएनजीसी के प्रयासों की सराहना करते हुए, माननीय मंत्री ने बाजार में रिग उपलब्धता के बारे में पूछताछ की और घरेलू तेल और गैस उत्पादन को बढ़ाने के लिए आवश्यक कदम उठाने की सलाह दी।

च) ओएनजीसी हरित हाइड्रोजन बनाएगी और इसके लिए नवीकरणीय ऊर्जा क्षेत्र की प्रमुख कंपनी ग्रीनको जीरो सी के साथ समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए हैं: ऊर्जा क्षेत्र की प्रमुख कंपनी ओएनजीसी ने मेसर्स ग्रीनको जीरो सी प्राइवेट लिमिटेड (ग्रीनको) के साथ एक समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए हैं, जो संयुक्त रूप से नवीकरणीय, हरित हाइड्रोजन, हरित अमोनिया और हरित हाइड्रोजन के अन्य व्युत्पन्न में व्यापारिक अवसर दूढ़ रहा है।

ण) ओएनजीसी ने भारत के पूर्वी और पश्चिमी तटों में गहरे पानी की खोज हेतु एक्सॉनमोबिल के साथ समझौते विषय पर हस्ताक्षर किए हैं: ओएनजीसी ने दिनांक 17 अगस्त 2022 को पेट्रोलियम और प्राकृतिक गैस मंत्रालय के सचिव की उपस्थिति में भारत के पूर्वी और पश्चिमी तटों में गहरे पानी की खोज के लिए एक्सॉनमोबिल के साथ समझौते विषय (एचओए) पर हस्ताक्षर किए हैं। सहयोग क्षेत्र पूर्वी अपतटीय में कृष्णा गोदावरी और कावेरी घाटी और पश्चिमी अपतटीय में कच्छ–मुंबई क्षेत्र पर ध्यान केंद्रित कर रहा है। ओएनजीसी और एक्सॉनमोबिल के बीच सहयोग एक उपयुक्त कार्यनीति साबित होगा जहां इन क्षेत्रों में ओएनजीसी के ज्ञान और पिछले अनुभव को एक्सॉनमोबिल की वैश्विक अंतर्दृष्टि के साथ जोड़ा जाएगा।

त) हजीरा संयंत्र ने निजी कंपनियों से प्राकृतिक गैस का प्रसंस्करण और विपणन करना शुरू किया: अपने प्रयासों से गैस प्रसंस्करण के साथ मिलकर वीएपी उत्पादन और बिक्री को बढ़ाया, बी एंड एरा परिसम्पत्ति और हजीरा संयंत्र ने पहली बार किसी निजी कंपनी–हिंदुस्तान ऑयल एक्सप्लोरेशन कंपनी (एचओईसी)–हजीरा संयंत्र में 42" ट्रंक मार्ग के माध्यम से बी–80 प्राकृतिक गैस के टोलिंग और प्रसंस्करण के लिए सेवाएं प्रदान की हैं।

थ) ओएनजीसी ने ब्रिटेन आधारित वैश्विक पेट्रोलियम जाइंट शैल के साथ समझौता ज्ञापन पर हस्ताक्षर किए हैं, जो भारत में प्रमुख घाटी के लिए संयुक्त कार्बन डाइऑक्साइड (सीओ2) भंडारण अध्ययन और उन्नत तेल प्राप्ति (ईओआर) स्क्रीनिंग मूल्यांकन पर ध्यान केंद्रित करेगा, जिसमें कम तेल और गैस क्षेत्र और खारा जलभृत शामिल हैं।

द) घरेलू ऊर्जा उत्पादन बढ़ाने के लिए ओएनजीसी और इंडियन ऑयल कॉरपोरेशन लिमिटेड (आईओसीएल) के बीच संयुक्त प्रचालन करार (जेओए) पर हस्ताक्षर किए गए।

**14.1.2.2. अन्वेषण:**

- ओएनजीसी ने दिनांक 01.01.2023 तक 383 एलकेएम 2डी, 9,392 एसकेएम 3डी भूकंपीय डेटा प्राप्त किया और 52 अन्वेषणात्मक कुओं की खुदाई की।
- ओएनजीसी ने अपने परिचालित क्षेत्र में वित्त वर्ष 2022–23 के दौरान कुल 6 खोजों (जमीन पर 4 और अपतटीय में 2) की घोषणा की है। इनमें से, 1 पूर्वेक्षण (जमीन पर) में है और 5 (3 जमीन पर में और 2 अपतटीय में) कुंड में हैं। वित्त वर्ष 2022–23 के दौरान अब तक अधिसूचित छह खोजों में से दो खोजें अर्थात् ओएनजीसी द्वारा मंडपेटा–60 और केसनापल्ली वेस्ट डीप–7 का पहले ही मुद्रीकरण किया जा चुका है।
- ओएनजीसी ने डीएसएफ–III के दौरान अपतटीय में अन्वेषित छोटे क्षेत्रों के लिए 6 करारों, सीबीएम बोली दौर–2021 के अंतर्गत 2 करार पर हस्ताक्षर किए: ओएनजीसी ने डीएसएफ–III बोली दौर के अंतर्गत अपतटीय में अन्वेषित छोटे क्षेत्रों (डीएसएफ) के लिए 6 करारों पर हस्ताक्षर किए हैं, जिसमें अरब सागर और बंगाल की खाड़ी में क्षेत्रों से संबंधित 3 करार शामिल हैं। इस ऊर्जा महारत्न ने झारखंड और मध्य प्रदेश में विशेष सीबीएम बोली दौर –2021 ब्लॉकों से संबंधित क्षेत्रों के लिए 2 करारों पर भी हस्ताक्षर किए।
- उत्तरी गेलेकी क्षेत्र में एनजी–08 की सफलतापूर्वक स्थापना ने बरैल रेत में वाईटीएफ क्षमता की खोज और प्राप्ति हेतु एक नया मुकाम हासिल किया है एनजीएई की

अवस्थिति गेलेकी मुख्य संरचना के सी गलियारा में इसलिए प्रस्तावित किया गया था ताकि बीएमएस (प्राथमिक) और बीसीएस–1 और बीसीएस–3 (माध्यमिक) के उद्देश्य को पूरा किया जा सकें। एनजी–8 कूप खुदाई के बाद, गेलेकी क्षेत्र में बरैल रेत को उत्तरी क्षेत्र में नया विस्तार क्षेत्र मिला है।

- साइड–ट्रैक वेल आईपी: 5 वाई में समकालिक अन्वेषण और वास्तविक समय पर निगरानी परिचालन कौशल से एल–IIबी भंडार में तेल प्रतिष्ठान के रूप में अग्रणी बनना: साइड–ट्रैक वेल आईपी: 5 वाई में समकालिक अन्वेषण (सिमेक्स) और वास्तविक समय पर निगरानी परिचालन कौशल से मुंबई हाई में आरईसी सीमा से इतर एल–IIबी भंडार की डी–सब परत में तेल प्रतिष्ठान के रूप में अग्रणी बना हुआ है।
- ओएनजीसी ने भारत में अन्वेषण क्षमता का आकलन करने के लिए दिनांक 19 सितंबर 2022 को कैलिफोर्निया आधारित ऊर्जा प्रमुख शेवरॉन कॉर्पोरेशन की सहायक कंपनी शेवरॉन न्यू वेंचर्स पीटीई लिमिटेड के साथ समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किया है। यह कार्यनीतिक सहयोग ओएनजीसी के अंतरराष्ट्रीय दूर–दराज संबंधी कार्यक्रम का अंश है, जिसका उद्देश्य वैश्विक ईएंडपी कंपनियों को सीमावर्ती क्षेत्रों का पता लगाने और भारतीय तलछटी घाटी के भूवैज्ञानिक रूप से चुनौतीपूर्ण और कठिनाइयों का पता लगाने के लिए उपयुक्त साझेदारी के लिए आमंत्रित करना है।
- लॉगिंग समूह, केडीएमआईपीई, भारतीय तलछटी घाटी के प्रमुख–व्युत्पन्न ध्वनिक और भूयांत्रिकी मापदंडों का मानचित्रावली प्रकाशित करता है। यह मानचित्रावली ईएंडपी भू–वैज्ञानिकों और ड्रिलिंग अभियांत्रिकों के लिए एक महत्वपूर्ण संदर्भ दस्तावेज के रूप में काम करेगा।
- पादरा क्षेत्र में त्वरित अन्वेषण से उत्पादन में महत्वपूर्ण वृद्धि हुआ है: पाड्रा क्षेत्र कैम्बे परिसम्पत्ति में सबसे अधिक तेल उत्पादक है और इसके उत्पादन का लगभग आधा हिस्सा है। वर्तमान में यह क्षेत्र प्रतिदिन 440–450 एम3 की दर से तेल उत्पादन कर रहा है।

**14.1.2.3. उत्पादन संबंधी पहल:**

- राजमुंदरी परिसम्पत्ति ने मल्लेश्वरम क्षेत्र की क्षमता बढ़ाने के लिए हाइड्रो फ्रैक्चरिंग अभियान को निष्पादित किया गया: यह राजमुंदरी परिसम्पत्ति के लिए महत्वपूर्ण उपलब्धि साबित हुआ, विशेषरूप से केजी घाटी में प्रमुख तेल क्षेत्र के संकुचित भंडार को बढ़ाने और इस तरह के संकुचित भंडारों के दोहन के लिए मानदंड स्थापित किया गया।
- गोजालिया जीसीएस लक्ष्य को पूरा किया गया: ओएनजीसी की त्रिपुरा परिसम्पत्ति ने गोजालिया जीसीएस की स्थापना की और गोजालिया जीसीएस से पलाटाना जीएमएस तक 58 किलोमीटर की पाइपलाइन बिछाने की प्रमुख परियोजनाएं शुरू की।
- बीएंडएस परिसम्पत्ति के बी–55 क्षेत्र में मुक्ता पे का पुनरुद्धार से गैस उत्पादन में महत्वपूर्ण लाभ मिला है: बी–55 क्षेत्र, वर्ष 1978 में खोजा गया था और यह ओएनजीसी के प्रारंभिक सीमांत क्षेत्रों में से एक है, जो मुंबई के लगभग 110 किमी उत्तरी–पश्चिमी क्षेत्र में स्थित है। रिग डीएस जीवाश्म की नियोजन से बी–55 ए: 4 का पुनरुद्धार हुआ और बासीन पे में मौजूदा अंतराल को अलग करने और मुक्ता पे में 27 मीटर अतिरिक्त छिद्र करने का निर्णय लिया गया। वर्तमान में यह कूप 41 केएससी के एफटीएचपी सहित 48/64" चोक के माध्यम से/0.117 एमएमएससीएमडी गैस प्रवाहित कर रहा है।
- हजीरा संयंत्र ने भारत का पहला जल धुंध टर्बाइन जनरेटर अग्नि शमन प्रणाली शुरू किया जिसे अन्य अग्निशमन माध्यम की तुलना में उपयुक्तता और श्रेष्ठता की विस्तृत श्रृंखला के कारण अग्निशमन प्रणाली के भविष्य के रूप में जाना जाता है। जल धुंध प्रणाली में, पानी की बूंदों का आकार काफी हद तक माइक्रोन तक कम हो जाता है जिससे बूंदों का सतह क्षेत्र बढ़ जाता है। पानी की बूंदें आग की ताप से भाप में परिवर्तित हो जाती हैं और इसे 1,700 गुणा विस्तारित कर देती हैं, जिससे हवा में ऑक्सीजन विस्थापित हो जाती है।
- डब्ल्यूएसएस अहमदाबाद ने हाइड्रोलिक फ्रैक्चरिंग के लिए अभिनव निम्न तापमान ब्रेकर प्रणाली विकसित करने के लिए एकस्व अधिकार प्राप्त किया है: इसने तकनीकी–किफायती ब्रेकर प्रणाली के नवाचार को सुनिश्चित किया है, जिसने डब्ल्यूएसएस अहमदाबाद को इन हाउस प्रौद्योगिकी उन्नयन, स्वदेशी रसायनों और उपकरणों से कम/बहुत कम तापमान वाले कुओं (24–40 डिग्री सेल्सियस के बीएचटी वाले) के हाइड्रोलिक फ्रैक्चरिंग संचालन को सक्षम बनाया है ताकि इस प्रकार के कूपों के लिए अंतरराष्ट्रीय सेवा प्रदाताओं पर किए जाने वाले व्यय को बचाया जा सकें।

**14.1.2.4. ड्रिलिंग संबंधी पहल:**

- ड्रिलिंग के दौरान लाइनर: मुंबई अपतट में समाप्त हो चुके एल–III भंडार में प्रौद्योगिकी का सफलतापूर्वक कार्यान्वयन किया गया जो कि एशिया का सबसे पहला पहल है। ड्रिलिंग सेवाओं ने एसएन # 8वाई के 8½ चरण में एशिया लाइनर ड्रिलिंग (एलडब्ल्यूडी) के प्रथम कार्य को सफलतापूर्वक पूरा करके इतिहास रच दिया है।
- कैम्बे परिसम्पत्ति ने नया अत्याधुनिक एसी–वीएफडी, श्रेणी–2 ड्रिलिंग रिग को शामिल किया है जो ओएनजीसी की अनुठी पहल है। न्यू रिग एनजी–1500–1 को शामिल करने से कैम्बे परिसम्पत्ति की प्रगति में एक नए अध्याय का शुरूआत होता है जो रिग कर्मिकों के लिए रिग परिचालन को कुशल और सुरक्षित बनाता है।

**14.1.2.5. तकनीकी सेवा संबंधी पहल:**

- एसएपी एस/4 एचएएनए (उत्कृष्टता उद्यम मंच) में ओएनजीसी का संक्रमण दिनांक 11 दिसंबर 2022 से शुरू हो गया है, जिससे बेहतर निष्पादन, त्वरित डिजिटलीकरण, लेनदेन प्रसंस्करण में कमी और बेहतर अंतर्दृष्टि विकसित होगी। यह ओएनजीसी को नवीनतम एसएपी सॉफ्टवेयर एस/4 एचएएनए संस्करण 2021 को अपनाने वाले देशों के कुछ प्रथम श्रेणी के संगठनों के बीच अन्यतम रैंक प्रदान करता है।
- कैम्बे परिसम्पत्ति ने दिनांक 30 सितंबर 2022 को पहली व्यापारिक साझेदार सम्मेलन का आयोजन किया, जिसका उद्देश्य ओएनजीसी और उसके व्यापारिक साझेदारों के बीच हाल के वर्षों में ऊर्जा महारत्न द्वारा अपनाई गई नीतियों के बारे में जागरूक करके संबंधों को मजबूत करना था।

**14.1.2.6. नवीकरणीय ऊर्जा और ओएनजीसी की संधारणीय प्रबंधन पहल:**

ओएनजीसी ने तटवर्ती और अपतटीय प्रचालनों से ड्रिलिंग, उत्पादन और प्रसंस्करण सुविधाओं के कारण उत्पन्न विभिन्न गैसीय, तरल और ठोस बहिस्त्राव के लिए रूपरेखा और निर्माण सुविधाओं सहित उत्सर्जन नियंत्रण हेतु स्वच्छ प्रौद्योगिकियां शुरू की हैं जिन्हें निम्नानुसार चित्रित किया गया है।

- स्वच्छ विकास तंत्र (सीडीएम) परियोजनाएं: ओएनजीसी ने वर्ष 2006 में स्वच्छ विकास तंत्र (सीडीएम) शुरू किया और अब तक, ओएनजीसी ने अपशिष्ट ताप पुनःप्राप्ति परियोजना (मुंबई हाई दक्षिण), उरण और हजीरा गैस संयंत्र में गैस फ्लेरिंग को कम करने के लिए परियोजना, भुज में 51 मेगावाट पवन ऊर्जा परियोजना, मुंबई, दिल्ली, देहरादून, कोलकाता में हरित भवन, जैसलमेर राजस्थान में 102 मेगावाट पवन ऊर्जा परियोजना आदि जैसी संयुक्त राष्ट्र जलवायु परिवर्तन ढांचागत सम्मेलन (यूएनएफसीसीसी) सहित 15 सीडीएम परियोजनाओं को पंजीकृत किया है। 15 सीडीएम परियोजनाओं से संयुक्त सीईआर उत्पादन क्षमता लगभग 21,02,769 सीईआर (1 सीईआर= टन सीओ2 ई) है।
- हरित गृह गैस (जीएचजी) से संबंधित लेखांकन और शमन: ओएनजीसी का उद्देश्य बेहतर ऊर्जा दक्षता पर ध्यान केंद्रित करके जीएचजी उत्सर्जन को कम करना है। वित्त वर्ष 2022 के दौरान स्कोप–1 और स्कोप–2 में उत्सर्जन 9.136 एमएमटीसीओ2ई था, जो पिछले वर्ष की तुलना में 3 प्रतिशत कम है।
- हरित मीथेन पहल (जीएमआई) आर्थिक विकास को बढ़ाने, ऊर्जा सुरक्षा को संवर्धन करने, पर्यावरण में सुधार करने और हरित गृह गैसों के उत्सर्जन को कम करने के लिए वैश्विक अस्थायी मीथेन उत्सर्जन को कम करने के लिए संयुक्त राज्य पर्यावरण संरक्षण एजेंसी (यूएसईपीए) की ओर से एक कार्रवाई–उन्मुख पहल है। वित्त वर्ष 2022 के दौरान अंकलेश्वर परिसम्पत्ति और सी2–सी3 संयंत्र में सर्वेक्षण किया गया था।
- सौर और पवन ऊर्जा पहल: 31 मार्च 2022 तक की स्थिति के अनुसार नवीकरणीय ऊर्जा की कुल स्थापित क्षमता लगभग 184.3 मेगावाट (सौरः 31.3 मेगावाट और पवनः 153 मेगावाट) थी। ओएनजीसी ने सौर, पवन (तटवर्ती), सौर उद्यान ईवी मूल्य श्रृंखला, हरित हाइड्रोजन, भंडारण आदि में नवीकरणीय ऊर्जा परियोजनाओं के लिए एसईसीआई के साथ समझौता ज्ञापन पर भी हस्ताक्षर किए हैं।
- पारंपरिक लाइटों के स्थान पर एलईडी लाइट प्रतिस्थापन करना: कुशल ऊर्जा उपयोग (उजाला योजना) को बढ़ावा देने के लिए भारत सरकार के आह्वान के अनुरूप, ओएनजीसी ने चरणबद्ध तरीके से ओएनजीसी में सभी पारंपरिक लाइटों को बदलने के लिए एनर्जी एफिशिएंसी सर्विसेज लिमिटेड (ईईएसएल) के साथ समझौता ज्ञापन पर हस्ताक्षर किए हैं। तथापि, तापदीप्त लैंप, ट्यूब लाइट और सीएफएल को तुरंत बदल दिया गया। वित्त वर्ष 2022 के दौरान ओएनजीसी ने 41,000 एलईडी लाइटें लगाई हैं, जिससे ओएनजीसी द्वारा अब तक लगभग 3,51,000 एलईडी लाइटें लगाई गई हैं। इससे ओएनजीसी को वार्षिक आधार पर लगभग 75.9 मिलियन बिजली यूनिट की

बचत करने में मदद मिली है और इससे ₹ 531 मिलियन की वार्षिक बचत हुई है।

- सूक्ष्म टर्बाइन और गतिशील गैस मिश्रण प्रणाली: संधारणीय पहल के अंश के रूप में ओएनजीसी के विभिन्न स्थानों में कुल 460 किलोवाट क्षमता वाली 05 सूक्ष्म टर्बाइन और 02 गतिशील गैस मिश्रण प्रणालियां (ड्रिलिंग रिग के डीजल इंजनों में) शुरू किए गए, जिससे कुल 7 सूक्ष्म टर्बाइन और 6 डीजीबी हो गए।

- पवन और सौर ऊर्जा परियोजनाएं: ओएनजीसी ने गुजरात (भुज जिले) में 51 मेगावाट क्षमता की अपनी पहली पवन ऊर्जा परियोजना और जैसलमेर, राजस्थान में 102 मेगावाट क्षमता की एक और पवन ऊर्जा परियोजना स्थापित की है। कार्य स्थानों पर सौर ऊर्जा संयंत्र भी स्थापित किए गए हैं। आज की स्थिति के अनुसार नवीकरणीय ऊर्जा की कुल संस्थापित क्षमता लगभग 184 मेगावाट है। ओएनजीसी की 'ऊर्जा कार्यनीति 2040'' में अपतटीय पवन पर ध्यान केंद्रित करते हुए 5–10 गीगावाट क्षमता पोर्टफोलियो बनाने, दीर्घकालिक व्यवधानों के लिए पोर्टफोलियो के जोखिम को कम करने और कंपनी के कार्बन संबंधी छाप को कम करने की दिशा में परिकल्पना की गई है।

- कार्बन प्राप्ति, उपयोग और भंडारण (सीसीयूएस): कार्बन कैप्चर, उपयोग और भंडारण (सीसीयूएस) एक महत्वपूर्ण सीओ2 उत्सर्जन शमन प्रौद्योगिकी है जो बड़ी मात्रा में सीओ2 को वायुमंडल में फैलने से रोक सकती है। इसके लाभों को ध्यान में रखते हुए ओएनजीसी ने सीओ2 आधारित उन्नत ऑयल पुनःप्राप्ति (ईओआर) के लिए इंडियन ऑयल कॉरपोरेशन लिमिटेड (आईओसीएल) के साथ समझौता ज्ञापन पर हस्ताक्षर किए हैं। इस पहल के अंतर्गत आईओसीएल की कोयली रिफाइनरी से प्राप्त सीओ2 का उपयोग वडोदरा के पास गांधार क्षेत्र में ओएनजीसी के घटते तेल क्षेत्रों के ईओआर के लिए किया जाएगा। इस परियोजना में वर्ष 2040 तक 5 से 6 मिलियन टीसीओ2 को अलग करने की क्षमता है।

- संधारणीय जल प्रबंधन: ओएनजीसी ने अपने जल प्रबंधन कार्यप्रणाली में संधारणीय जल प्रबंधन (एसडब्ल्यूएम) की नीति को अपनाया और वर्षा जल संचयन (आरडब्ल्यूएच) परियोजनाओं के सुचारु कार्यान्वयन, निगरानी और नियमित अनुरक्षण के लिए वर्षा जल संचयन (आरडब्ल्यूएच) संबंधी अपनी नीति को भी संशोधित किया। 10 एमएलडी समुद्री जल अलवणीकरण करने के लिए उरण संयंत्र स्थापना की प्रक्रिया में है जिसे भविष्य में 20 एमएलडी तक बढ़ाया जा सकता है।

**14.1.2.7. प्रमुख पुरस्कार और सम्मान:**

- फोर्ब्स 2000 की सूची 2022: फोर्ब्स ने बिक्री, लाभ, परिसम्पत्ति और बाजार मूल्य के आधार पर वैश्विक 2000 सूची के अनुसार कंपनी को भारत में 5 वें और दुनिया भर में 229 वें स्थान पर रखा है।

- फॉर्च्यून ग्लोबल 500 में ओएनजीसी 190वें स्थान पर रही।

- प्लैट की शीर्ष 250 वैश्विक ऊर्जा कंपनी में ओएनजीसी 25वें स्थान पर रही।

- ओएनजीसी को जोखिम प्रबंधन के लिए **गोल्डन पीकॉक पुरस्कार से सम्मानित किया गया:** अपने व्यवसाय और संचालन में जोखिम न्यूनीकरण के प्रति अपनी प्रतिबद्धता की मान्यता देते हुए ओएनजीसी को 09 नवंबर 2022 को ब्रिटेन की संसद हाउस ऑफ लॉर्ड्स में इंस्टीट्यूट ऑफ डायरेक्टर्स (आईओडी), भारत द्वारा आयोजित कॉर्पोरेट शासन और संधारणीयता लंदन वैश्विक सम्मेलन, 2022 में जोखिम प्रबंधन के लिए गोल्डन पीकॉक अवार्ड मिला।

- ओएनजीसी ने डब्ल्यूसीडीएम–डीआरआर पुरस्कार जीता: ओएनजीसी को आपदा प्रबंधन के क्षेत्र में उत्कृष्टता के लिए डब्ल्यूसीडीएम–डीआरआर पुरस्कार से सम्मानित किया गया। निदेशक (तटवर्ती) ने 'प्रभावी' और कुशल आपदा जोखिम प्रबंधन (डीआरएम) के लिए आपदा तत्परता के क्षेत्र में उत्कृष्ट योगदान हेतु ''व्यक्तिगत उत्कृष्टता पुरस्कार'' भी जीता।

- ओएनजीसी राष्ट्र निर्माताओं के बीच भारत के सर्वश्रेष्ठ नियोक्ताओं संबंधी कार्य करने के लिए प्रसिद्ध स्थान सूची में शामिल है: ओएनजीसी को दिनांक 14 जून 2022 को कार्य करने की प्रसिद्ध स्थान (जीपीटीडब्ल्यू) द्वारा अन्य राष्ट्र–निर्माताओं के बीच भारत के सर्वश्रेष्ठ नियोक्ताओं में से एक के रूप में मान्यता दी गई है। ऊर्जा महारत्न को राष्ट्र की ऊर्जा सुरक्षा को बनाए रखने की अपनी प्रतिबद्धता के लिए जीपीटीडब्ल्यू के 'वॉल ऑफ फेम' पर शामिल किया गया है।

- ओएनजीसी को वैश्विक सुरक्षा पुरस्कार 2022 से सम्मानित किया गया: कॉर्पोरेट एचएसई को

उत्कृष्ट कार्य संस्कृति बनाए रखने में उत्कृष्ट निष्पादन हेतु प्लेटिनम श्रेणी में प्रतिष्ठित वैश्विक सुरक्षा पुरस्कार 2022 से सम्मानित किया गया।

- ओएनजीसी विदेश लिमिटेड सुकुरसल कोलंबियाना को कोलंबिया में लानोस घाटी के सीपीओ–5 ब्लॉक में शून्य श्रम दुर्घटनाओं सहित दो वर्ष पूरे करने के लिए सम्मानित किया गया।

### 14.1.3. गेल (इंडिया) लिमिटेड



गेल (इंडिया) लिमिटेड को निगमन अगस्त, 1984 में पेट्रोलियम और प्राकृतिक गैस मंत्रालय (एमओपी एंड एनजी) के अधीन केंद्रीय सार्वजनिक क्षेत्र के उपक्रम (पीएसयू) के रूप में किया गया था, जिसका मिशन "राष्ट्रीय अर्थव्यवस्था के लाभ के लिए प्राकृतिक गैस और इसके अंशों के प्रभावी और आर्थिक उपयोग में तेजी लाना और इसे अनुकूलन करना" था। भारत सरकार के पास अब कंपनी के 51.52% शेयर हैं। गेल 1997 में नवरत्न बना और अब बारह महारत्न सार्वजनिक क्षेत्र के उपक्रमों में से एक है, जो किसी भी पीएसयू को दिया गया सर्वोच्च दर्जा है।

गेल ने अस्सी के दशक के उत्तरार्ध में एक गैस ट्रांसमिशन कंपनी के रूप में शुरुआत की और लगभग 14,600 किलोमीटर के प्राकृतिक गैस पाइपलाइनों का एक बड़ा नेटवर्क; लगभग 2,030 किमी की दो एलपीजी पाइपलाइन प्रणालियों; लगभग 1.4 एमएमटीपीए की संयुक्त उत्पादन क्षमता सहित एलपीजी और अन्य तरल हाइड्रोकार्बन के उत्पादन के लिए पांच गैस प्रसंस्करण संयंत्र और पॉलिमार 810 केटीपीए क्षमता की एक गैस आधारित एकीकृत पेट्रोरसायन संयंत्र स्थापित करके व्यवस्थित रूप से विकसित हुआ है। गेल असम में 280 केटीपीए ब्रह्मपुत्र क्रैकर एंड पॉलीमर लिमिटेड (बीसीपीएल) कॉम्प्लेक्स और गुजरात में 1.4 एमएमटीपीए ओएनजीसी पेट्रो–एडिशन्स लिमिटेड (ओपीएएल) परियोजना सहित दो अन्य पेट्रोरसायन परियोजनाओं का सह–प्रवर्तक है। पेट्रोनेट एलएनजी (गेल का संयुक्त उद्यम) दाहेज और कोच्चि में दो एलएनजी पुनर्गैसीकरण टर्मिनलों का प्रचालन करता है। गेल कोंकण एलएनजी प्राइवेट लिमिटेड का प्रवर्तक भी है जो 5 एमएमटीपीए की रूपरेखा क्षमता सहित धाबोल में एलएनजी पुनर्गैसीकरण टर्मिनल प्रचालित करता है। इसके अतिरिक्त गेल की रामागुंडम फर्टिलाइजर एंड केमिकल्स लिमिटेड (आरएफसीएल) में 14.72% इक्विटी हिस्सेदारी है, जिसे एनएफएल, ईआईएल एंड एफसीआईएल द्वारा 2200 एमटीपीडी अमोनिया और 3,850 एमटीपीडी यूरिया का उत्पादन करने के लिए निगमित किया गया है। गेल, कोल इंडिया लिमिटेड (सीआईएल), राष्ट्रीय केमिकल्स एंड फर्टिलाइजर्स लिमिटेड (आरसीएफ) के साथ गठित एक संयुक्त उद्यम–तालचेर फर्टिलाइजर लिमिटेड के माध्यम से कोयला गैसीकरण आधारित उर्वरक संयंत्र स्थापित करने की प्रक्रिया में भी है। जिसमें प्रत्येक का 31.85% इक्विटी शेयर है और फर्टिलाइजर कॉर्पोरेशन ऑफ इंडिया लिमिटेड (सीएफआई) का 4.45% इक्विटी शेयर है।

गेल भारत में सिटी गैस वितरण (सीजीडी) कारोबार में अग्रणी है। इसकी उपस्थिति संपूर्ण भारत के 67 भौगोलिक क्षेत्रों में है।

गेल के सीजीडी कारोबार के लिए भारत में 8 संयुक्त उद्यम और तीन पूर्ण स्वामित्व वाली सहायक कंपनियां हैं। इसके अतिरिक्त, गेल की संयुक्त राज्य अमेरिका, सिंगापुर, म्यांमार, चीन और मिस्र में विदेशी उपस्थिति है। इसने सिंगापुर, यांगून, ह्यूस्टन और मॉस्को (भारत ऊर्जा कार्यालय) में कार्यालय खोले हैं। इसकी संयुक्त राज्य अमेरिका में एक पूर्ण स्वामित्व वाली सहायक कंपनी अर्थात गेल ग्लोबल (यूएसए) इंक (जीजीयूआई) है। जीजीयूआई ने सहायक कंपनी, गेल ग्लोबल (यूएसए) एलएनजी एलएलसी (जीजीयूएलएल) का गठन किया है जिसने डोमिनियन कोव प्वाइंट एलएनजी द्रवीकरण परियोजना में 2.3 एमएमटीपीए क्षमता बुक की है। गेल की एक अन्य पूर्ण स्वामित्व वाली सहायक कंपनी है, जिसका नाम गेल ग्लोबल (सिंगापुर) पीटीई लिमिटेड है, जो एलएनजी में व्यापार करने और विदेशी निवेश करने के लिए है। गेल का कुल एलएनजी साधन पोर्टफोलियो लगभग 14 एमटीपीए है।

गेल का 13 ब्लॉकों में भागीदारी हित है, जिनमें से 10 ब्लॉक भारत में, 2 म्यांमार में और 1 यूएसए के ईगल फोर्ड बेसिन, टेक्सास के शेल गैस जेवी में है। इसके अतिरिक्त, गेल की दक्षिण पूर्व एशिया गैस पाइपलाइन कंपनी (एसईएजीपी) में 4.17% इक्विटी साझेदारी है जो म्यांमार से चीन तक गैस का परिवहन कर रही है। गेल ने मिस्र और चीन के अनुप्रवाह कारोबार में तीन कंपनियों में निवेश किया है।

गेल के पास लगभग 132 मेगावाट का नवीकरणीय पोर्टफोलियो है जिसमें लगभग 118 मेगावाट पवन और लगभग 14 मेगावाट सौर ऊर्जा शामिल है। इसके अतिरिक्त गेल जैविक अपशिष्ट से संपीड़ित जैव गैस (सीबीजी) के उत्पादन और विपणन में

विभिन्न व्यावसायिक अवसरों की तलाश कर रही है। एथेनॉल, हाइड्रोजन, आदि सहित उभरते क्षेत्र से संबंधित नए व्यापार के लिए भी अवसर तलाश की जा रही है। गेल ने सीजीडी नेटवर्क में हाइड्रोजन मिश्रण की प्रौद्योगिकी–वाणिज्यिक व्यवहार्यता स्थापित करने के लिए एक पायलट परियोजना के रूप में हाइड्रोजन मिश्रण शुरू किया है। इसके अतिरिक्त गेल 10 मेगावाट हरित हाइड्रोजन संयंत्र स्थापित कर रहा है जो विश्व का सबसे बड़ा हरित हाइड्रोजन संयंत्र होगा।

वित्त वर्ष 2021–2022, के दौरान गेल ने ₹ 91,426 करोड़ और ₹ 10,364 करोड़ का अब तक का सर्वाधिक कारोबार और लाभ किया है।

दिनांक 31 मार्च, 2022 तक की स्थिति के अनुसार गेल की कार्यबल 4,754 थी।

**14.1.3.1. भौतिक तथा वित्तीय निष्पादन :–**

**भौतिक**

| मापदंड | इकाई | वर्ष 2021–22 में निष्पादन | वर्ष 2022–23 में निष्पादन (दिसम्बर, 2022 तक) |
|---|---|---|---|
| गैस परिवहन | एमएमएससीएमडी | 110.98 | 106.97 |
| गैस विपणन | एमएमएससीएमडी | 96.24 | 94.42 |
| तरल हाइड्रोकार्बन उत्पादन | टीएमटी | 1,002 | 701 |
| पेट्रोरसायन उत्पादन | टीएमटी | 777 | 295 |
| एलपीजी परिवहन | टीएमटी | 4,199 | 3,256 |

**वित्तीय**

| मापदंड | इकाई | वर्ष 2021–22 में निष्पादन | वर्ष 2022–23 में निष्पादन (दिसम्बर, 2022 तक) |
|---|---|---|---|
| परिचालन से राजस्व | ₹ करोड़ | 91,646 | 1,11,443 |
| सकल सीमा (ईबीडीआईटीए) | ₹ करोड़ | 15,876 | 8,059 |
| कर पूर्व लाभ | ₹ करोड़े | 13,590 | 5,993 |
| कर पश्चात लाभ | ₹ करोड़ | 10,364 | 4,698 |

**14.1.3.2. गेल द्वारा निष्पादित प्रमुख परियोजनाएं/पाइपलाइनें**

**क. जगदीशपुर हल्दिया और बोकारो धामरा पाइपलाइन (जेएचबीडीपीएल)**

सस्ती कीमत पर पूर्वी भारत में स्वच्छ और गुणवत्तापूर्ण ऊर्जा प्रदान करने के उद्देश्य से, गेल जगदीशपुर हल्दिया और बोकारो–धामरा प्राकृतिक गैस पाइपलाइन (जेएचबीडीपीएल) परियोजना (2,655 किमी.) को निष्पादित कर रहा है, जिसे पूर्वी भारत की प्रधान मंत्री ऊर्जा गंगा के नाम से जाना जाता है। इसके अतिरिक्त, पूर्वोत्तर क्षेत्र (एनईआर) को राष्ट्रीय गैस ग्रिड से जोड़ने के लिए जेएचबीडीपीएल के अभिन्न अंग के रूप में बरौनी से गुवाहाटी (सिलीगुड़ी और बोंगाईगांव के माध्यम से) (729 किमी) तक पाइपलाइन का विस्तार भी किया जा रहा है, जिसका कुल एकीकृत जेएचबीडीपीएल 3,384 किलोमीटर है।

बीजीपीएल सहित संपूर्ण जेएचबीडीपीएल को ₹ 15,520 करोड़ के निवेश से निष्पादित किया जा रहा है और इसे जून 2023 तक प्रगामी रूप से पूरा किया जाना है। यह उत्तर प्रदेश (335 किमी.), बिहार (711 किमी.), झारखंड (539 किमी.), पश्चिम बंगाल (755 किमी.), ओडिशा (782 किमी.) और असम (262 किमी.) से होकर गुजरेगी। जेएचबीडीपीएल एचयूआरएल गोरखपुर, एचयूआरएल सिंदरी, एचयूआरएल बरौनी के उर्वरक संयंत्र को पुनर्जीवित करेगा और दुर्गापुर में मैसर्स मैटिक्स फर्टिलाइजर्स की मांगों को भी पूरा करेगा। इसके अतिरिक्त इस नेटवर्क पाइपलाइन के माध्यम से भारत के पूर्वी भाग में घरेलू और औद्योगिक ग्राहकों के लिए स्वच्छ ईंधन की आपूर्ति करेगा।

**एचयूआरएल गोरखपुर, एचयूआरएल सिंदरी, एचयूआरएल बरौनी और मैटिक्स फर्टिलाइजर्स के लिए संपर्क सहित 1,976 किलोमीटर का जेएचबीडीपीएल शुरू किया गया है।**

**ख. मुंबई नागपुर झारसुगुडा पाइपलाइन (एमएनजेपीएल)**

मुंबई–नागपुर–झारसुगुडा पाइपलाइन (1,755 किमी.) एमएनजेपीएल, जो राष्ट्रीय गैस ग्रिड (एनजीजी) का हिस्सा है महाराष्ट्र, मध्य

छत्तीसगढ़ और ओडिशा राज्यों के 25 जिलों से होकर गुजरेगा। यह ठाणे (महाराष्ट्र) से शुरू होगा और झारसुगुडा (ओडिशा) में जेएचबीडीपीएल से जुड़ेगा। इसके अलावा, स्पर लाइन को नागपुर (महाराष्ट्र) से जबलपुर (मध्य प्रदेश) तक विस्तारित किया जाएगा। इस पाइपलाइन से स्वच्छ ईंधन की उपलब्धता सुनिश्चित की जाएगी और सीजीडी उद्योगों और ग्राहकों पर पड़ने वाली भार संबंधी मांग को पूरी की जाएगी। मुंबई–नागपुर और नागपुर–जबलपुर खंड के लिए निर्माण कार्य पूरे जोरों पर है और नागपुर–जबलपुर खंड में आरओयू अधिग्रहण प्रक्रियाधीन है। जनवरी 2023 तक 517 किलोमीटर का कार्य पूरा कर लिया गया था।

**ग. श्रीकाकुलम अंगुल पाइपलाइन (एसएपीएल):**

राष्ट्रीय गैस ग्रिड (एनजीजी) के अंश के रूप में अंगुल से श्रीकाकुलम (744 किमी.) तक की पाइपलाइन ओडिशा और आंध्र प्रदेश के 12 जिलों से होकर गुजरेगी। इस पाइपलाइन से स्वच्छ ईंधन की उपलब्धता सुनिश्चित की जाएगी और सीजीडी उद्योगों और ग्राहकों पर पड़ने वाली भार संबंधी मांग को पूरी की जाएगी। निर्माण कार्य पूरे जोरों पर है और जनवरी 2023 तक 209 किलोमीटर का कार्य पूरा किया गया था।

**घ. कोच्चि–कूटनाड–बंगलोर मंगलौर पाइपलाइन (केकेबीएमपीएल) परियोजना चरण–II (891 किमी.):**

केरल और कर्नाटक से होकर गुजरने वाले कोच्चि से मंगलौर पाइपलाइन (केएमपीएल–450 किमी.) को शुरू किया गया और और इससे एंकर कस्टमर मैंगलोर केमिकल्स एंड फर्टिलाइजर्स लिमिटेड, ओएनजीसी मैंगलोर पेट्रोकेमिकल्स लिमिटेड और मंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड को भी जोड़ा गया।

कूटनाड से बंगलौर पाइपलाइन के 129 किमी. खंड को भी शुरू कर दिया गया है। तमिलनाडु सरकार से मंजूरी मिलने के बाद–310 किमी. के तमिलनाडु खंड की निर्माण–पूर्व कार्यकलाप प्रक्रियाधीन हैं।

**ङ. पूर्वोत्तर प्राकृतिक गैस ग्रिड (इंद्रधनुष गैस ग्रिड लिमिटेड (आईजीजीएल):**

पूर्वोत्तर भारत के हाइड्रोकार्बन विजन 2030 के अनुरूप परिकल्पित प्रतिष्ठित पूर्वोत्तर गैस ग्रिड (एनईजीजी) परियोजना के कार्यान्वयन संबंधी कार्य भारत सरकार द्वारा आईओसीएल (20%), ओएनजीसी (20%), गेल (20%), ओआईएल (20%), और एनआरएल (20%) की संयुक्त उद्यम कंपनी इंद्रधनुष गैस ग्रिड लिमिटेड (आईजीजीएल) को सौंपा गया है। एनईजीजी को ₹ 9,265 करोड़ की अनुमानित लागत से सभी आठ पूर्वोत्तर राज्यों अर्थात असम, अरुणाचल प्रदेश, मेघालय, त्रिपुरा, मिजोरम, नागालैंड, मणिपुर और सिक्किम को प्राकृतिक गैस की आपूर्ति करने के लिए कार्यान्वित किया जा रहा है। 4.75 एमएमएससीएमडी की क्षमता वाली 1,656 किमी. लंबा प्राकृतिक गैस पाइपलाइन ग्रिड पूर्वोत्तर भारत के चुनौतीपूर्ण इलाकों से गुजरकर उन दुर्गम क्षेत्र से संपर्क साधेगा ।

गुवाहाटी जोकि ईटानगर, दीमापुर, कोहिमा, इंफाल, आइजोल, अगरतला, शिलांग, सिलचर, गंगटोक और नुमालीगढ़ जैसे कई क्षेत्र का राजधानी/प्रमुख शहर है। कई तरह की परियोजनाएं चरणबद्ध तरीके से चल रही हैं और उन्हें मार्च, 2024 तक शुरू किया जाएगा।

उपर्युक्त पाइपलाइनों के अतिरिक्त, पाइपलाइन के मार्ग में बसे शहरों को प्राकृतिक गैस संबंधी सुविधाएं प्रदान करने हेतु धामरा–हल्दिया पाइपलाइन (253 किमी.), हरिद्वार ऋषिकेश–देहरादून पाइपलाइन (एसओ किमी) और सुल्तानपुर–झज्जर–हिसार पाइपलाइन (135 किमी.) का निर्माण कार्य प्रगति पर है।

**च. कोयला गैसीकरण:**

गेल कोल इंडिया लिमिटेड (सीआईएल), राष्ट्रीय केमिकल्स एंड फर्टिलाइजर्स लिमिटेड (आरसीएफ) के साथ गठित संयुक्त उद्यम–तालचेर फर्टिलाइजर्स लिमिटेड (टीएफएल) के माध्यम से कोयला गैसीकरण आधारित यूरिया परियोजना स्थापित करने जा रही है, जिसमें प्रत्येक की 31.85% हिस्सेदारी है और फार्टिलाइजर कॉर्पोरेशन ऑफ इंडिया लिमिटेड (एफसीआईएल) की 4.45% इक्विटी है। 2,200 एमटीपीडी अमोनिया और 3,850 एमटीपीडी यूरिया का उत्पादन करने के लिए लगभग ₹ 13,277 करोड़ की अनुमानित लागत वाली इस परियोजना की परिकल्पना की गई है।

आर्थिक कार्य मंत्रिमंडलीय समिति (सीसीईए) ने दिनांक 20 अप्रैल, 2021 को टीएफएल द्वारा उत्पादित यूरिया के लिए विशेष राजसहायता नीति को मंजूरी दे दी है। जून, 2021 में 9,560 करोड़ (लगभग) के ऋण टाई–अप सहित इस परियोजना का वित्तीय समापन सफलतापूर्वक

पूरा कर लिया गया है। लगभग ₹ 11,600 (लगभग) करोड़ की संविदा पहले ही दिए जा चुके हैं और इस परियोजना ने कुल मिलाकर 39.18% कार्य पूरा कर लिया गया है।

**छ. पेट्रोरसायन:**

गेल महाराष्ट्र के उसर में 500 केटीए प्रोपेन डिहाइड्रोजनेशन और पॉलीप्रोपाइलीन (पीडीएच–पीपी) संयंत्र स्थापित करने की योजना बना रही है, जिसके वर्ष 2025 में शुरू होने की उम्मीद है। यह प्रोपलीन के उत्पादन के लिए प्रोपेन डिहाइड्रोजनेशन प्रौद्योगिकी का उपयोग करने वाला भारत का पहला संयंत्र होगा। इस परियोजना के लिए, मैसर्स लुमस टेक्नोलॉजी एलएलसी, यूएसए को पीडीएच इकाई की प्रौद्योगिकी लाइसेंसकर्ता के रूप में चयन किया गया है और मेसर्स ग्रेस टेक्नोलॉजीज इंक को पीपी यूनिट के लिए प्रौद्योगिकी लाइसेंसकर्ता के रूप में चयन किया गया है। परियोजना से संबंधित विभिन्न कार्यकलाप तेजी से की जा रही हैं।

गेल पाटा में 60 केटीए पॉलीप्रोपाइलीन (पीपी) संयंत्र भी स्थापित कर रही है। परियोजना के लिए पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ने पर्यावरण मंजूरी प्रदान की है। मेसर्स ग्रेस टेक्नोलॉजीज इंक, यूएसए को पाटा में पीपी इकाई की प्रौद्योगिकी लाइसेंसकर्ता के रूप में चयन किया गया है। परियोजना से संबंधित विभिन्न कार्यकलाप तेजी से की जा रही हैं और इसके वर्ष 2024 में शुरू होने की उम्मीद है।

**उपलब्धियां:–**

वित्त वर्ष 2022–23 के दौरान लगभग 455 किलोमीटर की गैस पाइपलाइन परिचालन के लिए तैयार की गई है। इसके अतिरिक्त, राष्ट्रीय गैस ग्रिड और अन्य छोटी संपर्क के अंश के रूप में लगभग 4,860 किमी. पाइपलाइन परियोजना निष्पादन के विभिन्न चरणों में है।

- गेल ने वित्त वर्ष 2021–22 में अब तक क्रमशः ₹ 91,426 करोड़ और ₹ 10,364 करोड़ रुपये का सर्वाधिक कारोबार और लाभ दर्ज किया है।
- विजयपुर से औरैया पाइपलाइन (लगभग 350 किमी),जो राष्ट्रीय गैस ग्रिड का हिस्सा है, उसे वर्ष 2022 में सफलतापूर्वक शुरू किया गया था।
- बोकारो अंगुल मेनलाइन (533 किमी.) को दिनांक 12.07.2022 को माननीय प्रधान मंत्री द्वारा राष्ट्र को समर्पित किया गया था।
- श्रीकाकुलम–अंगुल (744 किमी.) की आधारशिला माननीय प्रधानमंत्री द्वारा दिनांक 12.11.2022 को रखी गई।
- धर्मा–अंगुल मेनलाइन (206 किमी.) को दिनांक 16.02.2023 को शुरू की गई।
- ₹ 1,335 करोड़ के समझौता ज्ञापन से संबंधित लक्ष्य के स्थान पर ₹ 2,593 करोड़ की जीईएम खरीद की गई है।
- राष्ट्रीय हाइड्रोजन ऊर्जा मिशन के अनुरूप, गेल ने इंदौर में सिटी गैस स्टेशन में हाइड्रोजन के मिश्रण के लिए भारत की पहली परियोजना को सफलतापूर्वक शुरू किया है।
- गेल मध्य प्रदेश राज्य के विजयपुर में प्रति दिन 4.3 टन हरित हाइड्रोजन का उत्पादन करने के लिए 10 मेगावाट क्षमता वाली इलेक्ट्रोलाइजर इकाई स्थापित कर रहा है।
- गेल के अखिल भारतीय प्रतिष्ठानों में दुर्घटना से संबंधित कोई भी घटना घटित नहीं हुई है।

वित्त वर्ष 2021–22 (लगातार 13वां वर्ष) के लेखों पर सीएजी से शून्यश टिप्पणियां प्राप्त हुई है।

**वर्ष के दौरान प्राप्त प्रमुख सम्मान/पुरस्कार:–**

- गेल को 2022 में वर्ष के लिए 'एनर्जी ट्रांजिशन–मिडस्ट्रीम' श्रेणी में प्रतिष्ठित 'प्लैट्स ग्लोबल एनर्जी पुरस्कार' प्राप्त हुआ।
- गेल को दिनांक 18.12.2022 को विद्युत और ऊर्जा श्रेणी में "एसएएफए सर्वश्रेष्ठ प्रस्तुत वार्षिक रिपोर्ट पुरस्कार, एकीकृत रिपोर्टिंग पुरस्कार और कॉर्पोरेट गवर्नेंस डिस्क्लोजर, 2021 के लिए सार्क वर्षगांठ पुरस्कार" में कांस्य पदक प्राप्त हुआ।
- गेल पाटा को राष्ट्रीय ऊर्जा संरक्षण ऊर्जा पुरस्कार (एनईसीए)–2022 में पेट्रोरसायन क्षेत्र में 'योग्यता प्रमाण पत्र' प्राप्त हुआ।
- गेल पाटा को इंटरनेशनल रिसर्च इंस्टीट्यूट ऑफ मैन्युफैक्चरिंग द्वारा विनिर्माण प्रतिस्पर्धा आईजीएमसी के लिए 9वें राष्ट्रीय पुरस्कार में "स्वर्ण पुरस्कार" प्राप्त हुआ।
- गेल को निम्नलिखित एफआईपीआई पुरस्कार प्राप्त हुए हैं:
  - सस्टेनेबली ग्रोइंग कॉरपोरेट ऑफ द ईयर (गेल बीपीसीएल के साथ संयुक्त विजेता रहा)।
  - ऊर्जा गैस पाइपलाइन और संबद्ध सीजीडी नेटवर्क के लिए विशेष पुरस्कार।

- मानव संसाधन प्रबंधन में उत्कृष्टता–वर्ष की सर्वश्रेष्ठ कंपनी।
- गेल को वर्ष 2020–21 के लिए वित्तीय सूचना प्राप्ति में उत्कृष्टता आईसीएआई पुरस्कारों की 11वीं श्रेणी–सार्वजनिक क्षेत्र की संस्थाओं में स्वर्ण शील्ड से सम्मानित किया गया है।
- गेल डन एंड ब्रैडस्ट्रीट कॉर्पोरेट अवार्डर्स 2021 द्वारा "गैस प्रसंस्करण संचरण और वितरण में क्षेत्रीय निष्पादन" श्रेणी में विजेता के रूप में उभरा है।
- गेल को वर्ष 2021–22 के लिए जीईएम पोर्टल के माध्यम से सीपीएसई के बीच अधिकतम खरीद करने के लिए सम्मानित किया गया।

## 14.1.4. भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल)



भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल) अनुप्रवाह क्षेत्र में भारत सरकार के स्वामित्व वाली तेल और गैस से संशोधित महारत्न कंपनी है जो पेट्रोलियम उत्पादों की अन्वेषण और उत्पादन, शोधन और विपणन में कार्यरत है और इसका मुख्यालय मुंबई, महाराष्ट्र में है।

बीपीसीएल कोच्चि, मुंबई और बीना में तीन बड़ी रिफाइनरियों का संचालन करती है। यह परिचालन देश भर में इसकी सात व्यावसायिक इकाइयों (बीयू) और 3,706 किलोमीटर से अधिक फैले पाइपलाइन संपर्क के माध्यम से किया जाता है। व्यापारिक इकाइयों में रिफाइनरी, खुदरा, स्नेहक, तरलीकृत पेट्रोलियम गैस, औद्योगिक और वाणिज्यिक, विमानन और गैस शामिल हैं। दो नए व्यापारिक इकाईयां (बीयू) अर्थात् बीपीसीएल के मुख्य कारोबार का समर्थन करने के लिए अतिरिक्त संधारणीय राजस्व प्रवाह तैयार करने के लिए वर्ष 2021–22 में नवीकरणीय और नए व्यवसाय खोले गए। बीपीसीएल ने लगातार अपने उत्पाद पोर्टफोलियो को बढ़ाने से संबंधित विषय को हमेशा गंभीरता से लिया है।

बीपीसीएल के उत्पाद पोर्टफोलियो में मोटर स्प्रिट (एमएस), उच्च गति डीजल (एचएसडी), औद्योगिक और वाणिज्यिक स्नेहक, विमानन ईंधन, बिटुमेन, एलपीजी, सॉल्वेंटस, फूड ग्रेड क्वालिटी हेक्सेन (एफजीक्यूएच), पॉलिमर ग्रेड प्रोपलीन आदि शामिल हैं। बीपीसीएल ने देश भर में अपने विशाल अवसंरचना संपर्क के अतिरिक्त जैव ईंधन, सौर, ईवी चार्जिंग आदि में पहल करने के साथ–साथ वैकल्पिक और नवीकरणीय ऊर्जा क्षेत्र में भी कदम रखा है। फॉर्च्यून की 'ग्लोबल 500' 2022 सूची में बीपीसीएल 295वें स्थान पर है।

### 14.1.4.1. वित्तीय निष्पादन:

बीपीसीएल की परिचालन आय अप्रैल–दिसंबर 21 में ₹ 3,09,040 करोड़ की तुलना में अप्रैल–दिसंबर में 29 प्रतिशत बढ़कर ₹ 4,00,054 करोड़ हो गई। बीपीसीएल ने अप्रैल–दिसंबर, 21 में ₹ 8,862 करोड़ के कर पश्चात लाभ की तुलना में अप्रैल–दिसंबर 22 की अवधि के दौरान ₹ 4,608 करोड़ का कर पश्चात घाटा हुआ। सकल रिफाइनिंग मार्जिन अप्रैल–दिसंबर, 21 को 6.98 अमेरिकी $ प्रति बैरल की तुलना में अप्रैल–दिसंबर 22 में 20.08 अमेरिकी $ प्रति बैरल रहा। तथापि, प्रमुख पेट्रोलियम उत्पादों के दबे हुए विपणन सीमा ने उच्च जीआरएम के लाभ की भरपाई की है।

### 14.1.4.2. राजकोष में योगदान:

पिछले कुछ वर्षों में, बीपीसीएल ने शुल्क, कर और लाभांश के रूप में सरकारी खजाने में योगदान दिया है। अप्रैल–दिसंबर 2022 की अवधि के दौरान सरकारी खजाने में ₹ 98,914 करोड़ का भुगतान किया गया। अप्रैल–दिसंबर, 22 के दौरान केन्द्रीय राजकोष को ₹ 47,815 करोड़ और राज्य के राजकोष को ₹ 51,099 करोड़ का भुगतान किया गया।

### 14.1.4.3. रिफाइनरी संबंधी निष्पादन:

**मुंबई रिफाइनरी**

मुंबई रिफाइनरी की वर्तमान संस्थापित क्षमता 12.00 एमएमटीपीए है। मुंबई रिफाइनरी ने वर्ष 2022–23 (दिसंबर 2022 तक) के दौरान 10.5 एमएमटी का प्रवाह क्षमता हासिल किया। वित्त वर्ष 2021–22 में 14.44 एमएमटी कच्चे तेल का प्रवाह क्षमता हासिल किया गया था और कच्चे तेल की शोधन उपयोग क्षमता 120.33% था।

**कोच्चि रिफाइनरी**

कोच्चि रिफाइनरी लिमिटेड की वर्तमान संस्थापित क्षमता 15.5 एमएमटीपीए है। कोच्चि रिफाइनरी ने अप्रैल–दिसंबर 2022 में 11.54 एमएमटी कच्चे तेल का प्रसंस्करण किया। वित्त वर्ष 2021–22 में, कोच्चि रिफाइनरी ने 99.4% की कच्चे तेल की शोधन उपयोग क्षमता सहित 15.4 एमएमटी कच्चे तेल का प्रसंस्करण किया।

निम्नलिखित प्रमुख परियोजनाएं शुरू की गईं:

- नेप्था का उन्नयन करके बीएस–6 ग्रेड मोटर स्पिरिट उत्पादन को बढ़ाने लिए ₹ 3,288.96 करोड़ की अनुमोदित लागत पर बीएस–6 मोटर स्पिरिट ब्लॉक प्रोजेक्ट (एमएसबीपी) मार्च 2021 में पूरा हुआ और जून 2021 को पूर्ण रूप से शुरू किया गया।
- आला पेट्रोरसायन उत्पादन के लिए ₹ 5,575 करोड़ (निवल पूंजी लागत) की अनुमोदित लागत पर प्रोपलीन डेरिवेटिव पेट्रोरसायन संयंत्र (पीओपी) को सितंबर 2021 में पूर्ण रूप से शुरू किया था।
- 2022–23: कोचीन पोर्ट प्रविकरण क्षेत्र में उत्तरी जेटी रिक्लेमेशन पिट से जेट्टी तक 20" पाइपलाइन का विस्तार कार्य प्रगति पर है।

**बीना रिफाइनरी**

भारत ओमान रिफाइनरीज लिमिटेड (बीओआरएल), बीना रिफाइनरी को मध्य प्रदेश के बीना में बीना रिफाइनरी स्थापित करने के लिए भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड बीपीसीएल और ओक्यू एसएओसी (पूर्व में ओमान ऑयल कंपनी एसएओसी के रूप में जाना जाता था) के संयुक्त उद्यम के रूप में निगमित किया गया था। रिफाइनरी ने मई 2011 में अपना वाणिज्यिक उत्पादन शुरू किया था। जुलाई 2022 से, भारत ओमान रिफाइनरीज लिमिटेड (बीओआरएल) ने इसे अपनी मूल कंपनी, भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल) के साथ विलय कर दिया है। बीना रिफाइनरी की वर्तमान संस्थापित क्षमता 7.8 एमएमटीपीए है। बीना रिफाइनरी ने वर्ष 2022–23 (दिसंबर 2022 तक) के दौरान 7.8 एमएमटीपीए की स्थापित क्षमता के स्थान पर 5.769 एमएमटी का प्रवाह क्षमता प्राप्त किया। वित्त वर्ष 2021–22 में कच्चे तेल में 7.410 एमएमटी का प्रवाह क्षमता प्राप्त किया गया था, और कच्चे तेल की उपयोग क्षमता 95% था।

**14.1.4.4. पाइपलाइन संबंधी निष्पादन:**

बीपीसीएल 29 एमएमटीपीए की रूपरेखा क्षमता सहित 3,536 किलोमीटर की बहु उत्पाद और कच्चे तेल के पाइपलाइनों का मालिक है। वर्ष 2021–22 की इसी अवधि के दौरान 12.055 एमएमटी पाइपलाइन प्रवाह क्षमता की तुलना में वर्ष 2022–23 (दिसंबर 22 तक) के दौरान, 14.092 एमएमटी पाइपलाइन प्रवाह क्षमता प्राप्त किया गया। जबकि भारत पेट्रोलियम ने एक कुशल तरीके से पाइपलाइनों का संचालन जारी रखा और पिछले वर्ष की इसी अवधि की तुलना में वर्ष 2022–23 (दिसंबर 22 तक) में विशिष्ट ऊर्जा खपत (एसईसी) में 2.93% की कमी हुई है।

**14.1.4.5. विपणन अवसंरचना और निष्पादन:**

दिनांक 31.12.2022 तक की स्थिति के अनुसार बीपीसीएल के पास 43 पीओएल डिपो, 16 प्रमुख प्रतिष्ठान, 23 टीओपी, 20,729 खुदरा दुकान, 927 एसकेओ एजेंसियां, 54 एलपीजी बॉटलिंग संयंत्र, 6,235 एलपीजी डिस्ट्रीब्यूटरशिप, 62 विमानन सेवा केन्द्र, 4 स्नेहक मिश्रण/फिलिंग संयंत्र और 3,706 किलोमीटर (कच्चे तेल और एलपीजी पाइपलाइन सहित) के पाइपलाइन नेटवर्क को शामिल करते हुए वृहत व्यापार क्षेत्र है। वित्त वर्ष 2022–23 (दिसंबर 2022 तक) में बीपीसीएल की बाजार बिक्री 36.05 एमएमटी थी। वित्त वर्ष 2021–22 के दौरान, बाजार बिक्री 42.60 एमएमटी हुई थी।

**14.1.4.6. अनुसंधान और विकास:**

भारत पेट्रोलियम का अनुसंधान एवं विकास नई प्रौद्योगिकियों को विकसित करने और ग्राहकों और हितधारकों को अभिनव तकनीकी समाधान प्रदान करने में महत्वपूर्ण भूमिका निभाता है। ग्रेटर नोएडा, उत्तर प्रदेश में कॉर्पोरेट अनुसंधान और विकास केंद्र (सीआरडीसी) और मुंबई में उत्पाद और अनुप्रयोग विकास केंद्र (पीं एंड एडी) अनुसंधान कार्यकलापों के माध्यम से व्यवसायों के लिए मूल्य बढ़ाने के लिए सक्रिय रूप से कार्य करती है। "आत्मनिर्भर भारत" के अंश के रूप में, सीआरडीसी ने विभिन्न नवीन और आला उत्पादों/प्रसंस्करणों को विकसित किया है और उनका व्यवसायीकरण करने के लिए गंभीरता से काम कर रहा है। अतिरिक्त विवरण अध्याय–8 में उपलब्ध है।

**14.1.4.7. पेट्रोरसायन निष्पादन:**

प्रोपलीन डेरिवेटिव पेट्रोकेमिकल प्रोजेक्ट (पीओपी), जो पेट्रोरसायन क्षेत्र में बीपीसीएल के एकछत्र मालिकाना को चिह्नित करता है, को वर्ष 2021–22 के दौरान प्रगामी रूप से शुरू किया गया है। परियोजना के लिए फीडस्टॉक पॉलिमर ग्रेड प्रोपलीन है। इसे उत्पाद पोर्टफोलियो में ऐक्रेलिक एसिड, ऑक्सो अल्कोहल और एक्रिलेट्स जैसी आला पेट्रोरसायन शामिल हैं। इन उत्पादों को वर्तमान में देश में आयात किया जाता है और इसलिए पीओपीपी एक 'मेक इन इंडिया' पहल है।

पीओपीपी इकाइयों के शुरू होने पर, बीपीसीएल एक्रिलेट्स (ब्यूटाइल एक्रिलेट और 2 एथिल हेक्सिल एक्रिलेट), ऐक्रेलिक एसिड और ऑक्सो–अल्कोहल (सामान्य बुटानोल, 2 एथिल हेक्सानोल और एलएसओ बुटानोल) जैसी आला पेट्रोरसायन का

उत्पादन करने वाली पहली भारतीय रिफाइनरी बन गई है, जो मुख्य रूप से देश में आयात किए जा रहे हैं और इससे लगभग ₹ 4,000 करोड़ की विदेशी मुद्रा बचत होने की उम्मीद है। इकाइयों के शुरू होने और स्थापना के बाद, वर्ष 2021–22 के दौरान आला पेट्रोरसायन का उत्पादन 92,300 मीट्रिक टन था और वर्तमान वित्त वर्ष में (दिसंबर–22 तक) यह 1,30,000 मीट्रिक टन तक पहुंच गया है।

राष्ट्रीय प्राथमिकताओं के साथ संरेखित और विकास और जोखिम शमन के लिए विविधीकरण के अवसरों को तलाशते हुए, बीपीसीएल पेट्रोरसायन से संबंधित पहलुओं के घटनाक्रम में बारीकी से निगरानी कर रहा है और भविष्य के निवेश के लिए व्यावसायिक उपकरण विकसित कर रहा है।

**14.1.4.8. प्राकृतिक गैस:**

बीपीसीएल ने वर्ष 2022–23 के दौरान अपने प्राकृतिक गैस के कारोबार का विस्तार करना जारी रखा और वर्ष 2021–22 (अप्रैल–दिसंबर) में 1.32 एमएमटी की तुलना में 1.08 एमएमटी (आंतरिक खपत सहित) की बिक्री (आंतरिक खपत सहित) दर्ज की जो इसकी वृद्धि को दर्शाता है। बीपीसीएल के पास अब 59 उपभोक्ता वाले ग्राहक आधार है, जिसमें वर्ष के दौरान 4 नए ग्राहक शामिल हुए हैं, इसके अतिरिक्त मुंबई (महाराष्ट्र) और कोच्चि (केरल) में अपनी रिफाइनरियों की मांगें भी पूरी की हैं।

**14.1.4.9. नगर गैस वितरण:**

बीपीसीएल के पास पेट्रोलियम और प्राकृतिक गैस विनियामक बोर्ड (पीएनजीआरबी) द्वारा 25 भौगोलिक क्षेत्रों के लिए सिटी गैस वितरण (सीजीडी) नेटवर्क के विकास के लिए प्राधिकरण है, जिसमें 62 जिलों शामिल हैं। प्राकृतिक गैस की यथाशीघ्र आपूर्ति सुनिश्चित करने के लिए सीजीडी परियोजनाएं पूरे जोर–शोर से कार्य कर रही हैं। जनवरी 2023 तक, 265 सीएनजी केन्द्र स्थापित किए गए हैं, 1.2 लाख पीएनजी ग्राहक जुड़े गए हैं, 1,051 किलोमीटर की स्टील पाइपलाइन और 2,604 किलोमीटर की एमडीपीई पाइपलाइन सहित सीजीडी नेटवर्क विस्तृत है और औरंगाबाद (महाराष्ट्र) में एक एल–सीएनजी केन्द्र परिचालन में है।

**14.1.4.10. अन्वेषण और उत्पादन:**

भारत पेट्रो रिसोर्सेज लिमिटेड (बीपीआरएल) का सत्रह ब्लॉकों में भागीदारी रूची (पीएल) हैं, जिनमें से आठ भारत में और नौ विदेशों में हैं। इसके अतिरिक्त, बीपीआरएल की दो रूसी संस्थाओं में इक्विटी हिस्सेदारी है, जो रूस में चार उत्पादक ब्लॉकों का लाइसेंस धारण किए हुए है।

भारत में आठ ब्लॉकों में से पांच को नई अन्वेषण लाइसेंसिंग नीति (एनईएलपी) के विभिन्न चरणों के अंतर्गत अधिग्रहित किया गया था, एक ब्लॉक को छोटे क्षेत्रों की खोज (डीएसएफ) बोली दौर–I के अंतर्गत पुरस्कृत किया गया था और दो ब्लॉकों को ओपेन एकरेज लाइसेंसिंग पॉलिसी (ओएएलपी) बोली दौर–I के अंतर्गत पुरस्कृत किए गए थे।

नौ विदेशी ब्लॉकों में से पांच ब्राजील में, दो संयुक्त अरब अमीरात में और एक–एक मोजाम्बिक और इंडोनेशिया में हैं। बीपीआरएल के ब्लॉक अन्वेषण, मूल्यांकन, विकास और उत्पादन के विभिन्न चरणों में हैं। बीपीआरएल और उसकी सहायक कंपनियों के पास कुल क्षेत्रफल लगभग 21,360 वर्ग किलोमीटर है, जिसमें से लगभग 50% अपतटीय है।

बीपीआरएल, इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल) और ऑयल इंडिया लिमिटेड (ओआईएल) सहित भारतीय सहायता संघ (आईसी) ने सिंगापुर में निगमित पूर्ण स्वामित्व वाली सहायक कंपनियों और विशेष प्रयोजन तंत्रों (एसपीवी) के माध्यम से अक्टूबर 2016 में रूस की नेशनल ऑयल कंपनी मेसर्स रोसनेफ्ट से एलएलसी तास युरिख नेफ्तेगजडोबायाचा (टीवाईएनजीडी) में 29.9% इक्विटी हिस्सेदारी और जेएससी वैंकोर्नेफ्ट में 23.9% इक्विटी हिस्सेदारी का अधिग्रहण किया था। एसपीवी जो रूसी संस्था की शेयरधारक है, केवल लाभांश पाने का हकदार है। रूसी संस्थाओं से बीपीआरएल का तेल उत्पादन संबंधी प्रभावी हिस्सा टीवाईएनजीडी से लगभग 10 कोबीओपीडी और वैंकोर्नेफ्ट से 15 कोबीओपीडी है।

वर्ष 2018 में, भारत पेट्रो रिसोर्सेज लिमिटेड (बीपीआरएल), ओएनजीसी विदेश और इंडियन ऑयल कॉर्पोरेशन लिमिटेड के साथ संयुक्त रूप से भारतीय सहायता संघ के रूप में कार्य करने कारण लोअर ज़कुम कंसेशन, अपतटीय अबू धाबी में उन्हें 10% हिस्सेदारी प्रदान की गई थी। यह पहली बार हुआ था जब किसी भारतीय तेल और गैस कंपनियों को अबू धाबी के हाइड्रोकार्बन संसाधनों के विकास में हिस्सेदारी दी गई थी। बीपीआरएल की अपनी सहायक कंपनी के माध्यम से भारतीय सहायता संघ के एसपीवी में 30% हिस्सेदारी है, जो लोअर ज़कुम कंसेशन में 10% हिस्सेदारी रखती है। रियायत, जो दिनांक 9 मार्च 2018 से लागू है उस पर दिनांक 10 फरवरी 2018 को हस्ताक्षर किए गए थे। इस क्षेत्र का वर्तमान तेल उत्पादन लगभग 400 कोबीओपीडी है और भारतीय सहायता संघ का वार्षिक हिस्सा लगभग 1.5 एमएमटी होगा। बीपीआरएल के इक्विटी कच्चे तेल के हिस्से को बीपीसीएल समूह की रिफाइनरियों द्वारा प्राप्त किया गया है।

मोजाम्बिक में, उत्तरी मोजाम्बिक के तट से रोवुमा अपतटीय क्षेत्र 1 में प्राकृतिक गैस की विशाल मात्रा की खोज के बाद, क्षेत्र 1 सहायता संघ भागीदारों ने दिनांक 18 जून 2019 को अपतटीय गोलिन्हो–अटम खोज क्षेत्र से खोजी गई गैस के मुद्रीकरण के लिए 2–ट्रेन (2x6.56 एमएमटीपीए) तटवर्ती प्रारंभिक एलएनजी परियोजना विकसित करने के लिए अंतिम निवेश निर्णय (एफआईडी) की घोषणा की। एफआईडी की घोषणा से, गोलिन्हो अतुम क्षेत्र विकास योजना प्रभावी हो गया है, और इससे 30 वर्ष की विकास और उत्पादन अवधि शुरू हो गई। एफआईडी के बाद, जबकि परियोजना निर्धारित समय पर थी और मार्च 2021 तक बजट के भीतर थी, मार्च 2021 के अंत के दौरान आफुंगी परियोजना स्थल के आसपास सुरक्षा घटनाओं के कारण, ऑपरेटर ने जेओए, ईपीसीसी और अन्य सभी संविदा के अंतर्गत एफएम घोषित कर दिया है क्योंकि वे सुरक्षित पेट्रोलियम संचालन करने के अपने दायित्वों को पूरा नहीं कर पाए। मोजाम्बिक सरकार शांति की पुनर्स्थापना और सुरक्षा स्थिति संबंधी समस्या का समाधान हेतु काम कर रही है। मोजाम्बिक सेना रवांडा और दक्षिणी अफ्रीकी विकास समुदाय (एसएडीसी) के संयुक्त बलों के साथ इस क्षेत्र में अपना अभियान जारी रखा। क्षेत्र 1 परियोजना स्थानीय सामाजिक और आर्थिक अवसंरचना के विकास में सहायता कर रही है और यह परियोजना वर्तमान में कृषि, जल और स्वच्छता, स्वास्थ्य, शिक्षा और क्षमता निर्माण, मत्स्य पालन, सौरीकरण और छोटे व्यवसाय विकास के क्षेत्रों में विभिन्न परियोजनाओं को कार्यान्वित कर रही है। जबकि परियोजना फोर्स मेजर में बनी हुई है, संविदाकारों के साथ संबंध रचनात्मक बने हुए हैं और स्थानीय सामग्री, रोजगार और प्रशिक्षण आदि की संवेदनशीलता को देखते हुए स्थानीय मोजाम्बिक कंपनियों के साथ स्थिति की समीक्षा करने के लिए विशेष ध्यान रखी गई है। प्रचालक ने सूचित किया है कि स्थल पर उपकरण और अवसंरचना अच्छी स्थिति में है।

ब्राजील में सेर्गिपे अलागोस (बीएम–सील–11) रियायत में दो ब्लॉक अर्थात सील–एम–426 और सील–एम–349 शामिल हैं और पेट्रोब्रास 60% पीआई सहित परिचालित है जबकि बीपीआरएल का संयुक्त उद्यम अर्थात आईबीवी शेष 40% पीआई धारन करता है। परिचालक ने रियायतग्राहियों की ओर से दो खोजों के लिए नवंबर 2022 में एएनपी (ब्राजील विनियामक) को क्षेत्र विकास योजना (एफडीपी) प्रस्तुत किया है।

वर्ष 2019 के दौरान, बीपीआरएल और आईओसीएल के सहायता संघ को अबू धाबी 2018 ब्लॉक लाइसेंसिंग दौर में विजेता बोलीदाता के रूप में उभरने के बाद अबू धाबी में तटवर्ती ब्लॉक–1 रियायत से सम्मानित किया गया था। यह पुरस्कार संभावित यूएई क्षेत्र में पहली बार विदेशी परिसम्पत्तियों के परिचालक के रूप में बीपीआरएल के प्रवेश की सूचना देती है। अबू धाबी सरकार की ओर से एसपीसी द्वारा दी गई रियायत की प्रभावी रियायत अवधि 35 साल है और अन्वेषण चरण में ऊर्जा भारत पीटीई लिमिटेड (यूबीपीएल) द्वारा संचालित किया जाता है, जो सिंगापुर में भारतीय सहायता संघ द्वारा इस उद्देश्य के लिए 50:50 निगमित एसपीवी है। रुवैस खोज में मूल्यांकन कुओं की ड्रिलिंग और परीक्षण पूरा हो गया है जिसने हाइड्रोकार्बन की उपस्थिति स्थापित की है और खोज के विकास के लिए भावी अध्ययन चल रही हैं। इंडियन सहायता संघ के पास तेल के इक्विटी अधिकार होंगे। इसके अतिरिक्त, रियायत में अन्वेषण कुओं की भी खुदाई की गई है।

भारत के कावेरी घाटी में ब्लॉक सीवाई ओएनएन–2002/2 में मदनम की खोज, जहां ओएनजीसी परिचालक है और बीपीआरएल का 40% का पीआई है क्योंकि गैर–परिचालन वर्तमान में विकासाधीन है और भविष्य में 2016 से वाणिज्यिक तेल उत्पादन के लिए गैस मुद्रीकरण मई 2021 से शुरू हो गया है।

### 14.1.4.11. वैकल्पिक ऊर्जा:

बीपीसीएल की कुल स्थापित नवीकरणीय ऊर्जा क्षमता 46.24 मेगावाट है। कुल स्थापित सौर क्षमता 34.44 मेगावाट और पवन क्षमता 11.8 मेगावाट है। बीपीसीएल ने इस वर्ष 2.85 मेगावाट की कुल क्षमता के 36 विपणन स्थानों पर नए सौर संयंत्र स्थापित और शुरू किए हैं। वर्तमान में 4 भूमिगत सौर परियोजनाएं और जमीन के ऊपर 2 सौर परियोजनाएं कार्यान्वयन के विभिन्न चरणों में हैं। इन नई परियोजनाओं की कुल क्षमता 53.7 मेगावाट डीसी/40.34 मेगावाट एसी है। कई अन्य सौर परियोजनाएं भी हैं जो व्यवहार्यता अध्ययन के विभिन्न चरणों में हैं। बीपीसीएल ने 2025 तक 1 गीगावॉट और 2040 तक 10 गीगावॉट सौर संयंत्र स्थापित करने का लक्ष्य रखा है।

सौर ऊर्जा से चलने वाले खुदरा दुकानों की कुल संख्या 2471 है जबकि रिटेल बीयू ने वर्ष 21–22 में 2,000 आरओ को सौर ऊर्जा से रोशन करने का लक्ष्य रखा है। बीपीसीएल ने हरित हाइड्रोजन संयंत्र बनाने की योजना बनाई है और मध्य प्रदेश में अपनी बीना रिफाइनरी में स्थापित होने वाले 20 मेगावाट इलेक्ट्रोलाइजर के लिए निविदा जारी की है। यह निविदा तकनीकी मूल्यांकन के अधीन है।

बीपीसीएल ने हरित हाइड्रोजन उत्पादन के उत्पादन के लिए क्षारीय इलेक्ट्रोलाइजर प्रौद्योगिकी को बढ़ाने के लिए भाभा परमाणु अनुसंधान केंद्र (बीएआरसी) के साथ भागीदारी की है। यह नवीकरणीय ऊर्जा लक्ष्यों को प्राप्त करने और हरित गृह गैस उत्सर्जन को कम करने के लिए भारत की प्रतिबद्धता का समर्थन करने के लिए अपनी पहली पहल है। इलेक्ट्रोलाइजर संयंत्र वर्तमान में आयात किए जाते हैं, और "हरित हाइड्रोजन उत्पादन के लिए क्षारीय इलेक्ट्रोलाइजर प्रौद्योगिकी को बढ़ाने" में सहयोग देना है। हाइड्रोजन पुन–प्राप्ति के लिए प्रौद्योगिकी: कोच्चि रिफाइनरी (केआर) में घर के भीतर विकसित मेम्ब्रेन सहायता प्राप्त हाइड्रोजन पुन–प्राप्ति प्रक्रिया अर्थात भारतएच2एसईपी के लिए प्रदर्शन इकाई रिफाइनरी ऑफ गैस से हाइड्रोजन संवर्धन के लिए स्थापना की गई है। भारतएच2सेप का निष्पादन केआर वीजीओ एचडीएस इकाई में 60–80 किलोग्राम/घंटा के पैमाने पर स्थापित किया गया था। एच2 की शुद्धता 86 एमओएल% से 95 एमओएल% से अधिक तक वृद्धि हुई है। सफल निष्पादन ने ओएमसी रिफाइनरियों के लिए प्रौद्योगिकी के व्यावसायीकरण का मार्ग प्रशस्त किया है।

### जैव ईंधन

बीपीसीएल बारगढ़, ओडिशा में 400 मीट्रिक टन/डी फीड–स्टॉक के रूप में लिग्नोसेलुलोसिक बायोमास का उपयोग करके 100 केएलपीडी क्षमता की 2जी जैव एथेनॉल रिफाइनरी स्थापित कर रहा है और उसी परिसर में 100 केएलपीडी क्षमता का एक एकीकृत 1जी जैव–एथेनॉल संयंत्र स्थापित कर रहा है। तेल विपणन कंपनियां एथेनॉल की उपलब्धता के अनुसार, 28 राज्यों और 6 संघ राज्य क्षेत्र में एमएस में 20% तक मिश्रित एथेनॉल बेच रही हैं। ईएसवाई 21–22 के दौरान अर्थात दिसम्बर, 21 से नवम्बर, 22 तक 433.6 करोड़ लीटर वृद्धि हुआ है। इस प्रकार एथेनॉल मिश्रण का 10.02% प्राप्त किया गया। ईएसवाई 20–21 अर्थात दिसंबर 2020 से नवंबर 21 के दौरान उद्योग आधार पर 302 करोड़ लीटर मिश्रण किया गया, जिससे एथेनॉल मिश्रण का 8.10% प्राप्त हुआ।

बीपीसीएल ने वित्त वर्ष 22–23 में एचएसडी से मिश्रण के लिए 8,208 केएल जैव–डीजल की खरीद की है। दिनांक 31.01.2023 तक की स्थिति के अनुसार वर्ष 2022–23 में जैव–डीजल मिश्रित एचएसडी पर कुल बिक्री 1,11,980 केएल है। दिनांक 31.01.2023 तक की स्थिति के अनुसार वर्ष 2022–23 के लिए कुल जैव–डीजल मिश्रण प्रतिशत 0.04% है।

### सतत

सतत (किफायती परिवहन हेतु संधारणीय विकल्प) पहल दिनांक 01.10.2018 को शुरू किया गया था। इसमें 5,000 सीबीजी संयंत्रों से 2023–24 तक सीबीजी के 15 मिलियन मीट्रिक टन (एमएमटी) के उत्पादन का लक्ष्य रखा गया है। बीपीसीएल ने 0.49 एमएमटीपीए की कुल संस्थापित क्षमता सहित 318 नग लोओआईइस जारी किए हैं। 318 संयंत्रों में से 8 संयंत्रों ने जैव–गैस/सीबीजी का उत्पादन शुरू कर दिया है। बीपीसीएल ने 38 खुदरा दुकानों से सीबीजी बेच रही है।

### 14.1.4.12. संधारणीय विकास:

एक जिम्मेदार व्यवसाय के रूप में, बीपीसीएल ने 3 आर की विचारधारा अर्थात, रिड्यूस (घटाना), रीयूज़ (पुनःउपयोग) और रीसायकल (परावर्तन) का पालन करते हुए ऊर्जा संरक्षण, ऊर्जा दक्षता, नवीकरणीय ऊर्जा, कार्बन पृथक्करण, बहिस्त्राव उपचार के माध्यम से जल प्रबंधन, वर्षा जल संचयन, जल संतुलन अध्ययन और अपशिष्ट प्रबंधन आदि से संबंधित अपने स्थानों पर संधारणीय विकास के लिए कई पहल की हैं। वर्षा जल संचयन (आरडब्ल्यूएच) के जलग्रहण क्षेत्र में 3.9% की वृद्धि हुई है, जिससे बीपीसीएल में आरडब्ल्यूएच का कुल क्षेत्र 10.6 लाख वर्ग मीटर हो जाएगा। बीपीसीएल द्वारा वर्ष 2021–22 में कुल 3,85,000 किलोलीटर पानी का संचयन किया गया है। मुंबई रिफाइनरी ने मुंबई रिफाइनरी में वर्षा जल संचयन को बढ़ाने के लिए पर्याप्तता अध्ययन और क्षमता का आयोजन किया है। मुंबई रिफाइनरी आरडब्ल्यूएच प्रणाली के 29 नए समूहों को बढ़ाएगी और इस वर्ष 1 लाख किलोलीटर जल संचयन का लक्ष्य रखेगी। मुंबई, कोच्चि और बीना रिफाइनरियों ने जल संतुलन अध्ययन आयोजित किया है और अब पानी की खपत को कम करने के लिए सुझाए गए विभिन्न पहलों को कार्यान्वित कर रहे हैं। सभी खुदरा विपणन स्थानों और एलपीजी संयंत्रों में जल संतुलन अध्ययन प्रक्रियाधीन है और जल की बचत और स्थान को जल तटस्थ बनाने के लिए पहल कार्यान्वयनाधीन है।

बीपीसीएल ने क्षेत्र 1 और क्षेत्र 2 जीएचजी उत्सर्जन के लिए 2040 तक निवल–शून्य बनने की घोषणा की है और इसके लिए दिशा–निर्देश बनाने की प्रक्रिया में है। बीपीसीएल की वर्तमान नवीकरणीय ऊर्जा स्थापना में 38 मेगावाट सौर ऊर्जा और 11.8 मेगावाट पवन ऊर्जा है जिसे वर्ष 2025 तक 1 गीगावाट और 2040 तक 10 गीगावाट तक बढ़ाया जाएगा। बीपीसीएल अपनी रिफाइनरियों में हरित हाइड्रोजन के उपयोग को लागू करने और क्षारीय इलेक्ट्रोलाइजर प्रौद्योगिकी का उपयोग

करके 20 मेगावाट का एक संयंत्र बीना रिफाइनरी में स्थापित करने के लिए बड़े पैमाने पर काम कर रहा है। बीपीसीएल ई–मोबिलिटी बढ़ाने, जैव–सीएनजी, जैव–डीजल के उपयोग में वृद्धि और बड़े पैमाने पर ऊर्जा संक्रमण के लिए बैटरी स्वैपिंग पहल को बढ़ाने के लिए खुदरा दुकानों पर चार्जिंग स्टेशन स्थापित कर रहा है।

बीपीसीएल में स्थापित ऊर्जा दक्षता लाइट्स (ईईएल) की वर्तमान स्थिति लगभग 63 मेगावाट है, जिसमें मार्च, 22 की तुलना में 4.75% की वृद्धि हुई है। यह ध्यान रखना उचित है कि एमआर, पाइपलाइनों और लगभग 70% अन्य विपणन स्थानों को छोड़कर सभी खुदरा परिचालन स्थानों को 100% ईईएल में प्रतिस्थापन कर दिया गया है। केआर ने रिफाइनरी के भीतर 19,000 नग पारंपरिक लाइटों को ईईएल में बदल दिया है। अगले दो वर्षों में केआर, बीआर और शेष विपणन स्थानों को चरणबद्ध तरीके से 100% ईईएल में बदलने का लक्ष्य रखा गया है। ईईएल से लगभग ₹ 250 करोड़ की बचत हुई है और जीएचजी उत्सर्जन में 2.5 लाख एमटीसीओ2ई की कमी आई है।

सीड बॉम्बिंग: बीपीसीएल ने महाराष्ट्र क्षेत्र में 5 लाख बीज बॉम्बिंग स्थापित किए हैं जिसमें खुदरा स्थान, एलपीजी संयंत्र और एमएमबीपीएल पाइपलाइन शामिल हैं और जिसमें उत्तरजीविता रहने की दर और कार्बन पृथक्करण पर अध्ययन किया गया। मूल्यांकन की गई उत्तरजीविता दर लगभग 22% थी जो बीज बॉम्बिंग की सामान्य विधि से कहीं अधिक है जो केवल 10% है। बीपीसीएल ने पर्यावरण संस्थान मैसर्स एसआईईएस, गैर सरकारी संगठनों, एनसीसी कैडेटों और सरकारी निकायों की सेवाएं ली हैं और बीज बॉम्बिंग की प्रक्रिया पूरी हो गई है।

बीपीसीएल विपणन स्थानों में हरित अच्छादन बढ़ाने के लिए मियावाकी प्रौद्योगिकी का भी बड़े पैमाने पर उपयोग किया गया था। इस पद्धति से 25 स्थानों पर वृक्षारोपण किया गया है और जहां भी पर्याप्त अवसर मिले शेष बचे स्थानों में भी ऐसा किया जाएगा। बीपीसीएल स्थान के प्रावधान के लिए रेलवे और अन्य सरकारी एजेंसियों की सेवाएं लेने की भी कोशिश कर रहा है ताकि हरित अच्छादन को और अधिक विस्तारित किया जा सके। इस वर्ष वृक्षारोपण अभियान के माध्यम से कुल कार्बन पृथक्ककण लगभग 14,000 एमटीसीओ2ई हुआ है।

परिचालन स्थानों में संचालन मिट्टी को खराब न करे यह सुनिश्चित करने के लिए बीपीसीएल ने अपनी सभी रिफाइनरी और विपणन स्थानों पर जीरो वेस्ट टू लैंड फिल लैंडफिल के प्रमाणन को प्राप्त करने के लिए अभियान शुरू किया है। मुंबई रिफाइनरी, खुदरा और एलपीजी प्रचालन अवस्थलों ने पहले ही प्रमाण पत्र ले लिए हैं और विमानन, स्नेहक और पाइपलाइन जैसी अन्य व्यावसायिक इकाइयां इसे मार्च, 2023 तक प्राप्त करने के लिए कार्रवाई कर रही हैं। इसके अतिरिक्त, कोच्चि और बीना रिफाइनरी के लिए यह लक्ष्य मार्च 2024 है। यह बीपीसीएल को अपनी प्रतिबद्धता को पूरा करने में जिम्मेदार कॉर्पोरेट के रूप में प्रतिष्ठित करेगा जो अपने परिचालन से भूमि को खराब नहीं करता है।

बीपीसीएल स्नेहक विभाग ने ब्रांड मालिक के रूप में ईपीआर के अंतर्गत लाइसेंस प्राप्त किया है और वर्ष 2021–22 में लगभग 804 टन और जनवरी 23 तक लगभग 2,100 अपशिष्ट प्लास्टिक का निपटान किया है जो ईपीआर के आवश्यकताओं को पूरा करता है। बीपीसीएल के कॉर्पोरेट आर एंड डी ने सड़क बनाने में अपशिष्ट प्लास्टिक का उपयोग करने की एक नई प्रौद्योगिकी तैयार की है और अब तक 750 एमटीसीओ2ई के जीएचजी उत्सर्जन को कम करने के लिए लगभग 250 टन अपशिष्ट प्लास्टिक का उपयोग किया है। बीपीसीएल अपने खुदरा व्यावसायिक केन्द्र में भी इसी प्रौद्योगिकी का प्रयोग करने के लिए कोशिश कर रहा है जो परिक्रामी अर्थव्यवस्था को बढ़ावा देगा।

### 14.1.5. हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल)



हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल) एक महारत्न सार्वजनिक क्षेत्र उद्यम (सीपीएसई) और एस एंड पी ग्लोबल प्लैट्स की शीर्ष 250 वैश्विक ऊर्जा कंपनी में से एक है। जिसने वित्त वर्ष 2021–22 के दौरान ₹ 3,72,642 रुपये की वार्षिक सकल बिक्री की है। एचपीसीएल की पीएसयू श्रेणी में लगभग 21% बाजार हिस्सेदारी सहित भारत में रिफाइनिंग और विपणन में मजबूत उपस्थिति है।

एचपीसीएल मुंबई और विशाखापत्तनम में क्रमशः 9.5 एमएमटीपीए और 8.3 एमएमटीपीए की निर्धारित क्षमता वाली रिफाइनरियों का स्वामित्व रखता है और

उनका संचालन करती है। एचपीसीएल के पास 428 टीएमटीपीए (स्थापित क्षमता) की क्षमता सहित ल्यूब ऑयल बेस स्टॉक का उत्पादन करने के लिए मुंबई में देश की सबसे बड़ी ल्यूब रिफाइनरी भी है।

इसके अतिरिक्त, एचपीसीएल के पास संयुक्त उद्यम कंपनी, एचपीसीएल–मित्तल एनर्जी लिमिटेड (एचएमईएल) में 48.99% इक्विटी हिस्सेदारी है, जो पंजाब राज्य के बठिंडा में 11.25 एमएमटीपीए क्षमता वाली रिफाइनरी का संचालन करती है और इसका मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल) में 16.96% इक्विटी हिस्सेदारी भी है, जो कर्नाटक राज्य के मैंगलोर में 15 एमएमटीपीए क्षमता वाली रिफाइनरी का संचालन करती है।

एचपीसीएल के पास भारत में पेट्रोलियम उत्पाद पाइपलाइनों का दूसरा सबसे बड़ा नेटवर्क है जिसकी नेटवर्क लंबाई लगभग 4,435 किलोमीटर है। एचपीसीएल का विशाल विपणन नेटवर्क भी है जिसमें प्रमुख शहरों में 14 क्षेत्रीय कार्यालय और 140 क्षेत्रीय कार्यालय शामिल हैं, जिसमें 43 टर्मिनल/इंस्टॉलेशन/टैप ऑफ पॉइंट, 52 विमानन सेवा सुविधाएं, 53 एलपीजी बॉटलिंग संयंत्र, 6 ल्यूब मिश्रण संयंत्र, ल्यूब डिपो सहित 70 डिपो वाली आपूर्ति और वितरण अवसंरचना की सुविधा है। दिसंबर 2022 तक 20,791 खुदरा व्यावसायिक केन्द्र, 1,638 एसकेओ/एलडीओ डीलर, 297 ल्यूब वितरक, 123 कैरी एंड फॉरवर्डिंग एजेंट, रिटेल आउटलेट्स पर 1,288 सीएनजी सुविधाएं, 727 घर–घर–तक वितरण डिस्ट्रीब्यूटरशीप और 1,198 ईवी चार्जिंग स्टेशन और 9.3 करोड़ एलपीजी ग्राहक से अधिक ग्राहक आधारित 6,265 एलपीजी वितरण केन्द्र शामिल हैं।

एचपीसीएल का बेंगलुरु में 'एचपी ग्रीन आर एंड डी सेंटर' नामक अपना अनुसंधान और विकास केंद्र है। यह केंद्र रिफाइनरियों और विपणन एसबीयू को परिचालन सुधार, नई प्रौद्योगिकियों को अपनाने, अभिनव और पथप्रदर्शक प्रौद्योगिकियों को विकसित करने, लाइसेंस प्रौद्योगिकियों और ज्ञान केंद्र बनने के लिए उन्नत तकनीकी सहायता प्रदान करता है। एचपीसीएल तेल और गैस मूल्य श्रृंखला में काम करने वाली 19 संयुक्त उद्यम और सहायक कंपनियों के माध्यम से भी कारोबार करती है।

### 14.1.5.1. वित्तीय निष्पादन:

एचपीसीएल की सकल बिक्री अप्रैल 21 से दिसंबर 21 की अवधि में ₹ 2,67,699 करोड़ की तुलना में अप्रैल 22 से दिसंबर 22 की अवधि में ₹ 3,50,63 करोड़ हुई थी। एचपीसीएल को अप्रैल 21 से दिसंबर 21 की अवधि में ₹ 4,587 करोड़ का कर पश्चात लाभ (पीएटी) की तुलना में अप्रैल 22 से दिसंबर 22 की अवधि के दौरान ₹ 12,197 करोड का निवल घाटा (पीएटी) हुआ है। एचपीसीएल की रिफाइनिंग मार्जिन (निर्यात शुल्क का सकल) अप्रैल 21 से दिसंबर, 21 की अवधि में 450 अमरीकी $ प्रति बैरल की तुलना में अप्रैल 22 से दिसंबर 22 की अवधि में औसतन 11.40 अमरीकी $ प्रति बैरल हुई थी।

### 14.1.5.2. राजकोष में योगदान:

अप्रैल 22 से दिसंबर 2022 की अवधि के दौरान एचपीसीएल ने सरकारी खजाने में ₹ 65,627 करोड़ का योगदान दिया है, जिसमें केंद्रीय राजकोष में योगदान ₹ 21,891 और सरकारी खजाने में योगदान ₹ 43,736 शामिल है।

### 14.1.5.3. रिफाइनरी संबंधी निष्पादन:

अप्रैल 22 से दिसम्बर, 2022 की अवधि के दौरान, रिफाइनरी ने अभी तक एक अच्छा भौतिक निष्पादन किया है, जिसमें 14.13 मिलियन मीट्रिक टन (एमएमटी) का शोधन किया गया है, जो अप्रैल–दिसंबर 2022 की अवधि के लिए एचपीसीएल का अब तक का सर्वाधिक रिफाइनिंग प्रवाह क्षमता है।

एचपीसीएल विशाख रिफाइनरी क्षमता संवर्धन करने के लिए विशाख रिफाइनरी आधुनिकीकरण परियोजना (वीआरएमपी) को कार्यान्वित कर रही है। शोधन क्षमता को 8.3 से बढ़ाकर 15 एमएमटीपीए करने के उद्देश्य से विशाख रिफाइनरी आधुनिकीकरण परियोजना (वीआरएमपी) शुरू करने की अंतिम चरण में है। वीआरएमपी के अंश के रूप में अवशिष्ट उन्नयन सुविधाओं का निष्पादन कार्य भी प्रगति पर है।

रिफाइनिंग क्षमता को और बढ़ाने के लिए एचपीसीएल अपनी संयुक्त उद्यम कंपनी एचपीसीएल राजस्थान रिफाइनरी लिमिटेड (एचआरआरएल) के माध्यम से राजस्थान के बाड़मेर जिले के पचपदरा में एक नया 9 एमएमटीपीए हरित क्षेत्र रिफाइनरी सह पेट्रोकेमिकल कॉम्प्लेक्स स्थापित कर रहा है।

### 14.1.5.4. पाइपलाइन संबंधी निष्पादन:

एचपीसीएल वर्तमान में 35.2 एमएमटीपीए के मेनलाइन क्षमता वाली 4,435 किलोमीटर के पेट्रोलियम उत्पाद पाइपलाइन नेटवर्क का संचालन कर रहा है, जिसमें 19 एमएमटीपीए की शाखा लाइन क्षमता शामिल है। अप्रैल, 22 से दिसम्बर, 2022 की अवधि के दौरान 17.49 एमएमटी की कुल पाइपलाइन प्रवाह क्षमता प्राप्त की गई थी।

₹ 2,160 करोड़ की लागत वाली 650 किलोमीटर लंबी हसन चेरालापल्ली एलपीजी पाइपलाइन परियोजना 2022 में शुरू की गई है और ₹ 3,950 करोड़ की पाइपलाइन परियोजनाएं यांत्रिक रूप से पूरी हो गई हैं। इन परियोजनाओं के शुरू होने पर एचपीसीएल का परिचालन पाइपलाइन नेटवर्क बढ़कर 5,348 किलोमीटर हो जाएगा। धर्मपुरी टर्मिनल अगस्त, 2022 से शुरू किया गया है।

पाइपलाइन नेटवर्क और संवर्धित साजोसामान क्षमता और संबंधित पर्यावरणीय लाभों के लिए क्षमताओं का और विस्तार करने के लिए, भटिंडा संगरूर पाइपलाइन परियोजना और हल्दिया पानागढ़ एलपीजी पाइपलाइन परियोजना लगभग ₹ 1,400 करोड़ के अनुमानित निवेश सहित निष्पादनाधीन हैं। इन पाइपलाइन परियोजनाओं से प्रमुख बाजारों में एचपीसीएल की स्थिति मजबूत होने की उम्मीद है। एचपीसीएल ने संयुक्त उद्यम मार्ग के माध्यम से कांडला से गोरखपुर (2,809 किमी.) तक भारत की सबसे लंबी एलपीजी पाइपलाइन के विकास के लिए आईओसीएल और बीपीसीएल के साथ मिलकर काम किया है।

**14.1.5.5. विपणन निष्पादन:**

अप्रैल–दिसंबर 2022 की अवधि के दौरान एचपीसीएल में निर्यात सहित 32.34 एमएमटी की बिक्री हुई है।

घरेलू बिक्री खंड में एचपीसीएल ने 31.27 एमएमटी की बिक्री की है और सार्वजनिक क्षेत्र की तेल विपणन कंपनियों (ओएमसी) के बीच लगभग 20.97% की बाजार हिस्सेदारी हासिल की है।

मोटर–ईंधन खंड में, एचपीसीएल ने अप्रैल–दिसंबर 22 की अवधि में कुल मोटर ईंधन आधार (पीएसयू के बीच) पर 25% की बाजार हिस्सेदारी सहित 20.50 एमएमटी की बिक्री की। अप्रैल–दिसंबर 2022 की अवधि में 766 नए खुदरा बिक्री केन्द्र शुरू किए गए (कुल खुदरा बिक्री केन्द्रों की संख्या 20,791 हो गई) और 201 खुदरा बिक्री केन्द्रों (ऐसे कुल 1,288 बिक्री केन्द्र) पर सीएनजी सुविधाएं शुरू की गईं। दिसंबर, 2022 तक, 727 नग घर–घर तक मोबाइल डिस्पेंसर और 1,198 नग ईवी चार्जिंग केन्द्र शुरू किए गए। अप्रैल–दिसंबर 2022 के दौरान 1,575 बिक्री केन्द्रों को सौरीकरण किया गया, जिससे कुल 7,986 बिक्री केन्द्रों हो गए।

अप्रैल–दिसंबर 2022 के दौरान एचपीसीएल के एलपीजी कारोबार में बिक्री पिछले वर्ष की तुलना में 6.4% की वृद्धि सहित 6.03 एमएमटी हो गई है और जिसमें बाजार हिस्सेदारी 27.14% रही। एचपीसीएल ने लगातार 7 वें वर्ष घरेलू एलपीजी के बाजार हिस्सेदारी में वृद्धि दर्ज की है। अप्रैल–दिसंबर 2022 के दौरान एचपीसीएल ने 22.38 लाख नए ग्राहकों को पंजीकृत किया और 25 नए नियमित एलपीजी वितरण केन्द्र शुरू किया (जिससे वितरण केन्द्र की कुल संख्या 6,265 हो गई)। अप्रैल–दिसंबर 2022 के दौरान एचपीसीएल ने 14.82 लाख पीएमयूवाई ग्राहकों को नामांकित किया, जिससे कुल 255.1 लाख पीएमयूवाई ग्राहक हो गए हैं। दिसंबर 2022 तक एचपीसीएल के खाते में 9.34 करोड़ एलपीजी उपभोक्ता ग्राहक जुड़ गए हैं। एचपीसीएल ने अप्रैल, 2022 के दौरान बरही, झारखंड में 120 टीएमटीपीए की क्षमता वाली एलपीजी संयंत्र शुरू किया है।

एचपीसीएल अप्रैल–दिसंबर 22 की अवधि के दौरान 10 देशों को 4.10 टीएमटी स्नेहक के निर्यात सहित 432 टीएमटी ('000 मीट्रिक टन) की बिक्री करते हुए देश में एक प्रमुख ल्यूब विपणक बन गया है।

औद्योगिक और उपभोक्ता (आई एंड सी) व्यापार के संबंध में, एचपीसीएल ने लगभग 3.06 एमएमटी की कुल बिक्री की है। एचपी पेटकेम ब्रांड–एचपी ब्यूरापोल को एमओपी एंड एनजी के माननीय सचिव, श्री पंकज जैन ने एचपीसीएल सी एंड एमडी, सीएफडी और वरिष्ठ अधिकारियों की उपस्थिति में दिनांक 20 दिसंबर, 2022 को शुरू किया गया।

विमानन व्यापार के संबंध में, एचपीसीएल ने 501 टीएमटी विमानन टरबाइन ईंधन बिक्री की है। भारतीय वायु सेना के 5 स्थानों को अपने नियंत्रण में लेने के साथ विमानन सेवा सुविधा (एएसएफ) नेटवर्क को बढ़ाया गया, जिससे एएसएफ की कुल संख्या 52 हो गई है।

जैव ईंधन और नवीकरणीय ऊर्जा में एचपीसीएल ने अप्रैल–दिसंबर, 2022 के दौरान 100.9 मेगावाट पवनफार्म से ₹ 53.86 करोड़ का राजस्व प्राप्त करते हुए 15.05 करोड़ किलोवाट की नवीकरणीय ऊर्जा का उत्पादन किया।

एचपीसीएल के आपूर्ति, परिचालन और वितरण विभाग ने अप्रैल–दिसंबर 2022 की अवधि के दौरान 39.6 एमएमटी की प्रवाह क्षमता प्राप्त की और रिफाइनरियों से ग्राहकों तक पूरी आपूर्ति श्रृंखला में पेट्रोलियम उत्पादों की निर्बाध आपूर्ति करती रही। दिसंबर 2022 तक एचपीसीएल ने 62 स्थानों पर स्वचालन और विभिन्न प्रक्रियाओं के निर्बाध एकीकरण सहित 'स्मार्ट' टर्मिनल स्थापित किए हैं। एचपीसीएल ने अगस्त 2022 के दौरान सितारगंज डिपो (उत्तराखंड) को शुरू किया है।

**14.1.5.6. अनुसंधान और विकास (आर एंड डी):**

हिंदुस्तान पेट्रोलियम ग्रीन रिसर्च एंड डेवलपमेंट सेंटर (एचपीजीआरडीसी) की स्थापना विपणन एसबीयू और रिफाइनरियों को उन्नत तकनीकी सहायता प्रदान करने के उद्देश्य से की गई है। एचपीजीआरडीसी का उद्देश्य परिचालन उत्कृष्टता प्रदान करना, अभिनव, पथ प्रदर्शक प्रौद्योगिकियों को विकसित करना और उसे अपनाना और ज्ञान केंद्र बनना है। अनुसंधान केंद्र को अत्याधुनिक अवसंरचना सुविधाएं प्रदान की जाती हैं जिसमें 5.6 लाख वर्ग फुट के निर्मित क्षेत्र वाली ऊर्जा दक्षता हरित भवन शामिल हैं। अनुसंधान एवं विकास केंद्र के पहले चरण में फ्लूइडाइज्ड कैटेलिटिक क्रैकिंग/रेसिड फ्लुइडाइज्ड केटालिटिक क्रैकिंग, हाइड्रो प्रोसेसिंग, कैटलिसिस, बायो–प्रोसेस, क्रूड इवैल्यूएशन एंड फ्यूल्स रिसर्च, मानक परीक्षण, विश्लेषण, प्रोसेस मॉडलिंग एंड सिमुलेशन और नैनो टेक्नोलॉजी के क्षेत्रों से संबंधित नौ प्रयोगशालाएं हैं। चरण–II में पेट्रोकेमिकल्स और पॉलिमर, सेंटर ऑफ एक्सीलेंस ल्यूब्स, संक्षारण अध्ययन, नोवेल सेपरेशन, रेसिड उन्नयन, इंजन और बैटरी अनुसंधान के क्षेत्रों से संबंधित सात प्रयोगशालाएं हैं।

अप्रैल, 22 से दिसम्बर, 22 की अवधि के दौरान 11 उत्पादों/प्रौद्योगिकियों का विकास और शुभारंभ किया गया। अप्रैल 22–दिसंबर 2022 की अवधि के दौरान, एचपीजीआरडीसी ने 53 पेटेंट दायर किए, जिससे संचयी भारतीय और अंतरराष्ट्रीय पेटेंट अनुप्रयोग 406 हो गए हैं। वर्ष के दौरान, एचपीजीआरडीसी को 24 पेटेंट प्रदान किए गए, जिससे 31 दिसंबर, 2022 तक की स्थिति के अनुसार एचपीजीआरडीसी को 148 संचयी पेटेंट प्रदान किए गए हैं। दिसंबर, 22 तक एचपीजीआरडीसी द्वारा विभिन्न अंतरराष्ट्रीय पत्रिकाओं में 62 पत्रिकाएं (संचयी रूप से) प्रकाशित किए गए थे।

**14.1.5.7. प्राकृतिक गैस:**

एचपीसीएल की प्राकृतिक गैस कारोबार के संपूर्ण मूल्य श्रृंखला में भागीदारी है।

एचपीसीएल एक सहायक कंपनी एचपीसीएल एलएनजी लिमिटेड (एचएलएल) के माध्यम से गुजरात के छारा बंदरगाह (गिर सोमनाथ जिले में) में 5 एमएमटीपीए एलएनजी पुनः गैसीकरण टर्मिनल का निर्माण कर रहा है। वित्त वर्ष 2023–24 में टर्मिनल के शुरू होने की उम्मीद है।

एचपीसीएल संयुक्त उद्यम कंपनियों अर्थात जीएसपीएल इंडिया गैसनेट लिमिटेड (जीआईजीएल) और जीएसपीएल इंडिया ट्रांसको लिमिटेड (जीआईटीएल) के माध्यम से तीन अंतर–देशीय प्राकृतिक गैस पाइपलाइनों (गेहसाणा से बठिंडा, बठिंडा से श्रीनगर और मल्लावरम से भीलवाड़ा) के विकास कार्य भी कर रही है।

दिसंबर 2022 तक 1,290 खुदरा व्यापार केन्द्रों पर सीएनजी सुविधाएं उपलब्ध कराई गई हैं।

**14.1.5.8. नगर गैस वितरण:**

नगर गैस वितरण (सीजीडी) में एचपीसीएल की उपस्थिति बढ़ाने के लिए एचपीसीएल हरियाणा, उत्तर प्रदेश, उत्तराखंड, पश्चिम बंगाल, राजस्थान, बिहार और झारखंड राज्यों में स्टैंडअलोन आधार पर 13 जीए में सीजीडी नेटवर्क स्थापित कर रहा है। एचपीसीएल अहमदाबाद में सीएनजी नेटवर्क का परिचालन भी स्टैंडअलोन आधार पर कर रही है।

इसके अतिरिक्त एचपीसीएल संयुक्त उद्यम कंपनी एचपीओआईएल गैस प्राइवेट लिमिटेड (एचओजीपीएल) के माध्यम से अंबाला–कुरुक्षेत्र (हरियाणा) और कोल्हापुर (महाराष्ट्र) जिलों के जीए में सीजीडी नेटवर्क स्थापित कर रही है।

एचपीसीएल संयुक्त उद्यम कंपनियों अर्थात अवंतिका गैस लिमिटेड (एजीएल), भाग्यनगर गैस लिमिटेड (बीजीएल) और गोदावरी गैस प्राइवेट लिमिटेड (जीजीपीएल) के माध्यम से आंध्र प्रदेश, तेलंगाना और मध्य प्रदेश राज्यों में 8 भौगोलिक क्षेत्रों (जीए) में नगर गैस वितरण (सीजीडी) नेटवर्क भी संचालित कर रहा है।

**14.1.5.9 अन्वेषण और उत्पादन:**

एचपीसीएल अपनी पूर्ण स्वामित्व वाली सहायक कंपनी अर्थात प्राइज पेट्रोलियम कंपनी लिमिटेड (पीपीसीएल) के माध्यम से हाइड्रोकार्बन की अन्वेषण और उत्पादन (ईएंडपी) करता है। एचपीसीएल के पास भारत के गुजरात में सीबी–ओएनएन–2002/3 नामक एक उत्पादक क्षेत्र में 15% भागीदारी हित (पीआई) है और एचपीसीएल ने अप्रैल से दिसंबर 2022 के दौरान इस ब्लॉक से 2,605 बैरल कच्चे तेल के उत्पादन में हिस्सेदारी प्राप्त की है।

पीपीसीएल की एक पूर्ण स्वामित्व वाली सहायक कंपनी है, जिसका नाम प्राइज पेट्रोलियम इंटरनेशनल पीटीई लिमिटेड (पीपीआईपीएल) है, जिसे सिंगापुर में निगमित किया गया है। पीपीआईपीएल के ऑस्ट्रेलिया में दो ईएंडपी ब्लॉकों अर्थात टी/एल1 और टी/18पी में क्रमशः 11.25% और 9.75% भागीदारी हित हैं। अप्रैल–दिसम्बर, 22 के दौरान पीपीआईपीएल ने आस्ट्रेलिया के योला उत्पादन क्षेत्र (टी/एल1) से 83,358 बीओई (तेल समतुल्य बैरल) के उत्पादन का अपना हिस्सेदारी प्राप्त की है।

**14.1.5.10 वैकल्पिक ऊर्जा:**

**नवीकरणीय ऊर्जा**

एचपीसीएल मूल्य श्रृंखला में कार्बन संबंधी छाप और विद्युत की लागत को कम करने के लिए नवीकरणीय ऊर्जा स्रोतों का लाभ उठा रहा है और पवन और सौर ऊर्जा उत्पादन क्षमताओं का लगातार विस्तार कर रहा है।

दिसंबर 2022 तक एचपीसीएल की कुल सौर स्थापित विद्युत संयंत्र क्षमता लगभग 73.8 एमडब्ल्यूपी है। ये सौर संयंत्र देश भर में विस्तारित कंपनी के विभिन्न विपणन/प्रचालन स्थलों में संस्थापित किए गए हैं।

इसके अतिरिक्त, एचपीसीएल के पास महाराष्ट्र और राजस्थान में 100.90 मेगावाट पवन ऊर्जा संयंत्र भी है। ये पवन विद्युत परियोजनाएं राजस्थान की डिस्कॉम को और राजस्थान में मुद्रा–दिल्ली पाइपलाइन और एलपीजी स्थानों के लिए कैप्टिव स्थानों और महाराष्ट्र में मुंबई पुणे सोलापुर पाइपलाइन स्थान के लिए कैप्टिव स्थानों के लिए भी उत्पादित बिजली बेचती हैं। वित्त वर्ष 22–23 में इन पवन संयंत्रों से 15.675 करोड़ किलोवाट बिजली उत्पादन हुआ था।

**जैव ईंधन**

अप्रैल 22–दिसंबर 22 की अवधि के दौरान एचपीसीएल ने मोटर स्पिरिट (एमएस) में 92.76 करोड़ लीटर एथेनॉल मिश्रण करके 10.11% एथेनॉल मिश्रण प्राप्त किया।

परिवहन क्षेत्र में वैकल्पिक ईंधन में छाप रखने के लिए, एचपीसीएल संपीड़ित जैव गैस (सीबीजी) को बढ़ावा देने के लिए भारत सरकार की एसएटीएटी (किफायती परिवहन हेतु संधारणीय विकल्प) पहल में सक्रिय रूप से भाग ले रहा है। एचपीसीएल सीबीजी संयंत्रों की स्थापना के लिए संभावित निवेशकों और उद्यमियों से रुचि की अभिव्यक्ति (ईओआई) आमंत्रित कर रहा है और खुदरा नेटवर्क के माध्यम से विपणन के लिए एचपीसीएल को सीबीजी की पेशकश कर रहा है। दिसंबर, 2022 तक एचपीसीएल ने 940 टीएमटीपीए की अनुमानित उत्पादन क्षमता वाले 474 सीबीजी संयंत्रों की स्थापना के लिए आशय पत्र (एलओआई) जारी किए और 17 टीपीडी (टन प्रति दिन) की कुल सीबीजी उत्पादन क्षमता वाले 4 सीबीजी संयंत्र शुरू किए गए हैं।

एचपीसीएल पंजाब के बठिंडा में बायोमास से 100 किलोलीटर प्रति दिन एथेनॉल उत्पादन क्षमता वाली दूसरी पीढ़ी की एथेनॉल बायो रिफाइनरी का निर्माण कर रहा है। एचपीसीएल उत्तर प्रदेश के बदायूं में 14 एमटी/दिन क्षमता वाली संपीड़ित बायोगैस (सीबीजी) संयंत्र भी स्थापित कर रहा है। संयंत्र से उत्पादित सीबीजी एचपीसीएल के खुदरा व्यावसाय केन्द्र के माध्यम से बेचा जाएगा। ये दोनों परियोजनाएं कार्यान्वयनाधीन हैं।

'ग्रामीण भारत–गोवर्धन में अपशिष्ट से ऊर्जा' के लिए भारत सरकार के परिदृश्य के अनुरूप, एचपीसीएल पाठमेडा, सांचोर राजस्थान में सीएसआर मार्ग के माध्यम से प्रतिदिन 1.5–2 मीट्रिक टन सीबीजी क्षमता वाली गोबर आधारित सीबीजी संयंत्र स्थापित कर रहा है।

**14.1.5.11 संधारणीय विकास:**

एचपीसीएल स्वच्छ और पर्यावरण अनुकूल तरीके से संसाधनों को विकसित करने का प्रयास करते हुए, लोगों और अर्थव्यवस्था की जरूरतों को पूरा करने के लिए ऊर्जा समाधानों का जिम्मेदार प्रदाता होने के लिए प्रतिबद्ध है। रिफाइनरियों और प्रमुख विपणन स्थानों को आईएसओ –14001 मानकों के आधार पर अंतरराष्ट्रीय स्तर पर स्वीकृत 'पर्यावरण प्रबंधन प्रणाली' के साथ कार्यान्वित किया गया है। संसाधन तीव्रता को कम करने पर ध्यान केंद्रित करते हुए रिफाइनरियों और विपणन स्थानों को ऊर्जा दक्षता, जल संरक्षण, वर्षा जल संचयन, बहिस्त्रावों के पुनः उपयोग और पुनर्चक्रण, जीएचजी उत्सर्जन की निगरानी और शमन आदि के लिए संधारणीय पहलों के कार्यान्वयन जोर दे रही हैं। प्रशिक्षण कार्यक्रम, जागरूकता सत्र, संधारणीय प्रश्नोत्तरी, समाचार पत्र और तकनीकी बुलेटिन संधारणीयता पर जागरूकता बढ़ाने जैसी संधारणीय हेतु सभी क्षमता निर्माण पहलों के लिए निरंतर आधार पर कार्यक्रम आयोजित किए जाते हैं।

एचपीसीएल का मानना है कि आने वाला भविष्य बहु ऊर्जा और कम कार्बन का होगा। कंपनी 2070 तक कार्बन तटस्थ बनने के देश के लक्ष्य के अनुरूप कई डीकार्बोनाइजेशन पहल कर रही है। कंपनी ने 2040 तक निवल–शून्य क्षेत्र–1 और 2 उत्सर्जन प्राप्त करने के अपने लक्ष्य की घोषणा की है।

एचपीसीएल जीएचजी में कमी के लिए उन्नत जैव ईंधन, एच–सीएनजी, सीओ2 कैप्चर के लिए नवीन अधिशोषक जैसी प्रौद्योगिकियों का प्रदर्शन करने के लिए अनुसंधान कर रहा है। कंपनी अपने अनुसंधान एवं विकास केंद्र में हाइड्रो प्रोसेसिंग पायलट संयंत्रों और बैच रिएक्टरों के संचालन के लिए हरित हाइड्रोजन का उपयोग कर रही है और रिफाइनरियों में हरित हाइड्रोजन के उत्पादन के लिए इलेक्ट्रोलाइजर स्थापित कर रही है।

रिफाइनरियों के परिचालन निष्पादन के लिए ऊर्जा दक्षता एक महत्वपूर्ण पहलू है जो कच्चे तेल को पेट्रोलियम और पेट्रोकेमिकल उत्पादों में विभाजित करता है। एचपीसीएल अपनी रिफाइनरियों में ऊर्जा दक्षता के लिए फ्लेयर गैस पुनःप्राप्ति/समानांतर रिफॉर्मर, एचपीआरटी, वीडीयू का एकीकरण; हेलिकॉल/पैकिनॉक्स हीट एक्सचेंजर्स; वीडीयू में वैक्यूम पंप; मेम्ब्रेन एच2 पुनःप्राप्ति; ऑनलाइन हिट एक्सचेंजर क्लिनिंग; हाइड्रोकॉम क्षमता नियंत्रण जैसी प्रौद्योगिकियों को अपना रहा है।

पेट्रोलियम उत्पादों को न्यूनतम कार्बन छाप सहित सुरक्षित रूप से दूर के स्थानों तक पहुंचाने के लिए, उत्पाद पाइपलाइन नेटवर्क का लगातार विस्तार किया जा रहा है और साजोसामान योजना और नेटवर्क अनुकूलन हेतु तकनीकी समाधानों का लाभ उठाया जा रहा है। कंपनी एमएस, एचएसडी, एसकेओ, एलपीजी और एटीएफ के परिवहन के लिए 5,000 किलोमीटर से अधिक अंतर–देशीय पेट्रोलियम उत्पाद पाइपलाइन नेटवर्क का संचालन करती है। पाइपलाइन प्रचालनों में बेहतर उत्पादकता और सुरक्षा के लिए ओएफसी (ऑप्टिकल फाइबर केबल) पर आधारित पाइपलाइन अतिक्रमण पहचान प्रणाली (पीआईडीएस) का लाभ उठाया जा रहा है।

एचपीसीएल ने समग्र अवसंरचना की प्रभावशीलता बढ़ाने के लिए अपने टर्मिनलों, एलपीजी संयंत्रों और खुदरा बिक्री केन्द्रों का आधुनिकीकरण और स्वचालन भी शुरू कर दिया है। कंपनी ने 'स्मार्ट नॉब' प्रौद्योगिकी का मार्ग प्रशस्त किया है, जिसमें एक एलपीजी स्टोव है तथा जिसमें एम फेल उपकरण है, जो स्टोव नॉब के अनजाने में चालू हो जाने या खाना पकाने के दौरान ली बंद हो जाने की स्थिति में गैस रिसाव को रोकता है। इससे सुरक्षा में काफी सुधार होगा। कंपनी ने एलपीजी स्टोव के ऐसी रूपरेखा भी शुरू की हैं जो वर्तमान रुपरेखा के 68% थर्मल दक्षता की तुलना में 73% तक थर्मल दक्षता रखते है। एचपीसीएल प्लास्टिक पैकेजिंग के बजाय स्नेहक के विपणन के लिए पुनर्नवीनीकरण योग्य टिन पैकेजिंग का उपयोग कर रहा है और परिक्रामी अर्थव्यवस्था को बढ़ावा देने के लिए ल्यूब तेलों में घटक के रूप में पुनः परिष्कृत तेलों का भी उपयोग कर रहा है।

गतिशील व्यापार परिदृश्यों में व्यावसायिक जरूरतों को पूरा करने के लिए उभरती हुई डिजिटल प्रौद्योगिकियों का लाभ उठाया जा रहा है। प्रमुख पहलों में वीडियो विश्लेषिकी, डेटा और विश्लेषिकी आधारित मांग पूर्वानुमान समाधान, ग्राहक सहभागिता और अनुभव मंच, आभासी कर्मचारी सहभागिता कार्यान्वयनाधीन हैं।

एचपीसीएल वित्तपोषण, परामर्श और मार्गदर्शन के माध्यम से स्टार्टअप के जरिए पर्यावरणीय संधारणीयता को भी बढ़ावा दे रहा है। इसके अतिरिक्त इन स्टार्टअप्स को बड़े पैमाने पर शुरू करने से पहले परियोजनाओं की व्यवहार्यता और व्यावहारिक विचारों को समझने के लिए कंपनी के एसबीयू के माध्यम से इस क्षेत्र में काम करने का अवसर प्रदान किया जा रहा है; इस दिशा में कुछ उदाहरण निम्नानुसार हैं:

1. सौर स्टोव नामक ठोस थर्मल भंडारण–आधारित समाधान, जिसका उद्देश्य गैस और इलेक्ट्रिक कुकटॉप की तुलना में बेहतर अनुभव और निष्पादन सहित घरेलू खाना पकाने के लिए सभी ऊर्जा आवश्यकताओं को पूरा करना है।
2. अधिशेष बायोमास के सुनिश्चित और दक्षतापूर्ण एकत्रीकरण और आपूर्ति के लिए कृषि आपूर्ति श्रृंखला का पुनर्निर्माण।
3. पत्तेदार स्ट्रॉ के रूप में प्लास्टिक स्ट्रॉ का विकल्प प्रदान करना जो गिरे हुए सूखे ताड़ के पत्तों से बने 100% जैविक, बायोडिग्रेडेबल पीने योग्य स्ट्रॉ हैं।
4. मकई के कोब, चावल की भूसी, डकवीड आदि जैसी कृषि बायोमास से 2 जी बायोएथेनॉल का विकास।

### 14.1.5.13. परियोजनाएं:

एचपीसीएल अपने संयुक्त उद्यमों के साथ रिफाइनरियों और विपणन अवसंरचना के सुदृढ़ीकरण और विस्तार की दिशा में विभिन्न परियोजनाओं को निष्पादित कर रहा है।

#### पूरी की गई परियोजनाएं

एचपीसीएल बेंगलुरु में ग्रीन आर एंड डी केन्द्र (एचपीजीआरडीसी) ने अतिरिक्त भूमि के अधिग्रहण के साथ क्षमताओं का विस्तार किया और आर एंड डी क्षमताओं का लाभ उठाने के लिए 7 नई प्रयोगशालाओं को जोड़ा।

आपूर्ति के अवसंरचना को मजबूत करने की दिशा में, तीन अंतर–देशीय पाइपलाइन परियोजनाएं अर्थात विजयवाड़ा–धर्मपुरी पाइपलाइन, हसन–चेरलापल्ली एलपीजी पाइपलाइन और बाड़मेर पालनपुर पाइपलाइन पूरी हो चुकी हैं। इन दो अंतर–देशीय पाइपलाइनों को जोड़ने से, एचपीसीएल के पेट्रोलियम उत्पाद पाइपलाइन नेटवर्क में 1,563

किलोमीटर की वृद्धि होगी, जिससे उत्पाद पाइपलाइन नेटवर्क 5,348 किलोमीटर हो जाएगा। संवर्धित पाइपलाइन नेटवर्क एचपीसीएल साजोसामान क्षमता को और मजबूत करेगा और उत्पाद अभियान के अन्य तरीकों से जुड़े उच्च कार्बन छापों को कम करके पर्यावरण में सुधार करने में सकारात्मक योगदान देगा।

पेट्रोलियम उत्पादों की बढ़ती मांग को पूरा करने के लिए तमिलनाडु के धर्मपुरी में एक हरित क्षेत्र विपणन टर्मिनल (विजयवाड़ा–धर्मपुरी पाइपलाइन से जुड़ा) और उत्तराखंड के सितारगंज में एक पीओएल डिपो शुरू किया गया।

देश में एलपीजी की बढ़ती मांग को पूरा करने की दिशा में एचपीसीएल ने महाराष्ट्र राज्य के पातालगंगा में नए 180 टीएमटीपीए एलपीजी संयंत्र और झारखंड राज्य के बरही में 120 टीएमटीपीए एलपीजी संयंत्र को शुरू करते हुए अपने एलपीजी आपूर्ति अवसंरचना को मजबूत किया है।

जटनी, जबलपुर, मांगलिया, हजीरा, गांधीनगर, औरंगाबाद और मदुरै एलपीजी संयंत्रों में अतिरिक्त जुड़ा हुआ भंडारण पात्र (एमएसवी) के पूरा होने से एचपीसीएल की समग्र एलपीजी भंडारण क्षमता में 7,700 मीट्रिक टन की वृद्धि हुई है।

**सतत परियोजनाएं**

**रिफाइनरी से संबंधित परियोजनाएं**

रिफाइनिंग क्षमता को 83 एमएमटी से बढ़ाकर 150 एमएमटी करने के लिए विशाख रिफाइनरी आधुनिकीकरण परियोजना (वीआरएमपी) पूरा होने के अंतिम चरण में है। एक बार शुरू होने के बाद, अतिरिक्त क्षमता एचपीसीएल रिफाइनिंग और विपणन पोर्टफोलियो को और अधिक संरेखित करेगी। वीआरएमपी के अंश के रूप में अवशिष्ट उन्नयन सुविधाओं (आरयूएफ) का निष्पादन कार्य भी अच्छी तरह से प्रगति कर रहा है।

इसके अतिरिक्त, एचपीसीएल संयुक्त उद्यम कंपनी एचपीसीएल राजस्थान रिफाइनरी लिमिटेड (एचआरआरएल) के माध्यम से राजस्थान के बाड़मेर जिले में एक नया 9 एमएमटीपीए क्षमता वाली हरित क्षेत्र रिफाइनरी–सह पेट्रोरसायन परिसर स्थापित कर रहा है जो अच्छी तरह से प्रगति कर रहा है।

एचपीसीएल संयुक्त उद्यम कंपनी रत्नागिरी रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (आरआरपीसीएल) के माध्यम से महाराष्ट्र के रत्नागिरी जिले में 60 एमएमटीपीए एकीकृत हरित क्षेत्र रिफाइनरी–सह पेट्रोरसायन कॉम्प्लेक्स की स्थापना भी कर रहा है।

**विपणन परियोजनाएं**

देश में पेट्रोलियम उत्पादों की बढ़ती मांग को लागत प्रभावी और पर्यावरण अनुकूल तरीके से पूरा करने के लिए एचपीसीएल ने कई पाइपलाइन परियोजनाएं शुरू की हैं। एचपीसीएल की प्रमुख सतत पाइपलाइन अवसंरचना परियोजनाओं में निम्नलिखित शामिल हैं:

(i) बठिंडा संगरूर पाइपलाइन

(ii) हल्दिया पानागढ़ एलपीजी पाइपलाइन

देश में एलपीजी की बढ़ती आवश्यकता को पूरा करने और आयात क्षमताओं को बढ़ाने के लिए मंगलौर में 80 टीएमटी एलपीजी कैवर्न का निर्माण कार्य प्रगति पर है। सितारगंज (उत्तराखंड), आबू रोड (राजस्थान) और वाराणसी (उत्तर प्रदेश) में नए एलपीजी संयंत्र स्थापित किए जा रहे हैं। रायपुर (छत्तीसगढ़), वाशी (महाराष्ट्र), इंदौर (मध्य प्रदेश), इलाथुर (केरल) में पीओएल डिपो/टर्मिनल का पुनरुद्धार/संवर्धन विपणन अवसंरचना को और सुदृढ़ बनाने के लिए कार्य प्रगति पर है।

**14.1.5.14. प्रमुख पुरस्कार और सम्मान:**

वर्ष 2022–23 के दौरान, एचपीसीएल को विभिन्न मंचों पर कई पुरस्कारों और सम्मानों से सम्मानित किया गया। वर्ष 2022–23 के दौरान एचपीसीएल द्वारा प्राप्त पुरस्कारों की सूची निम्नानुसार है:

1. पेट्रोलियम और प्राकृतिक गैस मंत्रालय (एमओपी एंड एनजी) की ओर से हिंदी के क्षेत्र में असाधारण योगदान देने के लिए **'राजभाषा शील्ड प्रथम पुरस्कार'**।
2. पेट्रोलियम और प्राकृतिक गैस मंत्रालय (एमओपी एंड एनजी) द्वारा स्थापित **'स्वच्छता पखवाड़ा 2022 पुरस्कार'**।
3. डन एंड ब्रैडस्ट्रीट पीएसयू और सरकारी शिखर सम्मेलन 2022 के दौरान डिजिटल ट्रांसफॉर्मेशन श्रेणी में **'पीएसयू अवार्ड्स 2022'**।
4. निम्नलिखित श्रेणियों में **सीआईआई डिजिटल ट्रांसफॉर्मेशन (डीएक्स) पुरस्कार 2022:**

क. **'डिजिटाइज़ मैक्सिमाइज़' डिजिटल ऑल अलॉन्ग** में सर्वश्रेष्ठ अभिनव कार्यप्रणाली

ख. **'एआई/एमएल आधारित मांग पूर्वानुमान समाधानों'** में सर्वश्रेष्ठ कार्यप्रणाली

5. **सार्वजनिक 'खरीद नीति पर सीपीएसई सम्मेलन में तीन प्रतिष्ठित पुरस्कार'**

क. वित्त वर्ष 2021–22 के दौरान एससी–एसटी एमएसई से महारत्न सीपीएसई के बीच खरीद मूल्य के संदर्भ में अधिकतम खरीद।

ख. वित्त वर्ष 2021–22 के दौरान एससी–एसटी एमएसई से महारत्न सीपीएसई के बीच कुल खरीद के प्रतिशत के संदर्भ में अधिकतम खरीद।

ग. वित्त वर्ष 2021–22 के दौरान महिला उद्यमियों से महारत्न सीपीएसई के बीच खरीद मूल्य के संदर्भ में अधिकतम खरीद।

6. **एचपी ग्रीन आर एंड डी केन्द्र ने आईईएसए द्वारा स्थापित प्रतिष्ठित नवाचार पुरस्कार जीता।**

7. **ज़ी डिजिटल की ओर से एचपी स्नेहक्स को 'ज़ी नेशनल अवीवर्स पुरस्कार'।**

8. **एचपीविट्रान ऐप की 'नवोन्मेष उत्पाद और सेवा पुरस्कार' श्रेणी में एचपी गैस को गोल्डन पीकॉक अवार्ड 2022।**

9. निम्नलिखित के लिए भारतीय जन संपर्क संस्था से **'पीआरएसआई राष्ट्रीय पुरस्कार 2022'**। (i) सीएसआर संचार अभियान, (ii) आंतरिक संचार अभियान, (iii) वार्षिक रिपोर्ट, (iv) गृह पत्रिका (अंग्रेजी), (v) गृह पत्रिका (हिन्दी), (vi) संधारणीयता रिपोर्ट।

10. एएसएएसओसीएचएएम के अपने 14 वें अंतरराष्ट्रीय नागर विमानन सम्मेलन में "सर्वश्रेष्ठ विमानन ईंधन प्रदाता" पुरस्कार।

## 14.2. नवरत्न सार्वजनिक क्षेत्र के उपक्रम

### 14.2.1. ऑयल इंडिया लिमिटेड (ओआईएल)

#### 14.2.1.1. प्रस्तावना

ऑयल इंडिया लिमिटेड (ओआईएल), भारत सरकार का एक उद्यम है और पेट्रोलियम और प्राकृतिक गैस मंत्रालय के प्रशासनिक कार्यढांचे के अंतर्गत एक नवरत्न कंपनी है जो देश और विदेशों दोनों में कच्चे तेल और प्राकृतिक गैस के अन्वेषण, उत्पादन और परिवहन से संबंधित व्यवसाय में कार्य कर रही है। ओआईएल की अधिकृत पूंजी ₹ 2,000 करोड़ और प्रदत्त पूंजी ₹ 1,084.41 करोड़ है। दिनांक 31.12.2022 तक की स्थिति के अनुसार, भारत सरकार की शेयरधारिता ओआईएल की प्रदत्त इक्विटी शेयर पूंजी का 56.66% है।

#### 14.2.1.2 घरेलू पोर्टफोलियो:

कंपनी का घरेलू प्रचालन असम, अरुणाचल प्रदेश और राजस्थान राज्यों में तटवर्ती पेट्रोलियम अन्वेषण लाइसेंस (पीईएल) और पेट्रोलियम खनन लीज (पीएमएल) के अंतर्गत आने वाले क्षेत्रों में विस्तारित है। ओआईएल के घरेलू क्षेत्रफल में 2 (दो) पेट्रोलियम अन्वेषण लाइसेंस (पीईएल) शामिल है जो नामांकन के आधार पर लगभग 136.75 वर्ग किलोमीटर क्षेत्र को शामिल करते हैं और 25 (पच्चीस) पेट्रोलियम खनन लीज (पीएमएल) शामिल हैं जो असम (21 नग), अरुणाचल प्रदेश (2 नग) और राजस्थान (2 नग) में स्थित लगभग 4,810 वर्ग किलोमीटर के क्षेत्र में फैले हुए हैं।

कंपनी के पास एनईएलपी के अंतर्गत प्रचालक के रूप में 3,909 वर्ग किमी के क्षेत्र सहित 4 (चार) तटवर्ती ब्लॉक क्षेत्रफल हैं जो असम, मिज़ोरम और आंध्र प्रदेश/पुडुचेरी राज्यों में स्थित है। ओआईएल के पास गुजरात–कच्छ (ऊपरी अपतटीय), पश्चिम बंगाल (तटवर्ती) में 5,301 वर्ग किलोमीटर की गैर–प्रचालक के रूप में एनईएलपी के अंतर्गत 2 (दो) ब्लॉक हैं। ओआईएल के पास गैर–प्रचालक के रूप में अर्थात खरसांग पीएससी (पीआई –40%) और ब्लॉक एएपी–ओएन–94/1 (डिरोक–पीआई–44.086%) पूर्व–एनईएलपी संयुक्त उद्यमों के अंतर्गत असम और अरुणाचल प्रदेश में 85.88 वर्ग किमी की 2 (दो) ब्लॉक हैं। कंपनी के पास डीएसएफ–I बोली दौर के अंतर्गत प्रदान किए गए एए/ओएनडीएसएफ/खेरेम/2016 में गैर–प्रचालन भागीदारी हित (40%) भी है।

कंपनी के पास प्रचालक के रूप में ओएएलपी–I से VII बोली दौर क्षेत्रफल भी है, जिसमें असम, अरुणाचल प्रदेश, त्रिपुरा, नागालैंड, ओडिशा, राजस्थान राज्यों और अंडमान और केरल–कॉकण के ऊपरी अपतटीय भागों में 53,859 वर्ग किमी के विस्तार क्षेत्र सहित 29 (उनतीस) ब्लॉक शामिल हैं। ओआईएल को प्रचालक के रूप में 3 (तीन) ब्लॉक प्रदान किया गया है, जिसमें डीएसएफ दौर–II के माध्यम से त्रिपुरा तटवर्ती क्षेत्र में 01 और कृष्णा–गोदावरी अपतटीय में 01 और डीएसएफ दौर–III के माध्यम से राजस्थान में 01 है जो 208 वर्ग किमी. क्षेत्रफल में फैला हुआ है ।

#### 14.2.1.3. अन्वेषण संबंधी कार्यकलाप:

ओआईएल असम, अरुणाचल प्रदेश, त्रिपुरा, ओडिशा और राजस्थान के तटवर्ती क्षेत्रों में 28 (अट्ठाईस) ओएएलपी ब्लॉकों में तथा अंडमान और केरल–कॉकण घाटियों में ऊपरी अपतटीय क्षेत्रों में अन्वेषण कार्यकलापों में कार्यरत है। यह त्रिपुरा और राजस्थान तटवर्ती और केजी अपतटीय के 3 (तीन)

डीएसएफ ब्लॉकों में भी काम कर रहा है। इसके अतिरिक्त, ओआईएल को डीजीएच के राष्ट्रीय भूकंपीय कार्यक्रम (एनएसपी) अभियान के अंतर्गत 2 डी भूकंपीय डेटा के अधिग्रहण, प्रसंस्करण और निर्वचन (एपीआई) के लिए 6,032 एलकेएम (भूकंपीय आंकड़ों का 5,162 एलकेएम और हवाई भूभौतिकीय सर्वेक्षण (एजीएस) का 870 एलकेएम) का संशोधित आवंटन प्रदान किया गया था। ओआईएल ने मई 2022 तक 5,245.80 एलकेएम (5,162 एलकेएम के संशोधित लक्ष्य का 101.62%) का भूकंपीय एपीआई पूरा किया। 2डी भूकंपीय एपीआई लक्ष्यों और उपलब्धियों का क्षेत्र–वार/राज्य–वार ब्यौरा नीचे सारणीबद्ध किया गया है।

| क्षेत्रफल/क्षेत्र | क्षेत्र का नाम | एलकेएम में संशोधित लक्ष्य | एलकेएम में उपलब्धि |
|---|---|---|---|
| क्षेत्र-1, क्षेत्रक-I | असम-अरुणाचल प्रदेश | 2,414 | 2,416.20 |
| क्षेत्र-1, क्षेत्रक-II | असम-अरुणाचल प्रदेश | 738 | 743.70 |
| क्षेत्र-2, क्षेत्रक-IV | मिजोरम-त्रिपुरा | 0 | 1,143.48 |
| क्षेत्र-2, क्षेत्रक-II | मणिपुर* | 885 | 4.74 |
| क्षेत्र-2, क्षेत्रक-III | एनसी पहाड़ी | 1,125 | 937.68 |
| **कुल** | | **5,162** | **5,245.80** |

*मणिपुर द्वारा निर्धारित लक्ष्य एजीजी और जीएम सर्वेक्षण द्वारा प्राप्त किया जाएगा।

**14.2.1.4. भौतिक निष्पादन**

| मापदंड | इकाई | 2021-22 (वास्तविक) | 2022-23 | |
|---|---|---|---|---|
| | | | लक्ष्य (ब.अ.) | वास्तविक (दिसम्बर, 22 तक) |
| **भूकंपीय सर्वेक्षण** | | | | |
| 2डी | जीएलकेएम | 2,105.21 | 1,389 | 1047.44 |
| 3डी | एसक्यूकेएम | 1,097.59 | 680.13 | 525.37 |
| **ड्रिलिंग** | | | | |
| अनुसंधानमूलक | '000मी. | 50,253 | 1,16,923 | 43,234 |
| | कूपों | 7 | 35 | 13 |
| विकास | '000मी. | 94,452 | 1,08,019 | 63,301 |
| | कूपों | 31 | 38 | 19 |
| कुल (व्यय+अंतर) | '000मी. | 1,44,705 | 2,24,942 | 106,535 |
| | कूपों | 38 | 73 | 32 |
| **कच्चे तेल का उत्पादन*** | | | | |
| असम | एमएमटी | 2.957 | 3.498 | 2.333 |
| अरुणाचल प्रदेश | | 0.021 | 0.061 | 0.016 |
| राजस्थान (भारी तेल) | | 0.009 | 0.012 | 0.011 |
| **कुल** | | **2.987** | **3.571** | **2.360** |
| **प्राकृतिक गैस उत्पादन*** | | | | |
| असम | एमएमएससीएम | 2620 | 3388 | 2,120.33 |
| अरुणाचल प्रदेश | | 53 | 90 | 37.261 |
| राजस्थान | | 219 | 240 | 137.056 |
| **कुल** | | **2893** | **3718** | **2,294.644** |
| **एलपीजी उत्पादन** | '000टी | **30.487** | **30.000** | **23.631** |

*जे वी शेयर को छोड़कर

**14.2.1.5. दिनांक 01.04.2022 तक की स्थिति के अनुसार आरक्षित स्थिति (2पी):**

अन्वेषण और विकास कार्यकलापों के परिणामस्वरूप, दिनांक 01.04.2022 तक की स्थिति के अनुसार ओआईएल ने घरेलू क्षेत्र में 806.67 एमएमटी (तेल) और 407.26 बीसीएम (गैस) (1161.82 एमएमटीओई ओ + ओईजी) की 2 पी / बीई की स्थापना की है। कंपनी का 2पी / बीई शेष उत्पादन योग्य तेल और गैस की मात्रा क्रमशः 70.86 एमएमटी और 138.31 बीसीएम (191.31 एमएमटीओई ओ + ओईजी) है।

**14.2.1.6. कच्चे तेल का परिवहनः**

ओआईएल कुल 1,243 किलोमीटर के कच्चे तेल के पाइपलाइन नेटवर्क का संचालन करता है जो असम, पश्चिम बंगाल और बिहार राज्यों से होकर गुजरता है। ओआईएल की कच्चे तेल की पाइपलाइन की क्षमता 6.0 एमएमटीपीए है। पाइपलाइन का उपयोग असम और अरुणाचल प्रदेश में उत्पादित तेल के कच्चे तेल को असम के रिफाइनरियों में ले जाने के लिए किया जाता है। यह पाइपलाइन ओएनजीसी द्वारा उत्पादित कच्चे तेल का परिवहन भी करती है। बरौनी बोंगाईगांव खंड वाला पाइपलाइन आईओसीएल के आयातित कच्चे तेल को बरौनी से आईओसी बोंगाईगांव रिफाइनरी तक पहुंचाता है। वित्त वर्ष 2020–21 के दौरान पाइपलाइन का कुल प्रवाह क्षमता 6.02 एमएमटी और वर्तमान वित्त वर्ष 2021–22 में 6.184 एमएमटी और वित्त वर्ष 2022–23 के दौरान 31 दिसंबर 2022 तक 5.05 एमएमटी थी।

ओआईएल नुमालीगढ़ रिफाइनरी (एनआरएल) से पश्चिम बंगाल के सिलीगुड़ी टर्मिनल तक कुल 1.72 एमएमटीपीए उत्पादों के खाली करने के लिए 654.3 किलोमीटर लंबी पाइपलाइन भी संचालित करती है। वित्त वर्ष 2020–21 में ओआईएल ने नुमालीगढ़–सिलीगुड़ी उत्पाद पाइपलाइन (एनएसपीएल) के माध्यम से 1.699 एमएमटी और वित्त वर्ष 2021–22 के दौरान 1.516 एमएमटी और वर्तमान वित्त वर्ष 2022–23 (दिसंबर, 2022 तक) के दौरान 1.112 एमएमटी परिष्कृत पेट्रोलियम उत्पादों का परिवहन किया। असम में उत्पादित प्राकृतिक गैस विभिन्न ग्राहकों अर्थात् बीवीएफसीएल, बीसीपीएल, एजीसीएल, एपीजीसीएल, नीपको, आईओसी (एओडी), और एपीएल और आसपास के चाय बागानों को बेची जाती है। मार्च, 2011 से ओआईएल नुमालीगढ़ रिफाइनरी को गैस की आपूर्ति कर रही है। राजस्थान में ओआईएल द्वारा उत्पादित गैर संबद्ध गैस राजस्थान राज्य विद्युत उत्पादन निगम लिमिटेड (आरआरवीयूएनएल) को बेची जाती है। ओआईएल दुलियाजान, असम के अपने संयंत्र में तरलीकृत पेट्रोलियम गैस (एलपीजी) का भी उत्पादन करती है।

**14.2.1.7. नवीकरणीय ऊर्जा पोर्टफोलियोः**

ओआईएल ने अपने कार्यनीतिक अभिप्राय के अंश के रूप में, पिछले कुछ वर्षों में नवीकरणीय (वैकल्पिक) ऊर्जा डोमेन में, विशेष रूप से पवन और सौर खंडों में विविधता लाई है और 188.10 मेगावाट की वाणिज्यिक प्रकृति नवीकरणीय ऊर्जा (आरई) परियोजनाओं की स्थापना की है जिसमें 174.10 मेगावाट पवन ऊर्जा परियोजनाएं और 14 मेगावाट सौर ऊर्जा परियोजनाएं शामिल हैं।

जबकि प्रचालित पवन ऊर्जा विद्युत परियोजनाएं राजस्थान, मध्य प्रदेश और गुजरात राज्यों में फैली हुई हैं, प्रचालित सौर ऊर्जा विद्युत परियोजनाएं राजस्थान और असम में स्थापित की गई हैं।

**14.2.1.8. विविधताः**

ओआईएल ने मुख्य रूप से अनुप्रवाह कारोबार में हिस्सेदारी प्राप्त करके अपने पोर्टफोलियो का चयनात्मक विविधीकरण किया है। ओआईएल की नुमालीगढ़ रिफाइनरी लिमिटेड में 69.63% हिस्सेदारी, ब्रह्मपुत्र क्रैकर एंड पॉलीमर लिमिटेड में 10% हिस्सेदारी और डीएनपीएल (दुलियाजान नुमालीगढ़ पाइपलाइन लिमिटेड) में 23% हिस्सेदारी है। ओआईएल ने असम पेट्रोकेमिकल लिमिटेड की 500 टीपीडी मेथनॉल और 200 टीपीडी फॉर्मलाडेहाइड परियोजना में 49% इक्विटी हिस्सेदारी का अधिग्रहण प्राप्त किया है।

ओआईएल ने मैसर्स एचपीसीएल के साथ सहायता संघ में नगर गैस वितरण (सीजीडी) के क्षेत्र में भी कदम रखा है। सीजीडी बोली के 8 वें दौर के अंतर्गत प्रस्तुत निविदाओं के आधार पर पीएनजीआरबी ने अंबाला–कुरुक्षेत्र और कोल्हापुर के भौगोलिक क्षेत्र में सीजीडी नेटवर्क के विकास के लिए एचपीसीएल और ओआईएल के सहायता संघ को प्राधिकरण के लिए पत्र जारी किया है। एक संयुक्त उद्यम कंपनी (जेवीसी), नामत एचपीआईएल गैस प्राइवेट लिमिटेड (एचओजीपीएल) को निगमत किया गया है और दोनों जीए में क्षेत्र निष्पादन कार्य प्रगति पर है। जेवीसी ने प्रत्येक जीए में 10 नग सीएनजी केन्द्र शुरू किया है। अंबाला–कुरुक्षेत्र जीए में 483 इंच–किमी और कोल्हापुर जीए में 431 इंच–किमी की स्टील पाइपलाइन पूरी हो गई है।

अंबाला–कुरुक्षेत्र जीए और कोल्हापुर जीए में प्रदान किए गए डीपीएनजी कनेक्शन संख्या क्रमशः 1,227 और 128 है।

असम गैस कंपनी लिमिटेड (एजीसीएल), ऑयल इंडिया लिमिटेड (ओआईएल) और गेल गैस लिमिटेड (गेल गैस) के सहायता संघ ने सीजीडी बोली के 9 वें दौर के अंतर्गत कामरूप और कामरूप मेट्रोपॉलिटन जिलों जीए और कछार, हैलाकांडी और करीमगंज जिलों में सीजीडी नेटवर्क के विकास के लिए बोली जीती है। एजीसीएल, ओआईएल और गेल गैस के भागीदारी हित क्रमशः 48%:26%:26% हैं। पीएनजीआरबी से प्राधिकरण प्रदान करने के लिए पत्र सितंबर, 2018 में प्राप्त हुआ। जुलाई, 2019 में संयुक्त उद्यम करार पर हस्ताक्षर किए गए। पूर्व भारती गैस प्राइवेट लिमिटेड (पीबीजीपीएल) नामक एक संयुक्त उद्यम कंपनी (जेवीसी) को निगमित किया गया है और दोनों जीए में क्षेत्र निष्पादन कार्य पहले ही शुरू कर दिया गया है। कछार जीए में 290 घरों को डीपीएनजी कनेक्शन पहले ही प्रदान किए जा चुके हैं।

### 14.2.1.9. विदेशी पोर्टफोलियो:

दिनांक 31 मार्च 2022 तक की स्थिति के अनुसार कंपनी का विदेशी ईएंडपी पोर्टफोलियो रूस, वेनेजुएला, मोजाम्बिक, नाइजीरिया, बांग्लादेश, लीबिया और गैबॉन को शामिल करने वाले 07 देशों में फैला हुआ है। पोर्टफोलियो में रूस (3) और वेनेजुएला (1) में फैली 4 (चार) उत्पादन परिसम्पत्तियां, मोजाम्बिक और नाइजीरिया में 2 (दो) खोजी और विकासात्मक परिसम्पत्तियां और लीबिया, गैबॉन और बांग्लादेश (2) में 4 (चार) अनुसंधानमूलक परिसम्पत्ति शामिल हैं। संयुक्त राज्य अमेरिका में शेल तेल और गैस परिसम्पत्ति को वर्ष 2021–22 के दौरान बेच दिया गया है।

दिनांक 31.03.2022 तक की स्थिति के अनुसार, 5 विदेशी उत्पादक और खोजी गई परिसम्पत्तियों अर्थात् लाइसेंस–61, रूस में वैंकोरनेफ्ट और तास्यूराह, वेनेजुएला में काराबोबो और मोजाम्बिक में रोवुमा एरिया 1 में तेल की हिस्सेदारी के अनुरूप 2 पी तेल और गैस भंडार की स्थिति 50.6421 एमएमटीओई थी। वर्ष 2021–22 के दौरान, तेल के भागीदारी हित के अनुरूप विदेशी परिसम्पत्तियों से उत्पादन 2.204 एमएमटीओई हुआ था।वर्तमान वित्त वर्ष के दौरान अप्रैल–दिसंबर 2022 की अवधि में, विदेशी परिसम्पत्तियों से संचयी उत्पादन में तेल की हिस्सेदारी 1.595 एमएमटीओई थी। ब्लॉकों में प्रमुख घटनाक्रमों की स्थिति निम्नानुसार है:–

#### 14.2.1.9.1. उत्पादन परिसम्पत्तियां:

**i. जेएससी वैंकोरनेफ्ट, रूस (रोसनेफ्ट: 50.1%, ओआईएल/आईओसीएल/बीपीआरएल: 23.9%, ओवीएल: 26%)**

कंपनी ने आईओसीएल और बीपीआरएल के साथ मिलकर 5 अक्टूबर 2016 से जेएससी वैंकोर्नेफ्ट, रूस में 23.9% हिस्सेदारी का अधिग्रहण प्राप्त किया। यह परिसम्पत्ति एसपीवीवैंकोर इंडिया पीटीई लिमिटेड (वीआईपीएल) के माध्यम से रखी गई है, जिसे सिंगापुर में आईओसीएल और बीपीआरएल कंपनी की पूर्ण स्वामित्व वाली सहायक कंपनियों द्वारा संयुक्त रूप से निगमित किया गया है।

दिनांक 31.03.2022 तक की स्थिति के अनुसार, इस परिसंपत्ति में कंपनी के भागीदारी हित के अनुरूप 2 पी आरक्षित स्थिति में 13.27 एमएमटी तेल और 3.77 एमएमटीओई प्राकृतिक गैस होने का अनुमान लगाया गया है। वर्ष 2021–22 के दौरान, परिसंपत्ति में कंपनी का उत्पादन हिस्सा 1.28 एमएमटीओई है। अप्रैल–दिसंबर 2022 के दौरान, परिसंपत्ति में कंपनी का उत्पादन हिस्सा 0.893 एमएमटीओई था। संचयी रूप से 31.03.2022 तक, परियोजना में तेल की हिस्सेदारी के अनुरूप लाभांश के रूप में वीआईपीएल स्तर पर 391.16 मिलियन अमेरिकी $ के समकक्ष राशि प्राप्त हुई है।

**ii. एलएलसी तास–यूरयाख नेफ्टेगाज़ोडोबीचा (टीवाईएनजीडी): रूस (रोसनेफ्ट: 50.1%, ओआईएल/आईओसीएल/बीपीआरएल: 29.9%, ब्रिटिश पेट्रोलियम: 20%)**

कंपनी ने आईओसीएल और बीपीआरएल के साथ दिनांक 5 अक्टूबर 2016 से रूस के एलएलसी तास–यूरयाख नेफ्टेगाज़ोडोबीचा (टीवाईएनजीडी) में 29.9% हिस्सेदारी का अधिग्रहण प्राप्त किया। यह परिसम्पत्ति एसपी तास इंडिया पीटीई लिमिटेड (टीआईपीएल) के माध्यम से रखी गई है जिसे सिंगापुर में आईओसीएल और बीपीआरएल कंपनी की पूर्ण स्वामित्व वाली सहायक कंपनियों द्वारा संयुक्त रूप से निगमित निगमित किया गया है।

दिनांक 31.03.2022 तक की स्थिति के अनुसार, इस परिसंपत्ति में कंपनी के भागीदारी हित के अनुरूप 2 पी आरक्षित स्थिति में 10.53 एमएमटी तेल होने का अनुमान लगाया गया है। वर्ष 2021–22 के दौरान, परिसंपत्ति में कंपनी का उत्पादन हिस्सा 0.86 एमएमटीओई है।

अप्रैल–दिसंबर 2022 के दौरान, परिसंपत्ति में कंपनी का उत्पादन हिस्सा 0.669 एमएमटीओई था। संचयी रूप से 31.03.2022 तक, परियोजना में ओआईएल की हिस्सेदारी के अनुरूप लाभांश और अधिशेष पूंजी के पुनर्भुगतान के रूप में टीआईपीएल स्तर पर 271.86 मिलियन अमेरिकी डॉलर के समकक्ष राशि प्राप्त हुई है।

**iii. रूस: लाइसेंस 61 [ओआईएल–50% और पेट्रोनेफ्ट रिसोर्सेज लिमिटेड–50% (प्रचालक)]**

कंपनी ने दिनांक 03 जुलाई 2014 को पेट्रोनेफ्ट रिसर्सेस पीआईसी (पीआर)से लाइसेंस 61, रूस (क्षेत्रफल: 4,991 वर्ग किमी.) में 50% हिस्सेदारी का अधिग्रहण प्राप्त किया। अब तक, लिनिनोये, पश्चिमी लिनिनोये, अर्बुज़ोवस्कोये और तुंगोलस्कोये क्षेत्रों का विकास किया गया है।

दिनांक 31.03.2022 तक की स्थिति के अनुसार, परिसंपत्ति में 2 पी हाइड्रोकार्बन भंडार स्थिति में कंपनी की हिस्सेदारी 6.20 एमएमटी है। वर्ष 2021–22 के दौरान, परिसंपत्ति में कंपनी का उत्पादन हिस्सा 0.038 एमएमटी है। अप्रैल–नवंबर 2022 के दौरान, परिसंपत्ति में कंपनी का उत्पादन हिस्सा 0.018 एमएमटीओई था।

**iv. यूएसए: तरल समृद्ध शेल परिसंपत्ति [वर्दाद संसाधन अधिग्रहण एलएलसी–60% (ओआईएल–20%, आईओसीएल–10%, हैमो ऑयल एंड गैस एलएलसी –10%]**

कंपनी ने दिनांक 01 अक्टूबर 2012 को कोलोराडो, यूएसए में डेनवर जूल्सबर्ग (डी–जे) घाटी में कैरिज़ो ऑयल एंड गैस इंक ("कैरिज़ो") शेल परिसंपत्तियों में बीस प्रतिशत (20%) हिस्सेदारी का अधिग्रहण प्राप्त किया। कंपनी ने परिसंपत्ति धारित और प्रबंधित करने के लिए ऑयल इंडिया (यूएसए), इंक के नाम से टेक्सास, यूएसए में एक पूर्ण स्वामित्व वाली सहायक कंपनी का गठन किया।

कंपनी के विदेशी पोर्टफोलियो को तर्कसंगत बनाने की कार्यनीति के अंश के रूप में, ऑयल इंडिया (यूएसए), इंक ने दिनांक 14 जनवरी, 2022 को शेल परिसंपत्ति में पूरी हिस्सेदारी वर्डाड रिसोर्सेज एलएलसी को बेच दी।

**v. वेनेजुएला: परियोजना कारावोबो [कॉर्पोरेशन वेनेजुएला डेल पेट्रोलियो (सीवीपी)–71%, इंडोइल नीदरलैंड बीवी 7% (आईओसीएल–3.5%, ओआईएल–3.5%), ओवीएल–11%, रेपसोल वाईपीएफ (स्पेन)–11%,**

रेपसोल (11%), ओवीएल (11%) और इंडोइल (7%) के सहायक संघ (जिन्हें अल्पसंख्यक शेयरधारक (एमएसएच) कहा जाता है) के पास 29: हिस्सेदारी है, और सीवीपी (पीडीवीएसए की सहायक कंपनी) के पास मेसर्स पेट्रोकारावोबो एसए (पीसीवी) नामक मिश्रित कंपनी में शेष 71% हिस्सेदारी है। पीसीवी परियोजना कारावोबो का प्रचालक है। इंडियाल की 7% की हिस्सेदारी में ओआईएल (3.5%) और आईओसीएल (3.5%) शामिल हैं। ओआईएल और आईओसीएल ने परियोजना में निवेश करने के लिए नीदरलैंड में इंडोइल नीदरलैंड्स बीवी (इंडोआईएल) नामक एक 50:50 संयुक्त उद्यम कंपनी का गठन किया। मिश्रित कंपनी के करार पर दिनांक 12 मई 2010 को 25 वर्षों की अवधि के लिए हस्ताक्षर किए गए थे।

आज तक, ब्लॉक में 7 कुओं की खुदाई की गई है। परियोजना 30 केबीडी कच्चे तेल के शोधन संयंत्र का मालिक है और इसका प्रचालक भी है। वर्तमान में, वेनेज़ुएला के आर्थिक और राजनीतिक संकट के कारण परियोजना कार्यकलापों में विलंब हो रही है।

दिनांक 31.03.2022 तक की स्थिति के अनुसार, प्रोजेक्ट कारावोबो में कंपनी के भागीदारी हित के अनुरूप 2 पी आरक्षित स्थिति 0.21 एमएमटी होने का अनुमान है। वर्ष 2021–22 के दौरान, परिसंपत्ति में कंपनी का उत्पादन हिस्सा 0.019 एमएमटी था। अप्रैल–दिसंबर 2022 के दौरान, परिसंपत्ति में कंपनी का उत्पादन हिस्सा 0.015 एमएमटीओई था।

### 14.2.1.9.2. विकास परिसंपत्तियां

**i. मोजाम्बिक: रोवुमा एरिया1 (कुल (प्रचालक–26.5%), मित्सुई–20%, ईएनएच–15% (किया गया), बीपीआरएल–10%, बीआरईएम–10%, ओवीएल–10%, पीटीटीईपी–8.5%)**

वीडियोकॉन मोजाम्बिक रोवुमा 1 लिमिटेड में 100% हिस्सेदारी अधिग्रहण करने के माध्यम से ओवीएल के साथ कंपनी ने दिनांक 7 जनवरी 2014 को एरिया 1 मोजाम्बिक में 10% भागीदारी हिस्सेदारी का अधिग्रहण प्राप्त किया। [तब से इसका नाम बदलकर ब्यास रोवुमा एनर्जी मोजाम्बिक लिमिटेड (बीआरईएमएल) ओवीएल–60%, ओआईएल–40% रखा गया)] प्रारंभ में तटवर्ती एलएनजी विकास ने प्रति वर्ष 13.12 मिलियन टन (एमएमटीपीए) की कुल नेमप्लेट क्षमता सहित दो (2) एलएनजी ट्रेनें शामिल की थीं। एरिया 1 मोजाम्बिक परियोजना के संयुक्त उद्यम भागीदारों ने दिनांक 18 जून 2019 को दो ट्रेन गोल्फिन्हो–अतुम मोजाम्बिक एलएनजी परियोजना के लिए अंतिम निवेश निर्णय (एफआईडी) की घोषणा की है। संयुक्त उद्यम ने भारत सहित एशिया और यूरोप में प्रमुख एलएनजी खरीदारों के साथ दीर्घकालिक एलएनजी बिक्री का 11.13 एमएमटीपीए को सफलतापूर्वक प्राप्त कर लिया है। परियोजना

को सीमित साधन परियोजना वित्तपोषण के माध्यम से विकसित किया जा रहा है जिसने दिनांक 24 मार्च 2021 को वित्तीय समापन प्राप्त कर लिया है। तटवर्ती और अपतटीय निर्माण संविदा प्रदान किए गए और स्थल पर निर्माण कार्य शुरू किया गया।

मोजाम्बिक के काबो डेलगाडो प्रांत में सुरक्षा स्थिति बिगड़ने के कारण, प्रचालक ने दिनांक 22 अप्रैल 2021 को फोर्स मेजर घोषित किया। यह परियोजना वर्तमान में फोर्स मेजर के अधीन है और इस क्षेत्र में सामान्य स्थिति बहाल करने के लिए प्रचालक और मोजाम्बिक सरकार के बीच चर्चा जारी है।

दिनांक 31.03.2022 तक की स्थिति के अनुसार, रोवुमा, क्षेत्र 1 में कंपनी के भागीदार हित के अनुरूप 2 पी आरक्षित स्थिति में 16.21 एमएमटीओई प्राकृतिक गैस और 0.46 एमएमटी कॉन्डेंसेट होने का अनुमान लगाया गया है।

ii. **नाइजीरिया: ब्लॉक ओएमएल 142 (भूतपूर्व ओपीएल 205) [ओआईएल–17.5%, आईओसीएल–17.5% और संयुक्त उद्यम सनटेरा नाइजीरिया 205 (ब्लॉक में 70% ब्याज) में सनटेरा रिसोर्सेज–35%, समिट पेट्रोलियम–30% (प्रचालक)]**

यह परियोजना नाइजर डेल्टा तटवर्ती के सबसे उत्तरी भाग में है। ब्लॉक में हाइड्रोकार्बन खोज (गैस और कंडेनसेट) 1991–92 (ओटिन: 1 कूप) से पहले से की जा रही है। नाइजीरिया में निगमित कंपनी सनटेरा नाइजीरिया 205 लिमिटेड (एसएन–205) ने मई 2006 में समिट ऑयल इंटरनेशनल से 40% भागीदारी ब्याज(पीआई) और 40: आर्थिक ब्याज (ईआई) का अधिग्रहण प्राप्त किया है। इसके पश्चात, ओआईएल ने आईओसीएल के साथ मिलकर सनटेरा नाइजीरिया 205 लिमिटेड (एसएन–205) की 25% (प्रत्येक) शेयरधारिता का अधिग्रहण प्राप्त किया, जिसमें सनटेरा रिसोर्सेज लिमिटेड शेष 50% हिस्सेदारी धारित करता है। समिट ऑयल 30% कामकाजी ब्याज सहित ब्लॉक का प्रचालक है, शेष 70: एसएन –205 द्वारा धारित किया जा रहा है। ऑयल प्रोस्पेक्टिंग लाइसेंस (ओपीएल–205) को दिनांक 12.06.2009 से 20 वर्षों के लिए ऑयल माईनिंग लाइसेंस (ओएमएल–142) में रूपांतरित किया गया था। लगभग 125 वर्ग किलोमीटर क्षेत्र का 3 डी भूकंपीय आंकड़े से संबंधित अधिग्रहण वर्ष 2014 में पूरा हुआ था और इसकी प्रसंस्करण और प्रस्तुतीकरण वर्ष 2016 में पूरी हुई थी। इसके बाद, सहायता संघ ने खोज की गई कूप ओटियन ₹ 1 में दोबरा परिचालन शुरू किया था। एकल क्षेत्र (क्षेत्र: 8) से विस्तारित वेल परीक्षण (ईडब्ल्यूटी) उत्पादन और ओटीयेनरु1 कुएं को पुन: शुरू किया गया। पुन: कार्य शुरू करने के बाद दिनांक 12 अगस्त, 2020 से 05 अप्रैल, 2021 तक ओटीयेन: 1 कुएं के तीन क्षेत्र से कूप वितरण क्षमता से संबंधी परीक्षण किए गए थे।

ओटियन क्षेत्र के नजदीक एक ऊर्जा उद्यान स्थापित की जा रही है और गैस मुद्रीकरण के लिए चर्चा चल रही है। नाइजीरिया के एनयूपीआरसी (ऊर्ध्वप्रवाह पेट्रोलियम विनियामक आयोग) को प्रस्तुत करने के लिए क्षेत्र विकासात्मक योजना (एफओपी) भी तैयार किया जा रहा है।

**14.2.1.9.3 अन्वेषणात्मक परिसंपत्ति:**

i. **बांग्लादेश: ब्लॉक एसएस–04 और एसएस –09 [ओआईएल–45% (ओवीएल–45% (बेपेक्स: 10% (किया गया)]**

कंपनी को बांग्लादेश बोली दौर–2012 में ऊपरी अपतटीय ब्लॉक एसएस–04 और एसएस–09 प्रदान किया गया था। ओआईएल दोनों ब्लॉकों में गैर–प्रचालक है। दोनों ब्लॉकों का कुल क्षेत्रफल 14,295 वर्ग किमी है, जिसमें ब्लॉक एसएस–04 का क्षेत्रफल 7,269 वर्ग किमी तक फैला हुआ है और ब्लॉक एसएस –09 का क्षेत्रफल 7,026 वर्ग किमी तक फैला हुआ है। दोनों ब्लॉकों के लिए उत्पादन हिस्सेदारी करार पर दिनांक 17 फरवरी, 2014 को ढाका, बांग्लादेश में पांच (05) वर्षों की प्रारंभिक अन्वेषण अवधि के लिए हस्ताक्षर किए गए थे। सहायता संघ ने अनिवार्य भूकंपीय सर्वेक्षण और 1 (एक) तटवर्ती कुएं (ब्लॉक एसएस–04 में) की ड्रिलिंग पूरी कर ली है। ब्लॉक एसएस–04 में 1 (एक) और एसएस–09 में 1 (एक) अर्थात दो अपतटीय कुओं की ड्रिलिंग की तैयारी प्रक्रियाधीन है।

ii. **लीबिया: क्षेत्र 95/96 –4 ब्लॉक [सीपेक्स (प्रचालक)–50%, आईओसीएल–25%, ओआईएल–25%]**

सहायता संघ ने एमडब्ल्यूपी के साथ की गई 08 (आठ) कुओं की ड्रिलिंग की प्रतिबद्धता में से पांच कुओं की ड्रिलिंग पूरी कर ली है। सभी ड्रिल किए गए कुओं ने तेल और गैस से भरी गई है। जब अशांति की परिस्थिति शुरू हुई तब छठे कुएं की ड्रिलिंग चल रही थी और मई, 2014 से क्षेत्र–95/96 में सभी प्रचालन निलंबित कर दिए गए थे। सहायता संघ ने मई 2018 तक ब्लॉक में उत्पादन जारी रखने के लिए अंतरिम व्यवस्था करार पर हस्ताक्षर किए थे। अंतरिम व्यवस्था करार को मई 2018 के बाद आगे विस्तारित करने के लिए सभी संबंधित पक्षकारों द्वारा सहमति व्यक्त की गई है। लीबिया में कानून और व्यवस्था की शत्रुतापूर्ण स्थिति के कारण ब्लॉक वर्तमान में फोर्स मेजर के अधीन है।

**iii. गैबॉन: ब्लॉक शक्ति–II [ओआईएल (प्रचालक)–50%, आईओसीएल–50%]**

पुराने पीएससी (जी 4–220) के दौरान ब्लॉक के तीसरे कुएं (लासा–1) में तेल की खोज की गई थी। नए पीएससी (जी4–245) के चरण–I के एमडब्ल्यूपी के अनुसार दो मूल्यांकन कुओं (लासा–2 और 3) की भी खुदाई की गई थी। सहायता संघ ने ब्लॉक के शेष भाग में संभावना का आकलन करने के लिए चरण–1 में 1213.04 एलकेएम के 2 डी भूकंपीय एपीआई को पूरा किया। एकीकृत प्रस्तुतीकरण और पूर्वेक्षण मूल्यांकन के आधार पर, सहायता संघ ने ब्लॉक में चरण –2 अन्वेषण अवधि में कार्य शुरू किया है जिसे वैधानिक विलंब और कोविड–19 वैश्विक महामारी के कारण दिनांक 15.04.2023 तक बिस्तारित किया गया था। इस बीच, वर्ष के दौरान ड्रिलिंग संबंधी प्रारंभिक कार्यकलापों में महत्वपूर्ण प्रगति हुई है।

**iv. ब्लॉक 32, इज़राइल (ओआईएल: 25%, आईओसीएल: 25%, बीपीआरएल: 25%, ओएनजीसी विदेश लिमिटेड: 25% प्रचालक)**

भारतीय सार्वजनिक क्षेत्र की कंपनियों के सहायता संघ के अंश के रूप में कंपनी, अर्थात् ओएनजीसी विदेश लिमिटेड (ओवीएल), भारत पेट्रो रिसोर्से लिमिटेड (बीपीआरएल) और इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल) को एक अपतटीय अन्वेषणपूर्ण ब्लॉक – लाइसेंस 412/32 प्रदान किया गया था। लाइसेंस को दिनांक 27 मार्च 2018 से अनुमोदित किया गया है और यह दिनांक 26 मार्च 2021 तक वैध था। इस ब्लॉक को दिनांक 23 जनवरी, 2022 को बेच दिया गया है।

**14.2.1.9.4. पाइपलाइन:**

**सूडान: उत्पाद पाइपलाइन [ओआईएल–10% पीआई और ओवीएल–90% पीआई]**

इस परियोजना में एआई–शबियन से पोर्ट सूडान तक 12" x 741 किमी. लंबी अंतर देशीय बहु–उत्पादन पाइपलाइन का निर्माण कार्य शामिल था। इस पाइपलाइन का निर्माण निर्माण, संचालन, पट्टे और हस्तांतरण के आधार पर किया गया है। सहायता संघ ने परियोजना के लिए ईपीसी संविदाकार के रूप में मेसर्स डोडसल पीटीई लिमिटेड को नियुक्त किया था। यह परियोजना 15 महीने के रिकॉर्ड समय में पूरी हुई (लक्ष्य 16 महीने का था)। पाइपलाइन वर्ष 2005 में शुरू हुई थी।

**14.2.1.10. वित्तीय निष्पादन:**

₹/करोड़

| | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (सितम्बर, 2022) |
|---|---|---|---|---|---|
| कुल आय | 15,170.00 | 13,648.71 | 10,561.45 | 16,427.65 | 12,700.67 |
| निवल लाभ / हानि | 2,590.14 | 2,584.06 | 1,741.59 | 3,887.31 | 3,276.02 |
| आयोजना परिव्यय–वास्तविक | 3,180.81 | 4,247.21 | 13,331.93* | 4,366.52 | 2,001.55 |
| आयोजना लक्ष्य | 4,299.99 | 4,105.20 | 3,877.00 | 4,108.00 | 4,302.00 |

टिप्पणी*: नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल) में ₹ 8,677.27 करोड़ का कार्यनीतिक निवेश शामिल है।

**14.2.1.11. संगठित सामाजिक उत्तरदायित्व:**

ऑयल इंडिया लिमिटेड एक जिम्मेदार कॉर्पोरेट नागरिक है जो अपने संचालन के क्षेत्रों और समग्र रूप से समाज के समावेशी और समग्र विकास को प्राप्त करने के लिए संगठित सामाजिक उत्तरदायित्व (सीएसआर) के सिद्धांतों के प्रति पूर्ण रूप से प्रतिबद्धता का पालन कर रहा है।

ऑयल इंडिया लिमिटेड (ओआईएल) का संगठित सामाजिक उत्तरदायित्व (सीएसआर) इसके विजन "ओआईएल एक जिम्मेदार कॉर्पोरेट नागरिक है जो अपने संचालन के क्षेत्रों में सामाजिक–आर्थिक विकास के लिए गंभीरता से प्रतिबद्ध है" और कंपनी अधिनियम 2013 की धारा 135 और कंपनी (संगठित सामाजिक उत्तरदायित्व नीति) संशोधन नियम 2021 द्वारा निर्देशित ओआईएल की सीएसआर और संधारणीय नीति द्वारा शासित है। ओआईएल सीएसआर पहल को मार्गदर्शन करने के लिए एक मजबूत मार्गदर्शक बल हैं, जिनका उद्देश्य सभी सार्थक तरीकों से लोगों और स्थानीय समुदायों के जीवन में बदलाव लाना है।

जैसा कि कंपनी अधिनियम 2013 की अनुसूची–VII के अंतर्गत विनिर्दिष्ट किया गया है, कंपनी ने प्रमुख क्षेत्रों के अंतर्गत विभिन्न सीएसआर परियोजनाएं शुरू की है जो निम्नानुसार हैं:

**क) स्वास्थ्य देखभाल और स्वच्छता**

- शिशु मृत्यु दर (आईएमआर) और मातृ मृत्यु दर (एमएमआर) में कमी लाने के लिए **परियोजना ओआईएल आरोग्य**।
- ग्रामीण स्वास्थ्य शिविरों के माध्यम से मोबाइल स्वास्थ्य सेवाओं पर **परियोजना ओआईएल स्पर्श**।
- स्वास्थ्य सेवा अवसंरचना में संवर्धन।

**ख) स्वच्छ भारत अभियान (पेयजल और स्वच्छता)**

- स्वच्छ प्रतिष्ठित स्थान पहल: कामाख्या मंदिर की स्वच्छता, अनुरक्षण और रखरखाव करना।
- ओआईएल के परिचालन क्षेत्रों और आकांक्षी जिलों (असम के धुबरी और गोवालपारा और अरुणाचल प्रदेश के नामसाई) में स्कूल शौचालयों, सामुदायिक शौचालयों और व्यक्तिगत घरेलू शौचालयों का निर्माण।
- ओआईएल के परिचालन क्षेत्रों में ग्रामीण क्षेत्रों और आकांक्षी जिलों (असम के धुबरी और गोवालपारा और अरुणाचल प्रदेश के नामसाई) के स्कूलों में स्वच्छ पेयजल की आपूर्ति।
- असम के तिनसुकिया में ओआईएल के परिचालन क्षेत्रों में एकीकृत ठोस अपशिष्ट प्रबंधन परियोजनाएं।
- अन्य कार्यकलापों में स्वच्छ भारत जागरूकता पखवाड़ा के अंतर्गत ओआईएल क्षेत्रों में ओआईएल कर्मचारियों द्वारा संगोष्ठी, वॉकथॉन, प्रतियोगिताओं और श्रमदान का आयोजन करना शामिल है।

**ग) शिक्षा**

- **ओआईएल सुपर 30 परियोजना**–असम के गुवाहाटी, जोरहाट, डिब्रूगढ़ और नगांव, राजस्थान के जोधपुर और अरुणाचल प्रदेश के ईटानगर केंद्रों में जेईई और एनईईटी के लिए 11 महीने की निःशुल्क आवासीय कोचिंग व्यवस्था।
- **ओआईएल दिक्षा परियोजना**–ओआईएल के परिचालन क्षेत्रों में स्कूली छात्रों के बीच कंप्यूटर साक्षरता को बढ़ावा देना।
- **ओआईएल दिक्षा परियोजना**–ओआईएल के परिचालन क्षेत्रों में वयस्क साक्षरता अभियान।
- दिव्यांगजनों के पुनर्वास के लिए सक्षम परियोजना।
- शैक्षिक अवसंरचना के संवर्धन के लिए सहायता।

**घ) संधारणीय आजीविका सृजन**

- एसएचजी/जेएलजी को समर्थन देने के लक्ष्य सहित स्व–रोजगार सृजन के लिए रूपांतर परियोजना
- **जीविका परियोजना**– संधारणीय आय सृजन हेतु क्लस्टर आधारित आजीविका परियोजना।
- ऑयल इंडिया ग्रामीण विकास संस्था (ओआईआरडीएस) के अंतर्गत कृषि परियोजना।

**ङ) कौशल/क्षमता निर्माण**

- कौशल/क्षमता निर्माण परियोजना के लिए ओआईएल स्वावलंबन परियोजना जिसके अंतर्गत ओआईएल प्रचालनात्मक क्षेत्रों के बेरोजगार युवाओं/महिलाओं को रोजगार से जुड़े कौशल प्रशिक्षण प्रदान किया जाता है ताकि उनकी रोजगार क्षमता को बढ़ाया जा सके।
- ओआईएल ने हाइड्रोकार्बन और अन्य क्षेत्रों में अपनी रोजगार क्षमता बढ़ाने के लिए पूर्वोत्तर क्षेत्र के युवाओं की कौशल आवश्यकता को पूरा करने के लिए अन्य तेल और गैस पीएसयू के समर्थन से कौशल विकास संस्थान, गुवाहाटी की स्थापना की है।

**च) महिला सशक्तिकरण संबंधी परियोजनाएं**

- ओआईएल नर्सिंग स्कूल सामान्य नर्सिंग और मध्य वाइनरी (जीएनएम) में तीन वर्ष का पाठ्यक्रम आयोजित करता है।
- हथकरघा, हस्तशिल्प और उद्यमिता उत्कृष्टता केंद्र में महिलाओं को सिलाई, कटाई, दर्जी का काम आदि के अतिरिक्त रचनात्मक वस्त्र, बांस और रंग–बिरंगी जैसी बाजार से प्रेरित कौशल व्यापारों में प्रशिक्षित करना।

**छ) पर्यावरण और संधारणीयता**

- बड़े पैमाने पर वृक्षारोपण और असम के डिगबोई में बांस उद्यान की स्थापना के माध्यम से कार्बन पृथक्करण और जैव विविधता का संरक्षण।
- अन्य परियोजनाओं में तालाबों/झीलों की सफाई और संरक्षण, वृक्षारोपण और जैव विविधता संरक्षण शामिल हैं।

**ज) कला, संस्कृति और विरासत का संवर्धन**

- जॉन बेरी व्हाइट चिकित्सा महाविद्यालय का नवीनीकरण।
- कला, सांस्कृतिक और अन्य विरासत के संवर्धन और संरक्षण के लिए परियोजनाएं।

**झ) खेल संबंधी विकास**

- वॉलीबॉल और फुटबॉल जैसे खेलों में नई प्रतिभाओं को खोजने के लिए कोचों की क्षमता निर्माण और खेल कार्यक्रमों के आयोजन के लिए कोचिंग कार्यक्रम।

**ञ) ग्रामीण अवसंरचना का संवर्धन**

- सड़कों, पुलों, सामुदायिक भवन और प्रतीक्षा स्थल और अन्य सामुदायिक से संबंधित अवसंरचना आदि का निर्माण।

**ट) कोविड के विरूद्ध लड़ाई**

- ओआईएल कंपनी ने उत्तर प्रदेश, बिहार, अरुणाचल प्रदेश और नागालैंड में पीएसए ऑक्सीजन संयंत्रों की स्थापना और उसकी शुरूआत, ऑक्सीजन सिलेंडर और ऑक्सीजन कंसंट्रेटर का वितरण, ऑक्सीजन सिलेंडरों को फिर से भरने के लिए तेल मुक्त ऑक्सीजन कंप्रेसर की स्थापना, कोविड देखभाल सुविधाओं की स्थापना आदि सहित स्वास्थ्य देखभाल से संबंधित अवसंरचना के विस्तार के लिए विभिन्न परियोजनाओं के माध्यम से कोविड–19 महामारी के प्रभावी प्रबंधन में सरकार के प्रयासों में योगदान दिया है।

## 14.2.2. इंजीनियर्स इंडिया लिमिटेड (ईआईएल)

### 14.2.2.1. प्रस्तावना

इंजीनियर्स इंडिया लिमिटेड (ईआईएल) की स्थापना सन 1965 में पेट्रोलियम रिफाइनरियों और संबंधित परियोजनाओं के लिए अभियांत्रिकी और संबंधित तकनीकी सेवाएं प्रदान करने के लिए की गई थी, जिसका मुख्यालय नई दिल्ली है। पिछले कुछ वर्षों में, इसने अपनी सेवाओं की क्षेत्रों में वृद्धि की है और विभिन्न क्षेत्रों में उत्कृष्ट प्रदर्शन किया है ताकि वे निम्नलिखित क्षेत्र में एक अग्रणी परियोजना, रूपरेखा, अभियांत्रिकी और संपूर्ण करार कंपनी के रूप में उभर सकें:

- पेट्रोलियम रिफाइनिंग
- पेट्रोरसायन, रसायन और उर्वरक
- कच्चे तेल, पेट्रोलियम उत्पाद और गैस पाइपलाइन
- अपतटीय / तटवर्ती तेल और गैस
- टर्मिनल और भंडारण
- उप–सतह कार्यनीतिक भंडारण
- खनन और धातु विज्ञान
- अवसंरचना और नगर विकास

अवसंरचना क्षेत्र में प्रवेश के बाद ईआईएल ने अंतरराष्ट्रीय हवाई अड्डों, उत्कृष्ट भवनों और जल प्रबंधन के आधुनिकीकरण / विकास से संबंधित कई उल्लेखनीय और महत्वपूर्ण कार्य किए हैं।

आईएसओ 9001: 2015 प्रमाणित कंपनी के रूप में, ईआईएल की क्षेत्रीय कार्यालय चेन्नई, वडोदरा और कोलकाता में हैं, मुंबई में शाखा कार्यालय है, अबू धाबी में विदेशी अभियांत्रिकी / विपणन कार्यालय है, जो मध्य पूर्व में कंपनी की कार्यकलापों का केंद्र है। भारत और विदेशों में विभिन्न परियोजना स्थलों पर निर्माण कार्यालय सहित संपूर्ण भारत के विभिन्न स्थानों और लंदन, मिलान और शंघाई में निरीक्षण / खरीद कार्यालय हैं। इसके अतिरिक्त, ईआईएल के पास प्रमाणन और निरीक्षण सेवाएं प्रदान करने के लिए पूर्ण स्वामित्व वाली सहायक कंपनी अर्थात सर्टिफिकेशन इंजीनियर्स इंटरनेशनल लिमिटेड है। ईआईएल की नेशनल फर्टिलाइजर लिमिटेड (एनएफएल) और फर्टिलाइजर कॉरपोरेशन ऑफ इंडिया (एफसीआईएल) सहित संयुक्त उद्यम कंपनी रामागुंडम फर्टिलाइजर्स एंड केमिकल्स लिमिटेड (आरएफसीएल) है, जो 26% का शेयर धारण करता है। आरएफसीएल संयत्र का वाणिज्यिक परिचालन दिनांक 22 मार्च, 2021 को किया गया। नुमालीगढ़ रिफाइनरी लिमिटेड में भी ईआईएल की 4.37% हिस्सेदारी है।

ईआईएल परियोजना अवधारणा से लेकर परियोजना शुरू करने तक परियोजना से संबंधित प्रौद्योगिकी और अभियांत्रिकी सेवाओं की व्यापक श्रृंखला प्रदान करता है जिसमें संयंत्रों का पुनरुद्धार, क्षमता विस्तार और आधुनिकीकरण शामिल है। कंपनी द्वारा दी जाने वाली सेवाओं के पोर्टफोलियो में निम्नलिखित शामिल हैं:

**परियोजना पूर्व सेवाएं**

- व्यवहार्यता अध्ययन
- पर्यावरण प्रभाव आकलन प्रौद्योगिकी और प्रक्रिया लाइसेंसर चयन
- लागत अनुमान

**परियोजना कार्यान्वयन सेवाएं**

- परियोजना प्रबंधन
- प्रक्रिया से संबंधित रूपरेखा और अग्रणी अभियांत्रिकी
- बुनियादी और विस्तृत अभियांत्रिकी
- खरीद
- निरीक्षण और तृतीय–पक्षकार प्रमाणन

- निर्माण प्रबंधन
- शुरूआत करना और संयंत्र स्टार्ट–अप सहायता

**विशेषज्ञ सेवाएं**

- ताप और द्रव्यमान अंतरण उपकरण संबंधी रूपरेखा
- पर्यावरण अभियांत्रिकी
- सूचना प्रौद्योगिकी
- विशेषज्ञ सामग्री और अनुरक्षण
- एचएजेडओपीएस और जोखिम विश्लेषण सहित संयंत्र परिचालन और सुरक्षा
- जंग संरक्षण, संयंत्र एकीकरण और अवशिष्ट जीवन आकलन
- रिफाइनरी अनुकूलन अध्ययन
- उपज और ऊर्जा अनुकूलन अध्ययन

**संपूर्ण संविदा**

- ईपीसी (अभियांत्रिकी, खरीद और निर्माण)
- ओबीई (खुला बुक अनुमान)

ईआईएल के पास बहु–अनुशासनात्मक अभियांत्रिकी कार्यबल है और दिनांक 31.12.2022 तक की स्थिति के अनुसार मुख्यालय, विदेशी कार्यालयों और क्षेत्रीय कार्यालयों में कुल मिलाकर 2,656 कर्मचारी कार्यरत थी।

अभियांत्रिकी में उत्कृष्टता हासिल करने के अतिरिक्त, ईआईएल एक जिम्मेदार कॉर्पोरेट कंपनी है और अच्छी कॉर्पोरेट प्रशासन कार्यप्रणाली के लिए प्रतिबद्ध है। सूचना का अधिकार अधिनियम, 2005 को कंपनी में जन सूचना अधिकारी और अधिनियम के अंतर्गत मामलों का समाधान करने के लिए नामित अपील प्राधिकरण के साथ क्रियान्वित किया गया है। अधिनियम के प्रावधान के अनुसार जानकारी कंपनी की वेबसाइट www.engineersindia.com पर प्रदर्शित की जाती है। इसके अतिरिक्त, जनता, संविदाकारों, विक्रेताओं, आपूर्तिकर्ताओं आदि की अभियोग/शिकायतों से निपटने के लिए वेब–आधारित शिकायत प्रबंधन प्रणाली लागू की गई है। इसके अतिरिक्त, कंपनी में महिला फोरम है जो यौन उत्पीड़न से संबंधित शिकायतों का निपटारा करने के लिए नामित समिति है।

### 14.2.2.2. वर्ष 2022–23 के दौरान निष्पादन संबंधी विशेषताएं

**क. सुरक्षित व्यापार**

वर्तमान वित्त वर्ष (31 दिसंबर, 2022 तक) के दौरान, ईआईएल ने ₹ 795.99 करोड़ का नया व्यवसाय प्राप्त किया, जिसमें परामर्श कार्य संबंधी भाग में ₹ 553.23 करोड का व्यवसाय (घरेलू ग्राहकों से ₹ 527 करोड़ और विदेशी ग्राहकों से ₹ 25.31 करोड़) और एलएसटीके भाग में ₹ 242.76 करोड़ शामिल हैं।

कंपनी द्वारा सुरक्षित कुछ प्रमुख कार्यों का विवरण निम्नानुसार हैं:

**ख. घरेलू कार्य**

**पीएमसी**

- आईओसीएल, गुजरात के लिए गुजरात रिफाइनरी में नए कोलतार संयंत्र के लिए परामर्श कार्य सेवाएं।
- एचपीसीएल के लिए वड़ोदरा में प्रस्तावित भूमिगत खनन रॉक एलपीजी कैवर्न के लिए परामर्श कार्य सेवाएं।
- आईओसीएल, बरौनी के लिए बरौनी रिफाइनरी ऑफ इंडियन ऑयल कॉर्पोरेशन लिमिटेड, भारत की समग्र परियोजना प्रबंधन, बीडीईपी तैयारी और अन्य संबंधित अभियांत्रिकी सेवाओं के लिए परामर्श कार्य सेवाएं।
- आईएफटीएएस ओडिशा के लिए आरबीआई के हरित क्षेत्र से संबंधित आंकड़ा केन्द्र–II, ईएमसी उद्यान, खुर्दा, ओडिशा की स्थापना के लिए प्रधान परामर्श कार्य फर्म (पीसीएफ)।
- जीएसपीएल, गुजरात की अंजार पालनपुर पाइपलाइन के लिए पीएमसी ।
- कोच्चि के नेयवेली, एनएलसी में लिग्नाइट से मेथनॉल परियोजना के लिए पुरस्कार–पूर्व कार्यकलापों के लिए परियोजना प्रबंधन परामर्श कार्य (पीएमसी)।
- आईओसीएल, पानीपत के लिए इंडियन ऑयल कॉर्पोरेशन लिमिटेड, भारत के पानीपत रिफाइनरी और पेट्रोकेमिकल कॉम्प्लेक्स में स्टाइरीन परियोजना के लिए पीएमसी परामर्श कार्य सेवाएं।
- गेल नोएडा के गेल विजयपुर में 4.3 टीपीडी पीईएम इलेक्ट्रोलाइजर की स्थापना के लिए पीएमसी सेवाएं।
- झगड़िया कांत्याजल खंड, एनसीटी, गुजरात में तीन स्थानों पर मौजूदा पाइप लाइन के प्रतिस्थापन के लिए पीएमसी कार्य सेवाएं।
- डीएनपी, असम के लिए पाइपलाइन संबंधी दोषों के अध्ययन और आकलन और शमन उपायों की संस्तुति (भाग–II, III, IV) के लिए परामर्श कार्य सेवाएं।

- नायरा एनर्जी लिमिटेड, गुजरात के डीसीयू के पुनर्गठन के लिए पीएमसी और फीड सेवाएं।
- हरियाणा बागवानी विपणन के लिए पीएमसी सेवाएं।
- एएआई के वृहत निकोबार द्वीप के चिंगेन में पहित क्षेत्र अंतरराष्ट्रीय हवाई अड्डे के विकास के लिए विस्तृत परियोजना रिपोर्ट तैयार करने के लिए परामर्श कार्य सेवाएं।
- एनटीपीसी, नोएडा में सहयोगी 10 टीपीडी एथेनॉल परियोजना।
- एईएल, गुजरात के लिए 30,000 एमटीपीए पॉलीसिलिकॉन और 500 एमटीपीए मोनोसिलेन विनिर्माण परियोजना के लिए ओनर्स इंजीनियर सेवाएं।
- डीटीसीएल, वडोदरा के लिए नए टर्बाइन जनरेटर सेट संबंधित प्रणाली, नए एफबीसी बॉयलर और अंतरसंबंधी पाइपिंग के लिए विस्तृत इंजीनियरिंग परामर्श कार्य सेवाएं।
- आईएफटीएएस, नोएडा के लिए आरबीआई आंकड़ा केन्द्र और प्रशिक्षण संस्थान।

**ईपीसीएम**

- नाहरकटिया बरौनी कच्चे तेल, तेल का पी/एल, बरौनी के पंप केन्द्र/टर्मिनलों के उन्नयन की परियोजना के कार्यान्वयन के लिए ईपीसीएम सेवाएं।
- एचपीसीएल, मुंबई हेतु एचपीसीएल मुंबई रिफाइनरी में एमआर–II परियोजना के लिए ईपीसीएम सेवाएं।
- डीसीटीएल, वडोदरा हेतु एमआईबीसी, एमएलबीके और यूएंडओ के लिए ईपीसीएम सेवाएं।
- पेट्रोनेट, दाहेज में दाहेज पुनर्गैसीकरण विस्तार परियोजना (20 से 22.5 एमएमटीपीए) के लिए ईपीसीएम सेवाएं।
- बीपीसीएल, कोच्चि के लिए स्थल कार्य–चरण–I हेतु सहायता सहित चरण 2 सीडीयू–3 डिसाल्टर के पुनरुद्धार के लिए बीडीईपी और ईपीसीएम सेवाएं।
- सीपीसीएल, चेन्नई की मनाली रिफाइनरी में समूह–II एलओबीएस परियोजना के लिए ओएचसीयू पुनरूद्धार, सीडीडब्ल्यूयू और ऑफ–साईट संबंधित सुविधाओं के लिए समग्र परियोजना प्रबंधन और ईपीसीएम सेवाओं हेतु परामर्श कार्य सेवाएं।
- बीपीसीएल, कोच्चि में भाप से चलने वाले सीसीआर नेट गैस कंप्रेसर (सीआरसी–2) के पुनःसंयोजन होतु चरण–II ईपीसीएम सेवा।

**डीएफआर**

- ओएमसी, ओडिशा के केओन्झार, ओडिशा में दैतारी लौह अयस्क खानों की क्षमता 6 एमटीपीए तक बढ़ाने के लिए विस्तृत परियोजना रिपोर्ट (डीपीआर)।
- बीपीसीएल के बीपीसीएल कोच्चि रिफाइनरी में पॉली प्रोपाइलीन (पीपी) इकाई परियोजना के लिए लाइसेंसर चयन, लागत अनुमान और विस्तृत व्यवहार्यता रिपोर्ट (डीएफआर) तैयार करना।
- मुंबई रिफाइनरी, एचपीसीएल, मुंबई में प्रोपीलीन पुनःप्राप्ति इकई (पीआरयू) 140 केटीपीए के डीएफआर, बीडीईपी और आरआरए की तैयारी।
- आईओसीएल, मुंबई के त्रिंकोमाली, श्रीलंका में कच्चे तेल के भंडारण की सुविधा विकसित करने के लिए व्यवहार्यता अध्ययन।
- पेट्रोनेट, दाहेज के दाहेज में ईथेन प्रोपेन आयात सुविधा सहित पीडीएच पीपी संयंत्र के लिए डीएफआर और लाइसेंसर का चयन।
- बीपीसीएल, मुंबई के बीपीसीएल मुंबई रिफाइनरी में ऊर्जा अनुकूलन अध्ययन।
- जीएनएफसी, गुजरात के लिए अन्य अनुप्रवाह उत्पादों सहित क्रैकर के लिए टीईएफआर।
- आईएफटीएएस, ओडिशा में 15 जून 2022 को प्रदान किए गए आंकड़ा केन्द्र कार्य की निरंतरता में आरबीआई के लिए उद्यम स्तरीय प्रशिक्षण संस्थान हेतु पीसीएफ सेवाएँ।
- गेल, दिल्ली की जाफराबाद से दाहेज पाइपलाइन के लिए डीएफआर।
- आईओसीएल, पारादीप के लिए पारादीप रिफाइनरी से पारादीप पोर्ट नॉर्थ ऑयल जेटी तक बिटुमेन पाइपलाइन की स्थापना के लिए डीएफआर।
- नायरा एनर्जी लिमिटेड, गुजरात में सीडीयू–2 पुनरूद्धार के लिए व्यवहार्यता अध्ययन।
- बीआईओ–एटीएफ संयत्र, एमआरपीएल, मैंगलोर के लाइसेंसिंग, बीईडीपी, डीएफआर और परियोजना–पूर्व कार्यकलाप।

**अन्य**

- ओएनजीसी, हजीरा के ओएनजीसी हजीरा संयत्र में गैस टर्मिनल चरण–I भाग क की बहाली।
- आरआईएसएल, राजस्थान में मुख्यमंत्री डिजिटल सेवा योजना के लिए तृतीय पक्षकार एजेंसी सेवाएं।

- एमओएवयूए दिल्ली में मिलियन से अधिक जनसंख्या वाले चयनित 25 शहरों में बड़े पैमाने पर बायो–मिथेनेशन और अपशिष्ट से ऊर्जा परियोजनाओं की स्थापना के लिए तकनीकी मूल्यांकन और लेनदेन संबंधी सलाहकार सेवाएं।

**ग. विदेश से संबंधित कार्य**

**पीएमसी**

- नाइजीरिया के पीएडीएएचएलएनजी, नाइजीरिया में ग्रास रूट रिफाइनरी कम इंटेग्रेटेड पेट्रोकेमिकल कॉम्प्लेक्स के लिए अवधारणा अध्ययन हेतु परामर्श कार्य सेवाएं।
- एडीएनओसी अपतटीय, यूएई में एसएटीएएच / यूएडी परियोजना और यूएसएसयू परियोजनों के लिए संविदा संख्या–429493 के अंतर्गत कॉल–ऑफ–बेस पर पीएमसी सेवाएं।
- पीआईसी कुवैत में सहायता, बेलोज़ और पीडीएस वल्वस के संबंध में क्षेत्र सर्वेक्षण और तनाव विश्लेषण के लिए अभियांत्रिकी सेवाएं।

**ईपीसीएम**

- डांगोट, नाइजीरिया के लेक्की मुक्त व्यापार क्षेत्र, नाइजीरिया (भिन्नता आदेश संख्या 13 और 14) में 6,50,000 बीपीएसडी रिफाइनरी और 6,00,000 टीपीए पॉलीप्रोपाइलीन संयंत्र।

**डीएफआर**

- एडीएनओसी अपतटीय, यूएई में 1 एमएमबीडी चरण–1 परियोजना के लिए मौजूदा उत्पादित जल शोधन संयंत्र क्षमता को 200 एमबीडी से 300 एमबीडी तक करने से संबंधित ई11150–फीड अभियांत्रिकी सेवा।

**अन्य**

- ऊपरी जकुम सुविधाएं–एडीएनओसी अपचतटीय, संयुक्त अरब अमीरात के लिए संयंत्र संशोधन अनुरोध (पीएमआर) और अभियांत्रिकी कार्य अनुरोध (ईडब्ल्यूआर) (पैकेज –07)।
- डांगोट उर्वरक, नाइजीरिया के लिए शीतल जल संपर्क हाइड्रोलिक विश्लेषण और ताप परिवर्तक का थर्मल रूपरेखा।
- टीएसएसए / पीडीसी / ओएचएक्स / 049 / 2021–एडीएनओसी जीपी, यूएई के लिए सभी हब्शान 5 संयंत्र क्षेत्रों और क्षेत्र 3 के लिए पुनर्वैधीकरण के लिए सुरक्षा ज्ञापन।

**14.2.2.3. वित्तीय निष्पादन:**

वित्त वर्ष 2022–23 (सितंबर 2022 तक) के लिए कंपनी का कारोबार और कर पूर्व लाभ क्रमशः ₹ 1,587 करोड़ और ₹ 169 करोड़ था। वर्ष 2022–23 (सितंबर, 2022 तक) के लिए कंपनी के वित्तीय निष्पादन का विवरण अनुबंध–I और अनुबंध–II में संलग्न है।

**14.2.2.4. शुरू की गई नीतिगत पहल (दिसंबर, 2022 तक)**

वर्तमान वित्त वर्ष के दौरान की गई महत्वपूर्ण नीतिगत पहलों में निम्नलिखित शामिल हैं:

**क. मानव संसाधन विकास**

विभिन्न सतत मानव संसाधन अंतःक्षेप / उपायों के अतिरिक्त, वर्ष 2022–23 (दिसंबर 2022 तक) के दौरान निम्नलिखित पहल की गई थी:

i) आभासी शिक्षण और कर्मचारी नियुक्ति के लिए अवसर बढ़ाए गए।

ii) नेतृत्व विकास कार्यक्रम– आरोहण, छह महीने की लंबी यात्रा का उद्घाटन किया गया और कुछ सत्र आयोजित किए गए। इस कार्यक्रम का उद्देश्य सभी स्तरों (व्यापारिक नेतृत्व, कार्यात्मक नेतृत्व और युवा नेतृत्व) में सर्वश्रेष्ठ वर्ग के नेताओं का निर्माण करना है।

iii) सहज एकीकरण और मानव संसाधन सेवा वितरण के लिए मानव संसाधन सॉफ्टवेयर का निरंतर उन्नयन।

iv) बेहतर कार्य जीवन संतुलन और कर्मचारी नियुक्ति के लिए मानव संसाधन नीतियों की पुर्नलोकन और समीक्षा।

v) मजबूत प्रणाली और प्रक्रियाओं के निर्माण के लिए एचआर लेखा–परीक्षा किया गया।

vi) मूल्यांकन विकास केंद्रों के माध्यम से योग्यता मूल्यांकन के लिए संरचित और मजबूत तंत्र।

vii) नियमित ज्ञान साझा करने वाले सत्रों और विशेषज्ञ व्याख्यान श्रृंखला–"सुविज्ञ व्याख्यान" श्रृंखला के माध्यम से शिक्षण संस्कृति का निर्माण

viii) दर्पण आंतरिक फोटोग्राफी प्रतियोगिता, उर्जालेख: उद्योग में व्यापक तकनीकी पेपर लेखन प्रतियोगिता आदि जैसी "यूफोरिया" मंच के अंतर्गत मिलेनियल्स के लिए आयोजित कर्मचारी नियुक्ति कार्यकलाप।

iv) वार्षिक पुरस्कार समारोह के दौरान पुरस्कारों की प्रस्तुति द्वारा कर्मचारियों की पहचान।

v) कर्मचारी कल्याण और परिचालन के सुचारू संचालन को सुनिश्चित करने के लिए कोविड–19 वैश्विक महामारी के दौरान किए गए व्यापक प्रयास। बाधाओं के बावजूद निरंतर उत्पादकता को सक्षम बनाने के लिए मौजूदा नीतियों के विभिन्न प्रावधानों की समीक्षा की गई और नए प्रावधान बनाए गए।

vi) कार्यस्थल पर संवर्धित सुरक्षा नियम और स्वच्छता प्रोटोकॉल लागू किए गए हैं।

vii) प्रबंधन प्रशिक्षुओं और नए भर्ती होने वालों के लिए परामर्श अंतःक्षेप।

viii) नई माताओं की समस्याओं को दूर करने के लिए मदर टू मदर (एम2एम) न्यू मदर मार्गदर्शक कार्यक्रम आयोजित की गई।

**ख. प्रौद्योगिकी विकास**

**1.1 दिसंबर 2022 तक शुरू की गई प्रौद्योगिकी विकास परियोजनाएं**

i) अशुद्धियों की उपस्थिति में फ्लू गैसों से सीओ2 को पुनः प्राप्त करने के लिए विलायक द्रव का विकास।

ii) कोयले से मेथनॉल में रूपांतर के लिए डीपीआर विनिर्मित पदार्थ।

**1.2 दिसंबर 2022 तक किए गए प्रौद्योगिकी व्यावसायीकरण के प्रयास**

i) एमआरपीएल में डेमो बायो एटीएफ संयंत्र के लिए बीईडीपी, डीएफआर और परियोजना–पूर्व कार्यकलाप।

ii) एनटीपीसी में इलेक्ट्रोलाईजर से कैप्चर किए गए सीओ2 और एच2 से 10 टीपीडी एथेनॉल डेमो इकाई के लिए डीपीआर।

iii) ईआईएल–बीपीसीएल डिसाल्टर प्रौद्योगिकी का उपयोग कर बीपीसीएल–केआर में सीडीयू–3 डिसाल्टर प्रणाली का पुनर्स्थान।

iv) एनआरएल में डीसीयू पुनर्स्थान के अंतर्गत एलपीजीटीयू के लिए बुनियादी अभियांत्रिकी रूपरेखा पैकेज (बीईडीपी) की आपूर्ति।

v) एचएमईएल के लिए ईएनजीआरटी–एचटीआरटीएम सॉफ्टवेयर के माध्यम से सीडीयू तापन के निष्पादन में सुधार के लिए परामर्श कार्य सेवाएं।

**1.3. वित्त वर्ष 2022–23 के शेष तीन महीनों में आरएंडडी कार्यकलाप शुरू होने की संभावना है**

i) एसएपी (सुपर अवशोषक पोलीमॉर) उत्पादन के लिए प्रौद्योगिकी का विकास।

ii) सीएसआईआर–आईआईपी और ओईसीटी सहित प्राकृतिक गैस से हीलियम पुनःप्राप्ति के लिए संयुक्त प्रौद्योगिकी विकास।

iii) ताप परिवर्तक में हेलिकल बैफल्स का विकास।

iv) अमोनिया तोडते हुए एच2 की पुनःप्राप्ति के लिए प्रौद्योगिकी का विकास।

v) नुमालीगढ़ रिफाइनरी लिमिटेड में रिफाइनरी की कड़वी गैसों से जलीय अमोनिया के उत्पादन के लिए बीईडीपी तैयार करने से संबंधित कार्यकलाप।

**1.4 प्रौद्योगिकी गठजोड़ को मजबूत करने के लिए की गई पहल**

i) एनआरएल में अमोनिया समृद्ध कड़वी गैसों से जलीय अमोनिया के उत्पादन के लिए विकास और प्रदर्शन प्रौद्योगिकी हेतु नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल) के साथ समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए गए।

ii) विश्व स्तर पर ग्राहकों के लिए यूओपी की पेशकश के साथ–साथ ईआईएल की टीजीटीयू प्रौद्योगिकी की संभावित नियोजन का पता लगाने के लिए यूओपी को सक्षम बनाने हेतु यूओपी एलएलसी, यूएसए के साथ समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए गए।

iii) विभिन्न प्रौद्योगिकियों के सहयोगी विकास के लिए आईआईटी–कानपुर के साथ समझौता ज्ञापन पर हस्ताक्षर करने के लिए कार्यकलाप शुरू की गई।

iv) प्राकृतिक गैस से हीलियम की पुनःप्राप्ति के लिए संयुक्त प्रौद्योगिकी विकास हेतु सीएसआईआर–आईआईपी और ओईसीटी के साथ समझौता ज्ञापन पर हस्ताक्षर करने के लिए कार्यकलाप शुरू की गई।

v) मेम्ब्रेंस प्रौद्योगिकियों के क्षेत्रों में प्रौद्योगिकियों के संयुक्त विकास के लिए पर्मोनिक्स मेम्ब्रेन प्राइवेट लिमिटेड (पीएमपीएल) के साथ समझौता ज्ञापन पर हस्ताक्षर करने के लिए कार्यकलाप शुरू की गई।

vi) वित्त वर्ष 2022–23 के लिए सदस्यता का नवीनीकरण:

- प्रोसेस साइंस टेक्नोलॉजी सेंटर (पीएसटीसी), जो यूनिवर्सिटी ऑफ टेक्सास, यूएसए द्वारा शुरू किया गया उद्योग–अकादमिक सहयोगी अनुसंधान कार्यक्रम है।
- प्रेक्सोनेशन रिसर्च इनकॉर्पोरेटेड (एफआरआई), जो ओक्लाहोमा, संयुक्त राज्य अमेरिका में स्थित गैर–लाभकारी सहकारी अनुसंधान संगठन है।
- प्रोसेस इंटीग्रेशन रिसर्च कंसोर्टियम (पीआईआरसी), यूनिवर्सिटी ऑफ मैनचेस्टर ब्रिटेन।

**1.5 दिसंबर 2022 तक दायर/स्वीकृत पेटेंट**

i. इस वर्ष पहले दायर किए गए निम्नलिखित पेटेंट प्रदान किए गए थे:

क) क्रॉस फ्लो रिएक्टर

ख) अलवणीय प्रणाली की रूपरेखा

ग) सौर ऊर्जा का उपयोग कर गर्म पानी, ठंडा पानी और बिजली के उत्पादन की प्रक्रिया।

ii. निम्नलिखित नए पेटेंट दिसंबर 2022 तक दायर किए गए हैं:

क) औद्योगिक अपशिष्ट गैसों को शुद्ध और दुर्गन्ध मुक्त करने के लिए उपकरण और प्रणाली।

ख) प्रक्रिया से चलने वाले हीटर की वाहक समर्थित संरचना।

ग) प्रणाली का उपयोग करके चलने वाले हीटर को अनुकूलित करने की प्रक्रिया।

घ) निर्वात आसवन इकाई का बेहतर विन्यास और घटते कच्चे तेल के घटकों को अलग करने की प्रक्रिया।

**14.2.2.5. सीएसआर से संबंधित कार्यकलाप:**

ईआईएल समाज में कंपनी के समग्र योगदान को बढ़ाने के लिए आर्थिक, सामाजिक और पर्यावरणीय रूप से जिम्मेदार तरीके से काम करने के लिए प्रतिबद्ध है। कंपनी की सीएसआर नीति का उद्देश्य सामाजिक उत्थान की प्रक्रिया के माध्यम से, समावेशी विकास को बढ़ावा देकर और संधारणीय प्रक्रिया के माध्यम से पर्यावरण को पुनर्भरन करके लोगों के जीवन को समृद्ध बनाना है।

सीएसआर कार्यकलाप कंपनी अधिनियम की अनुसूची–VII और भारत सरकार के विभिन्न मंत्रालयों/विभागों द्वारा जारी किए गए परिपत्रों/संशोधनों/दिशा–निर्देशों और अधिसूचनाओं के अनुपालन में की जाती हैं। तथापि ईआईएल के सीएसआर संबंधी मुख्य ध्यान केन्द्र क्षेत्र निम्नानुसार हैं:

- शिक्षा/कौशल विकास
- स्वास्थ्य देखभाल और पोषण
- पेय जल /स्वच्छता
- ग्रामीण विकास
- पर्यावरण संरक्षण/संधारणीयता
- महिला सशक्तिकरण
- पूरक विशिष्ट सरकारी कार्यक्रम/योजनाएं

सीएसआर कार्यकलापों को हमारे परियोजना स्थलों/कार्यालयों और प्रधान कार्यालय सहित देश भर के विभिन्न स्थानों पर पिछड़े क्षेत्रों और बंचितों पर ध्यान केंद्रित करने के साथ स्थानीय, राज्य या केंद्र सरकार की सतत और नियोजित पहलों को पूरक/समर्थन करने हेतु निदेशित किया जाता है। दोहराव से बचने के लिए शुरू किए गए कार्यकलापों के संबंध में राज्य सरकारों, जिला प्रशासन, स्थानीय प्रशासन के साथ–साथ केन्द्र सरकार के विभागों/एजेंसियों, स्वयं सहायता समूहों के साथ सामंजस्य और परामर्श किया जाता है।

कंपनी अधिनियम 2013 के अनुसार, सीएसआर कार्यकलापों के लिए वित्त वर्ष 2022–23 में पिछले लगातार तीन वित्तीय वर्षों के दौरान किए गए औसत निवल लाभ का कम से कम 2% का बजटीय आवंटन किया गया है।

वित्त वर्ष 2022–23 (31 दिसंबर, 2022 तक) के दौरान महत्वपूर्ण क्षेत्र में पूरी की गई सीएसएर कार्यकलापों के परियोजना/कार्यकलाप वार संक्षिप्त विवरण निम्नानुसार हैं:–

शिक्षा/कौशल विकास–इस महत्वपूर्ण क्षेत्र के अंतर्गत पूरी की गई परियोजनाओं में पिछड़े वर्गों के 600 अभ्यर्थियों का आवासीय कौशल विकास प्रशिक्षण कार्यक्रम, उत्तर प्रदेश के तिलहर जिले के शाहजहाँपुर में एक पाठशाला में छह कक्षाओं और एक शौचालय का निर्माण कार्य शामिल है और रायबरेली (उत्तर प्रदेश) और गुवाहाटी (असम) में कौशल विकास संस्थानों में परिचालन निधि के लिए योगदान शामिल है।



पिछड़े वर्गों के अभ्यर्थियों के लिए आवासीय कौशल विकास प्रशिक्षण




उत्तर प्रदेश के तिलहर जिले के एक पाठशाला में
छह कक्षाओं का निर्माण किया गया

इस क्षेत्र में क्रियान्वित की जा रही परियोजनाओं में कबेन्नूर, धारवाड़, कर्नाटक में सरकारी स्कूल भवन का निर्माण; स्वच्छ विद्यालय अभियान के अंश के रूप में असम, तमिलनाडु और ओडिशा राज्य में ईआईएल द्वारा निर्मित स्कूली शौचालयों का अनुरक्षण; असम के दरांग जिले के सरकारी स्कूलों में अतिरिक्त 21 नग कक्षाओं का निर्माण; कौशल विकास संस्थान (एसडीआई), अहमदाबाद के परिचालन हेतु वित्त पोषण के लिए योगदान; और पुडुचेरी के कराईकल जिले के 2 सरकारी स्कूलों में अतिरिक्त कक्षाओं का निर्माण।



धारवाड़, कर्नाटक में निर्मित स्कूल



असम के दरांग जिले के सरकारी स्कूलों में कक्षा का निर्माण

इस महत्वपूर्ण क्षेत्र के अंतर्गत कार्यान्वयनाधीन स्वास्थ्य देखभाल एवं पोषण परियोजनाओं में इंदिरा गांधी मेडिकल कॉलेज एवं अनुसंधान संस्थान, पुडुचेरी में एनेस्थिसियोलॉजी, कान नाक गला, रेडियो निदान और मूत्रविज्ञान विभाग के लिए चिकित्सा उपकरणों की खरीद; असम के आकांक्षी जिले धुबरी में 140 नग मॉडल आंगनवाड़ी केंद्रों की स्थापना; उत्तराखंड के आकांक्षी जिले हरिद्वार में 600 मोतियाबिंद सर्जरी और चश्मे और दवाओं के वितरण सहित नेत्र जांच शिविरों के लिए सहायता; असम के चार आकांक्षी जिलों में अर्थात बाक्सा, उदालगुरी, बरपेटा और हैलाकांडी में नेत्र और स्वास्थ्य जांच शिविर आयोजित किया गया; और राजीव गांधी कैंसर संस्थान और अनुसंधान केंद्र,



धुबरी, असम में मॉडल आंगनवाड़ी केंद्र




हरिद्वार, उत्तराखंड में नेत्र जांच शिविर

नई दिल्ली के सामान्य वार्ड श्रेणी में 5 वंचित कैंसर रोगियों के उपचार के लिए सहायता शामिल हैं।

इस महत्वपूर्ण क्षेत्र के अंतर्गत कार्यान्वयनाधीन पर्यावरण संरक्षण परियोजना में पश्चिम बंगाल में दिव्यांगजनों के लिए आरोग्य संघन आवासीय देखभाल गृह में 40 किलोवाट रूफटॉप सौर ऊर्जा ग्रिड की स्थापना शामिल है।

### 14.2.2.6. एससी/एसटी/ओबीसी/पीडब्ल्यूडी से संबंधित कल्याण कार्य

अनुसूचित जाति/अनुसूचित जनजाति/अन्य पिछड़ा वर्ग/पीडब्ल्यूडी से संबंधित कल्याण कार्य अनुबंध–III में संलग्न है। विशेष संघटक योजना (एससीपी)/जनजातीय उप–योजना (टीएसपी) के अंतर्गत योजना संबंधी संक्षिप्त टिप्पणी अनुबंध–IV में संलग्न है।

### 14.2.2.7. महिला कर्मचारी

दिनांक 31 दिसंबर, 2022 तक ईआईएल के कर्मचारियों की कुल संख्या में 312 महिला कर्मचारी थीं।

वर्ष 2022–23 (दिसंबर, 2022 तक) में स्तरवार महिला कर्मचारियों का विवरण अनुबंध–V में संलग्न किया गया है।

**14.2.2.8. सरकार की राजभाषा नीति का अनुपालन**

विस्तृत टिप्पणी अनुबंध VI में संलग्न है।

**14.2.2.9. प्रदूषण नियंत्रण और अन्य पर्यावरण संबंधी पहल**

विस्तृत टिप्पणी अनुबंध VII में संलग्न है।

## अनुलग्नक-I

### योजना आबंटन और व्यय

| विवरण | वास्तविक | ब.अ. | सं.अ. | वास्तविक (अनंतिम) |
|---|---|---|---|---|
| | 2021-22 | 2022-23 | 2022-23 | 04.2022 से 09.2022 |
| इंजीनियर्स इंडिया लिमिटेड एक अभियांत्रिकी परामर्श कार्य संगठन होने के नाते इसमें कोई योजना (पूंजीगत) व्यय नहीं है। | | | | |

## अनुलग्नक-II

### उपक्रम के वित्तीय परिणाम

(₹ करोड़ में)

| विवरण | वास्तविक | ब.अ. | सं.अ. | वास्तविक (अनंतिम) |
|---|---|---|---|---|
| | 2021-22 | 2022-23 | 2022-23 | 04.2022 से 09.2022 |
| कारोबार | 2,870.40 | 3,669.22 | 3,261.31 | 1,586.99 |
| अन्य आय | 136.73 | 123.43 | 150.90 | 94.12 |
| कर पूर्व लाभ | 447.83 | 376.66 | 357.24 | 169.32 |
| कर पश्चात लाभ | 344.40 | 281.86 | 281.21 | 135.64 |

## अनुलग्नक-III

### एससी/एसटी/ओबीसी/पीडब्ल्यूडी से संबंधित कल्याण कार्य

वर्ष 2022–2023 (31 दिसंबर, 2022 तक) के लिए एससी/एसटी/ओबीसी/पीडब्ल्यूडी से संबंधित कल्याणकारी कार्यकलाप, एससी/एसटी/ओबीसी/पीडब्ल्यूडी भर्ती, एससी/एसटी/ओबीसी/पीडब्ल्यूडी की कमी, एससी/एसटी/ओबीसी/पीडब्ल्यूडी की कमी को कम करने के प्रयास, दिव्यांगजनों और अल्पसंख्यकों की भर्ती की स्थिति से संबंधित विवरण निम्नानुसार हैं:-

**(I) भर्ती संबंधी स्थिति:**

दिनांक 01.04.2022 से 31.12.2022 तक की अवधि के दौरान समूह 'क' पद में 20 अभ्यर्थियों और समूह 'ग' में 07 अभ्यर्थियों को शामिल किया गया है।

**(II) दिनांक 31.12.2022 तक की स्थिति के अनुसार एससी/एसटी/ओबीसी की कमी:**

| पदों की श्रेणी | एससी | एसटी | ओबीसी |
|---|---|---|---|
| समूह–क | 6 | 5 | 6 |
| समूह–ख | - | - | - |
| समूह–ग | - | - | - |
| समूह–घ | - | - | - |
| **योग** | **6** | **5** | **6** |

**(III) दिनांक 31.12.2022 की स्थिति के अनुसार दिव्यांगजनों की कमी:**

| पदों की संख्या | अंधापन और अल्प दृष्टि | बधिर और श्रवण दिव्यागता | गतिविषयक दिव्यांगता | आत्मकेन्द्रीत, बौद्धिक दिव्यांगता, बहु–विषयक दिव्यांगता, आदि |
|---|---|---|---|---|
| समूह–क | 2 | 1 | - | 1 |
| समूह–ख | - | - | - | - |
| समूह–ग | - | - | - | - |
| समूह–घ | - | - | - | - |
| **कुल** | **2** | **1** | **-** | **1** |

**(IV) अनुसूचित जाति/अनुसूचित जनजाति/अन्य पिछड़ा वर्ग/पीडब्ल्यूडी की कमी को कम करने के प्रयास:**

जब भी भर्ती की जाती है कंपनी इससे संबंधित कमी को कम करने के लिए हर संभव प्रयास करती है।

**(V) दिव्यांगजनों की भर्ती:**

वर्ष के दौरान 1 दिव्यांग व्यक्ति को भर्ती किया गया है।

**(VI) अल्पसंख्यक समुदाय के व्यक्तियों की भर्ती:**

वर्ष के दौरान अल्पसंख्यक समुदाय के 2 व्यक्ति को भर्ती किया गया है।

**(VII) दिव्यांगजनों के अधिकार अधिनियम, 2016 के कार्यान्वयन की स्थिति:**

आरपीडब्ल्यूडी अधिनियम के अनुसार ईआईएल द्वारा दिव्यांगजनों के आरक्षण का अनुपालन किया जा रहा है।

## अनुलग्नक-IV

## विशेष संघटक योजना (एससीपी)/जनजाति उप योजना (टीएसपी)

**योजना के अंतर्गत संक्षिप्त टिप्पणी**

एससीपी/टीएसपी के अंतर्गत कंपनी निम्नलिखित कार्यक्रम चलाती है:

### अनुसूचित जाति/अनुसूचित जनजाति के स्नातक अभियांत्रिकी छात्रों के लिए छात्रवृत्ति

सिविल, यांत्रिक, इलेक्ट्रिकल, इलेक्ट्रॉनिक्स, कंप्यूटर विज्ञान, औद्योगिक, रसायन या इंस्ट्रूमेंटेशन अभियांत्रिकी विषयों में पूर्णकालिक स्नातक अभियांत्रिकी कार्यक्रम करने वाले छात्र अभियांत्रिकी योग्यता के अध्ययन के पहले वर्ष से छात्रवृत्ति पाने के लिए पात्र हैं। यह योजना अध्ययन के दूसरे, तीसरे और चौथे वर्ष के दौरान जारी रहेगा। वित्त वर्ष 2022–23 (31 दिसंबर, 2022 तक) में अनुसूचित जाति के छात्रों के लिए ₹ 11.16 लाख और अनुसूचित जनजाति के छात्रों के लिए ₹ 4.86 लाख की छात्रवृत्ति राशि जारी की गई है।

अनुलग्नक-V

## महिला कर्मचारी

वर्ष 2022–23 (दिनांक 31 दिसम्बर, 2022 तक की स्थिति के अनुसार) में स्तर–वार महिला कर्मचारी निम्नानुसार हैं

| स्तर | दिनांक 31 दिसम्बर, 2022 तक की स्थिति के अनुसार संविदा कर्मचारी सहित महिलाओं की स्वीकृत संख्या | दिनांक 31 दिसम्बर, 2022 तक की स्थिति के अनुसार महिलाओं की संख्या |
|---|---|---|
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 4 | 0 |
| 5 | 16 | 1 |
| 6 | 10 | 1 |
| 7 | 41 | 6 |
| 8 | 23 | 3 |
| 9 | 30 | 10 |
| 10 | 12 | 0 |
| 12 | 189 | 47 |
| 13 | 259 | 31 |
| 14 | 294 | 52 |
| 15 | 875 | 72 |
| 16 | 364 | 41 |
| 17 | 234 | 20 |
| 18 | 220 | 22 |
| 19 | 61 | 4 |
| 20 | 18 | 1 |
| निदेशक | 5 | 0 |
| सीएंड एमडी | 1 | 1 |
| **कुल** | **2,656** | **312** |

अनुलग्नक-VI

# ईआईएल में राजभाषा नीति का अनुपालन

(दिसम्बर 2022 तक)

1. **राजभाषा नीति का कार्यान्वयन और नई पहल:**

   i. त्रैमासिक बैठकें नियमित रूप से आयोजित की गई जिनमें हिन्दी के प्रगामी प्रयोग की प्रगति की समीक्षा की गई। क्षेत्रीय/क्षेत्र/खरीद कार्यालयों की विभिन्न राजभाषा कार्यान्वयन समितियों की बैठकें भी निर्धारित कार्यक्रम के अनुसार आयोजित की गईं और वित्त वर्ष में निर्धारित चार बैठकों के लक्ष्यों को सभी कार्यालयों में प्राप्त कर लिया जाएगा।

   ii. राजभाषा अधिनियम की धारा 3(3) तथा राजभाषा नियमों के प्रावधानों का अनुपालन किया गया है।

   iii. नगर राजभाषा कार्यान्वयन समिति (टोलिक) की बैठकों में कंपनी के वरिष्ठ अधिकारियों ने भाग लिया था।

   iv. कर्मचारियों को नराकास के तत्वावधान में अन्य उपक्रमों द्वारा आयोजित सभी प्रतियोगिताओं के लिए नामित किया जाता है।

   v. आईटी के क्षेत्र में की गई पहल में सभी कंप्यूटरों में यूनिकोड सुविधाओं को सक्रिय करना, इंडिक आईएमई प्रदान करना, मानक नोटिंग के लिए बुकलेट, हिंदी में ईमेल हस्ताक्षर का पीडीएफ और कंप्यूटर पर गूगल वॉयस टाइपिंग और अन्य सॉफ्टवेयर और उपरोक्त सॉफ्टवेयर का प्रशिक्षण इस दौरान आयोजित हिंदी कार्यशाला में दिया गया। कर्मचारियों के सहज उपयोग के लिए कंपनी के पोर्टल पर आवश्यक हिंदी सॉफ्टवेयर, शब्दावली और अन्य सामग्री उपलब्ध की गई है।

   vi. राजभाषा के बेहतर क्रियान्वयन के लिए कार्यालयों और विभागों में राजभाषा निरीक्षण किए गए हैं।

2. **हिंदी शिक्षण और प्रशिक्षण:**

   भारत सरकार की राजभाषा नीति के अनुसरण में, गृह मंत्रालय के पत्राचार पाठ्यक्रम में नवनियुक्त कर्मचारी, जिन्हें हिंदी भाषा में काम करना नहीं आता, उन्हें नामित किया गया है। आशुलिपिक और टंकक के संबंध में शत-प्रतिशत लक्ष्य प्राप्त कर लिया गया है।

3. **हिन्दी कार्यशालाएं:**

   दिसंबर 2022 को समाप्त तिमाही तक विभिन्न कार्यालयों में 12 भौतिक कार्यशालाओं का आयोजन किया जा चुका है। शेष कार्यशालाओं का लक्ष्य वित्त वर्ष की समाप्ति से पहले प्राप्त कर लिया जाएगा।

4. **हिंदी पखवाड़ा समारोह:**

   कंपनी में दिनांक 14-29 सितंबर, 2022 के दौरान हिंदी पखवाड़ा मनाया गया। हिंदी के प्रगामी प्रयोग को प्रोत्साहित करने के लिए विभिन्न प्रतियोगिताओं का आयोजन किया गया जिसमें विजेताओं को पुरस्कृत किया गया। इस अवसर पर ऐसे विभागाध्यक्षों/कार्यालयाध्यक्षों तथा उनके हिन्दी समन्वयकों को पुरस्कृत किया गया जिन्होंने वर्ष के दौरान हिन्दी में सर्वाधिक कार्य किया है।

5. **राजभाषा पुरस्कार:**

   1) पेट्रोलियम और प्राकृतिक गैस मंत्रालय द्वारा वर्ष 2019-2020 के लिए राजभाषा प्रोत्साहन पुरस्कार ईआईएल को प्रदान किया गया है।

   2) नगर राजभाषा कार्यान्वयन समिति, गुरुग्राम द्वारा ईआईएल, आर एंड डी को "नराकास राजभाषा पुरस्कार वर्ष 2021-22" से सम्मानित किया गया है। इसी प्रकार, नवी मुंबई नरकस से उत्कृष्ट गृह पत्रिका "पहल" के लिए ईआईएल शाखा कार्यालय मुंबई ने दूसरा स्थान प्राप्त किया है।

   3) शाखा कार्यालय मुंबई की अर्धवार्षिक पत्रिका "पहल" को सार्वजनिक उपक्रम के गृह पत्रिका पहल की श्रेणी में नराकास द्वारा वर्ष 2022-2023 के लिए उत्कृष्ट गृह पत्रिका के लिए प्रथम पुरस्कार और नवी मुंबई नरकास के अंतर्गत वर्ष 2021-2022 के लिए तृतीय पुरस्कार से सम्मानित किया गया है।

**अनुलग्नक-VII**

## प्रदूषण नियंत्रण और अन्य पर्यावरण संबंधी पहल

ईआईएल प्रमुख जल पारिस्थितिक तंत्रों की सुरक्षा और बहाली करते हुए भारत और विदेशों में जल संसाधन प्रबंधन के लिए समाधान प्रदान कर रहा है। ईआईएल ने उद्योगों और नगर पालिकाओं में अभिनव और एकीकृत जल और अपशिष्ट जल प्रबंधन को अपनाने में मदद की है। ईटीपी आधुनिकीकरण/उन्नयन आवश्यकताएं, प्रक्रिया इकाइयों में खपत को कम करते हुए उद्योगों के ताजे पेयजल में कमी, और शोधित बहिस्त्राव के पुनर्चक्रण और पुनः उपयोग को अधिकतम करना हमारे रुपरेखा का अभिन्न अंग रहा है। ईआईएल ग्राहकों को उत्पादों/सेवाओं की वितरण के दौरान सभी स्वास्थ्य, सुरक्षा और पर्यावरण आवश्यकताओं का अनुपालन सुनिश्चित करने के लिए प्रतिबद्ध है। ईआईएल ने पर्यावरण अभियांत्रिकी के विविध क्षेत्रों में कई सौ परियोजनाओं को निष्पादित किया है, जिसमें पानी और अपशिष्ट जल शोधन; बहिस्त्राव पुनर्चक्रण और पुनः उपयोग; पर्यावरण प्रभाव मूल्यांकन अध्ययन; वायु गुणवत्ता मूल्यांकन, मॉडलिंग और नियंत्रण; पर्यावरण प्रबंधन योजनाएं, संधारणीय विकास पहल, पर्यावरण व्यवहार्यता अध्ययन आदि शामिल हैं ।

पर्यावरण क्षेत्र में इस वित्त वर्ष के दौरान कंपनी द्वारा की गई कुछ प्रमुख परियोजनाओं में निम्नलिखित शामिल हैं:

- आवासन और नगर कार्य मंत्रालय (एमओएचयूए) ने पूरे भारत में मिलियन से अधिक आबादी वाले 25 शहरों के लिए नगरपालिका ठोस अपशिष्ट को मूल्यवान संसाधनों (बिजली/जैव सीएनजी) में परिवर्तित करने के लिए ईआईएल को लेनदेन सलाहकार सेवाएं प्रदान की हैं।
- दीपक फेनोलिक्स लिमिटेड परियोजना के लिए परियोजना प्रबंधन परामर्श कार्य (पीएमसी) सेवाएं जिसमें जल और अपशिष्ट जल शोधन और बहिस्त्राव पुनर्चक्रण सुविधाएं शामिल हैं।
- आईओसीएल की पानीपत रिफाइनरी पी–25 परियोजना के लिए परियोजना प्रबंधन परामर्श कार्य (पीएमसी) सेवाएं जिसमें जल और अपशिष्ट जल शोधन, बहिस्त्राव पुनर्चक्रण और शून्य तरल निर्वहन सुविधाएं शामिल हैं।
- सीपीसीएल की नागपट्टनम रिफाइनरी परियोजना के लिए परियोजना प्रबंधन परामर्श कार्य (पीएमसी) सेवाएं जिसमें जल और अपशिष्ट जल शोधन और बहिस्त्राव पुनर्चक्रण सुविधाएं शामिल हैं।
- गेल उसर परिसर परियोजना के लिए परियोजना प्रबंधन परामर्श कार्य (पीएमसी) सेवाएं जिसमें जल और अपशिष्ट जल शोधन, बहिस्त्राव पुनर्चक्रण और शून्य तरल निर्वहन सुविधाएं शामिल हैं।
- मंगोलिया में कच्चे तेल की रिफाइनरी के लिए परियोजना प्रबंधन परामर्श कार्य (पीएमसी) सेवाएं जिसमें जल और अपशिष्ट जल शोधन और बहिस्त्राव पुनर्चक्रण सुविधाएं शामिल हैं।
- एचआरआरएल राजस्थान रिफाइनरी परियोजना के लिए ताजे पानी की खपत को कम करने के लिए शून्य तरल निर्वहन अवधारणा को पूरा करने हेतु बहिस्त्राव पुनर्चक्रण और पुनः उपयोग सहित जल और अपशिष्ट जल शोधन सुविधाएं कार्यान्वित की जा रही हैं।
- मैंगलोर में एमआरपीएल की रिफाइनरी विस्तार परियोजना और बीना में भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल) रिफाइनरी की विस्तार परियोजना के लिए पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय (एमओईएफसीसी) से पर्यावरण संबंधी मंजूरी सफलतापूर्वक प्राप्त की गई थी।
- पर्यावरण प्रभाव मूल्यांकन अध्ययन परियोजनाओं को पूरा करने के लिए ईआईएल को पहले से ही भारतीय गुणवत्ता परिषद (क्यूसीआई) द्वारा मान्यता प्राप्त है और यह मान्यता दिनांक 22.11.2023 तक वैध है।

## 14.3. मिनी रत्न पीएसयू

### 14.3.1. बामर लॉरी एंड कंपनी लिमिटेड (बीएल):

बामर लॉरी एंड कंपनी लिमिटेड (बीएल) बहु–विषयक प्रौद्योगिकी, बहु–स्थलों में स्थित कंपनी है जिसका मुख्यालय कोलकाता में है और इसका संचालन पूरे भारत में फैला हुआ है। दुबई और इंडोनेशिया में संयुक्त उद्यमों सहित कंपनी के महत्वपूर्ण अंतरराष्ट्रीय व्यापार हित हैं। कंपनी की भारत में एक सहायक कंपनी और कई संयुक्त उद्यम भी हैं। कंपनी का व्यावसायिक हित विनिर्माण और सेवाओं दोनों दिशाओं में विस्तारित है। दिनांक 31 मार्च, 2022 तक कंपनी की प्राधिकृत और प्रदत्त पूंजी क्रमशः ₹ 300 करोड़ और ₹ 171 करोड़ थी। बामर लॉरी इन्वेस्टमेंट्स लिमिटेड, जो एक सरकारी कंपनी है, के पास कंपनी के ₹ 10 के 10,56,79,350 इक्विटी शेयर हैं (प्रदत्त इक्विटी पूंजी का लगभग 61.80% है)। कंपनी ने वर्ष 2020–21 में ₹ 1,592.77 करोड़ की तुलना में वर्ष 2021–22 के दौरान ₹ 2,104.85 करोड़ का निवल कारोबार किया है, जो पिछले वर्ष की तुलना में लगभग 32% की वृद्धि को दर्शाता है। वर्ष 2020–21 में ₹ 156.65 करोड़ की तुलना में वर्ष 2021–22 में ₹ 170.14 करोड़ का कर पूर्व लाभ प्राप्त किया जिसमें पिछले वर्ष की तुलना में लगभग 9% की वृद्धि मुख्य रूप से विनिर्माण व्यवसायों के कारोबार और लाभप्रदता में वृद्धि के कारण हुआ है।

### 14.3.2. चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड

**1. चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड (सीपीसीएल) रिफाइनरी**

चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड (सीपीसीएल), जिसे पहले मद्रास रिफाइनरीज लिमिटेड (एमआरएल) के नाम से जाना जाता था, का गठन 1965 में भारत सरकार (जीओएल), एएमओसीओ और नेशनल इरानी ऑयल कंपनी (एनआईओसी) के बीच एक संयुक्त उद्यम के रूप में किया गया था। एएमओसीओ ने सन 1985 में भारत सरकार के पक्ष में सीपीसीएल इक्विटी का विनिवेश किया। बाद में भारत सरकार ने अपनी इक्विटी आईओसीएल को हस्तांतरित कर दी और सीपीसीएल वर्ष 2001 में आईओसीएल की एक सहायक कंपनी बन गई। मनाली रिफाइनरी की वर्तमान क्षमता 105 एमएमटीपीए है।

सीपीसीएल मनाली रिफाइनरी ईंधन, ल्यूब, मोम और पेट्रोरसायन फीडस्टॉक उत्पादन सुविधाओं सहित भारत की सबसे मिश्रित रिफाइनरियों में से एक है। अपनी रिफाइनरी की पानी की आवश्यकताओं को बढ़ाने के लिए 5.8 एमजीडी समुद्री जल विलवणीकरण परियोजना उद्योग जैसी पहल करने वाली पहली कंपनी है।

सीपीसीएल के पास प्रति वर्ष 30,000 मीट्रिक टन (एमटी) क्षमता का मोम संयंत्र है, जो मोमबत्ती, जलरोधक सूत्रीकरण और माचिस मोम के निर्माण के लिए पैराफिन मोम का उत्पादन करता है। पड़ोसी अनुप्रवाह उद्योगों को पेट्रोरसायन फीडस्टॉक की आपूर्ति करने के लिए 17,000 मीट्रिक टन प्रति वर्ष की प्रारंभिक क्षमता के साथ सन 1988 में एक प्रोपलीन संयंत्र शुरू किया गया था। सन 2004 में प्रोपलीन उत्पादन क्षमता को 30,000 मीट्रिक टन प्रति वर्ष तक बढ़ाने के लिए इकाई का नवीनीकरण किया गया था।

कंपनी के मुख्य उत्पाद में एलपीजी, मोटर स्पिरिट, सुपीरियर केरोसिन, एविएशन टर्बाइन फ्यूल, हाई स्पीड डीजल, नेफ्था, बिटुमेन, ल्यूब बेस स्टॉक, पैराफिन वैक्स, फ्यूल ऑयल, हेक्सेन, पेट्रोरसायन फीड स्टॉक और पेट्रोलियम कोक शामिल हैं। सीपीसीएल लिनीयर एल्काइल बेंजीन के निर्माण के लिए अनुप्रवाह इकाई को लिनीयर एल्किल बेंजीन फीडस्टॉक (एलएबीएफएस) की आपूर्ति भी करता है।

नागपट्टिनम में स्थित सीपीसीएल की दूसरी रिफाइनरी को सन 1993 में शुरू किया गया था। यह कावेरी बेसिन रिफाइनरी (सीबीआर) पास के ओएनजीसी क्षेत्रों, रावा कच्चे तेल और केजी–डी 6 कच्चे तेल से कच्चे तेल का प्रसंस्करण करने वाली एक छोटी स्त्रोत रिफाइनरी थी। सीबीआर को मौजूदा समाकृति के उत्पाद विनिर्देशों को पूरा न कर पाने के कारण दिनांक 01.04.2019 से बंद कर दिया गया है। पेट्रोरसायन सुविधा के साथ–साथ 9.0 एमएमटीपीए क्षमता की एक नई रिफाइनरी का निर्माण कार्य प्रगति पर है।

**2. शेयरधारिता पैटर्न:**

| दिनांक 31.12.2022 तक की स्थिति के अनुसार सीपीसीएल की शेयरधारिता पैटर्न | |
|---|---|
| **विवरण** | **शेयर की %** |
| इंडियन ऑयल कार्पोरेशन लि. | 51.89 |
| नेपतीरन इंटर–ट्रेड निगम लि. | 15.40 |
| सार्वजनिक (कर्मचारी सहित) | 22.02 |
| एनबीएफसी | 0.00 |
| निकाय निगम | 0.91 |
| बैंक | 0.00 |
| म्युचुअल फंड और यूटीआई | 1.28 |
| विदेशी संस्थानिक निवेशक | 0.00 |
| पात्र संस्थानिक क्रेता | 1.90 |
| वैकल्पिक निवेश निधि | 0.07 |
| आईईपीएफ | 0.34 |
| अनिवासी भारतीय / ओसीबी / विदेशी पोर्टफोलिओ–निगम / अनिवासी भारतीय (अप्रत्यावर्तनीय) / विदेशी नागरिक | 6.19 |
| **कुल** | **100** |

**3. दिनांक 31 दिसंबर, 2022 तक इस मंत्रालय के अंतर्गत सार्वजनिक क्षेत्र के उपक्रमों/संगठनों में अनुसूचित जाति, अनुसूचित जनजाति, अन्य पिछड़ा वर्ग, पीडब्ल्यूबीडी से संबंधित बैकलॉग रिक्तियों का विवरण**

| सीपीसीएल | समूह क | | | | समूह ख | | | | समूह ग | | | | समूह घ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | अजा | अजजा | अपिव | दिव्यांग जन | अजा | अजजा | अपिव | दिव्यांग जन | अजा | अजजा | अपिव | दिव्यांग जन | अजा | अजजा | अपिव | दिव्यांग जन |
| | शून्य | शून्य | शून्य | शून्य | शून्य | 1$ | शून्य | शून्य | 1 | शून्य | 2 | 6 | शून्य | शून्य | शून्य | शून्य |

$ - दिव्यांगजन के लिए भी आरक्षित (भर्ती पूरी की गई है, अभ्यर्थी के शीघ्र ही कार्यभार ग्रहण करने की संभावना है)

**4. महिला कर्मचारी:**

दिनांक 31 दिसंबर, 2022 तक की स्थिति के अनुसार सीपीसीएल में महिला कर्मचारियों की कुल संख्या की तुलना में कर्मचारियों की कुल संख्या नीचे दी गई है:

| कर्मचारियों की कुल संख्या | महिला कर्मचारियों की कुल संख्या |
|---|---|
| 1,455 | 76 |

**5. निष्पादित आंकड़े**

**i) भौतिक निष्पादन**

कंपनी ने वर्ष 2021–22 में 9,040 टीएमटी (हजार मीट्रिक टन) कच्चे तेल का प्रसंस्करण किया था और अप्रैल से दिसंबर, 2022 की अवधि में 8,364 टीएमटी कच्चे तेल का प्रसंस्करण किया था।

सीपीसीएल ने वर्ष 2022–23 (दिसंबर, 2022 तक) में 75.93% का कुल आसवन प्राप्त किया है।

सीपीसीएल ने वर्ष 2022–23 (दिसंबर, 2022 तक) में 75.93% का कुल आसवन प्राप्त किया है।

| मापदंड | 2021–22 वास्तविक | 2022–23 (दिसम्बर 22 तक) |
|---|---|---|
| कच्चे तेल की प्रवाह क्षमता (एमएमटी) | 9.040 | 8.364 |
| आवसन उपज (%) | 74.93 | 75.93 |

**ii) वित्तीय निष्पादन**

वित्त वर्ष 2021–22 के दौरान, सीपीसीएल ने वर्तमान वित्त वर्ष 2022–23 में 60,402 करोड़ रुपये का कारोबार किया, दिसंबर 2022 तक का कारोबार 69,464 करोड़ रुपये है। वित्तीय निष्पादन का विवरण निम्नानुसार है:

(₹ करोड़ में)

| मापदंड | 2021-22 वास्तविक | 2022-23 (दिसम्बर 22 तक) |
|---|---|---|
| कारोबार | 60,402 | 69,464 |
| कर पूर्व लाभ | 1,832 | 3,421 |
| कर पश्चात लाभ | 1,342 | 2,530 |

**iii) परियोजनाएं**

**क. पूरी की गई प्रमुख परियोजनाएं**

**क) आरएलएनजी परियोजना:**

इस परियोजना का उद्देश्य एचजीयू में फीड (नेफ्था के स्थान पर) के रूप में आरएलएनजी का हाइड्रोजन रिफॉर्मर, जीटी, यूटिलिटी बॉयलर और प्रसंस्करण तापक में ईंधन के रूप में उपयोग करना है।

- हाइड्रोजन उत्पादन इकाई–एचजीयू–214 में आरएलएनजी रूपांतरण मार्च 2019 में पूरा हुआ।
- हाइड्रोजन उत्पादन इकाई–एचजीयू–205 में आरएलएनजी रूपांतरण अक्टूबर 2021 में पूरा हुआ।
- अगस्त 2021 तक सभी पांच जीटी और छह बॉयलरों में से पांच आरएलएनजी रूपांतरण को प्रगामी रूप से पूरा कर लिया गया है।
- यूटिलिटी बॉयलर–बॉयलर–5 में आरएलएनजी रूपांतरण जनवरी 2022 में पूरा किया गया।

आरएलएनजी परियोजनाओं की स्वीकृत लागत ₹ 421 करोड़ है। अनुमानित परियोजना लागत के संबंध में दिसंबर 2021 तक वित्तीय प्रगति ₹ 315 करोड़ था जो लगभग 95% है।

**ख. कार्यान्वयनाधीन प्रमुख परियोजनाएं**

**क) सीबीआर में रिफाइनरी का विस्तार:**

चेन्नई पेट्रोलियम कार्पोरेशन लिमिटेड (सीपीसीएल) भारतीय तेल के साथ मिलकर ₹ 31,580 करोड़ की अनुमानित लागत से नागपट्टिनम में 90 एमएमटीपीए कावेरी बेसिन रिफाइनरी एंड पेट्रोकेमिकल्स प्रोजेक्ट (सीबीआरपीएल) कार्यान्वित कर रहा है। यह परियोजना सीपीसीएल और आईओसीएल के साथ संयुक्त उद्यम (जेवी) मोड में शुरू की जाएगी, जिसमें प्रत्येक का इक्विटी हिस्सेदारी 25% होगा और शेष 50% कार्यनीतिक / वित्तीय भागीदारों द्वारा होगा।

इस रिफाइनरी में एलपीजी, पेट्रोल, डीजल और बीएस–VI के विनिर्देशों को पूरा करने के लिए एटीएफ और पॉलीप्रोपाइलीन का मूल्य वर्धित उत्पाद के रूप में उत्पादन किया जाएगा। यह परियोजना देश के आत्मनिर्भर भारत के परिदृश्य के अनुरूप इंडमैक्स, ऑक्टामैक्स आदि जैसी कई स्वदेशी तकनीकों का उपयोग करती है।

परियोजना की आधारशिला माननीय प्रधान मंत्री द्वारा दिनांक 17–फरवरी–2021 को रखी गई थी। यह परियोजना न केवल भारत की ऊर्जा सुरक्षा में वृद्धि करेगी, बल्कि रोजगार के अवसर भी सृजन करेगी (परियोजना निर्माण चरण के दौरान 25,000 लोगों सहित प्रतिदिन12,000 कार्यबल और 600 प्रत्यक्ष रोजगार और परियोजना के संचालन चरण के दौरान 2,000 अप्रत्यक्ष रोजगार) और क्षेत्र के आर्थिक विकास को बढ़ावा देगी।

अभियांत्रिकी, खरीद, निर्माण और प्रबंधन (ईपीसीएम) सलाहकारों (इंजीनियर्स इंडिया लिमिटेड, मैकडरमॉट और टाटा कंसल्टिंग इंजीनियर्स) को तैयार किया गया है और विस्तृत अभियांत्रिकी, निविदा और खरीद संबंधी कार्यकलाप प्रगति पर हैं। मौजूदा रिफाइनरी का निराकरण कार्य पूरा कर लिया गया है और स्थल ग्रेडिंग, निर्माण विद्युत और निर्माण जल कार्यों जैसे कार्य जमीनी स्तर पर गति पकड़ रहे हैं। टाउनशिप बनाने के लिए वास्तुकला संबंधी कार्य भी प्रगति पर है।

वर्तमान में, सभी प्रमुख उपस्करों, कार्य संविदाओं (एलएसटीके और बीओओ सहित), पैकेजों के लिए

अन्वेषण जारी है और ये निविदा, मूल्यांकन और अधिनिर्णय के विभिन्न चरणों में हैं। परियोजना के लिए टीएन–सरकार द्वारा अतिरिक्त भूमि का अधिग्रहण उन्नत चरण में है। भूमि अधिग्रहण पूरा होने के बाद परियोजना को वर्ष 2026 के मध्य तक पूरा किया जाना है।

संयुक्त उद्यम कंपनी के निगमन का प्रमाण पत्र दिनांक 06 जनवरी 23 को कॉर्पोरेट कार्य मंत्रालय से प्राप्त हुआ था और संयुक्त उद्यम की पहली बोर्ड बैठक दिनांक 16 जनवरी 23 को आयोजित की गई थी।

**ग) भावी परियोजनाएं**

सीपीसीएल बेहतर एलओबीएस उत्पादन के लिए समूह–2 ल्यूब ऑयल बेस स्टॉक के उत्पादन के लिए परियोजना लागू करने की योजना बना रही है। सीपीसीएल/आईओसीएल बोर्डों से प्रथम चरण का अनुमोदन प्राप्त हो गया है और बीडीईपी तैयारी जैसी परियोजना–पूर्व कार्यकलाप संबंधी कार्य प्रगति पर हैं।

**6. कॉर्पोरेट सामाजिक दायित्व और संधारणीय विकास:**

**1. स्वास्थ्य देखभाल**

क) **सामुदायिक स्वास्थ्य केंद्र:** एक बाह्य एजेंसी अर्थात मेसर्स वॉकहार्ट फाउंडेशन के माध्यम से रिफाइनरी के आसपास की जनता को आंख, दंत चिकित्सा, फिजियोथेरेपी और हेमेटोलॉजी विश्लेषण से संबंधित मुफ्त स्वास्थ्य देखभाल सेवाएं प्रदान करने के लिए सीपीसीएल द्वारा मनाली और चेन्नई में सामुदायिक स्वास्थ्य केंद्र का संचालन और अनुरक्षण किया जा रहा है।

ख) **मोबाइल चिकित्सा इकाई (एमएमयू):** एक बाह्य एजेंसी अर्थात मैसर्स हेल्पेज इंडिया के माध्यम से मनाली और तमिलनाडु के रामनाथपुरम (आकांक्षी जिले) के लगभग 10 गांवों में और उसके आसपास सामान्य स्वास्थ्य देखभाल सेवाएं प्रदान करने के लिए सीपीसीएल द्वारा मोबाइल चिकित्सा इकाई (एमएमयू) का संचालन किया जा रहा है।

**2. कोविड वैश्विक महामारी के दौरान सहायता**

क) ₹ 500.19 लाख की लागत से केरल और कर्नाटक में पीएसए ऑक्सीजन संयंत्र स्थापित किया गया।

ख) सीपीसीएल ऑक्सीजन संयंत्र से चिकित्सा ऑक्सीजन की निरंतर आपूर्ति सहित मनाली रिफाइनरी परिसर में अनुसंधान एवं विकास केंद्र में 60 बिस्तरों की सुविधा के साथ मेक शिफ्ट कोविड देखभाल केंद्र की स्थापना की गई।

**3. स्वच्छ भारत**

क) सरकारी अस्पतालों, सरकारी संस्थानों, महाविद्यालयों आदि में सार्वजनिक उपयोगिताओं का निर्माण किया गया।

ख) सर्व शिक्षा विभाग के माध्यम से विद्यालयों में शौचालयों का निर्माण किया गया।

ग) गांवों में पेयजल की व्यवस्था की गई।

**4. शिक्षा और कौशल विकास**

क) मनाली रिफाइनरी के आसपास के गरीबों और जरूरतमंदों के लाभ के लिए शिक्षा न्यास की स्थापना और उसका संचालन।

ख) युवाओं के ग्राफिक कौशल विकास हेतु जरूरतमंद लड़कियों/महिलाओं के लिए दर्जी से संबंधित कौशल और दृष्टि दिव्यांगों के लिए कंप्यूटर कौशल में योगदान दिया।

## 14.3.3. मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल)

**14.3.3.1. कंपनी का संक्षिप्त विवरण:**

मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल) श्रेणी–1 मिनीरत्न, "अनुसूची–क" सीपीएसई है और यह तेल और प्राकृतिक गैस निगम लिमिटेड (ओएनजीसी) की एक सहायक कंपनी है।

रिफाइनरी में 24 से 46 एपीआई गुरुत्वाकर्षण सहित कच्चे तेल को संसाधित करने की उच्च लचीलेपन सहित बहुमुखी प्रतिभा है और इसमें उच्च स्तर की स्वचालन प्रक्रिया है। एमआरपीएल भारत की एकमात्र रिफाइनरी है जिसमें प्रीमियम डीजल (हाई सेटेन) का उत्पादन करने वाले 2 हाइड्रोक्रैकर हैं और हाई ऑक्टेन के अनलेडेड पेट्रोल का उत्पादन करने वाले 2 सीसीआर हैं।

रिफाइनरी की वर्तमान क्षमता 15 एमएमटीपीए है। एमआरपीएल ने पिछले वर्ष 2020–21 के दौरान 11.47 एमएमटी कच्चे तेल की प्रवाह क्षमता की तुलना में वर्ष 2021–22 के दौरान 14.87 एमएमटी की अब तक की सबसे अधिक कच्चे तेल की प्रवाह क्षमता प्राप्त किया है, जिसमें 29.64% की वृद्धि दर्ज की गई है। एमआरपीएल पे वित्त वर्ष 2020–21 के दौरान ₹ 761.17 करोड़ की हानि की तुलना में वित्त वर्ष 2021–22 के दौरान ₹ 2,955.27 करोड़ का कर पश्चात लाभ (पीएटी) प्राप्त किया है।

एमआरपीएल कर्नाटक और आसपास के राज्यों में पेट्रोलियम उत्पादों बाजार के प्रत्यक्ष बिक्री खंड का प्रमुख हिस्सा है। एमआरपीएल बिटुमेन, ईंधन तेल, डीजल, सल्फर, पेटकोक, जाइलोल (जाइलीन) आदि जैसी प्रत्यक्ष बिक्री उत्पादों के अपने विपणन क्षेत्र में अग्रणी बना हुआ है। एमआरपीएल ने अपने नेटवर्क को विकसित करने के दौरान नए रेलवे

उपभोक्ता डिपो को सीधे डीजल की आपूर्ति करना शुरू कर दिया है। वित्त वर्ष 2021–22 के दौरान सभी उत्पादों की कुल घरेलू बिक्री मात्रा ₹ 11,033 करोड़ के बिक्री मूल्य सहित 1,988 टीएमटी रही है, जो पिछले वर्ष की बिक्री मूल्य ₹ 7,207 करोड़ से लगभग 53.08% अधिक है।

एमआरपीएल नए और विशिष्ट ग्रेड की पेशकश करते हुए पॉलीप्रोपाइलीन की अपनी बाजार हिस्सेदारी में वृद्धि करना जारी रखा है। जुलाई, 2021 के दौरान 43,111 टीएमटी उत्पादन की तुलना में अक्टूबर, 2021 के महीने में 43,267 टीएमटी का उच्चतम पीपी उत्पादन प्राप्त किया गया। 440 टीएमटी की विनिर्दिष्ट क्षमता की तुलना में वित्त वर्ष 2021–22 में 460 टीएमटी का अब तक का सर्वोत्तम पॉलीप्रोपाइलीन उत्पादन प्राप्त किया गया।

एमआरपीएल ने 828 टीएमटी की बिक्री मात्रा सहित लगातार आधार पर पेटकोक के अपने संपूर्ण उत्पादन का सफलतापूर्वक विपणन किया है। कंपनी ने अपने विपणन क्षेत्र में लगभग 191 टीएमटी सल्फर की बिक्री की है और अधिशेष सल्फर को बड़े आकार के पार्सल के रूप में निर्यात किया जा रहा है।

एमआरपीएल लगातार कर्नाटक और केरल राज्यों में अपने खुदरा बिक्री केन्द्रों के विस्तार पर ध्यान केंद्रित कर रहा है और अब तक सफलतापूर्वक 32 खुदरा बिक्री केन्द्र शुरू कर चुका है और अन्य 20 खुदरा बिक्री केन्द्र के निर्माण कार्य प्रक्रियाधान हैं। अगले 5–10 वर्षों में प्रति वर्ष 50 नए खुदरा बिक्री केन्द्र खोलने और निकटतम मध्यम अवधि में तमिलनाडु, आंध्र प्रदेश और तेलंगाना के नए भौगोलिक क्षेत्रों में प्रवेश करने की योजना है।

मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल) के साथ ओएनजीसी मैंगलोर पेट्रोकेमिकल्स लिमिटेड (ओएमपीएल) के समामेलन को कॉर्पोरेट कार्य मंत्रालय, नई दिल्ली ने अपने अंतिम आदेश दिनांक 01/04/2021 के साथ 14/04/2022 को नियत तिथि के रूप में अनुमोदित किया था और ओएमपीएल और एमआरपीएल के समामेलन की योजना की प्रभावी तिथि दिनांक 01/05/2022 है।

शेल एमआरपीएल एविएशन फ्यूल एंड सर्विसेज लिमिटेड (एमआरपीएल का संयुक्त उद्यम) ने भारतीय हवाई अड्डों पर एविएशन टर्बाइन इंधन (एटीएफ) की बिक्री में तेजी से कारोबार किया है। कंपनी ने पिछले वित्त वर्ष 2020–21 में ₹ 260.50 करोड़ के कारोबार की तुलना में वित्त वर्ष 2021–22 के दौरान ₹ 673.19 करोड़ का कारोबार किया है।

### 14.3.3.2. परियोजनाएं

#### बीएस–VI का उन्नयन

ऑटो ईंधन नीति और पेट्रोलियम और प्राकृतिक गैस मंत्रालय (एमओपीएनजी) के निदेशों के अनुसार, संपूर्ण देश एमएस और एचएसडी के लिए बीएस–VI गुणवत्ता विनिर्देशों की ओर बढ़ है। इस परियोजना में नई इकाइयों और अतिरिक्त सुविधाओं की स्थापना शामिल है। इस कार्य के लिए मेसर्स इंजीनियर्स इंडिया लिमिटेड अभियांत्रिकी, खरीद और निर्माण प्रबंधन सलाहकार था। मुख्य इकाई–एफजीटीयू को दिनांक 11.07.2021 को शुरू किया गया, जिसके परिणामस्वरूप अतिरिक्त 25 टीएमटी/माह बीएस–VI एमएस प्राप्त हुआ। शेष दो इकाइयां अर्थात नाइट्रोजन संयंत्र और एसआरयू–7 को क्रमशः दिनांक 16.03.2022 और 28.03.2022 को शुरू किया गया था।

#### विलवणीकरण संयंत्र

गर्मी/कमजोर मानसून के दौरान रिफाइनरी के निरंतर संचालन को सुनिश्चित करने और नेत्रावती नदी के ताजे पानी का एकमात्र स्रोत होने के जोखिम को कम करने के लिए 30 एमएलडी क्षमता (पैमाना 70 एमएलडी तक) का विलवणीकरण संयंत्र स्थापित किया गया है।

न्यू मैंगलोर पोर्ट ट्रस्ट से पट्टे पर ली गई भूमि पर मैंगलोर के थन्नीरभावी में अरब सागर के तट पर संयंत्र स्थापित किया गया है। मैसर्स फिच्टनर इंडिया परियोजना प्रबंधन सलाहकार था और मैसर्स वीए टेक वबाग लिमिटेड एलएसटीके का संविदाकार था। संयंत्र को दिनांक 30.12.2021 को शुरू किया गया था और यह तैयार की गई रूपरेखा के आधार पर लगातार काम कर रहा है, जबकि परमीएट (विलवणीकृत पानी) आवश्यक विनिर्देशों के अनुसार है।

#### देवनगोंठी में विपणन टर्मिनल

मुख्य रूप से कर्नाटक राज्य में व्यवसाय को पूरा करने के लिए देवनगोंठी, बेंगलुरु में विपणन टर्मिनल का निर्माण किया जा रहा है। यह टर्मिनल एमआरपीएल से मौजूदा पीएमएचबी पाइपलाइन के माध्यम से तैयार पेट्रोलियम उत्पाद (एमएस, एचएसडी और एटीएफ) प्राप्त करेगा। खुदरा बिक्री केन्द्र/ग्राहकों/विमानन स्टेशनों को पेट्रोलियम

उत्पादों की आपूर्ति सड़क टैंकरों के माध्यम से की जाएगी। मैसर्स नौवता इंजीनियरिंग प्राइवेट लिमिटेड परियोजना का सलाहकार है। टैंकेज और संबंधित सिविल, यांत्रिक, पाइपिंग, विद्युत, इंस्ट्रूमेंटेशन और अग्निशमन के लिए एलएसटीके निविदाकार मैसर्स विशाल स्ट्रक्चरल्स प्राइवेट लिमिटेड है और सिविल और संरचनात्मक कार्यों के लिए मैसर्स एसआरआर प्रोजेक्ट्स प्राइवेट लिमिटेड संविदाकार है। निर्माण से संबंधित कार्यकलाप शुरू हो गई हैं और यह टर्मिनल वित्त वर्ष 2023–24 की तीसरी तिमाही तक पूरा हो जाएगा।

**2जी एथेनॉल**

कर्नाटक राज्य में 2जी एथेनॉल परियोजना स्थापित करने के लिए पेट्रोलियम और प्राकृतिक गैस मंत्रालय द्वारा एमआरपीएल को मंजूरी दी गई है। इसके लिए भूमि कर्नाटक औद्योगिक क्षेत्र विकास बोर्ड (केआईएडीबी) द्वारा हरिहर, दावणगेरे में आवंटित की गई है। परियोजना के लिए प्रौद्योगिकी का चयन कर लिया गया है और विस्तृत व्यवहार्यता रिपोर्ट तैयार कर ली गई है। एमआरपीएल ने भारत सरकार से व्यवहार्यता अंतर निधियन के लिए आवेदन किया है और परियोजना के लिए पर्यावरणीय स्वीकृति प्रतीक्षित है।

**प्राकृतिक गैस फायरिंग के लिए गैस टर्बाइन का संशोधन**

एमआरपीएल के पास दो गैस टर्बाइन हैं। वर्तमान में, जीटी–1 को लाइट साइकिल ऑयल और जीटी –2 को रिफाइनरी ईंधन गैस द्वारा निकाला जाता है। दोनों गैस टर्बाइनों को प्राकृतिक गैस के साथ संचालित करने के लिए तैयार किया गया है। परियोजना में प्राकृतिक गैस फायरिंग के लिए गैस टर्बाइन में संशोधन शामिल है। मैसर्स एलएंडटी–एसएल परियोजना प्रबंधन सलाहकार थे और मैसर्स बीजीजीटीएस को परियोजना के निष्पादन के लिए संविदा दिया गया था। इस परियोजना को दिनांक 24.12.2021 को शुरू किया गया था।

**सीसीआर –1 पुर्नोत्थान**

सीसीआर–1 गैसोलीन मिश्रण के लिए भारी नेफ्था फीडस्टॉक को उच्च ऑक्टेन रिफॉर्मेट में परिवर्तित करता है और हाइड्रो ट्रीटींग / हाइड्रोक्रैकिंग के लिए हाइड्रोजन का उत्पादन करता है। रीजनरेटर कोक बर्न क्षमता को बढ़ाने के लिए सीसीआर–1 के रीजनरेटर सेक्शन का पुर्नोत्थान किया जा रहा है, जिसके परिणामस्वरूप समग्र क्षमता में 80 एम3 / घंटा (वर्तमान 75 एम3 / घंटा से) की वृद्धि हो सकती है। मैसर्स ट्राइयून एनर्जी सर्विसेज प्राइवेट लिमिटेड परियोजना का अभियांत्रिकी, खरीद और निर्माण प्रबंधन सलाहकार है। प्रमुख कार्य पूरा हो चुका है और स्थल पर उपकरण वितरण शुरू हो गई है। परियोजना का यांत्रिक संबंधी कार्य वित्त वर्ष 2023–24 की पहली तिमाही में समाप्त होने की संभावना है।

**पीएफसीसी स्टैक वेट गैस स्क्रबर प्रणाली**

पेट्रोकेमिकल फ्लूइडाइज्ड कैटेलिटिक क्रैकिंग (पीएफसीसी) इकाई हाइड्रोक्रैकर इकाइयों से अपरिवर्तित तेल को संसाधित करती है, सीधे कम सल्फर वैक्यूम गैस तेल और हाइड्रो शोधित भारी कोकर गैस तेल चलाती है और प्रोपलीन, एलपीजी और गैसोलीन जैसे मूल्य वर्धित उत्पादों में परिवर्तित हो जाती है। इस प्रक्रिया के दौरान, उत्प्रेरक पर कार्बन जमा होता है जो क्रैकिंग प्रक्रिया की सहायता के लिए उत्प्रेरक की क्षमता को कम करता है। कार्बन को फिर जला दिया जाता है और उत्प्रेरक को पुनर्जीवित किया जाता है। पुनर्जनन प्रक्रिया फ्लू गैस का उत्पादन करती है जो उत्प्रेरक फाइन को हटाने के लिए चक्रवातों और विभाजकों की एक प्रणाली से गुजरती है। इस परियोजना की परिकल्पना प्रदूषण नियंत्रण उपाय के रूप में पीएफसीसी की फ्लू गैस में एसपीएम सीमा को कम करने के लिए की गई है। मैसर्स थिसेनक्रुप इंडस्ट्रियल सॉल्यूशंस (इंडिया) प्राइवेट लिमिटेड परियोजना प्रबंधन सलाहकार है और मैसर्स कल्पतरु पावर ट्रांसमिशन लिमिटेड परियोजना के लिए एलएसटीके संविदाकार है। इस परियोजना का यांत्रिक संबंधी कार्य वित्त वर्ष 2023–24 की दूसरी तिमाही में समाप्त होने की संभावना है।

**पीएफसीसी एलपीजी+प्रोपलीन अमाइन स्क्रबर**

पेट्रोकेमिकल फ्लूइडाइज्ड कैटेलिटिक क्रैकिंग (पीएफसीसी) में उच्च सल्फर सामग्री के साथ फीड को संसाधित करते समय, एलपीजी और प्रोपलीन प्रवाह में उच्च हाइड्रोजन सल्फाइड (एच2 एस) होने की उम्मीद होती है। एलपीजी और प्रोपलीन उत्पाद में एच2 एस को पूरा करने के लिए वर्तमान प्रणाली कास्टिक वॉश है। अमाइन स्क्रबर प्रणाली कास्टिक वॉश पर निर्भरता को काफी हद तक कम करती है। यह प्रणाली एलपीजी और प्रोपलीन प्रवाहों में एच2 एस को हटा देती है और मौजूदा कास्टिक शोधन प्रणाली में व्यय किए गए कास्टिक उत्पादन को कम करती है। मैसर्स ट्राइयून एनर्जी सर्विसेज प्राइवेट

लिमिटेड परियोजना का अभियांत्रिकी, खरीद और निर्माण प्रबंधन सलाहकार है। इस परियोजना का यांत्रिक संबंधी कार्य वित्त वर्ष 2023–24 की दूसरी तिमाही में समाप्त होने की संभावना है।

**मौजूदा बिटुमेन ब्लोइंग यूनिट के विस्तार के अंश के रूप में नई बिटुमन ब्लोइंग ट्रेन**

इस परियोजना में बाजार की मांग का लाभ उठाने के लिए वीजी–30 और वीजी–40 ग्रेड के बिटुमेन की समकालिक मांग को पूरा करने के लिए मौजूदा बिटुमेन ब्लोइंग इकाई के विस्तार के अंश के रूप में 144 केटीपीए की क्षमता वाली अतिरिक्त बिटुमेन ब्लोइंग ट्रेन की स्थापना की परिकल्पना की गई है। मैसर्स इंजीनियर्स इंडिया लिमिटेड परियोजना का अभियांत्रिकी, खरीद और निर्माण प्रबंधन सलाहकार है। इस परियोजना का यांत्रिक संबंधी कार्य वित्त वर्ष 2023–24 की तीसरी तिमाही में समाप्त होने की संभावना है।

### 14.3.3.3. मानव संसाधन:

- वित्त वर्ष 2021–22 के दौरान, आपकी कंपनी ने सभी कर्मचारियों के साथ सौहार्दपूर्ण और सामंजस्यपूर्ण संबंध बनाए रखा और इसके प्रमाण के रूप में किसी भी औद्योगिक गड़बड़ी के कारण एक भी कार्य–घंटे का नुकसान नहीं हुआ।
- दिनांक 31 दिसंबर 2026 तक की अवधि के लिए एमआरपीएल कर्मचारी संघ के साथ दीर्घावधि समझौता वर्तमान वित्त वर्ष में किया गया था।
- कुल कर्मचारियों की संख्या 2,100 थी जिसमें 146 महिला कर्मचारी, 322 अनुसूचित जाति/जनजाति के कर्मचारी और 37 दिव्यांग कर्मचारी शामिल थे। 923 कर्मचारी प्रबंधन संवर्ग के हैं जबकि 1,177 कर्मचारी गैर–प्रबंधन संवर्ग के हैं।
- दिनांक 31/03/2022 तक की स्थिति के अनुसार एरोमैटिक कॉम्प्लेक्स में कुल कर्मचारियों की संख्या 472 थी। जिसमें से 179 कर्मचारी प्रबंधन संवर्ग के थे और 293 कर्मचारी गैर–प्रबंधन संवर्ग के थे। इसमें 297 परियोजना विस्थापित परिवार (पीडीएफ) अभ्यर्थी शामिल थे। एरोमैटिक कॉम्प्लेक्स में कार्यरत 83 महिला कर्मचारियों की संख्या कुल कार्यबल का 18 प्रतिशत से भी अधिक है।

### 14.3.3.4. उर्जा संरक्षण:

वर्ष के दौरान लागू किए गए प्रमुख ऊर्जा संरक्षण उपाय निम्नानुसार हैं:

- महत्वपूर्ण डैम्पर्स के प्रतिस्थापन के माध्यम से स्टैक तापमान अनुकूलन द्वारा सीडीयू1 हीटर (बीए 1001 और वीडीयू–हीटर (बीए 1101) की थर्मल दक्षता में सुधार।
- सीडीयू–2/वीडीयू–2 सीएपीएच (कास्ट आयरन एयर प्री–हीटर) प्रतिस्थापन।
- पीएचटी (प्री–हीट ट्रेन) में ताप पुनः प्राप्ति के लिए सीडीयू–1/2 केरो–अंतरसंबंध।
- इकोनोमाइजर के निष्पादन में सुधार–(इंटर आइस ब्लास्टिंग यूबी–3 और 4)।
- पीएफसीसी–एनएसयू (नेफ्था स्प्लिटर इकाई) स्टॉपेज।
- एचजीयू–3 (हाइड्रोजन उत्पादन इकाई–3) में नेफ्था को आरएलएनजी से बदलना।
- वीडीयू–III (वैक्यूम डिस्टिलेशन इकाई–3) में वैक्यूम कॉलम के अधिकतम दबाव को कम करना।
- सीएचटी फीड चार्ज पंप जीए 34101 क/ख, उसी ढक्कन के साथ पंप को बड़ी क्षमता वाले पंप में बदलें।
- टीजीटीयू में शमन कॉलम बॉटम पंप को रोकना।
- डीसीयू में डब्ल्यूजीसी एंट सर्ज कंट्रोलर ट्यूनिंग।
- टीडीएलएस विश्लेषण ईआर/सीडीयू–2 हीटर आर्क भाग पर आधारित अतिरिक्त 02 का अनुकूलन।
- वीडीयू–2 हीटर का तार एमपी भाप को कम करना।
- वीडीयू–2 हीटर कॉइल्स में एमपी भाप को कम करते हुए 297 एमटीओई ऊर्जा की बचत हुई है जो 2,970 जीसीएएल/वर्ष के बराबर है।
- एच2 को रोकना, योजनाओं को लागू करके पीपीयू में स्पिल बैक के माध्यम से कंप्रेसर सक्शन के लिए हाइड्रोजन के आंतरिक पुनर्चक्रण द्वारा जगमगाना, प्राप्त निवल ऊर्जा बचत 19,214 मीट्रिक टन तेल समकक्ष (एमटीओई)/वर्ष है जो 1,92,140 जीसीएएल/वर्ष के बराबर है।

### 14.3.3.5. सुरक्षा से संबंधित निष्पादन:

- एमआरपीएल ने वित्त वर्ष 2021–22 में सफलतापूर्वक शून्य आरएलटीआई प्राप्त किया है।

- दिनांक 31.03.2022 तक की स्थिति के अनुसार एमआरपीएल में कर्मचारी और संविदा श्रमिकों के मामले में क्रमशः 2,120 और 638 दिन तक कोई रिपोर्टेबल लॉस्ट टाइम इंजरी (आरएलटीआई) दर्ज नहीं हुई हैं।
- एमआरपीएल ने वर्ष 2021 में कारखाना, बॉयलर विभाग औद्योगिक सुरक्षा और स्वास्थ्य विभाग, केरल सरकार से 2 राज्य स्तरीय पुरस्कार प्राप्त किए हैं।
- तेल उद्योग श्रेणी के अंतर्गत सर्वश्रेष्ठ सुरक्षित उद्योग पुरस्कार।
- कोजेन बॉयलर श्रेणी के अंतर्गत सुरक्षित संचालन, अनुरक्षण और विश्वसनीय बॉयलर।
- दिनांक 31.03.2022 तक की स्थिति के अनुसार, एमआरपीएल के कर्मचारियों ने 29.4 सुरक्षित मिलियन कार्य घंटे हासिल किए।
- एसआरयू–7, ऑफसाइट सुविधा और जेटी के लिए एचएसडी लाइन हेतु ओआईएसडी शुरूआत पूर्व सुरक्षा लेखा–परीक्षा आयोजित किया गया।

**14.3.3.6. पर्यावरण प्रबंधन:**

- बीएस–VI परियोजना नामतः एफजीटीयू और एसआरयू–7 और ऑफसाइट सुविधाओं और शुरू करने के लिए केएसपीसीबी द्वारा संचालन हेतु सहमति (सीएफओ) प्रदान की गई।
- तन्नेरुवावी गांव में 30एमएलडी डिसेलिनेशन इकाई और इसे शुरू करने के लिए केएसपीसीबी द्वारा संचालन हेतु सहमति (सीएफओ) प्रदान की गई।
- देवनगोंठी, बैंगलोर में विपणन टर्मिनल स्थापित करने के लिए स्थापना सहमति (सीएफई) प्राप्त की गई।
- दावणगेरे में प्रस्तावित 2जी–एथेनॉल परियोजना के लिए राज्यिक पर्यावरण प्रभाव आकलन प्राधिकरण (एसईआईएए), केरल सरकार द्वारा पर्यावरण समाशोधन के लिए संस्तुति की गई थी। पीसीसीएफ–डब्ल्यूएल, बैंगलोर से वन्यजीव संरक्षण योजना प्रमाणीकरण कार्य प्रगति पर है।
- प्रस्तावित पेट्रो एडिशन एंड कैपेसिटी इनहांसमेंट परियोजना (पेस) का पर्यावरण प्रभाव आकलन संबंधी आधारभूत निगरानी अध्ययन पूरा हो गया है।
- एसपीसीबी अधिकृत सीमेंट उद्योगों में 81.43 एमटी ऑयली स्लज, 208.99 एमटी पीएफसीसी स्पेंट कैटेलिस्ट और 183.8 एमटी स्पेंट क्ले को सह–संस्करण किया गया है।
- एसपीसीबी अधिकृत रिसाइकलर्स/रिप्रोसेसरों के माध्यम से 846.5 एमटी व्यय किए गए कैटेलिस्ट का निपटान किया गया है।
- एसपीसीबी अधिकृत भस्मीकरण सुविधा के माध्यम से 7.31 मीट्रिक टन अपशिष्ट सफेद तेल का निपटान किया जा चुका है।
- 304.19 मीट्रिक टन गैर–पुनर्चक्रण/गैर–पुनः प्रयोज्य खतरनाक अपशिष्ट सुरक्षित लैंडफिल (टीएसडीएफ) को सौंप दिया गया।
- वित्त वर्ष 21–22 के दौरान मैंगलोर शहर से 65,87,079 एम³ टर्शियरी शोधित नगरपालिका का मलजल एमआरपीएल में उपयोग किया गया।
- एमआरपीएल ने उच्च प्रौद्योगिकी केन्द्र (सीएचटी), एमओपीएनजी के सहयोग से पर्यावरण और जल प्रबंधन पर कार्यकलाप समिति की बैठक (एसीएम) की मेजबानी की। एसीएम का उद्देश्य रिफाइनरियों द्वारा सर्वोत्तम परिचालन कार्यप्रणालियों, मामला अध्ययन, संशोधनों और समस्या निवारण को साझा करना है।
- इंडिया ग्रीन मैन्युफैक्चरिंग चैलेंज 2020–21 के लिए इंटरनेशनल रिसर्च इंस्टीट्यूट फॉर मैन्युफैक्चरिंग (आईआरआईएम) ने एमआरपीएल को स्वर्ण पदक से सम्मानित किया

**14.3.3.7. कॉर्पोरेट सामाजिक दायित्व पहल:**

- सीएसआर उद्देश्य कंपनी अधिनियम, 2013 की अनुसूची-VII और डीपीई दिशानिर्देशों के अनुरूप है और इसे संरक्षण के नाम से संवर्धित किया जाता है। यह हमारे व्यवसाय के क्षेत्र में और उसके आसपास सामाजिक, सांस्कृतिक और पर्यावरणीय विरासत और धन की सुरक्षा, संरक्षण और संवर्धन और सतत विकास की शुरूआत करने की भावना और प्रतिबद्धता को दर्शाता है।
- की गई कुछ सीएसआर पहलें निम्नानुसार हैं: पुनर्वास कॉलोनी में प्राथमिक स्वास्थ्य केंद्र का संचालन, ओवरहेड पानी की टंकी का निर्माण, कर्नाटक राज्य अग्निशमन सेवा के लिए शीट छत वाली प्रशिक्षण बैरक का निर्माण, सभागार, सामुदायिक केन्द्र, सार्वजनिक उद्यान का विकास, आंगनवाड़ियों का निर्माण, अतिरिक्त कक्षाओं का निर्माण, महिला विश्राम कक्ष, समुद्र तट विकास, अवसंरचना विकास, बोरवेल और सबमर्सिबल पंप की खुदाई, पाइपलाइन, ओपीडी ब्लॉक का निर्माण, सरकारी स्कूलों में प्रौद्योगिकी आधारित शिक्षा का विस्तार, मैंगलोर में कृत्रिम अंग शिविर का आयोजन, सीएसआर बजट की

उपलब्धता के आधार पर संरक्षण कार्यकलाप के अंश के रूप में प्रधान मंत्री स्वच्छ भारत अभियान के अनुसार सरकारी स्कूलों में शौचालयों का निर्माण कार्य पूरा कर लिया गया है।

**14.3.3.8. पुरस्कार और सम्मान:**

वर्ष के दौरान, कंपनी को निम्नलिखित पुरस्कारों और सम्मानों से सम्मानित किया गया है:

- एमआरपीएल को इंडिया ग्रीन मैन्युफैक्चरिंग चैलेंज 2020–21 के लिए अंतरराष्ट्रीय विनिर्माण अनुसंधान संस्थान (आईआरआईएम) द्वारा स्वर्ण पदक से सम्मानित किया गया है।
- एमआरपीएल ने वर्ष 2021 में कारखाना, बॉयलर विभाग, औद्योगिक सुरक्षा और स्वास्थ्य, केरल सरकार से 2 राज्य स्तरीय पुरस्कार प्राप्त किए हैं।
- एमआरपीएल ने तेल और गैस उद्योग में सर्वोत्तम सुरक्षा कार्यप्रणाली का पुरस्कार जीता है।

**14.3.3.9. वित्तीय निष्पादन संबंधी विशेषताएं**

| अवधि | | वि.व. 2018-19 | वि.व.2019-20 | वि.व.2020-21 | वि.व.2021-22 |
|---|---|---|---|---|---|
| प्रवाह क्षमता | एमएमटी | 16.43 | 14.14 | 11.50 | 15.05 |
| कारोबार (सकल) | ₹ करोड़ | 72,283 | 60,728 | 50,796 | 86,064 |
| ईबीआईटीडीए | ₹ करोड़ | 1,809 | (2,430) | 797 | 5,003 |
| पीबीटी | ₹ करोड़ | 581 | (3,955) | (915) | 2,708 |
| पीएटी | ₹ करोड़ | 332 | (2,708) | (761) | 2,955 |
| जीआरएस | $/बीबीएल | 4.06 | (0.23) | 3.90 | 8.73 |




एमआरपीएल एचआईक्यू–प्रथम खुदरा व्यापारी सम्मेलन



चिकित्सा ग्रेड ऑक्सीजन का उद्घाटन



सतर्कता जागरूकता सप्ताह–2021

### 14.3.4. ओएनजीसी विदेश लिमिटेड (ओवीएल)

ओएनजीसी विदेश लिमिटेड, भारत की प्रमुख राष्ट्रीय तेल कंपनी (एनओसी) ऑयल एंड नेचुरल गैस कॉर्पोरेशन लिमिटेड (ओएनजीसी) की पूर्ण स्वामित्व वाली सहायक और विदेशी शाखा है। कंपनी का प्राथमिक व्यवसाय विदेशों में तेल और गैस के एकरवार क्षेत्रफल तलाशना है, जिसमें विदेशी क्षेत्रों में तेल और गैस से संबंधित क्षेत्रों का अधिग्रहण और साथ ही तेल और गैस की खोज, उत्पादन, परिवहन और बिक्री शामिल है। दिनांक 01 अप्रैल 2022 तक की स्थिति के अनुसार, ओएनजीसी विदेश के पास दुनिया भर में फैले आरक्षित के 2 पी के 494.865 एमएमटीओई और 2 सी आकस्मिक संसाधनों के 120.049 एमएमटीओई हैं। आरक्षित और उत्पादन के संदर्भ में, ओएनजीसी विदेश भारत की दूसरी सबसे बड़ी पेट्रोलियम कंपनी है, जिसका स्थान इसकी मूल कंपनी ओएनजीसी के बाद है। ओएनजीसी विदेश ने वर्ष 2021–22 में भारत के घरेलू उत्पादन का लगभग 27.3% तेल और 19.4% तेल और प्राकृतिक गैस का उत्पादन किया। (स्रोत: पीपीएसी)

वर्तमान में, ओएनजीसी विदेश की 15 देशों में 32 तेल और गैस परियोजनाओं में हिस्सेदारी है, अर्थात् अज़रबैजान (2 परियोजनाएं), बांग्लादेश (2 परियोजनाएं), ब्राजील (2 परियोजनाएं), कोलंबिया (4 परियोजनाएं), ईरान (1 परियोजना), इराक (1 परियोजना), लीबिया (1 परियोजना), मोजाम्बिक (1 परियोजना), म्यांमार (6 परियोजनाएं), रूस (3 परियोजनाएं), दक्षिण सूडान (2 परियोजनाएं), सीरिया (2 परियोजनाएं), संयुक्त अरब अमीरात (1 परियोजना), वेनेजुएला (2 परियोजनाएं), और वियतनाम (2 परियोजनाएं)।

ओएनजीसी विदेश संतुलित पोर्टफोलियो दृष्टिकोण अनुकूलित करता है और उत्पादन, अभिनिश्चित, अन्वेषण और पाइपलाइन परिसंपत्तियों के संयोजन को बनाए रखता है। वर्तमान में, ओएनजीसी विदेश को 14 परिसंपत्तियों से तेल और गैस का उत्पादन प्राप्त हो रहा है, इसमें से 04 परिसंपत्तियों में हाइड्रोकार्बन अभिनिश्चित की गई है और इस संबंध में विकास कार्य विभिन्न चरणों में हैं, 11 परिसंपत्तियां अन्वेषण के विभिन्न चरणों में हैं और 3 परियोजनाएं पाइपलाइन परियोजनाएं हैं।

ओएनजीसी विदेश तेल और गैस क्षेत्र के सर्वश्रेष्ठ उद्योग के साथ प्रतिस्पर्धा करके अत्यधिक प्रतिस्पर्धी अंतरराष्ट्रीय तेल और गैस क्षेत्र में काम करता है। पिछले कुछ वर्षों में ओएनजीसी विदेश ने अपने परिचालन क्षेत्रों में अंतर्निहित क्षमताओं और विशेषज्ञता का सृजन किया है। ओएनजीसी विदेश ने एक्सॉनमोबिल, ब्रिटिश पेट्रोलियम, शेल, ईएनआई, टोटलएनर्जीज, रेपसोल, इक्विनोर, एमओएल, पेट्रोब्रास, सोडेको, एजेडएसीजी, रोसनेफ्ट, एडीएनओसी, पॉरको इंटरनेशनल, पेट्रो वियतनाम, सीएनपीसी, सिनोपेक, पीडीवीएसए, पेट्रोनास और इकोपेट्रोल सहित कई आईओसी और एनओसी के साथ मजबूत साझेदारी गठबंधन विकसित किया है।

ओएनजीसी विदेश में उत्कृष्ट तकनीकी और प्रबंधन क्षमताओं सहित अत्यधिक कुशल मानव संसाधन है। कंपनी ने तेल और गैस परियोजनाओं के मूल्यांकन, प्रस्तुतिकरण, आर्थिक मॉडलिंग, फीड, रूपरेखा और निष्पादन संबंधी सुविधाओं का सृजन किया है और ओएनजीसी से तकनीकी और मानव संसाधन समर्थन प्राप्त किया है। ओएनजीसी विदेश ने सम्यक उद्यम,प्रौद्योगिकी वाणिज्यिक मूल्यांकन, बोली वार्ता और लेन–देन प्रलेखन में मुख्य विशेषज्ञता विकसित की है।

ओएनजीसी विदेश अपनी पूर्ण स्वामित्व वाली सहायक कंपनियों, ओएनजीसी नील गंगा बी.वी., ओएनजीसी अमेजन अलकनंदा लिमिटेड, इम्पीरियल एनर्जी लिमिटेड, कारबोबो वन एबी और ओएनजीसी विदेश सिंगापुर पीटीई लिमिटेड के साथ तेल और तेल समतुल्य गैस (ओ + ओईजी) के उत्पादन में वित्त वर्ष 2022 के दौरान 12.330 एमएमटीओई हिस्सेदारी थी। वर्ष 2022–23 के दौरान, वित्त वर्ष 2023 के प्रथम छमाही तक ओएनजीसी विदेश की अपनी परियोजनाओं से तेल और गैस उत्पादन में हिस्सेदारी 4.951 मिलियन मैट्रिक टन है।

### 14.3.5. नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल)

#### 14.3.5.1. प्रस्तावना

नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल) की स्थापना 22 अप्रैल, 1993 को हुई थी। एनआरएल की स्थापना 15 अगस्त, 1985 को भारत सरकार द्वारा हस्ताक्षरित "असम समझौते" में निहित है। एनआरएल, ऑयल इंडिया लिमिटेड (ओआईएल) की सहायक कंपनी है और असम के गोलाघाट जिले के नुमालीगढ़ में 3.0 एमएमटीपीए पेट्रोलियम रिफाइनरी का संचालन करती है। एनआरएल श्रेणी–1 मिनीरत्न पीएसयू है। दिनांक 31.03.2021 तक की स्थिति के अनुसार, एनआरएल की शेयरधारिता में ऑयल इंडिया लिमिटेड (ओआईएल) की 80.16% हिस्सेदारी, असम सरकार (जीओए) की 15.47% हिस्सेदारी और इंजीनियर्स इंडिया लिमिटेड (ईआईएल) की 4.37% हिस्सेदारी थी। दिनांक 31.03.2021 को कंपनी की कुल परिसंपत्ति ₹ 5,596 करोड़ थी।

एनआरएल की रिफाइनरी में उन्नत माध्यमिक प्रसंस्करण प्रौद्योगिकियों के कारण उच्च मिश्रिता कारक है जिसने उच्च डिस्टिलेट उपज की उपलब्धि

को सक्षम बनाया है। एनआरएल के उत्पाद सूची में एलपीजी, नेफ्था, मोटर स्पिरिट (एमएस), एविएशन टर्बाइन फ्यूल (एटीएफ), उत्कृष्ट केरोसिन तेल (एसकेओ) मिनरल तारपीन तेल (एमटीओ), हाई स्पीड डीजल (एचएसडी), कच्चा / कैल्सीन्ड पेट्रोलियम कोक (आरपीसी / सीपीसी), सल्फर और पैराफिन मोम शामिल हैं।

एनआरएल का नुमालीगढ़ में 42 टीएमटीपीए क्षमता वाला एलपीजी बॉटलिंग संयंत्र है। कंपनी के दो विरणन टर्मिनल हैं– पहला नुमालीगढ़, असम में और दूसरा सिलीगुड़ी, बंगाल में जहां से उत्पाद सड़क और रेल द्वारा भेजे जाते हैं। एमएस, एसकेओ और एचएसडी जैसी अतिरिक्त व्हाइट ऑयल उत्पाद भी ऑयल इंडिया लिमिटेड के स्वामित्व और संचालित नुमालीगढ़–सिलीगुड़ी उत्पाद पाइपलाइन (एनएसपीएल) के माध्यम से नुमालीगढ़ से सिलीगुड़ी तक पहुंचाए जाते हैं।

एनआरएल गुणवत्ता प्रबंधन के लिए आईएसओ 9001, पर्यावरण प्रबंधन के लिए आईएसओ 14001, व्यावसायिक स्वास्थ्य और सुरक्षा के लिए ओएचएसएएस 18001, सूचना सुरक्षा प्रबंधन प्रणाली के लिए आईएसओ 27001 और ऊर्जा प्रबंधन के लिए आईएसओ 50001 के अंतर्गत प्रमाणित है।

### 14.3.5.2. निष्पादन

एनआरएल प्रतिवर्ष निरंतर लाभप्रदता के साथ काम कर रहा है। एनआरएल देश में सभी पीएसयू तेल रिफाइनरियों में उच्चतम डिस्टिलेट उपज प्राप्त करने में सफल रहा है। एनआरएल की विनिर्दिष्ट ऊर्जा खपत (एसईसी) और सकल रिफाइनिंग मार्जिन (जीआरएम) उद्योग में सर्वश्रेष्ठ स्थान रखता है।

पिछले तीन वर्षों और वर्तमान वित्त वर्ष के अप्रैल–दिसंबर 22 के दौरान एनआरएल के भौतिक और वित्तीय निष्पादन संकेतक निम्नानुसार हैं:

**भौतिक निष्पादन:**

| मापदंड | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल–दिस.) |
|---|---|---|---|---|
| कच्चे तेल प्राप्ति (टीएमटी) | 2,409 | 2,612 | **2,661** | **2,187** |
| कच्चे तेल की प्रवाह क्षमता (टीएमटी) | 2,383 | 2,707 | **2,624** | **2,358** |
| क्षमता उपयोगिता (%) | 79.00 | 90.24 | **87.47** | **104.8** |
| आसुत उपज (%) | 83.0 | 86.36 | **85.69** | **88.07** |
| विनिर्दिष्ट ऊर्जा खपत (एमबीएन)* | 65.0 | 64.37 | **63.51** | **61.66** |
| ऊर्जा तीव्रता सूचकांक (ईआईआई) | 86.3 | 86.99 | **84.68** | **82.61** |

**वित्तीय निष्पादन**

| मापदंड | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|
| बिक्री कारोबार (₹/करोड) | 18,511 | **14,072** | **18,543** | **23,546** |
| पीबीटी (₹/करोड) | 3,052 | **1,735** | **4,083** | **4,848** |
| पैट (₹/करोड) | 1,968 | **1,381** | **3,036** | **3,562** |
| जीआरएम ($/बीबीएल) | 11.80 | **7.99** | **4.09** | **14.33** |
| निवल मूल्य | 5,551 | **5,240** | **5,596** | **8,388** |

### 14.3.5.3. परियोजनाएं

**कार्यान्वयनाधीन परियोजनाएं**

**क) 3 एमएमटीपीए से 9 एमएमटीपीए तक रिफाइनरी का विस्तार:**

एनआरएल वर्तमान में संबंधित पाइपलाइनों के साथ अपनी विस्तार परियोजना को क्रियान्वित कर रहा है। मैसर्स एसबीआई कैपिटल मार्केट्स लिमिटेड, मुंबई को रिफाइनरी विस्तार परियोजना के लिए ₹ 15,102 करोड़ के ऋण सिंडिकेशन के लिए नियुक्त किया गया है।

एकीकृत रिफाइनरी विस्तार परियोजना का विवरण निम्नानुसार है:

क) नुमालीगढ़, गोलाघाट, असम में 6 एमएमटीपीए रिफाइनरी:

- एनआरएल ने परियोजना के निष्पादन के लिए पीएमसी और ईपीसीएम परामर्शदाताओं को नियुक्त किया है।
- सांविधिक स्वीकृतियां:
  - दिनांक 27.07.2020 को एनआरएल की क्षमता को 3 एमएमटीपीए से 9 तक विस्तार करने के लिए पर्यावरणीय मंजूरी दी गई है।

- साइट पर पूर्व–परियोजना समर्थकारी कार्यकलाप प्रगति पर हैं।
- एसआरयू, डीएचडीटी, जीडीएस, एमएसयू, पीएफसीसी, आरपीटीयू और एलपीजीटीयू के लिए लाइसेंसर चयन संबंधी प्रमुख प्रक्रिया पूरी हो गई हैं।
- भौतिक प्रगति:
  - उपलब्धि: 23.8%
- परियोजना की वित्तीय प्रगति:
  - व्यय–सह: ₹ 3,200 करोड़
  - प्रतिबद्धता लागत–सह: ₹ 15,938 करोड़

ख) कच्चे तेल का आयात टर्मिनल और पारादीप नुमालीगढ़ कच्चे तेल पाइपलाइन:

- ईआईएल को ईपीसीएम परामर्शदाता के रूप में नियुक्त किया गया है
- पाइपलाइन की लंबाई: 1,630 कि.मी. (ओडिशा के पारादीप पत्तन से असम के गोलाघाट के नुमालीगढ़ तक)
- कच्चे तेल की पाइपलाइन ओडिशा, पश्चिम बंगाल, झारखंड, बिहार और असम राज्यों से होकर गुजरेगी।
- पारादीप पोर्टट्रस्ट (पीपीटी) से 234 एकड़ जमीन पट्टे पर ली गई।
- एसपीसीबी (ओडिशा) से कच्चे तेल के आयात टर्मिनल (सीओआईटी) की स्थापना के लिए सहमति प्राप्त हो गई है।
- असम, बिहार, झारखंड के लिए सीएएलए को एमओपीएनजी द्वारा नियुक्त किया गया है।
- अभियांत्रिकी:
  - रूपरेखा आधारित प्रक्रिया (पीडीबी) और अभियांत्रिकी रूपरेखा आधार (ईडीबी) पूरा किया गया
  - पी एंड आईडी को अंतिम रूप दे दिया गया है
- भौतिक प्रगति:
  - उपलब्धि: 33.7%
- परियोजना की वित्तीय प्रगति:
  - व्यय–सह: ₹ 4,317 करोड़
  - प्रतिबद्धता लागत–सह: ₹ 6,665 करोड़

**ख) भारत–बांग्ला पाइपलाइन:**

एनआरएल पश्चिम बंगाल के सिलीगुड़ी से बांग्लादेश के पार्बतीपुर तक 130 किलोमीटर लंबी और 1 एमएमटीपीए क्षमता की उत्पाद पाइपलाइन का निर्माण कर रही है। सिलीगुड़ी से पार्बतीपुर (बांग्लादेश) तक भारत–बांग्ला मैत्री पाइपलाइन (आईबीएफपीएल) के निर्माण की कुल परियोजना लागत ₹ 377.08 करोड़ है। उपर्युक्त में से, भारतीय पाइपलाइन भाग के लिए परियोजना में एनआरएल का निवेश ₹ 91.84 करोड़ होगा। बांग्लादेश पाइपलाइन भाग के लिए ₹ 285.24 करोड़ की शेष राशि भारत सरकार द्वारा सहायता अनुदान के रूप में वित्त पोषित की जाएगी। परियोजना का यांत्रिक कार्य दिनांक 19 दिसंबर, 2022 को पूरा हो चुका है। इस परियोजना का मार्च, 2023 तक शुरू होने का लक्ष्य रखा गया है।

**ग) जैव–रिफाइनरी परियोजना:**

एनआरएल ने नुमालीगढ़ में एक जैव रिफाइनरी स्थापित करने के लिए एक संयुक्त उद्यम (जेवी) कंपनी का गठन किया है, जिसमें एनआरएल और फिनलैंड के मैसर्स चेमपोलिसोय (22%) और नीदरलैंड के मैसर्स फोर्टम 3 बीवी (28%) के बीच 50:50 की इक्विटी साझेदारी है। परियोजना की अनुमानित लागत ₹ 3,250 करोड़ है। संयंत्र को वर्ष 2022–23 की तीसरी तिमाही तक पूरा करने का लक्ष्य रखा गया है। सीएचटी की उच्चाधिकार प्राप्त समिति द्वारा एबीआरपीएल को ₹ 150 करोड़ के वित्तीय अनुदान की सिफारिश की गई है। इस परियोजना को अक्टूबर, 2023 तक पूरा करने का लक्ष्य रखा गया है। दिनांक 31.12.2022 तक, समग्र वास्तविक प्रगति 78.3% है और वित्तीय प्रगति 62.83% है।

**घ) पूर्वोत्तर क्षेत्र गैस ग्रिड:**

पूर्वोत्तर क्षेत्र में पीएनजी और सीएनजी की आपूर्ति के लिए सभी राज्यों की राजधानियों को जोड़ने वाले गैस ग्रिड का निर्माण किया जा रहा है। बरौनी से गुवाहाटी तक ट्रंक गैस पाइपलाइन पूर्वोत्तर क्षेत्र गैस ग्रिड को राष्ट्रीय गैस ग्रिड से जोड़ेगी। आईओसीएल, गेल, ओएनजीसी, ओआईएल और एनआरएल की समान इक्विटी भागीदारी के साथ एक संयुक्त उद्यम कंपनी को "इंद्रधनुष गैस ग्रिड लिमिटेड" के रूप में निगमित किया गया है। एनआरएल के रिफाइनरी विस्तार को एक प्रमुख ग्राहक के रूप में विचार किया जाता है, जो पाइपलाइन ग्रिड के कुल क्षमता प्रवाह का लगभग 50% है। परियोजना को व्यवहार्य बनाने के लिए व्यवहार्यता अंतर निधियन के रूप में सरकार द्वारा ₹ 5,559 करोड़ की राशि स्वीकृत की गई है जो ₹ 9,265 करोड़ की कुल परियोजना लागत का 60% है। इस परियोजना को मार्च, 2024 तक पूरा करने का लक्ष्य रखा गया है।

**14.3.5.4. एनआरएल द्वारा की गई नीतिगत पहल**

एनआरएल ने कंपनी के विकास और परिचर्या के लिए कई नीतिगत पहल की हैं। इस तरह की पहलों में रिफाइनरी को 9.0 एमएमटीपीए तक विस्तार करना, पड़ोसी देशों, विशेष रूप से बांग्लादेश और नेपाल को निरंतर उत्पाद निर्यात, एक जैव रिफाइनरी की स्थापना आदि शामिल हैं।

**14.3.5.5. अजा/अजजा/अपिव/दिव्यांगों का कल्याण**

दिनांक 31 दिसंबर, 2022 तक की स्थिति के अनुसार एनआरएल की स्वीकृत कार्यबल की संख्या 978 थी, जिनमें से संघीकृत श्रेणी के 435 और कार्यकारिणी संवर्ग के 543 कर्मचारी थे। कुल कर्मचारियों में से 110 कर्मचारी अनुसूचित जाति (एससी), 102 अनुसूचित जनजाति (एसटी), 303 अन्य पिछड़ा वर्ग (ओबीसी) और 20 दिव्यांग श्रेणी के थे।

**14.3.5.6. महिला कर्मचारी**

दिनांक 31.12.2022 तक की स्थिति के अनुसार महिला कर्मचारियों का श्रेणी–वार विवरण निम्नानुसार है:

| समूह | महिला कर्मचारियों की संख्या | कर्मचारी की कुल संख्या | कुल के प्रतिशत के रूप में महिला कर्मचारी |
|---|---|---|---|
| क | 53 | 543 | 9.76% |
| ग | 14 | 435 | 3.22% |
| घ | 0 | 0 | - |
| **कुल** | **67** | **978** | **6.85%** |

**टिप्पणी:** एनआरएल में कोई समूह ख कर्मचारी नहीं है।

**14.3.5.7. राजभाषा का कार्यान्वयन**

एनआरएल, राजभाषा विभाग, भारत सरकार, गृह मंत्रालय, नई दिल्ली के निदेशों के अनुसार राजभाषा के रूप में 'हिंदी' को निरंतर आधार पर बढ़ावा दे रही है और इसे कार्यान्वित कर रही है। भारत सरकार, राजभाषा विभाग, नई दिल्ली द्वारा निर्धारित वार्षिक लक्ष्य को प्राप्त करने के लिए हिन्दी कार्यशाला, राजभाषा कार्यान्वयन समिति की बैठकें समय–समय पर आयोजित की जाती हैं। कर्मचारियों के लिए "आज का शब्द" और "आज का सुविचार" के माध्यम से हिंदी शिक्षण प्रतिदिन डिस्प्ले बोर्ड पर प्रदर्शित किया जा रहा है। प्रोत्साहन योजना के अंतर्गत वर्ष 2021–22 के दौरान सरकारी कामकाज में हिंदी का प्रयोग करने वाले 317 कर्मचारियों को नकद प्रोत्साहन के रूप में ₹ 5.61 लाख की राशि का भुगतान किया गया। 'हिंदी पखवाड़ा' दिनांक 14 सितंबर, 2021 से 28 सितंबर, 2021 तक मनाया गया, जिसमें हिंदी के प्रति रूचि बढ़ाने और हिंदी का प्रचार–प्रसार करने के लिए कर्मचारियों, उनके परिवार के सदस्यों, स्कूली बच्चों और केंओसुब कर्मिकों को शामिल करते हुए विभिन्न प्रतियोगिताओं के आयोजन के साथ–साथ कोविड–19 दिशानिर्देशों का कड़ाई से पालन किया गया। दिनांक 14 सितंबर, 2021 को निदेशक (तकनीकी) द्वारा एक विशेष हिंदी ई–बुलेटिन जारी किया गया और दिनांक 28 सितंबर, 2021 को निदेशक (वित्त) द्वारा एक वार्षिक हिंदी पत्रिका "प्रयास" (11वां संस्करण) जारी किया गया। ई–मेल के माध्यम से हिन्दी पत्राचार को बढ़ावा देने के लिए वर्ष के दौरान प्रत्येक तिमाही में कर्मचारियों के बीच प्रतियोगिता का आयोजन किया गया।

नुमालीगढ़ रिफाइनरी ने दिनांक 07.12.2021 को टोलिक (पीएसयू), गुवाहाटी द्वारा सर्वोत्तम राजभाषा कार्यान्वयन के लिए 'राजभाषा चल वैजयंती शील्ड' और तीसरा पुरस्कार प्राप्त किया है और हिंदी पत्रिका "प्रयास" (11वां संस्करण) के प्रकाशन के लिए दूसरा पुरस्कार भी जीता है।

**14.3.5.8. आर एंड डी संबंधी कार्यकलाप**

कंपनी का विशेष रासायनिक प्रभाग अकादमिक और अनुसंधान संगठनों के साथ साझेदारी के माध्यम से संगठन की अनुसंधान और विकास क्षमता को सुदृढ़ करने में सक्रिय रूप से आवश्यक भूमिका निभा रहा है। विस्तृत विवरण अध्याय–8 में उपलब्ध है।

**14.3.5.9. ऊर्जा संरक्षण**

नुमालीगढ़ रिफाइनरी ऊर्जा दक्षता और ऊर्जा संरक्षण को बनाए रखने के लिए गंभीरता से कार्य कर रही है। रिफाइनरी विशिष्ट ऊर्जा खपत (एसईसी) और ऊर्जा तीव्रता सूचकांक (ईआईएल) जैसी कई परिचालन मापदंडों में से प्रमुख ऊर्जा निष्पादन माप संकेतकों की बारीकी से निगरानी

करती है। इकाई निष्पादन को निरंतर आधार पर मापा जाता है और सर्वोत्तम श्रेणी की प्रौद्योगिकी और वैश्विक सर्वोत्तम कार्यप्रणाली को शामिल करने के प्रयास किए जाते हैं। एसईसी में 64 एमबीएन और ईआईआई में 86.0% के लक्ष्य की तुलना में क्रमशः 63.5 एमबीएन और 84.68% प्राप्त किया गया जो पिछले वर्ष की तुलना में 1% से अधिक का सुधार दर्शाता है।

नुमालीगढ़ रिफाइनरी का पोर्टफोलियो 1.05 मेगावाट सौर फोटोवोल्टिक क्षमता का है, जो कुल कैप्टिव बिजली उत्पादन का 0.4% है। वर्ष 2021–22 में परियोजना से कुल उत्पादन 1,083 मेगावाट हुआ है, जो वैश्विक तापन क्षमता को 10 लाख पाउंड सीओ2 तक कम करता है।

वर्ष 2021–22 में शुरू की गई एनकॉन योजनाओं से ऊर्जा बचत हुई है जो आंतरिक पहल के साथ–साथ बाह्य लेखा–परीक्षा से त्वरित जीत की सिफारिश के परिणाम को दर्शाती है। 7,400 एसआरएफटी की कुल प्रत्यक्ष ऊर्जा बचत हुई है और ₹ 25 करोड़ की मौद्रिक बचत हुई है। इसके अतिरिक्त, ऊर्जा संरक्षण परियोजनाओं से लगभग 0.27 लाख टन सीओ2 की कमी हुई है और पाइपलाइन परिवहन के माध्यम से उत्सर्जन में 20 टन सीओ2 की कमी हुई है।

### 14.3.5.10. सीएसआर से संबंधित कार्यकलाप

एनआरएल की सीएसआर और संधारणीय कार्यकलापों को कंपनी अधिनियम 2013 की अनुसूची-VII के अंतर्गत निर्दिष्ट कार्यकलापों के अनुसार अनुकरण किया जाता है। एनआरएल ने कंपनी अधिनियम 2013, कॉर्पोरेट कार्य मंत्रालय और डीपीई द्वारा जारी सीएसआर और संधारणीयता पर लागू दिशानिर्देशों द्वारा जारी सीएसआर नियमावली के अनुरूप 'सीएसआर और संधारणीय नीति' तैयार की है। इसके अतिरिक्त, एनआरएल ने स्वयं का दरंग जिले के जिला प्रशासन के साथ निकटतम संबंध बनाया है, जिसे नीति आयोग द्वारा कंपनी को आकांक्षी जिले के रूप में आवंटित किया गया है।

एनआरएल ने अपनी सीएसआर नीति के अनुरूप निम्नलिखितों पर विशेष जोर दिया है क) स्वास्थ्य देखभाल, ख) शिक्षा और कौशल विकास, ग) स्वच्छता कार्य योजना, घ) आजीविका सृजन, ङ) अवसंरचना का विकास, च) कला, खेल, साहित्य और संस्कृति को बढ़ावा देना। इसके अतिरिक्त, एनआरएल सीएसआर ने कंपनी अधिनियम 2013 की अनुसूची–VII के अंतर्गत विनिर्दिष्ट कार्यकलापों के अनुरूप महिलाओं को सशक्त बनाने, पर्यावरण संधारणीयता सुनिश्चित करने और पशु कल्याण आदि जैसे अन्य क्षेत्रों में भी योगदान दिया है।

**क. स्वास्थ्य देखभाल:**

मंत्रालय द्वारा जारी अधिसूचना के अनुसार, वित्त वर्ष 2021–22 में 'स्वास्थ्य और पोषण' सीएसआर कार्यकलापों का विषयगत क्षेत्र होने के नाते, एनआरएल ने इस क्षेत्र में सामुदायिक स्वास्थ्य सेवा में सुधार पर बड़े पैमाने पर ध्यान केंद्रित किया था। कुछ उल्लेखनीय परियोजनाएं निम्नानुसार हैं:

- एनआरएल ने स्वयं को बरपेटा मेडिकल कॉलेज अस्पताल में कैंसर का बेहतर कारण का पता लगाने के लिए स्थापित रेडिएशन ब्लॉक से संबंधित असम कैंसर देखभाल संघ (एसीसीएफ) के साथ जोड़ा है, जिसका औपचारिक उद्घाटन दिनांक 28 अप्रैल, 2022 को भारत के माननीय प्रधान मंत्री द्वारा किया गया था।
- सीएसआर के अंतर्गत प्रमुख परियोजना के रूप में, नुमालीगढ़ रिफाइनरी लिमिटेड ने एक महीने की अवधि के भीतर जोरहाट मेडिकल कॉलेज एंड हॉस्पिटल (जेएमसीएच), जोरहाट में 120 बिस्तरों वाला अस्थायी कोविड अस्पताल स्थापित किया। 120 बिस्तरों वाले अस्पताल में 20 आईसीयू बिस्तर हैं जिनमें वेंटिलेटर, कार्डियक मॉनिटर, ऑक्सीजन कॉन्सेंट्रेटर, ऑक्सीजन सिलेंडर और आईसीयू से संबंधित अन्य उपकरण शामिल हैं। इसके अतिरिक्त, माजुली के श्री श्री पीतांबर देव गोस्वामी सिविल अस्पताल में पांच (5) बिस्तरों वाला आईसीयू वार्ड भी स्थापित किया गया। एनआरएल ने ब्लॉक के नवीनीकरण के लिए भी समर्थन दिया जिसमें सिविल और विद्युत कार्य शामिल हैं।
- वीकेएनआरएल अस्पताल के माध्यम से समाज के कमजोर वर्ग के लोगों को रियायती उपचार प्रदान करने के अतिरिक्त वीकेएनआरएल अस्पताल और नेत्र शिविरों के माध्यम से आयोजित मोबाइल चिकित्सा स्वास्थ्य शिविरों को जारी रखा गया।
- कैंसर, फेफड़े और हृदय रोग, गुर्दे की समस्या आदि जैसी गंभीर बीमारियों के लिए अपनी चिकित्सा सहायता योजना सहित एनआरएल स्वास्थ्य सेवा के मामले में समाज के जरूरतमंद और आर्थिक रूप से कमजोर वर्ग को लगातार समर्थन दे रहा है।
- वर्ष के दौरान दूर–दराज के क्षेत्रों में स्वास्थ्य सुविधाओं को पहुँचने के लिए विभिन्न चिकित्सा महाविद्यालयों, पीएचसी, पीएमएचसी को सात एंबुलेंस प्रदान की गईं।

**ख. शिक्षा और कौशल विकास:**

वर्ष के दौरान समाज को प्रभावित करने वाली कुछ परियोजनाएं निम्नानुसार हैं:

- वित्त वर्ष के दौरान 25 विद्यालयों के निर्माण एवं जीर्णोद्धार का कार्य पूरा किया गया।
- दसवीं और बारहवीं कक्षा में उत्तीर्ण विद्यार्थियों के लिए छात्रवृत्ति योजना 'ज्ञानदीप' तथा विगत 12 वर्षों से विशेष छात्रवृत्ति 'प्रेरणा' जारी है। सतत 'ज्ञानदीप छात्रवृत्ति' योजना के अंतर्गत, 230 विद्यार्थियों को दसवीं और बारहवीं कक्षा में उनके प्रदर्शन के आधार पर लाभान्वित किया गया। बालिका शिक्षा को बढ़ावा देने के लिए सातवीं से दसवीं कक्षा की शीर्ष तीन बालिकाओं को कुल 288 "प्रेरणा छात्रवृत्ति" प्रदान की गई है। संविदा कर्मियों के मेधावी बच्चों को दसवीं कक्षा की परीक्षा में अच्छे परिणाम के लिए 29 मेधावी बच्चों को छात्रवृत्ति प्रदान की गई। इसके अतिरिक्त 26 विद्यार्थियों को उच्च शिक्षा प्राप्त करने के लिए "प्रतिभा" योजना के अंतर्गत छात्रवृत्ति प्रदान की गई। छात्रवृत्ति योजनाओं के लिए कुल ₹ 74.27 लाख व्यय किया गया।
- एनआरएल ने सेंटर फॉर सोशल रिस्पॉन्सिबिलिटी एंड लीडरशिप, नई दिल्ली के माध्यम से आस–पास के स्कूलों के कक्षा IX और X के छात्रों के लिए अनुशिक्षण केन्द्र का समर्थन करना जारी रखा है। यह अनुशिक्षण छात्रों को अभियांत्रिकी और चिकित्सा पाठ्यक्रमों में दाखिला लेने के लिए स्वयं को पात्र बनाने के लिए है।
- एनआरएल ने विवेकानंद केंद्र विद्यालय, मंगलदोई में कक्षाओं के निर्माण के लिए विवेकानंद केंद्र रॉक मेमोरियल और विवेकानंद केंद्र का समर्थन किया।
- गोलाघाट आईटीआई के माध्यम से वेल्डिंग, फिटर और आतिथ्य क्षेत्र में किए गए कौशल विकास की पहल को जारी रखा जा रहा है और वर्तमान में कुल पांच शाखाओं में 93 छात्र हैं।
- वीकेएनआरएल स्कूल ऑफ नर्सिंग ने जनवरी, 2022 से जीएनएम पाठ्यक्रम के लिए 40 छात्रों के 5वें बैच को दाखिला दिया। वर्तमान में, स्कूल में 118 लडकियां पढ़ रही हैं और अब तक 2 बैच उत्तीर्ण हुए है।
- गोलाघाट जिले के उपायुक्त के नेतृत्व में बाढ़ और अन्य प्राकृतिक आपदा के दौरान लोगों को बचाने के लिए आशा कर्मी और अन्य सामाजिक रूप से सक्रिय महिलाओं को प्रशिक्षित करने के लिए आपदा प्रबंधन संबंधी परियोजना 'आपदा प्रतिरोधी समाज के लिए सखी महिला अभियान' जारी है।

**ग. स्वच्छता कार्य योजना:**

पेट्रोलियम और प्राकृतिक गैस मंत्रालय द्वारा अधिशेष इस कार्यक्रम के अंतर्गत व्यय के विभिन्न शीर्षों के अंतर्गत ₹ 5.50 करोड़ के लक्ष्य के स्थान पर ₹ 5.91 करोड़ की राशि व्यय की गई थी।

- 'परिच्छन्नता' परियोजना के अंतर्गत 5 वर्षों के अनुरक्षण सहित स्कूल शौचालयों के निर्माण का कार्य शुरू किया गया है। इसके अतिरिक्त, एनआरएल सीएसआर ने विभिन्न स्थानों में सार्वजनिक शौचालयों के निर्माण के लिए सहायता प्रदान की है।
- परियोजना 'जीवनधारा' गांवों, स्कूलों और अन्य सामुदायिक स्थानों पर स्वच्छ पेयजल उपलब्ध कराने पर ध्यान केंद्रित है। वर्ष के दौरान, एनआरएल ने गोलाघाट जिले के अंतर्गत आस–पास के गांवों और सामुदायिक स्थानों में एटीएम सुविधा के साथ 14 नग सुरक्षित और स्वच्छ पेयजल शोधन संयंत्रों की स्थापना की है। इन सभी संयंत्रों को 3 वर्ष के वार्षिक अनुरक्षण संविदा के प्रावधान के साथ स्थापित किया गया था।
- एनआरएल ने प्रभावी अपशिष्ट प्रबंधन और उपचार हेतु स्वयं को सुसज्जित करने के लिए निम्नलिखित नगर पालिकाओं/नगर समितियों और गैर सरकारी संगठनों को 5 मिनी अपशिष्ट टिपर वाहन प्रदान किए हैं।
- एनआरएल ने असम चाय जनजाति कल्याण समिति और गोलाघाट शाखा साहित्य सभा को मौजूदा पेयजल प्रणालियों के नवीनीकरण और निर्माण के लिए वित्तीय सहायता भी प्रदान की है।

**घ. आजीविका सृजन:**

परियोजना 'स्वनिर्भर' गांव के लोगों की आजीविका सृजन के लिए शुरू की गई प्रतिष्ठित परियोजना है। यह परियोजना ग्रामीणों को अपनी आजीविका के लिए सुअर पालन फार्म, बकरी फार्म, निर्माण इकाइयों, किराने की दुकानों, चावल मिलों, कपड़े की दुकानों, डेयरी फार्मों आदि जैसी छोटी परियोजनाओं को शुरू करने के लिए प्रोत्साहित करती है। गांवों की महिलाओं को भी इस तरह की पहल से प्रेरित किया गया था और इससे वे अपने परिवार को छोटी–मोटी योगदान भी कर सकती थीं।

**च.अवसंरचना विकास:**

वित्त वर्ष के दौरान एनआरएल में और उसके आसपास कई विकासात्मक कार्य किए गए जिनमें ग्राम सड़क निर्माण और नवीकरण, सौर स्ट्रीट लाइटों की स्थापना और शुरूआत के साथ–साथ घरेलू रोशनी, पुलों/पुलियाओं का निर्माण और ग्रामीण क्षेत्रों में अन्य अवसंरचना के विकास कार्य आदि शामिल हैं।

- फुलनीबारी–मधापुर रोड, गुटीबाड़ी लिंक रोड, एनएच–37 से ज्योति एकेडमी स्कूल और हलुआ गाँव रोड, बरचापरी (एडब्ल्यूसी से पीडब्ल्यूडी पूल) और राजाबाड़ी–ओउगुरी–अहोम गाँव सड़क के लिए पक्की सड़कें विकसित की गईं। फुलनीबारी मधापुर सड़क और बरचापरी (पीडब्ल्यूडी पूल से एडब्ल्यूसी) और राजाबाड़ी–ओउगुरी–अहोम गांव सड़क का निर्माण कार्य पूरा हो चुका है और अन्य दो सड़कों का कार्य प्रगति पर है।
- ग्रामीण अवसंरचना को विकसित करने और ऊर्जा के नवीकरणीय स्रोत को बढ़ावा देने के उपाय के रूप में, एनआरएल ने पोंका मौंडल गांव और कुछ महत्वपूर्ण सामुदायिक स्थानों सहित आस–पास के इलाके के गांव की सड़कों में 220 नग सौर स्ट्रीट लाइटों की स्थापना और शुरूआत के लिए परियोजनाएं शुरू की हैं। बोकाखाट में बाढ़ प्रभावित गांव चिनाकॉन गांव में कुल 275 नग सौर घरेलू रोशनी प्रदान की गई।

**ङ. कला, खेल, साहित्य और संस्कृति का संवर्धन:**

- एनआरएल लंबे समय से खेलकूद और सांस्कृतिक कार्यकलापों को बढ़ावा दे रहा है और इस वर्ष भी मौजूदा परियोजनाओं से इतर कुछ नई परियोजनाओं को शुरू किया गया। कला और सांस्कृतिक कार्यकलापों के माध्यम से, एनआरएल सीएसआर ने नई पीढ़ियों के बीच पारंपरिक कला के रूपों को संरक्षित करने और इसे आगे बढ़ाने का प्रयास किया।
- एनआरएल निरंतर आधार पर एनआरएल फुटबॉल अकादमी चला रहा है। कोविड वैश्विक महामारी के बाद, एनआरएल ने नवंबर, 2021 से फिर से अकादमी का संचालन शुरू कर दिया है। वर्तमान में, इसमें अंडर 13, अंडर 15 और अंडर 18 श्रेणियों में खेलने वाले खिलाड़ियों की संख्या 69 है।

सीएसआर कार्यकलापों का विवरण एनआरएल की वेबसाइट www.nrl.co.in पर निरंतर आधार पर प्रकाशित किया जाता है।

पिछले तीन वर्षों के दौरान और अप्रैल–दिसंबर 22 के दौरान सीएसआर कार्यकलापों पर एनआरएल द्वारा व्यय की गई राशि निम्नानुसार है:

(राशि ₹ करोड़ में)

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल–दिस.) |
|---|---|---|---|---|
| सीएसआर परिव्यय | 62.25 | 52.80 | 59.13 | 71.11 |
| वास्तविक व्यय | 62.60 | 53.19 | 74.14 | 27.91 |

**14.3.5.11. डिजिटल भारत**

एनआरएल ने विश्वसनीय, परिपक्व और समय सिद्ध एसएपी ईसीसी 6.0 ईआरपी से एस/4 हाना ईआरपी में प्रव्रजन करने के लिए बहुत ऊंची छलांग लगाई है। इस परियोजना को समय और बजट के भीतर सफलतापूर्वक पूरा कर लिया गया और दिनांक 07 फरवरी, 2022 से शुरू किया गया। इसके शुरूआत से एनआरएल ने तेल और गैस संबंधित पीएसयू में पहला और अनुप्रवाह क्षेत्र में पहला स्थान प्राप्त किया। कार्यान्वयन एजेंसी की पूर्ण रिमोट मोड भागीदारी सहित परियोजना को पूरी की गई थी। परियोजना की समय पर पूरा करना, एनआरएल की प्रतिबद्धता को दर्शाती है जिसके लिए समय पर उपलब्धि को पूरा करने के लिए उचित परियोजना निगरानी और संसाधनों के प्रणालीकरण की आवश्यकता होती है।

एस/4 हाना, एसएपीहाना इन–मेमोरी डेटाबेस पर आधारित ईआरपी व्यापार अनुकूल कंपनियों को लेनदेन करने और वास्तविक समय पर व्यावसायिक डेटा का विश्लेषण करने की अनुमति देता है। एस 4 हाना को अनुकूलन करके, एनआरएल ने डिजिटल दिशा–निर्देशों की अपनी व्यवस्था को समृद्ध किया है जो ईसीसी 6.0 के लिए लेनदेन के तेजी से प्रसंस्करण और सूचना निर्माण में मदद करेगा और इसमें निर्णय समर्थन प्रणाली को बढ़ाने के लिए विश्लेषणात्मक सूचना विकसित करने का प्रावधान है।

एस/4 हाना के प्रव्रजन से, संगठन की कार्यात्मक क्षमताओं को बढ़ाने और रिफाइनरी विस्तार और नए व्यवसाय में प्रवेश करने के लिए अतिरिक्त सुविधाओं को भी कार्यान्वित किया गया, जैसे कि 'वित्तीय समापन कॉकपिट' को केंद्रीकृत करने और महीने के अंत को निर्बाध और द्रुत बनाना और डीएएस 116 लेखा मानक आवश्यकताओं के भीतर पूर्ण अनुपालन हेतु 'संविदा पट्टा प्रबंधन'।

कागज रहित अभियान के अनुसरण में, एक कदम आगे बढ़कर, एनआरएल ने एनआरईपी (नुमालीगढ़ रिफाइनरी विस्तार परियोजना) के लिए क्लाउड में एक एकीकृत इलेक्ट्रॉनिक आंकड़े और दस्तावेज प्रबंधन प्रणाली (आईईडीडीएमएस) लागू की है. इसका उद्देश्य बड़े पैमाने पर समाधान अभियांत्रिकी परामर्शदाताओं के बीच सुरक्षित सहयोगी वातावरण को सक्षम बनाना है। यह विभिन्न अभियांत्रिकी परामर्शदाताओं की कार्यकलापों को एकीकृत करता है, जिससे सही अभियांत्रिकी मास्टर आँकड़े, समीक्षा और अनुमोदन सहित परियोजना के काम में बेहतर निर्णय लेने में सक्षम बनाया जाता है। संचालन प्रबंधन समाधान (ओएमएस) जिसे अपने औद्योगिक स्थलों के सुरक्षित, कुशल और अनुपालन संचालन को सुनिश्चित करने के लिए लागू किया गया था, को रिफाइनरी और विपणन टर्मिनलों की सभी मुख्य इकाइयों तक विस्तार किया गया था, जिससे कंपनी की मैनुअल रिकॉर्ड का उपयोग, लॉग बुक, पालि हस्तांतरण, कार्य निर्देश संबंधी कार्यकलाप आदि समाप्त हो गया। ओएमएस डिजिटल पालि लॉगबुक बनाता है, शिफ्ट संचालन को डिजिटल करता है जो पालि–दर–पालि संचार में सुधार करेगा और खतरनाक घटनाओं के जोखिम को कम करने के लिए संचालन समूह की मदद करेगा।

भारत सरकार के एथेनॉल मिश्रित मोटर स्पिरिट (ईबीएमएस) के दिशा–निर्देशों का पालन करते हुए एनआरएल ने ग्राहकों की आवश्यकता के अनुसार एथेनॉल के मिश्रण प्रतिशत को संभालने के लिए लचीलापन सहित दोनों टर्मिनलों (एनआरएमटी और एसएमटी) से ईबीएमएस लदान को संभालने के लिए एसएपी में आवश्यक विन्यास कार्यान्वित किया है।

पारदर्शिता सहित बेहतर शासन और नियंत्रण लाने के लिए, विभिन्न व्यावसायिक कार्यों में निम्नलिखित कार्यक्षमताओं को लागू किया गया है।

संविदा कामगार के मामले में, हम कार्यस्थल संबंधी विकसित अनुप्रयोग ('सरल प्रवेश') के रूप में पहुंच नियंत्रण को पूरी तरह से डिजिटली करने में सक्षम रहे हैं, जिसमें कार्य आदेश के मुताबिक कामगार का नामांकन, सत्यापन, सुरक्षा प्रशिक्षण, दैनिक उपस्थिति और कार्य पूरा होने पर श्रमिकों के निकासी आदि शामिल हैं। इस प्रणाली ने मैनुअल पेपर आधारित प्रक्रिया में लगने वाले समय को पूरी तरह से समाप्त कर दिया और यह सुनिश्चित किया कि संविदाकारों/श्रमिकों द्वारा वास्तविक क्षेत्र संबंधित कार्य में कोई समय बर्बाद न हो। इसके अतिरिक्त मजदूरी भुगतान आसानी से उपलब्ध उपस्थिति रिकॉर्ड के आधार पर निर्बाध हो गया है।

- नए कर्मचारियों या परिवीक्षाधीन कर्मचारियों के मामले में, एचआर के लिए पुष्टिकरण प्रक्रिया के लिए कार्यप्रवाह को लागू किया गया है जिससे समय पर पुष्टि पत्र जारी किया जा सके। एचआर में एक और कार्यप्रवाह प्रक्रिया, ''सूचना प्रेषण में परिवर्तन'' को ऑनलाइन कर दिया गया है, जिसने संबंधित प्रबंधकों को अपने संसाधनों को बेहतर ढंग से व्यवस्थित करने का लचीलापन प्रदान किया है।
- रिफाइनरी के अंदर चलने वाले पूल्ड वाहनों के व्यय को उत्पन्न करने के लिए, संविदाकारों को स्मार्ट फ्लीट प्रबंधन प्रणाली सहित पश्च एकीकरण के साथ वेब पोर्टल से माप पत्रक तैयार करने का अधिकार दिया गया है, जिससे पारदर्शिता और जवाबदेही सुनिश्चित होती है।
- विभिन्न प्रकार के अंतर–विभागीय नोट तैयार करने और विभिन्न विषयों से संबंधित नोट पर अनुमोदन लेने के लिए इसे समिति के सदस्यों के भीतर परिचालित करने के लिए आईबीएम व्यापार स्वचालन कार्यप्रवाह (बीएडब्ल्यू) मंच में 'ईनोट' अनुमोदन प्रक्रिया–कार्यप्रवाह–आधारित अनुप्रयोग विकसित किया गया है। कार्यप्रवाह–आधारित ई–नोट अनुमोदन प्रक्रिया ई–नोट को ढूंढना और भौतिक रूप में रखना, संगठन में विभिन्न स्थानों पर बैठे समिति के सदस्यों से ई–नोट पर अनुमोदन प्राप्त करने जैसी विभिन्न समस्याओं को दूर करने में मदद करती है।
- अंतर–विभागीय ई–नोट अनुमोदन प्रक्रिया के डिजिटलीकरण के बाद, अब उपयोगकर्ता ई–नोट को आसानी से पता कर सकता है, नोट के सभी सहायक दस्तावेजों को डिजिटल रूप में रख सकता है जो इसकी त्वरित पुनर्प्राप्ति और इसे लंबे समय तक बनाए रखने में मदद करता है। ईनोट अनुमोदन प्रक्रिया नोट अनुमोदन

प्रक्रिया को तेज बनाती है जो निर्णय लेने की प्रक्रिया को तेज, पारदर्शी, अधिक प्रभावी बनाने, जवाबदेही बढ़ाने, कर्मचारियों की ऊर्जा और अनुत्पादक प्रक्रियाओं में लगने वाले समय को बचाने में मदद करती है।

- संविदाकारों को पट्टे/किराए के उपकरण ("उपकरण शक्ति" के माध्यम से) द्वारा एनआरएल द्वारा प्रदान की गई सेवा हेतु बिलिंग एसएपी के साथ एकीकृत है, जहां विक्रेता बिलिंग स्वचालित रूप से संसाधनों की खपत के लिए होती है, इस प्रकार यह सुनिश्चित करता है कि परिसंपत्ति का उपयोग सही ढंग से किया जाता है।
- क्लाउड आधारित 'ऑनलाइन बोर्ड मीटिंग' सेवा ने एनआरएल को पेपर और ईमेल आधारित बैठक प्रणाली से कार्यक्रम तैयार करने, कार्यसूची तैयारी, वितरण, सहयोग और बैठक पश्चात कार्रवाई से संबंधित मद का पता लगाने से डिजिटल और पेपरलेस बैठक प्रणाली में संक्रमण के लिए सक्षम बनाया है।
- परियोजना सीईआर व्यय के अनुपालन की निगरानी के लिए सीईआर (कॉर्पोरेट पर्यावरण उत्तरदायित्व) हेतु ऑनलाइन अनुमोदन प्रणाली लागू की गई है।
- कोविड–19 टीकाकरण संबंधी सूचना "वेक ट्रेक" को एनआरएल कर्मचारियों और उनके आश्रितों के टीकाकरण विवरण को पता लगाने के लिए विकसित किया गया था, ताकि कोविड–19 प्रोटोकॉल का अनुपालन सुनिश्चित किया जा सके।
- प्रशिक्षुओं की नियुक्ति के लिए ऑनलाइन आवेदन सुविधा, भागीदारी के लिए व्यापक और समान अवसर को सक्षम बनाता है।
- यूरेका इंट्रानेट पोर्टल को भी नए रूप और अनुभव सहित उन्नत कार्यक्षमताओं के साथ फिर से तैयार किया गया है।
- राष्ट्रीय साइबर सुरक्षा जागरूकता माह का पालन: अक्टूबर 2021 में साइबर सुरक्षा खतरों पर जागरूकता बढ़ाने के लिए एनआरएल, के. औ.सु.ब. डीपीएस और वीकेएनआरएल के कर्मचारियों के बीच असमी, हिंदी और अंग्रेजी भाषाओं में साइबर सुरक्षा पर स्लोगन प्रतियोगिता आयोजित की गई थी।

### 14.3.5.12. सूचना का अधिकार (आरटीआई) अधिनियम

एनआरएल सूचना का अधिकार अधिनियम 2005 में निहित सार, पारदर्शिता और जवाबदेही का नियमित रूप से अक्षरशः अनुपालन कर रहा है। अधिनियम के अनुसार भारत के नागरिकों से कंपनी द्वारा प्राप्त आरटीआई याचिकाओं का समय पर, विवेकपूर्ण और तथ्यात्मक उत्तर सुनिश्चित करने के लिए एक संरचित प्रणाली स्थापित की गई है। आरटीआई प्रश्न ऑनलाइन और ऑफलाइन दोनों तरह से प्राप्त किए जाते हैं और संबंधित कार्यों से जानकारी आंतरिक प्रणालियों के माध्यम से एकत्र की जाती है। वित्त वर्ष 2021–22 में एनआरएल के आरटीआई आवेदनों की स्थिति निम्नानुसार है:

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| वित्त वर्ष 2021–22 में प्राप्त आरटीआई आवेदनों की संख्या | 259 |
| वित्त वर्ष 2021–22 में निपटाए गए आरटीआई आवेदनों की संख्या | 255 |
| 31–03–22 की स्थिति के अनुसार लंबित आरटीआई आवेदनों की संख्या | 04 |

एनआरएल ने आरटीआई अधिनियम से संबंधित कार्य संभालने के लिए नोडल अधिकारी/सीपीआईओ/अपीलीय प्राधिकारी नियुक्त किया है। पारदर्शिता और जवाबदेहीता सुनिश्चित करने के लिए एक सक्रिय उपाय के रूप में, कंपनी से संबंधित सभी प्रासंगिक सूचना नियमित रूप से कंपनी की आधिकारिक वेबसाइट www.nrl.co.in के आरटीआई लिंक में अधिदेशित प्रकटीकरण, सार्वजनिक डोमेन में सूचना पहुंच सुनिश्चित करने सहित अद्यतन की जाती है। इतना ही नहीं, कंपनी का यह प्रयास रहा है कि लोगों की पूछताछ को कम करने के लिए कंपनी की वेबसाइट के माध्यम से अधिक से अधिक जानकारी सार्वजनिक डोमेन में प्रदर्शित की जाए। आरटीआई के जवाब मासिक

आधार पर आधिकारिक वेबसाइट पर प्रदर्शित किए जाते हैं, जिससे ऐसे सभी जवाबों का कोष संरक्षित रहता है। इसके अतिरिक्त, मासिक प्रगति रिपोर्ट पेट्रोलियम और प्राकृतिक गैस मंत्रालय को प्रस्तुत की जाती है जबकि ऑनलाइन तिमाही विवरणी आरटीआई वार्षिक विवरणी सूचना प्रणाली पर अपलोड किए जाते हैं।

### 14.3.5.13. सतर्कता

एनआरएल सतर्कता संबंधी कार्यों का नेतृत्व श्री अमित सरन, आईआरएसएमई द्वारा किया जाता है, जो एनआरएल के साथ–साथ ओआईएल के मुख्य सतर्कता अधिकारी भी हैं। सतर्कता संबंधी कार्यों का उद्देश्य संपूर्ण कंपनी में उच्चतम स्तर की सत्यनिष्ठा का अनुरक्षण सुनिश्चित करना है। एनआरएल में सतर्कता को राजभाषा कार्यान्वयन और सत्यनिष्ठा के लिए ईमानदारी पुरस्कार की संस्कृति को बढ़ावा देने, नैतिक मानकों और अच्छे कॉर्पोरेट प्रशासन को बढ़ाने के लिए महत्व दिया गया है, जिसे कंपनी प्रभावी निवारक सतर्कता उपायों के माध्यम से प्राप्त करने का प्रयास करती है।

एनआरएल सतर्कता ने सीवीसी और संबंधित मंत्रालय को सूचना प्रस्तुत करने के संबंध में सभी सरकारी दिशानिर्देशों का अनुपालन किया। ई–शासन पर विभिन्न सरकारी दिशानिर्देशों का पालन करने के लिए, एनआरएल सतर्कता ने ई–निविदा, ई–नीलामी, ई–भुगतान, ई–रसीद, ई–मार्केटप्लेस (जीईएम) आदि जैसी व्यावसायिक प्रक्रिया के प्रणाली–संचालित तंत्र को सुनिश्चित किया है।

इस वर्ष के दौरान रिफाइनरी के कुछ प्रचालनात्मक स्थानों पर निर्धारित प्रक्रियाओं और पद्धतियों के कार्यान्वयन पर ध्यान केन्द्रित करने के उद्देश्य से तकनीकी निरीक्षण (04) अर्थात् सीटीई, नियमित औचक निरीक्षण किए गए थे। इसके अतिरिक्त, विभाग ने हितधारकों के हितों की रक्षा के उद्देश्य से शिकायतों पर जांच की और प्रबंधन के लिए प्रणालीगत सुधार सहित उपयुक्त कार्रवाई की सिफारिश की थी।

केंद्रीय सतर्कता आयोग के निर्देश के अनुसार दिनांक 26 अक्टूबर से 1 नवंबर, 2021 तक कंपनी के सभी स्थानों पर ''सतर्कता जागरूकता सप्ताह–2021'' मनाया गया, जिसका विषय वस्तु ''इंडिपेंडेंट इंडिया @75 सत्यनिष्ठा सहित आत्मनिर्भरता'' था। सप्ताह के कार्य और विभिन्न कार्यकलाप बड़े जोश और उत्साह के साथ आयोजित किए गए। निबंध लेखन, नारा, वाद–विवाद आदि प्रतियोगिताएं एनआरएल कर्मचारियों और परिवार, एनआरएल के ओ.सु.ब. इकाई और डीपीएस नुमालीगढ़ सहित आस–पास के स्कूली छात्रों के लिए सक्षम प्राधिकारी द्वारा समय–समय पर जारी किए गए मौजूदा कोविड–19 रोकथाम दिशानिर्देशों का पालन करते हुए आयोजित किए गए थे। दूरस्थ कार्यकलापों के संबंध में, सप्ताह के दौरान गोलाघाट में वॉकथॉन, एनआरएल के सूचीबद्ध विक्रेताओं के बीच विक्रेता सम्मेलन और नौपथार में ग्राम सभा की व्यवस्था की गई थी।

वर्ष के दौरान, सतर्कता पत्रिका 'चैतन्य' (2021 संस्करण) जारी की गई थी, जिसमें जन जागरूकता बढ़ाने के उद्देश्य से 2020–21 के दौरान की गई विभिन्न प्रकार की सतर्कता पहलों को शामिल किया गया था।

### 14.3.5.14. पूर्वोत्तर क्षेत्र के विकास में एनआरएल का योगदान

एनआरएल की स्थापना सरकार द्वारा 'असम समझौते' के प्रावधानों के अंतर्गत पूर्वोत्तर क्षेत्र के सामाजिक–आर्थिक विकास के लिए आवश्यक प्रभाव प्रदान करने के उद्देश्य से की गई थी। पिछले कुछ वर्षों से, कंपनी हितधारकों की अपेक्षाओं को बनाए रखने में सक्षम रही है और आज इस क्षेत्र में सबसे बड़ी परिचालन औद्योगिक इकाई है। पूर्वोत्तर क्षेत्रों के विकास में एनआरएल का योगदान मोटे तौर पर नीचे संक्षेप में दिया गया है:

#### मूल्य वर्धित परियोजनाओं में निवेश

₹ 3,461 करोड़ की स्वीकृत परियोजना लागत के भीतर एनआरएल रिफाइनरी परियोजना लागू की गई थी। रिफाइनरी की स्थापना के बाद से, एनआरएल निरंतरता और विकास सुनिश्चित करने के लिए कई मूल्य वर्धित परियोजनाओं को लागू कर रहा है। पूर्वोत्तर सीमा पर सिलीगुड़ी में विपणन टर्मिनल की स्थापना को छोड़कर ऐसी सभी परियोजनाएं पूर्वोत्तर क्षेत्र के भीतर हैं। ऐसी परियोजनाओं पर एनआरएल का कुल निवेश संबंधी विवरण निम्नानुसार है:

| क्र. सं. | परियोजना | निवेश (₹ करोड़ में) | अभ्युक्ति |
|---|---|---|---|
| 1 | 10 टीएमटीपीए क्षमता वाली एलपीजी बॉटलिंग संयंत्र | 6 | वर्ष 2002–03 में शुरू किया गया |
| 2 | कोक कैल्सीनेशन इकाई | 90 | वर्ष 2004–05 में शुरू किया गया |
| 3 | 225 टीएमटीपीए क्षमता वाला मोटर स्पिरिट संयत्र | 297 | वर्ष 2006–07 में शुरू किया गया |
| 4 | सिलीगुड़ी विपणन टर्मिनल | 186 | ऑयल इंडिया लिमिटेड की नुमालीगढ़–सिलीगुड़ी उत्पाद पाइपलाइन से जुड़ी परियोजना के रूप में वर्ष 2008–09 में शुरू किया गया। |
| 5 | डीजल गुणवत्ता उन्नयन परियोजना | 435 | 100% क्षमता उपयोग पर बीएस–III एचएसडी के उत्पादन के लिए वर्ष 2010–11 में शुरू किया गया |
| 6 | नेफ्था स्प्लिटर इकाई | 87 | 160 टीएमटीपीए तक पेट्रोकेमिकल ग्रेड नेफ्था उत्पादन के लिए वर्ष 2013–14 में शुरू किया गया |
| 7 | मोम परियोजना | 676 | मार्च'15 में शुरू किया गया। एनआरएल 50 टीएमटीपीए तक मोम उत्पादन करने वाले देश की सबसे बड़ी मोम उत्पादक इकाई के रूप में उभरा है। |
| 8 | संयुक्त उद्यम में निवेश: असम गैस क्रैकर परियोजना | 142 | ब्रह्मपुत्र क्रैकर एंड पॉलीमर लिमिटेड में 10% इक्विटी भागीदारी |
| 9 | संयुक्त उद्यम में निवेश:<br>दुलियाजान से नुमालीगढ़ तक<br>प्राकृतिक गैस पाइपलाइन | 43 | डीएनपी लिमिटेड में 26% इक्विटी भागीदारी। |
| 10 | डीजल हाइड्रोट्रीटर यूनिट (डीएचटी) | 1,031 | |
| 11 | माउंडेड बुलेट परियोजना | 122 | दिनांक 29.10.18 को यांत्रिक कार्य संपन्न हुआ |
| 12 | संयुक्त उद्यम में निवेश: असम बायो रिफाइनरी प्राइवेट लिमिटेड | 138 | कार्यान्वयनाधीन (50% इक्विटी भागीदारी) |
| 13 | संयुक्त उद्यम में निवेश:<br>इन्द्रधनुष गैस ग्रिड लिमिटेड | 198 | कार्यान्वयनाधीन (20% इक्विटी भागीदारी) |
| 14 | एलपीजी बॉटलिंग संयत्र की क्षमता को 10 से 42 टीएमटीपीए तक बढ़ाना | 10 | वर्ष 2017–18 में शुरू किया गया |
| | **कुल** | **3,461** | |

**राजकोष में योगदान**

वाणिज्यिक संचालन की शुरुआत से और वर्ष 2021–22 तक, एनआरएल ने केंद्र और राज्य के राजकोष में ₹ 46,642 करोड़ से अधिक का योगदान दिया है। पिछले तीन वर्षों और वर्तमान वर्ष के दौरान दिसंबर'22 तक राजकोष में एनआरएल का योगदान निम्नानुसार है:

(राशि ₹ करोड़ में)

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल–दिस.) |
|---|---|---|---|---|
| केंद्रीय राजकोष | 2,971 | 5,863 | 5,330 | 3,088 |
| राज्य का राजकोष | 389 | 605 | 480 | 472 |
| **कुल** | **3,360** | **6,468** | **5,810** | **3,560** |

**औद्योगिक सफलता संबंधित निष्पादन**

पिछले कुछ वर्षों में, एनआरएल पूर्वोत्तर में औद्योगिक सफलता संबंधित निष्पादन के रूप काफी आगे बढ़ा है, जिससे इस क्षेत्र में और अधिक निवेश आकर्षित करने से संबंधित सहायक कार्य किया गया है।





## 14.4. अन्य सीपीएसई

### 14.4.1. भारत पेट्रो रिसोर्सेज लिमिटेड (बीपीआरएल)

भारत पेट्रो रिसोर्सेज लिमिटेड (बीपीआरएल) के सत्रह ब्लॉकों में भागीदारी हित (पीआई) है, जिनमें से आठ भारत में और नौ विदेशों में हैं। इसके अतिरिक्त, बीपीआरएल की दो रूसी संस्थाओं में इक्विटी हिस्सेदारी है, जो रूस में चार उत्पादक ब्लॉकों का लाइसेंस धारण करता है।

भारत में आठ ब्लॉकों में से पांच को नई अन्वेषण लाइसेंसिंग नीति (एनईएलपी) के विभिन्न दौर के अंतर्गत अधिग्रहित किया गया था, एक ब्लॉक को डिस्कवर्ड स्मॉल फिल्ड्स (डीएसएफ) बोली दौर 1 के अंतर्गत प्रदान किया गया था और दो ब्लॉकों को ओपन एकरेज लाइसेंसिंग पॉलिसी (ओएएलपी) बोली दौर 1 के अंतर्गत प्रदान किए गए थे।

नौ विदेशी ब्लॉकों में से पांच ब्राजील में हैं, दो संयुक्त अरब अमीरात में हैं और एक–एक ब्लॉक मोजाम्बिक और इंडोनेशिया में हैं। बीपीआरएल के ब्लॉक अन्वेषण, मूल्यांकन, विकास और उत्पादन के विभिन्न चरणों में हैं।

बीपीआरएल और उसकी सहायक कंपनियों के कुल क्षेत्रफल लगभग 21,360 वर्ग किलोमीटर है, जिसमें से 50% क्षेत्रफल अपतटीय है।

भारतीय सहायता संघ (आईसी) में बीपीआरएल, इंडियन ऑयल कॉरपोरेशन लिमिटेड (आईओसीएल) और ऑयल इंडिया लिमिटेड (ओआईएल) शामिल हैं जिन्होंने अक्टूबर 2016 में सिंगापुर में निगमित पूर्ण स्वामित्व वाली सहायक कंपनियों और विशेष प्रयोजन तंत्र के माध्यम से एलएलसी तास–युरयाख नेफ्तेगज्डोबायाचा (टीवाईएनजीडी) में 29.9%, रूस की राष्ट्रीय ऑयल कंपनी मेसर्स रोसनेफ्ट से जेएससी वंकोरनेफ्ट में 23.9% इक्विटी हिस्सेदारी का अधिग्रहण प्राप्त किया था। एसपीवी जो रूसी संस्थाओं के शेयरधारक हैं, केवल लाभांश के हकदार हैं। रूसी संस्थाओं से बीपीआरएल का तेल उत्पादन का प्रभावी हिस्सा टीवाईएनजीडी से लगभग 10 केबीओपीडी और वैंकरनेफ्ट से 15 केबीओपीडी है।

वर्ष 2018 में, भारत पेट्रो रिसोर्सेज लिमिटेड (बीपीआरएल), ओएनजीसी विदेश और इंडियन ऑयल कॉर्पोरेशन लिमिटेड के साथ संयुक्त रूप से

भारतीय सहायता संघ के रूप में कार्य करते हुए, लोअर जकुम कंसेशन, ऑफशोर अबू धाबी में 10% हिस्सेदारी प्रदान की गई थी। यह पहली बार हुआ था कि किसी भारतीय तेल और गैस कंपनी को अबू धाबी के हाइड्रोकार्बन संसाधनों के विकास में हिस्सेदारी दी गई थी। बीपीआरएल की अपनी सहायक कंपनी के माध्यम से भारतीय सहायता संघ के एसपीवी में 30% हिस्सेदारी है, जो लोअर जकुम कंसेशन में 10% हिस्सेदारी रखती है। कंसेशन, जिसका कार्यकाल दिनांक 09 मार्च 2018 की प्रभावी तारीख से 40 वर्ष का है, पर दिनांक 10 फरवरी 2018 को हस्ताक्षर किए गए थे। इस क्षेत्र का वर्तमान तेल उत्पादन लगभग 400 केबीओपीडी है और इसमें भारतीय सहायता संघ की वार्षिक हिस्सेदारी लगभग 1.5 एमएमटी होगी। बीपीआरएल के इक्विटी कच्चे तेल के हिस्सेदारी को बीपीसीएल समूह की रिफाइनरियों द्वारा उन्नयन किया गया है।

मोजाम्बिक में, उत्तरी मोजाम्बिक के तट से रोवुमा अपतटीय क्षेत्र 1 में प्राकृतिक गैस की विशाल मात्रा की खोज को ध्यान में रखते हुए, क्षेत्र 1 सहायता संघ भागीदारों ने दिनांक 18 जून 2019 को 2–ट्रेन (2x6.56 एमएमटीपीए) अपतटीय गोल्फिन्हो–अटम खोज क्षेत्र से खोजी गई गैस के मुद्रीकरण के लिए तटवर्ती प्रारंभिक एलएनजी परियोजना विकसित करने के लिए अंतिम निवेश निर्णय (एफआईडी) की घोषणा की थी। एफआईडी की घोषणा से, गोल्फिन्हो–अटम क्षेत्र विकास योजना प्रभावी हो गयी है और इसके साथ–साथ इसकी 30 वर्ष की विकास और उत्पादन अवधि शुरू हो गई है। एफआईडी के पश्चात, जबकि परियोजना निर्धारित समय पर चल रही थी और मार्च 2021 तक के बजटीय अवधि के भीतर थी, मार्च 2021 के अंत में अफुंगी परियोजना स्थल के आसपास सुरक्षा संबंधी आकस्मिक कारणों से, पेट्रोलियम प्रचालनों का संचालन करने से संबंधित अपने दायित्वों को पूरा न कर पाने के कारण प्रचालक को जेओए, ईपीसीसी और अन्य सभी संविदा के अंतर्गत एफएम घोषित किया है। मोजाम्बिक सरकार शांति की पुनर्स्थापना और सुरक्षा स्थिति को सुधार करने की दिशा में काम कर रही है। मोजाम्बिक सेना रवांडा और दक्षिणी अफ्रीकी विकास समुदाय (एसएडीसी) के संयुक्त बलों के मदद से इस क्षेत्र में अपना अभियान जारी रखे हुए है। क्षेत्र1 परियोजना स्थानीय सामाजिक और आर्थिक अवसंरचना के विकास में सहायता कर रही है और यह परियोजना वर्तमान में कृषि, जल और स्वच्छता, स्वास्थ्य, शिक्षा और क्षमता निर्माण, मत्स्य पालन, सौरीकरण और छोटे व्यवसाय से संबंधित विकास क्षेत्रों में विभिन्न परियोजनाओं को लागू कर रही है। जबकि परियोजना फोर्स मेजर में बनी हुई है, संविदाकारों के साथ संबंध रचनात्मक बने हुए हैं, स्थानीय सामग्री, रोजगार और प्रशिक्षण आदि की संवेदनशीलता को देखते हुए स्थानीय मोजाम्बिक कंपनियों के साथ स्थिति की समीक्षा करने के लिए विशिष्ट वार्ता की गई है। प्रचालक ने सूचित किया है कि स्थल पर उपकरण और अवसंरचनाएं अच्छी स्थिति में हैं।

ब्राजील में सेर्गिपे अलागोस (बीएम–सील–11) कंसेशन में दो ब्लॉक अर्थात सील–एम–426 और सील–एम–349 शामिल हैं और पेट्रोब्रास 60% पीआई सहित प्रचालक है जबकि बीपीआरएल का संयुक्त उद्यम अर्थात आईबीवी शेष 40% पीआई की हिस्सेदारी रखता है। प्रचालक ने रियायतग्राहियों की ओर से दो खोजों के लिए नवंबर 2022 में एएनपी (ब्राजील नियामक) को क्षेत्र विकास योजना (एफडीपी) प्रस्तुत किया है।

वर्ष 2019 के दौरान, बीपीआरएल और आईओसीएल के सहायता संघ को अबू धाबी 2018 ब्लॉक लाइसेंसिंग दौर में विजेता बोलीदाता के रूप में आगे बढ़ने के बाद अबू धाबी में तटवर्ती ब्लॉक –1 कंसेशन प्रदान किया गया था। यह अधिनिर्णय संभावित यूएई क्षेत्र में पहली बार विदेशी परिसंपत्तियों के संचालक के रूप में बीपीआरएल के प्रवेश को चिह्नित करता है। अबू धाबी सरकार की ओर से एसपीसी द्वारा दी गई रियायत की प्रभावी रियायत अवधि 35 वर्ष है और अन्वेषण चरण ऊर्जा भारत पीटीई लिमिटेड (यूबीपीएल) द्वारा संचालित की जाती है, जो सिंगापुर में भारतीय सहायता संघ के इस उद्देश्य के लिए 50:50 एसपीवी की हिस्सेदारी रखता है। रुबैस डिस्कवरी में मूल्यांकन कुओं की खुदाई और परीक्षण कार्य पूरा हो गया है जिसने हाइड्रोकार्बन की उपस्थिति को दर्शाया है और खोज के विकास के लिए भावी अध्ययन प्रगति पर हैं। तेल में भारतीय सहायता संघ की इक्विटी अधिकार होंगे। इसके अतिरिक्त, रियायत में अन्वेषण कुओं की भी खुदाई की गई है।

भारत के कावेरी घाटी में ब्लॉक सीवाई ओएनएन–2002/2 में गदनम की खोज, जहां ओएनजीसी प्रचालक है और बीपीआरएल का गैर–प्रचालक के रूप में 40% का पीआई है जो वर्तमान में विकासाधीन है और इसके अतिरिक्त 2016 से वाणिज्यिक तेल उत्पादन के लिए गैस मुद्रीकरण मई 2021 से शुरू किया गया है।

बीपीआरएल ने दिसंबर 2022 तक लगभग ₹ 33,500 करोड़ का निवेश किया है। बीपीआरएल विदेशी परिसंपत्तियों की सूची निम्नानुसार है:

| देश | परिसंपत्ति | भागीदार |
|---|---|---|
| ब्राजिल | बीएम–सील–11 (2 ब्लॉक) | पेट्रोब्रास–60% (प्रचालक)<br>आईबीपी–40% |
| ब्राजिल | बीएम–सी– 30 (1 ब्लॉक) | पेट्रो रियो–64.3% (प्रचालक)<br>आईबीपी–35.7% |
| ब्राजिल | बीएम–पीओटी–16 (2 ब्लॉक) | पेट्रोब्रास–30% (प्रचालक)<br>बीपी–30%<br>पेट्रोगल–20%<br>आईबीपी–20% |
| इंडोनेशिया | नुनुकन | बीपीआरएल उद्यम इंडोनेशिया बीवी–16.2%<br>पार्टामिना–83.8% 2 (प्रचालक) |
| मोज़ाम्बिक | क्षेत्र 1 अपतटीय | कुल ऊर्जा–26.5% (प्रचालक)<br>बीपीआरएल उद्यम मोज़ाम्बिक बीवी–10%<br>बीआरईएमएल–10%<br>ओवीआरएल–10%<br>पीटीटीईपी–8.5%<br>मित्सुई–20%<br>ईएनएच–15% |
| रूस | वैंकोरनेफ्ट (2 लाइसेंस) | वैंकोर इंडिया 3–23.9%<br>वोस्टोक तेल–50.1% (प्रचालक)<br>ओवीएल–26% |
| रूस | टीयाईएनजीडी 2 लाइसेंस) | तास इंडिया 4–29.9%<br>रोसनेफ्ट–50.1% (प्रचालक)<br>बीपी–20% |
| संयुक्त अरब अमीरात | निचला जकुम | एडनोक–60%<br>फॉल्कोन 5–10%<br>इनपैकेस–10%<br>सीएनपीसी–0%<br>कुल ऊर्जा–5%<br>ईएनआई–5% |
| संयुक्त अरब अमीरात | तटवर्ती ब्लॉक 1 | यूबीपीएल 6–100% |

[1] आईबीवी ब्राजिल एक संयुक्त उद्यम (जेवी) कंपनी है, जो ब्राजिल में निगमित है और जो बीपीआरएल और बीडियोकॉन इंडस्ट्रीज लिमिटेड द्वारा उनकी विदेशी सहायक कंपनियों के माध्यम से समान रूप से धारित है।

[2] निकासी की सूचना जारी की गई, पीआई को मौजूदा पीआई, अतिरिक्त पीआई (12.5% के वर्तमान पीआई से अधिक) के बीपीआरएल शेयर के अनुपात में भागीदारों को अंतरित किया जा रहा है, जो 3.7338% होगा, एसकेके निगास से स्वीकृति लंबित है।

[3] वैंकोर इंडिया पीटीवाई लिमिटेड जो बीपीआरएल, ओआईएल और आईओसीएल का संयुक्त उद्यम है जिसमें बीपीआरएल की 33% हिस्सेदारी है

[4] तास इंडिया पीटीवाई लिमिटेड जो बीपीआरएल, ओआईएल और आईओसीएल का संयुक्त उद्यम है जिसमें बीपीआरएल की 33% हिस्सेदारी है

[5] फाल्कन, बीपीआरएल, ओवीएल और आईओसीएल का संयुक्त उद्यम है जिसमें बीपीआरएल की 30% हिस्सेदारी है।

[6] कर्जा भारत पीटीवाई लिमिटेड, बीपीआरएल और आईओसीएल का संयुक्त उद्यम है, जिसमें बीपीआरएल की हिस्सेदारी 50% है।

### 14.4.2. बामर लॉरी इंवेस्टमेंट्स लिमिटेड (बीएलआईएल)

भारत सरकार ने तेल के अपने नियोजित विनियमन और अर्थव्यवस्था के वैश्वीकरण को ध्यान में रखते हुए, आईबीपी कंपनी लिमिटेड (आईबीपी) में अपनी कुल 59.58% इक्विटी होल्डिंग का 33.58: प्रबंधन नियंत्रण सहित कार्यनीतिक भागीदारी को विनिवेश करने का निर्णय लिया। इसके परिणाम स्वरूप आईबीपी की अपनी पूर्ववर्ती सहायक कंपनी बामर लॉरी एंड कंपनी लिमिटेड (बीएल) में शेयरधारिता को बामर लॉरी इन्वेस्टमेंट्स लिमिटेड (बीएलआईएल) के पक्ष में विलय कर दिया गया था, जिसे कंपनी अधिनियम, 1956 के अनुसार दिनांक 20 सितंबर, 2001 को निगमित किया गया था। भारत के राष्ट्रपति, कंपनी में ₹ 10 (कुल चुकता इक्विटी पूंजी का कुल 59.67% के 1,32,46,098 इक्विटी शेयर धारण करता हैं। बीएलआईएल, पेट्रोलियम और प्राकृतिक गैस मंत्रालय के प्रशासनिक नियंत्रण में है जिसका पंजीकृत कार्यालय कोलकाता में है। बामर लॉरी एंड कंपनी लिमिटेड (बीएल) नामक सहायक कंपनी के इक्विटी शेयरों को छोड़कर कंपनी की कोई व्यावसायिक कार्यकलाप नहीं है, आय का प्रमुख स्रोत बीएल से प्राप्त लाभांश आय है। लाभांश आय के अतिरिक्त, कंपनी अनुसूचित बैंकों की सावधि/मीयादी जमा

योजनाओं में रखी अपनी अधिशेष निधियों से ब्याज अर्जित करती है। बीएलआईएल के संयुक्त उद्यम और सहायक कंपनियां निम्नानुसार हैं:

- बीएलआईएल का किसी कॉर्पोरेट इकाई के साथ कोई संयुक्त उद्यम नहीं है।
- बीएलआईएल की वर्तमान में एक सहायक कंपनी और एक स्टेप–डाउन सहायक कंपनी है, अर्थात्

i. बामर लॉरी एंड कंपनी लिमिटेड [कंपनी अधिनियम, 2013 की धारा 2(87) (ii) के अनुसार] [जिसे यहां 'बीएल' के रूप में संदर्भित किया गया है] और बीएल, इसके बदले में, एक सहायक कंपनी है जैसा कि नीचे क्रम संख्या ii में बताया गया है।

ii. विशाखापत्तनम पोर्ट लॉजिस्टिक्स पार्क लिमिटेड [कंपनी अधिनियम, 2013 की धारा 2(87) (ii) के अनुसार]।

## 14.4.3. तेल उद्योग विकास बोर्ड (ओआईडीबी)

### 14.4.3.1. बोर्ड के उद्देश्य और कार्य

तेल उद्योग के विकास के लिए वित्तीय और अन्य सहायता प्रदान करने के लिए तेल उद्योग (विकास) अधिनियम, 1974 के अंतर्गत दिनांक 13 जनवरी, 1975 को तेल उद्योग विकास बोर्ड (ओआईडीबी) की स्थापना की गई थी। अधिनियम की धारा 6 में बोर्ड के कार्यों को यथा परिभाषित किया गया है, जिसमें ऐसी सभी कार्यकलापों को बढ़ावा देने के लिए ऋण और अनुदान सहित वित्तीय सहायता प्रदान करना शामिल है, जो उनकी राय में तेल उद्योग के विकास के लिए अनुकूल हैं।

### 14.4.3.2. संगठनात्मक ढांचा

तेल उद्योग विकास बोर्ड में सचिव, एमओपी एंड एनजी अध्यक्ष के रूप में और अन्य सदस्य जैसे सचिव, रसायन और पेट्रोरसायन विभाग, अपर सचिव और वित्तीय सलाहकार, एमओपीएनजी, अपर सचिव, व्यय विभाग, वित्त मंत्रालय, अपर सचिव (अन्वेषण), एमओपीएनजी, अध्यक्ष, आईओसीएल, अध्यक्ष और प्रबंध निदेशक, ओएनजीसी, गेल, बीपीसीएल, ईआईएल, महानिदेशक, हाइड्रोकार्बन महानिदेशालय, निदेशक (आर एंड डी), आईओसीएल और सचिव, तेल उद्योग विकास बोर्ड के सदस्य सचिव के रूप में शामिल हैं।

### 14.4.3.3. बोर्ड के संसाधन

इस अधिनियम के अंतर्गत परिकल्पित विभिन्न कार्यकलापों के लिए अपेक्षित निधियां स्वदेशी कच्चे तेल पर लगाए गए और एकत्रित उपकर की आय से संसद द्वारा यथोचित विनियोग के पश्चात केन्द्र सरकार द्वारा उपलब्ध कराई गई थीं। अब तक ओआईडीबी को वर्ष 1991–92 तक केंद्र सरकार से ₹ 902.40 करोड़ की राशि प्राप्त हुई है, जिसमें आंतरिक उत्पादन के माध्यम से दिनांक 31.03.2022 तक की स्थिति के अनुसार ₹ 11,937.70 करोड़ जमा हो गई है।

### 14.4.3.4. निधियों का परिनियोजन

वर्ष 2022–23 (09.12.2022 तक) के दौरान, ओआईडीबी ने हाइड्रोकार्बन महानिदेशालय (डीजीएच), पेट्रोलियम संरक्षण अनुसंधान संघ (पीसीआरए), उच्च प्रौद्योगिकी केंद्र (सीएचटी), तेल उद्योग सुरक्षा निदेशालय (ओआईएसडी), पेट्रोलियम योजना और विश्लेषण प्रकोष्ठ (पीपीएसी) और अन्य अनुसंधान एवं विकास जैसी संस्थानों से संबंधित कार्यकलापों के लिए ₹ 292.78 करोड़ का अनुदान जारी किया है। इंद्रप्रस्थ गैस ग्रिड लिमिटेड को ₹ 300 करोड़ का ऋण जारी किया गया है। वित्त वर्ष 2022–23 (ब.अ.) के दौरान विभिन्न तेल पीएसयू के लिए स्वीकृत कुल ऋण ₹ 4,866.17 करोड़ है। तथापि, कंपनियों ने अभी तक ऋण नहीं लिया है। इंडियन कार्यनीतिक पेट्रोलियम रिजर्व लिमिटेड (आईएसपीआरएल) जो ओआईडीबी की पूर्ण स्वामित्व वाली सहायक कंपनी है, को तीन स्थानों पर कच्चे तेल के लिए कार्यनीतिक भंडारण के निर्माण–कार्य सौंपा गया है। ओआईडीबी ने अब तक आईएसपीआरएल में इक्विटी निवेश के रूप में 3,790.05 करोड़ रुपये की राशि और चरण–II एसपीआर के लिए परियोजना–पूर्व कार्यकलापों के लिए अनुदान के रूप में ₹ 19 करोड़ की राशि जारी की है।

## 14.4.4. तेल उद्योग सुरक्षा निदेशालय (ओआईएसडी)

पेट्रोलियम और प्राकृतिक गैस मंत्रालय के अंतर्गत तकनीकी निदेशालय, तेल उद्योग सुरक्षा निदेशालय (ओआईएसडी) को मानकों को सूत्रीकरण करने, सुरक्षा स्तरों को बढ़ाने और इस उद्योग में निहित जोखिम को कम करने के लिए सुरक्षा लेखा–परीक्षा के माध्यम से इसके कार्यान्वयन की देखरेख करने की जिम्मेदारी सौंपी गई है। ओआईएसडी मानकों को तेल और गैस कंपनियों द्वारा स्व–विनियामक आधार पर लागू किया जाता है।

पेट्रोलियम और प्राकृतिक गैस (अपतटीय प्रचालनों में सुरक्षा) नियमावली, 2008 को अपतटीय तेल और गैस अन्वेषण, खुदाई, उत्पादन और संबंधित कार्यकलापों में सुरक्षा को विनियमित करने के लिए भारत के राजपत्र में अधिसूचित किया गया था; और ओआईएसडी को जून, 2008 में जारी राजपत्र अधिसूचना के माध्यम से इन नियमों, 2008 में निर्धारित शक्तियों और कार्यों का प्रयोग करने के लिए सक्षम प्राधिकारी के रूप में नामित किया गया है। निदेशालय, इन नियमों के प्रावधानों के अंतर्गत, अंतरराष्ट्रीय कार्यप्रणाली के समान लक्ष्य निर्धारण से संबंधित परिप्रेक्ष्य के अनुरूप अपतटीय प्रतिष्ठानों के संचालन के लिए सहमति प्रदान करता है।

**14.4.4.1. वित्त वर्ष 2022–23 में ओआईएसडी द्वारा सुरक्षा लेखा–परीक्षा:**

ओआईएसडी तटवर्ती और अपतटीय ई एंड पी प्रतिष्ठानों, रिफाइनरी, गैस प्रसंस्करण संयंत्र, केंद्रीय टैंक फार्म, एलएनजी टर्मिनल, पेट्रोरसायन संयंत्र, अंतर–देशीय पाइपलाइन, एलपीजी बॉटलिंग संयंत्र, एलपीजी आयात सुविधा, डिपो, टर्मिनल, विमानन ईंधन केन्द्र और ल्यूब मिश्रण संयंत्र के लिए आवधिक आधार पर विदेशी सुरक्षा संबंधी लेखा परीक्षा (ईएसए) आयोजित करता है ताकि ओआईएसडी मानक और वैधानिक विनियामन के अनुसार अनुपालन स्तर की निगरानी की जा सके। वर्ष 2022–23 (अप्रैल–दिसंबर) के लिए ओआईएसडी सुरक्षा लेखा–परीक्षा संबंधी निष्पादन निम्नानुसार हैं:

| कार्रवाई | इकाई | 2022-23 | | अनुमान जनवरी–मार्च 23 | कुल अपेक्षित सुरक्षा लेखा–परीक्षा |
|---|---|---|---|---|---|
| | | योजना | वास्तविक (31.12.22) | | |
| रिफाइनरी / पेट्रोरसायन / जीपीपी / सीटीएफ / एलएनजी टर्मिनल | कोई नहीं | 23 | 22 | 3 | 25 |
| विपणन प्रतिष्ठान (पीओएल) | कोई नहीं | 78 | 63 | 15 | 78 |
| विपणन प्रतिष्ठान (एलपीजी) | कोई नहीं | 42 | 42 | 3 | 45 |
| ई एंड पी तटवर्ती | कोई नहीं | 100 | 97 | 13 | 110 |
| ई एंड पी अपतटीय | कोई नहीं | 20 | 21 | 4 | 25 |
| कॉर्पोरेट / एसबीयू स्तर पर सुरक्षा लेखा–परीक्षा | कोई नहीं | 5 | 5 | 1 | 6 |
| प्रमुख पत्तन लेखा–परीक्षा | कोई नहीं | 2 | 5 | 1 | 6 |
| **कुल योग** | कोई नहीं | **270** | **255** | **40** | **295** |
| अंतर–देशीय पाइपलाइन | कि.मी. | 10,000 | 9,416 | 1,584 | 11,000 |

**14.4.4.2. कमीशनिंग–पूर्व सुरक्षा लेखा परीक्षा**

ओआईएसडी हरित–क्षेत्र विकास और मौजूदा स्थानों पर प्रमुख अतिरिक्त सुविधाओं के लिए कमीशनिंग–पूर्व सुरक्षा लेखा–परीक्षा करता है, ताकि निर्माण चरण में वैधानिक आवश्यकता और ओआईएसडी मानकों का अनुपालन सुनिश्चित किया जा सके। दिनांक 31 दिसंबर, 2022 तक की स्थिति के अनुसार वर्ष 2022–23 के दौरान किए गए पीसीएसए की स्थिति निम्नानुसार है:

| कमीशनिंग–पूर्व सुरक्षा लेखा–परीक्षा (पीसीएसए) | इकाई | वास्तविक 2021-22 | वास्तविक 2022-23 (अप्रैल–दिसम्बर) |
|---|---|---|---|
| रिफाइनरी / पेट्रोरसायन / जीपीपी / सीटीएफ / एलएनजी टर्मिनल | कोई नहीं | 31 | 24 |
| विपणन प्रतिष्ठान (पीओएल) | कोई नहीं | 34 | 27 |
| विपणन प्रतिष्ठान (एलपीजी) | कोई नहीं | 20 | 13 |
| ई एंड पी क्षेत्र | कोई नहीं | 0 | 1 |
| पाइपलाइन की अवस्थिति (किमी में शामिल पाइपलाइन की लंबाई) | कोई नहीं (किमी) | 14 (1984.6) | 22 (3058.5) |
| **कुल** | कोई नहीं | **99** | **87** |

### 14.4.4.3. अपतटीय प्रतिष्ठानों में 'प्रचालन सहमति'

पेट्रोलियम और प्राकृतिक गैस (अपतटीय प्रचालनों में सुरक्षा) नियम, 2008 के कार्यान्वयन की निगरानी के लिए सक्षम प्राधिकारी के रूप में ओआईएसडी अपतटीय प्रतिष्ठानों को प्रचालन की सहमति प्रदान करता है। वर्ष 2022–23 (अप्रैल दिसंबर) की स्थिति निम्नानुसार है:

| संचालन की सहमति का अनुदान (सीटीओ)–अपतटीय | इकाई | वास्तविक 2021-22 | वास्तविक 2022-23 (अप्रैल–दिसंबर) |
|---|---|---|---|
| निर्धारित अपतटीय प्रतिष्ठान | कोई नहीं | 07 | 09 |
| मोबाइल अपतटीय प्रतिष्ठान | कोई नहीं | 04 | 04 |
| **कुल** | कोई नहीं | **11** | **13** |

### 14.4.4.4. ओआईएसडी सुरक्षा मानकों में संशोधन:

ओआईएसडी, समिति के सदस्यों के अनुभव का लाभ उठाकर और अंतरराष्ट्रीय मानकों का उल्लेख करके सभी हितधारकों को शामिल करते हुए एक सहभागी प्रक्रिया के माध्यम से तेल और गैस उद्योग के लिए मानक विकसित करता है। ये मानक तेल और गैस उद्योग के विभिन्न पहलुओं में अंतर्निहित रूपरेखा सुरक्षा, परिसंपत्ति प्रामाणिकता और सर्वोत्तम प्रचालन कार्यप्रणाली को शामिल करते हैं। नए मानकों को विकसित करने, नवीनतम प्रौद्योगिकीय विकास के साथ–साथ जमीनी स्तर पर मौजूदा अनुभवों को शामिल करने के लिए वर्तमान के मानकों को अद्यतन/संशोधित करने की आवश्यकताओं का पता लगाने के लिए ओआईएसडी मानकों की आवधिक रूप से समीक्षा की जाती है।

आज की तारीख तक, ओआईएसडी ने तेल और गैस उद्योग के लिए 120 तकनीकी सुरक्षा मानक विकसित किए हैं। इनमें से 23 मानक पेट्रोलियम नियमावली, 2002, गैस सिलेंडर नियमावली, 2016, स्टेटिक और मोबाइल प्रेशर वेसल्स (अनफायर्ड), नियमावली, 2016, ऑयल माइनर्स रेगुलेशंस (ओएमआर), 2017 और पीएनजीआरबी विनियमनों के सांविधिक प्रावधानों में शामिल हैं।

वर्तमान में, 02 नए मानकों का विकास किया जा रहा है और 47 मौजूदा मानक संशोधन के विभिन्न चरणों में हैं।

### 14.4.4.5. तकनीकी संगोष्ठी/सम्मेलन/कार्यशालाएं

ओआईएसडी द्वारा नवीनतम प्रौद्योगिकीय विकास, मालमा अध्ययन आदि पर चर्चा हेतु तेल और गैस उद्योग के लिए तकनीकी संगोष्ठी/सम्मेलन/कार्यशालाएं आयोजित की जाती हैं।

वर्ष 2022–23 (अप्रैल–दिसंबर) के दौरान, ओआईएसडी ने विभिन्न विषयों पर 1,365 प्रतिभागियों को शामिल करते हुए छह 'सुरक्षा संवाद' का आयोजन किया जिसमें विपणन प्रचालन में एआई और डिजिटलीकरण, पर्यावरणीय पहलुओं, पाइपलाइन रिसाव, निर्माण में सुरक्षा प्रबंधन, रिफाइनरी में बड़े शटडाउन के दौरान सुरक्षा प्रबंधन प्रणाली, विद्युत सुरक्षा और उद्योग में अच्छा हाउसकीपिंग को संबोधित करते हुए स्वच्छता से सुरक्षा संबंधित विषय शामिल हैं, जिसमें उद्योग के केन्द्रीय विशेषज्ञों ने गलतियों से सीखने हेतु अनुभव साझा किए।

वर्ष 2022–23 के दौरान ज्ञान के प्रसार के लिए ओआईएसडी तकनीकी विशेषज्ञों द्वारा 05 प्रशिक्षण/कार्यशालाएं आयोजित की गई थीं, जिसमें हरित हाइड्रोजन के संपूर्ण मूल्य श्रृंखला से संबंधित सुरक्षा पहलू पर अंतरराष्ट्रीय वेबिनार भी शामिल था। छोटे और मध्यम ई एंड पी प्रचालकों के लिए ओआईएसडी और डीजीएच द्वारा "तटवर्ती ड्रिलिंग और उत्पादन प्रतिष्ठानों में बुनियादी सुरक्षा और जागरूकता" पर प्रशिक्षण कार्यक्रम आयोजित किया गया था। आरजीआईपीटी के छात्रों को ग्रीष्मकालीन प्रशिक्षण भी दिया गया।

### 14.4.4.6. सुरक्षा परिषद:

सुरक्षा परिषद, शीर्ष सुरक्षा निकाय, ने दिनांक 06 मई 2022 को हाइब्रिड मोड के माध्यम से परिषद की 39वीं बैठक में सुरक्षा निष्पादन की समीक्षा की। बैठक के दौरान स्वीकृत और/या विचार–विमर्श किए गए प्रमुख मुद्दे निम्नानुसार हैं:

- वर्ष 2021–22 में ओआईएसडी का प्रमुख कार्यकलाप शुरू किया गया और वर्ष 2022–23 के लिए कार्यकलाप योजना तैयार की गई।
- दो वर्ष से अधिक समय के लिए ओआईएसडी सुरक्षा लेखापरीक्षा संबंधित अनुशंसा पर व्यय की अनुपालन स्थिति और संबंधित क्षेत्र की समीक्षा की गई।

- असम के बागजान विस्फोट घटना से संबंधित एचएलसी की सिफारिशों का अनुपालन।
- चक्रवात ताउते घटना से संबंधित एचएलसी की सिफारिशों का अनुपालन।
- वित्त वर्ष 2021–22 में ओआईएसडी के वास्तविक व्यय और वित्त वर्ष 2022–23 के बजट अनुमान की स्वीकृति।

**14.4.4.7. घटना की जांच और विश्लेषण:**

ओआईएसडी घटना के मूल कारणों का विश्लेषण करने के लिए प्रमुख घटनाओं की जांच करता है। तेल और गैस उद्योग की प्रमुख घटनाओं का डेटाबैंक अनुरक्षण किया जाता है और रुझानों, संबंधित क्षेत्रों और आवश्यक सुधारात्मक कार्रवाई का आकलन करने के लिए विश्लेषण किया जाता है। इसके पश्चात इन्हें आवधिक बुलेटिन 'सुरक्षा चेतना' सुरक्षा चेतावनी और मामला अध्ययन; संगोष्ठी और कार्यशालाओं के माध्यम से उद्योग को प्रसारित किया जाता है।

वर्ष 2022–23 के दौरान (31 दिसंबर, 2022 तक) ओआईएसडी द्वारा छह प्रमुख घटनाओं की जांच की गई है, जिनमें से एक घटना की पीएनजीआरबी के साथ संयुक्त रूप से जांच की गई थी।

**14.4.4.8. 'तेल उद्योग सुरक्षा पुरस्कार' के माध्यम से पूरे उद्योग में सुरक्षा निष्पादन को प्रोत्साहित करना:**

उद्योग के सदस्यों के सुरक्षा निष्पादन का वार्षिक मूल्यांकन विशेष रूप से विकसित पद्धति द्वारा किया जाता है, जो संबंधित खतरों, वर्ष के दौरान दर्ज की गई घटना और प्रतिष्ठान की सुरक्षा प्रबंधन प्रणाली का संज्ञान लेता है। वर्ष के दौरान 'असाधारण सुरक्षा निष्पादन' प्राप्त करने वाले प्रतिष्ठानों/संगठनों को तेल उद्योग सुरक्षा पुरस्कार से सम्मानित किया जाता है। इसके अतिरिक्त, सुरक्षा के लिए असाधारण योगदान देने वाले कंपनी के कर्मचारियों या संविदा श्रमिकों को व्यक्तिगत रूप से भी प्रोत्साहित किया जाता है और उन्हें पुरस्कारों से पुरस्कृत भी किया जाता है। वर्ष 2019–20 से, व्यक्तिगत और संगठन दोनों स्तरों पर 'एचएसई में नवाचार' नामक नई श्रेणी की पुरस्कार जोड़ी गई है।

## 14.4.5. हाइड्रोकार्बन महानिदेशालय (डीजीएच)

हाइड्रोकार्बन महानिदेशालय (डीजीएच) की स्थापना दिनांक 08 अप्रैल, 1993 को पर्यावरण, प्रौद्योगिकीय और आर्थिक पहलुओं के लिए संतुलित धारणा रखने वाले भारतीय पेट्रोलियम और प्राकृतिक गैस संसाधनों के सुदृढ़ प्रबंधन को बढ़ावा देने के उद्देश्य से की गई थी।

**14.4.5.1. हाइड्रोकार्बन महानिदेशालय (डीजीएच) की भूमिका और कार्य**

i) इन कार्यक्रमों की पर्याप्तता पर सरकार को सलाह देने की दृष्टि से तेल क्षेत्र (विनियमन और विकास) अधिनियम, 1948 और पेट्रोलियम और प्राकृतिक गैस नियमावली, 1959 के अधीन दिए गए पेट्रोलियम अन्वेषण लाइसेंस के अंतर्गत संचालित कंपनियों के अन्वेषण कार्यक्रमों की समीक्षा करना।

ii) प्रचालन कंपनियों द्वारा खोजे गए और अनुमानित हाइड्रोकार्बन भंडार का मूल्यांकन करना।

iii) कंपनियों को अन्वेषण के लिए क्षेत्रफल की पेशकश के साथ–साथ कंपनियों द्वारा क्षेत्रफल को छोड़ने से संबंधित मामलों पर सरकार को सलाह देना।

iv) प्रचालन कंपनियों द्वारा प्रस्तावित हाइड्रोकार्बन आरक्षित की वाणिज्यिक खोजों के लिए विकास योजनाओं की समीक्षा करना और ऐसी योजनाओं की पर्याप्तता और प्रस्तावित दोहन दरों और उससे संबंधित मामलों पर सरकार को सलाह देना।

v) प्रचालन कंपनियों द्वारा पेट्रोलियम जलस्त्रोत के प्रबंधन की समवर्ती समीक्षा और लेखा–परीक्षा करना और आरक्षित के इष्टतम दोहन और पेट्रोलियम संसाधनों के संरक्षण के अनुरूप तेल जलस्त्रोत प्रबंधन कार्यप्रणाल को सुनिश्चित करने के लिए आवश्यक किसी मध्य मार्ग सुधार पर सलाह देना।

vi) संरक्षण को विनियमित करना, पेट्रोलियम अन्वेषण, खुदाई, जलस्त्रोत के उत्पादन आदि से संबंधित आंकड़े और नमूनों की अनुरक्षण और भंडारण और कंपनियों को प्रस्तावित क्षेत्रफल के लिए आंकड़े संबंधी पैकेज तैयार करना।

vii) संविदा प्रबंधन कार्यों में सरकार की सहायता करना।

viii) गैस हाइड्रेट, शेल गैस/तेल और तेल शेल जैसी अपरंपरागत हाइड्रोकार्बन संसाधनों की खोज और विकास करना।

ix) अन्य सभी प्रासंगिक मामले और ऐसे अन्य कार्य जो सरकार द्वारा समय–समय पर सौंपे जा सकते हैं।

**नए अवसर**

भारत सरकार ने हाइड्रोकार्बन अन्वेषण और लाइसेंसिंग नीति (एचईएलपी), खोजे गए लघु क्षेत्र (डीएसएफ) नीति और कोल बेड मीथेन नीति के अंतर्गत ब्लॉकों और क्षेत्रों के अपने कई पहलुओं और पेशकशों सहित विभिन्न आकारों के कंपनियों, नए प्रवेशकों, विदेशी कंपनियों, प्रचालकों और सेवा प्रदाताओं को समान अवसर प्रदान किए हैं।

नीचे प्रस्तुत किया गया भाग दिसंबर 2022 तक प्राप्त की गई व्यक्तिगत पेशकशों और नवीनतम प्रगति को दर्शाता है।

**हाइड्रोकार्बन अन्वेषण और लाइसेंसिंग नीति (एचईपीएल)**

क) भारतीय तलछटी घाटी में तेल और गैस के उत्पादन को बढ़ाने के उद्देश्य से हाइड्रोकार्बन अन्वेषण और लाइसेंसिंग नीति (एचईपीएल) शुरू की गई थी। हाइड्रोकार्बन अन्वेषण लाइसेंसिंग नीति (एचईपीएल) लागत वसूली से राजस्व साझाकरण तंत्र में एक आदर्श बदलाव था। यह भारतीय ई एंड पी क्षेत्र में 'व्यापारिक सुगमता' में सुधार की दिशा में महत्वपूर्ण उपाय था। भारत सरकार ने एचईपीएल के हिस्से के रूप में ओपन एकरेज लाइसेंसिंग (ओएएल) तंत्र की शुरुआत की है, जो अन्वेषण कंपनियों को सरकार से औपचारिक बोली दौर की प्रतीक्षा किए बिना, अपने आप अन्वेषण ब्लॉकों का चयन करने का विकल्प देता है। एचईपीएल की कुछ प्रमुख विशेषताएँ हैं जिन्हें उद्योग जगत से काफी प्रशंसा मिली है, जो निम्नानुसार हैं:

i. सभी प्रकार के पारंपरिक और अपरंपरागत हाइड्रोकार्बन के लिए समान लाइसेंसिंग प्रणाली।

ii. ईओएल के माध्यम से ब्लॉकों को तराशने की स्वतंत्रता

iii. 100% एफडीआई की अनुमति

iv. विपणन और मूल्य निर्धारण स्वतंत्रता, कम रॉयल्टी दरें

v. प्रारंभिक वाणिज्यिक उत्पादन के मामले में आगे की रियायती रॉयल्टी दरें

vi. पूर्ण संविदा कार्यकाल के लिए अन्वेषण अधिकार

**14.4.5.2. ओएएलपी बोली दौर की स्थिति:**

ओएएलपी के अंतर्गत बोली के सात दौर में, 139 ब्लॉक प्रस्ताव पर थे और 2,07,692 वर्ग किलोमीटर के क्षेत्रफल को शामिल करने वाले 134 अन्वेषण ब्लॉकों को सफल बोलीदाताओं को प्रदान किए गए थे। ओएएलपी–दौर–III के अंतर्गत पांच (5) गैर–प्रदत्त ब्लॉकों की पेशकश की गई थी और उन सभी में सीबीएम पर ध्यान केंद्रित किया गया था, तथापि, उन सीबीएम ब्लॉकों के लिए कोई बोली प्राप्त नहीं हुई थी। शेष 134 ब्लॉकों के लिए 239 बोलियां प्राप्त हुई थीं जो 19 तलछटी घाटी में विस्तारित हैं।

| बोली दौर | ब्लॉकों की संख्या | अधिनिर्णय क्षेत्र (वर्ग किमी) |
|---|---|---|
| ओएएलपी-I | 55 | 59,283 |
| ओएएलपी-II | 14 | 29,233 |
| ओएएलपी-III | 18 | 29,765 |
| ओएएलपी-IV | 7 | 18,510 |
| ओएएलपी-V | 11 | 19,789 |
| ओएएलपी-VI | 21 | 35,346 |
| ओएएलपी-VII | 8 | 15,766 |
| **कुल** | **134** | **2,07,692** |

**14.4.5.3. ओएलएपी बोली दौर–VIII:**

इसे 07 जुलाई 2022 को शुरू किया गया था, जिसमें लगभग 34,365 वर्ग किलोमीटर क्षेत्रफल को शामिल करते हुए 10 ब्लॉकों की पेशकश की गई थी। ओएएलपी बोली दौर–VIII के लिए बोली प्रस्तुतिकरण की अंतिम तिथि 16.05.2023 है।

**14.4.5.4. अपतटीय बोली दौर (ओएएलपी बोली दौर–IX):**

इस बोली के अंतर्गत अंतरराष्ट्रीय प्रतिस्पर्धी बोली के माध्यम से अन्वेषण और विकास की पेशकश के लिए लगभग 2.23 लाख वर्ग किलोमीटर क्षेत्र को कवर करने वाले 26 ब्लॉक शामिल हैं। इनमें से 18 ब्लॉक सरकार द्वारा बनाए गए हैं और शेष 8 ब्लॉक संभावित निवेशकों से प्राप्त ईओआई के अनुसार हैं।

**14.4.5.5. खोजे गए छोटे क्षेत्र (डीएसएफ) संबंधी नीति:**

क) वर्ष 2015 में, भारत सरकार ने खोजे गए छोटे क्षेत्र (डीएसएफ) नीति की शुरुआत की थी, जो खोजे गए क्षेत्रफल को प्रदान करने और गैर–मुद्रीकृत खोजों को मुद्रीकृत करने के लिए महत्वपूर्ण उपाय था। राजस्व सांझाकरण संविदा रूपरेखा, एकीकृत लाइसेंस, मध्यम रॉयल्टी दरों जैसी अपनी आकर्षक विशेषताओं और बेहतर वित्तीय शर्तों के माध्यम से डीएसएफ ने प्रचालकों पर विनियामक बोझ को काफी हद तक कम कर दिया।

ख) अंतरराष्ट्रीय बोली के लिए 46 संविदा क्षेत्रों की पेशकश करते हुए खोजे गए क्षेत्र नीति के अंतर्गत पहला बोली दौर दिनांक 25 मई 2016 को शुरू किया गया था। मार्च, 2017 में कुल 30 संविदा प्रदान की गई थी। उम्मीद है कि 15 वर्ष की अवधि में 40 मिलियन मीट्रिक टन (एमएमटी) तेल और 22 बिलियन क्यूबिक मीटर (बीसीएम) गैस के निरूद्ध हाइड्रोकार्बन भंडार का मुद्रीकरण किया जाएगा।

ग) दिनांक 7 फरवरी, 2018 को, सरकार ने खोजे गए छोटे क्षेत्र (डीएसएफ) नीति बोली दौर–II को मंजूरी दी थी, जो दिनांक 14.10.2015 को अधिसूचित खोजे गए छोटे क्षेत्र नीति का विस्तार रूप है। डीएसएफ बोली दौर–II के अंतर्गत, बोली लगाने के लिए 24 संविदा क्षेत्रों में लगभग 190 मिलियन मीट्रिक टन (एमएमटी) तेल और तेल समकक्ष गैस (ओ+ओईजी) होने का अनुमान लगाया गया था। इसके पश्चात, दिनांक 7 मार्च, 2019 को कुल 24 राजस्व सांझाकरण संविदा पर हस्ताक्षर किए गए थे।

घ) डीएसएफ बोली दौर–I (2016) और डीएसएफ बोली दौर–II (2018) की सफलता के अनुपालनों और तथ्य यह है कि अभी भी कई और अप्रयुक्त खोजें हैं जिसके लिए सरकार ने जून–2021 में डीएसएफ बोली दौर–III शुरू किया था जिसमें 32 संविदा क्षेत्र शामिल हैं। इसके पश्चात, 31 संविदा क्षेत्र प्रदान किये गये (31 संविदा क्षेत्र में से, 1 संविदा पर अभी हस्ताक्षर होना शेष है)।

**14.4.5.6. कोल बेड मीथेन नीति:**

क) कोलबेड मीथेन (सीबीएम), जो प्राकृतिक गैस का अपरंपरागत स्रोत है, जिसे भारत के ऊर्जा संसाधनों को बढ़ाने के लिए महत्वपूर्ण विकल्प के रूप में विचार किया जाता है। दुनिया में पांचवें सबसे बड़े सिद्ध कोयला भंडार होने के कारण, भारत सीबीएम के अन्वेषण और उत्पादन के लिए महत्वपूर्ण संभावनाएं रखता है।

ख) भारत के सीबीएम संसाधनों का अनुमान लगभग 92 ट्रिलियन क्यूबिक फीट (टीसीएफ), या 2,600 बिलियन क्यूबिक मीटर (बीसीएम) है। देश के कोयला और सीबीएम भंडार भारत के 12 राज्यों में पाए जाते हैं, जिनमें पूर्वी भारत के गोंडवाना तलछट में पर्याप्त रूप से पाए जाते हैं।

ग) देश में सीबीएम क्षमता का उपयोग करने के लिए, डीजीएच द्वारा कोयला मंत्रालय (एमओसी) और सेंट्रल माइन प्लानिंग एंड डिजाइन इंस्टीट्यूट (सीएमपीडीआई), रांची के साथ निकटतम वार्ता के माध्यम से सीबीएम ब्लॉक बनाए गए थे।

घ) आज तक, चार सीबीएम बोली दौर लागू किए गए हैं, जिसके परिणामस्वरूप 33 सीबीएम ब्लॉक [नामांकन पर 2 ब्लॉक और विदेशी निवेश संवर्धन बोर्ड (एफआईपीबी) मार्ग] के माध्यम से 1 ब्लॉक सहित, प्रदान किया गया है, जिसमें 16,598 वर्ग किलोमीटर शामिल है। वर्तमान में 08 सीबीएम ब्लॉक सक्रिय हैं जिनमें से 05 ब्लॉक में उत्पादन जारी है और 03 ब्लॉक विकास के चरण में हैं। दिसंबर–2022 तक सीबीएम का संचयी उत्पादन लगभग 5.58 बीसीएम है।

ङ) विशेष सीबीएम बोली दौर 2021–इस तथ्य को स्वीकार करते हुए कि गैर पारंपरिक हाइड्रोकार्बन महत्वपूर्ण भूमिका निभाने जा रहे हैं, सरकार ने देश में हाइड्रोकार्बन के उत्पादन को बढ़ाने की अपनी कोशिश में अंतरराष्ट्रीय प्रतिस्पर्धी बोली के माध्यम से हाइड्रोकार्बन अन्वेषण लाइसेंसिंग नीति के अंतर्गत विशेष सीबीएम बोली दौर–2021 (एससीबीएम 2021) शुरू किया। एससीबीएम बोली दौर–2021 के अंतर्गत, लगभग 3,862 वर्ग किमी के क्षेत्र को शामिल करते हुए 04 सीबीएम ब्लॉक प्रदान किए गए। वर्तमान में, ये सभी 04 सीबीएम ब्लॉक अन्वेषण चरण में हैं।

च) विशेष सीबीएम बोली दौर 2022 (एससीबीएम–2022): भारत सरकार ने खुला क्षेत्रफल लाइसेंसिंग नीति (ओएएलपी) के अंतर्गत अंतरराष्ट्रीय प्रतिस्पर्धी बोली (आईसीबी) के माध्यम से लगभग 5,817 वर्ग किमी मीटर के क्षेत्र को शामिल करते हुए 16 सीबीएम ब्लॉक की पेशकश की घोषणा की।

### 14.4.5.7. आंकड़े आधारित सुधार और पहल:

भारत सरकार ने परियोजना प्रौद्योगिकी–आर्थिक रूप से क्या व्यवहार्य है इसके लिए गुणवत्तापूर्ण ई एंड पी आंकड़े संबंधी महत्व को मान्यता दी है। भारत सरकार ने निवेशकों को ईएंडपी आंकड़े देखने, उनका विश्लेषण करने और किसी भी समय निवेश के लिए ठोस निर्णय लेने में सक्षम बनाने के लिए इस क्षेत्र में आंकड़े आधारित सुधारों की शुरुआत की है।

दस्तावेज़ का यह भाग भारत सरकार द्वारा की गई विभिन्न पहलों और दिसंबर 2022 तक इस क्षेत्र में की गई नवीनतम उपलब्धियों के बारे में विस्तार से विवरण प्रस्तुत करता है।

### 14.4.5.8. राष्ट्रीय डेटा रिपॉजिटरी (एनडीआर):

बोली प्रक्रिया के दौरान योजना बनाने और तथ्य आधारित निर्णय लेने के लिए ई एंड पी कंपनियों हेतु गुणवत्ता पूर्ण आंकड़ो की उपलब्धता महत्वपूर्ण है। इस पहलू का संज्ञान लेते हुए, डीजीएच की राष्ट्रीय डेटा रिपॉजिटरी (एनओआर) वर्तमान में भौतिक आंकड़े देखने वाले कक्ष में उपलब्ध अपनी ई एंड पी आंकड़े मानस दर्शन और प्रस्तुतीकरण (डीवीआई) सुविधाओं को वैश्विक आधार पर ऑनलाइन/कहीं भी/कभी भी आंकड़े मार्गदर्शन और प्रस्तुतीकरण संबंधी सुविधा का विस्तार करने का लक्ष्य रख रहा है। एनओआर जीआईएस सक्षम वेब पोर्टल है जिसमें आंकड़े संबंधी अधिकार, सूचना प्रेषण और आंकड़े संबंधी लेनदेन इंटरनेट के माध्यम से आंकड़ों का पता लगाना और वितरण करना शामिल है। वर्तमान में लगभग 304 कंपनियां और 950 से अधिक उपयोगकर्ता एनओआर में पंजीकृत हैं।

इस एनओआर को प्राप्त करने के लिए, डीजीएच ने पीडीसी, नोएडा और एसडीसी भुवनेश्वर में अपने परिसरों में एक निजी क्लाउड सुविधा स्थापित की है ताकि बोली के लिए विभिन्न ओएएलपी/डीएसएफ दौर के अंतर्गत पहचाने गए ब्लॉकों की खोज को बढ़ावा देने के लिए दूरस्थ पहुंच को बढ़ावा दिया जा सके। इससे दूरदराज के स्थानों में रहने वाले लोगों को डीजीएच कार्यालय में भ्रमण किए बिना भारत के जी एंड जी आंकड़ों पर काम करने में मदद मिलेगी।

एनओआर में वर्तमान में उपलब्ध ईएंडपी आंकड़े (31 दिसंबर 2022 तक):

- 2डी भूकंपीय आंकड़े: 3.284 मिलियन एलकेएम
- 3डी भूकंपीय आंकड़े: 1.041 मिलियन एसकेएम
- वेल और लॉग डेटा: 22,563 नग।
- वेल संबंधी सूचना: 46,826 नग

### 14.4.5.9. राष्ट्रीय भूकंपीय कार्यक्रम:

क) माननीय प्रधान मंत्री के आत्मनिर्भर भारत के विजन के अनुरूप, एमओपीएंडएनजी ने भारत के सभी तलछटी घाटियों में भूकंपीय सर्वेक्षण करने के लिए एक महत्वाकांक्षी योजना तैयार की है, जहां भारत की हाइड्रोकार्बन क्षमता का बेहतर आकलन करने के लिए कोई डेटा उपलब्ध नहीं/अपर्याप्त है। इस पहल का लक्ष्य घरेलू अन्वेषण और उत्पादन को बढ़ाना था और आयात पर निर्भरता को कम करना था। यह परियोजना 23 राज्यों में सेवा प्रदाताओं के माध्यम से राष्ट्रीय तेल कंपनियों के माध्यम से कार्यान्वित की जा रही है। इसके निर्बाध प्रयासों से एनएसपी परियोजना अब पूरी हो गई है।

ख) हाइड्रोकार्बन संसाधनों का पता लगाने के लिए अक्टूबर 2016 में राष्ट्रीय भूकंपीय कार्यक्रम (एनएसपी) शुरू किया गया था। इसका उद्देश्य संपूर्ण भारत के उन सभी तलछटी घाटियों का मूल्यांकन करना है, जहां विशेष रूप से कोई आंकड़ा उपलब्ध नहीं/अपर्याप्त है। 48,243

एलकेएम के लक्ष्य में से कुल 46,960 एलकेएम का अधिग्रहण प्राप्त किया गया और इसमें लगभग 97% का लक्ष्य पूरा कर लिया गया है।

ग) जिन क्षेत्रों में दुर्गम इलाके और प्रतिफल वातावरण के कारण भूकंपीय सर्वेक्षण नहीं किया जा सका, वहां वायुवेहित भूभौतिकीय सर्वेक्षण करके गुरुत्वाकर्षण चुंबकीय आंकड़ों के 40,000 हवाई एलकेएम प्राप्त करने की योजना है। वायुवाहित सर्वेक्षण ओआईएल के माध्यम से कार्यान्वित किया जाना है। दिनांक 31 दिसंबर, 2022 तक ओआईएल ने डीजीसीए को आवश्यक आवेदन प्रस्तुत किया है और इस संबंध में अनुमति प्रतीक्षित है।

घ) अंडमान में प्रगति: अंडमान और निकोबार (अंडमान और निकोबार) द्वीपों के आसपास के क्षेत्र में तेल और गैस की महत्वपूर्ण संभावना है। इस प्रकार, अंडमान अपतट के व्यापक मूल्यांकन के लिए, डीजीएच ने लगभग 2डी ब्रॉडबैंड भूकंपीय आंकड़े संबंधी अधिग्रहण, प्रसंस्करण और प्रस्तुतीकरण के 22,500 एलकेएम प्राप्त करने की योजना तैयार की है, जिसमें लगभग 2,81,613 वर्ग किमी. का घाटी क्षेत्र शामिल है। सर्वेक्षण कार्यकलाप दिनांक 30.08.2021 को शुरू किया गया था और अब आंकड़े अधिग्रहण और प्रसंस्करण का काम पूरा हो गया है और संपूर्ण आंकड़ा एनओआर पोर्टल पर अपलोड कर दिया गया है। वर्तमान में, आंकड़े प्रस्तुतीकरण का कार्य चल रहा है।

ङ) अधिग्रहण और प्रस्तुतीकरण का गुणवत्तापूर्ण भूभौतिकीय आंकड़े किसी क्षेत्र को प्रौद्योगिकी और व्यावसायिक रूप से व्यवहार्य होने पर विचार करने में सबसे महत्वपूर्ण पहलुओं में से एक है। एनएसपी खुदाई योजनाओं के संभावित मूल्यांकन में गुणवत्ता पूर्ण आंकड़े और अंतर्दृष्टि प्रदान करने में मदद कर रहा है जो पूंजीगत प्रोत्साहन परियोजना है जिससे प्रचालकों को नई संविदात्मक व्यवस्था के लिए बोली लगाने के संबंध में ठोस निर्णय लेने में मदद मिलती है।

च) ईईजेड तक तलछटी घाटी का मूल्यांकन: लगभग 1.13 मिलियन वर्ग कि.मी. भारतीय तलछटी घाटियों के अपतटीय घाटी क्षेत्र का मूल्यांकन नहीं किया गया है जिसमें विभिन्न एजेंसियों से अन्वेषण के लिए एनओ–जीओ क्षेत्रों को जारी करने के कारण पूर्वी क्षेत्र, पश्चिमी क्षेत्र और अंडमान क्षेत्रों में विशेष आर्थिक क्षेत्र (ईईजेड) शामिल है। ईईजेड सर्वेक्षण के लिए ओएनजीसी को केंद्रीय एजेंसी के रूप में दायित्व सौंपा गया था। तदनुसार, ओएनजीसी ने इन तीन क्षेत्रों को शामिल करते हुए 2डी ब्रॉडबैंड भूकंपीय आंकड़े अधिग्रहण के लिए सेवा प्रदाता को संविदा (20% विस्तार के प्रावधान सहित 70,000 एलकेएम) प्रदान किया था। दिनांक 31 दिसंबर, 2022 तक लगभग ईईजेड सर्वेक्षण के अंतर्गत 23,431 एलकेएम भूकंपीय आंकड़े पहले ही प्राप्त कर लिया गया है।

**14.4.5.10. व्यापारिक सुगमता–मंजूरी/अनुमोदन की सुविधा और बेहतर समन्वय के लिए पहल:**

क) ऊर्जा प्रगति पोर्टल (सक्रिय शासन और समय पर कार्यान्वयन के लिए संयुक्त कार्रवाई से ऊर्ध्वप्रवाह संबंधी प्रतिक्रिया): ई एंड पी प्रचालकों ऑपरेटरों की सुविधा और अनुमोदन/मंजूरी की निगरानी के लिए प्रचालकों, केन्द्रीय मंत्रालयों और राज्य सरकारों जैसी विभिन्न हितधारकों को शामिल करते हुए ऊर्ध्वप्रवाह हाइड्रोकार्बन क्षेत्र से संबंधित लंबे समय से लंबित मुद्दों को प्राथमिकता देने और ध्याजांकित करने के लिए ऊर्जा प्रगति वेब–आधारित संवादात्मक पोर्टल हाल ही में डीजीएच द्वारा शुरू किया गया है इस पोर्टल के माध्यम से पीईएल, पीएमएल, एफसी, डब्ल्यूएल, सीटीई/सीटीओ, ईएसजेड और सीआरजेड से संबंधित मंजूरी वाले मुद्दों का निपटान किया जाएगा।

- नए सुधारों के बारे में ईएंडपी प्रचालकों को संवेदनशील बनाने के लिए दो कार्यशालाओं का संयुक्त रूप से आयोजन किया गया (एमआईईएफ और सीसी और डीजीएच द्वारा)।
- एमओईएफ एंड सीसी से अपेक्षित अनुमोदन हेतु एफसी/ईसी और डब्ल्यूएम पर चर्चा करने के लिए 5 अंतर–मंत्रालयी समन्वय और बैठक समिति (आईसीएमसी) की बैठकें।
- समाशोधन प्रक्रिया में तेजी लाने के लिए आईआरओ और राज्यों और उपयोगकर्ता एजेंसियों के साथ पाक्षिक क्षेत्रीय समन्वय बैठक (एफआरसीएम) आयोजित की गई है।
- लंबे समय से लंबित मामलों पर चर्चा करने के लिए राज्य के विभागों के साथ समीक्षा बैठक आयोजित की गई।

- लंबे समय से लंबित मामलों पर चर्चा करने के लिए ऊर्जा प्रगति पोर्टल के माध्यम से विभिन्न राज्य के वन अधिकारियों के साथ वीडियो कॉन्फ्रेंस के माध्यम से बैठक आयोजित की गई।

ख) अपस्ट्रीम इंडिया पोर्टल: 'अपस्ट्रीम इंडिया' पोर्टल शुरू किया गया था जो डीजीएच में उपलब्ध सुविधाओं/अवसंरचना को साझा करने, ज्ञान साझा करने के लिए मंच तैयार करने, नवीनतम सरकारी नीतियों/प्रौद्योगिकियों/सूची के उपयोग आदि पर नियमित कार्यशालाओं/संगोष्ठी/सम्मेलनों/प्रशिक्षण सत्रों/चर्चा आदि के आयोजन जैसी सेवाओं के साथ–साथ ई एंड पी प्रचालकों को सहायता प्रदान करता है।

ग) 'नो गो' क्षेत्रों को कम करना: ऐतिहासिक निर्णय के रूप में, भारत सरकार ने अन्वेषण और विकास कार्यकलापों के लिए विशेष आर्थिक क्षेत्र (ईईजेड) विकसित किया है। अब, तेल कंपनियाँ मानक नवाचार और वैश्विक कार्यप्रणाली का अनुपालन करके लगभग पूरे ईईजेड (99%) में काम कर सकती हैं। सभी नए अन्वेषण और विकास क्षेत्रों में ब्लॉक देने से पहले 'नो गो' क्षेत्रों, रक्षा प्रतिष्ठानों, वन/वन्यजीव/ईएसजेड या ईएफए आदि को पहले ही चिह्नित किया गया है। बोली लगाने वालों की सुविधा के लिए इस कार्यप्रणाली को विस्तृत रूप से मानचित्रण किया जा रहा है।

घ) सशक्त समन्वय समिति (ईसीसी): हाइड्रोकार्बन क्षेत्र से संबंधित रक्षा, पर्यावरण, लाइसेंस आदि संबंधित मुद्दों पर चर्चा करने के लिए मंत्रिमंडल सचिव की अध्यक्षता में इस समिति का गठन किया गया है। वर्ष 2022 के दौरान 3 ईसीसी बैठकें आयोजित की गईं, जिनमें वन/पर्यावरण/वन्यजीव समाशोधन और रक्षा से संबंधित कई नीतिगत मुद्दों का समाधान किया गया।

ङ) हाइड्रोकार्बन समाशोधन प्रकोष्ठ: डीजीएच, एमओपीएंडएनजी में हाइड्रोकार्बन समाशोधन प्रकोष्ठ (एचसीसी)/पूर्वोत्तर समन्वय समिति (एनईसीसी) की स्थापना की गई है, जो राज्य और केंद्र सरकारों से पीईएल और पीएमएल को वैधानिक मंजूरी में तेजी लाने और पता लगाने, समन्वय और अनुदान की सुविधा के लिए समर्पित है। वर्तमान में, 13 युवा पेशेवरों को असम, अरुणाचल प्रदेश और त्रिपुरा राज्य के विभिन्न राज्यिक कार्यालयों में नियुक्त किया गया है और आसानी के लिए विभिन्न पर्यावरणीय विनियमनों के अंतर्गत प्रसंस्करण मंजूरी और अनुमोदन प्रस्तावों के साथ–साथ राज्य सरकारों से अपेक्षित प्रशासनिक/विनियामक समर्थन संबंधी तेल और गैस ईएंडपी कार्यकलापों से संबंधित अन्य मुद्दों में तेजी लाने के लिए असम, अरुणाचल प्रदेश और त्रिपुरा राज्य के विभिन्न विभागों में उन्हें तैनात किया गया है।

### 14.4.5.11. अनुसंधान संबंधी अध्ययन

डीजीएच ने 12 एनएम (निगरानी और शमन उपायों सहित) से परे अपतटीय क्षेत्रों में पेट्रोलियम अन्वेषण और विकास परियोजनाओं के लिए दिशानिर्देश विकसित करने और समुद्री प्राकृतिक संसाधनों के प्रबंधन के लिए राष्ट्रीय समुद्र विज्ञान संस्थान (एनआईओ) द्वारा किए जाने वाले अध्ययन को प्रायोजित किया है।

### 14.4.5.12. शैक्षिक–उद्योग सहयोग

- दिसंबर 2022 में कच्छ–सौराष्ट्र घाटी के भू–वैज्ञानिक आंकड़े विश्लेषण पर पंडित दीनदयाल ऊर्जा विश्वविद्यालय, गांधीनगर, गुजरात और हाइड्रोकार्बन अनुसंधान परियोजना महानिदेशालय के बीच समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए गए।
- मार्च 2022 में संयुक्त वैचारिक और परामर्शी अध्ययन के लिए सेंट पीटर्सबर्ग (खनन विश्वविद्यालय), सेंट पीटर्सबर्ग, रूस और हाइड्रोकार्बन अनुसंधान परियोजना महानिदेशालय के बीच समझौता ज्ञापन (एमओयू) पर हस्ताक्षर किए गए।

### 14.4.5.13. लंबित स्वीकृतियों का नकदीकरण:

डीजीएच केंद्र और राज्य सरकारों के विभिन्न संबंधित विभागों और अन्य सांविधिक निकायों के साथ समन्वय करके विभिन्न ई एंड पी प्रचालकों के पर्यावरण/वन/वन्यजीव मंजूरी/लंबित पीईएल/पीएमएल मामलों जैसे विभिन्न सांविधिक पर्यावरण संबंधी मंजूरी के समाधान की सुविधा में सक्रिय रूप से काम कर रहा है। केन्द्रीय मंत्रालयों और राज्य सरकारों के साथ एनईसीसी समन्वयकों के इस सख्त अनुवर्ती/बाधा के कारण स्वीकृतियों की लंबित संख्या 164 से घटकर 95 रह गई है।

## 14.4.6. उच्च प्रौद्योगिकी केंद्र (सीएचटी)

वर्ष 1987 में स्थापित उच्च प्रौद्योगिकी केंद्र भारत सरकार के वैज्ञानिक और प्रौद्योगिकी कार्यक्रमों के कार्यान्वयन के लिए एमओपीएंडएनजी के तकनीकी विंग के रूप में कार्य कर रहा है। सीएचटी के प्रमुख कार्य में निम्नलिखित शामिल हैं:

- रिफाइनरियों और पाइपलाइनों का निष्पादन बेंचमार्किंग।
- सर्वश्रेष्ठ कार्यप्रणाली, विशेष अध्ययन, परिचालन सुधार और प्रक्रिया प्रौद्योगिकी के माध्यम से रिफाइनरियों के प्रदर्शन में सुधार।
- अनुप्रवाह हाइड्रोकार्बन क्षेत्र में ऊर्जा दक्षता में सुधार।
- पेट्रोलियम उत्पाद की गुणवत्ता में सुधार।
- सर्वश्रेष्ठ कार्यप्रणाली और सूचना और ज्ञान प्रसार को साझा करना।
- वैकल्पिक ऊर्जा के साथ एकीकरण और भावी संधारणीय के लिए अनुप्रवाह क्षेत्र में नई पहल।
- हाइड्रोजन अनुसंधान सहित अनुप्रवाह हाइड्रोकार्बन क्षेत्र में नवाचारों और अनुसंधान एवं विकास को संवर्धन करना। एमओपीएंडएनजी के हाइड्रोकार्बन पर वैज्ञानिक सलाहकार समिति (एसएसी) की कार्यकलापों का समन्वय।
- पानी के छाप में होने वाली कमी को कम करना।
- आयात एवज ईंधन, रसायन और उत्प्रेरक का विकास।
- पीएम जी–वन योजना के कार्यान्वयन के लिए केंद्रीय एजेंसी।

### 14.4.6.1. निष्पादित प्रमुख कार्यकलाप:

**1. निष्पादन बेंचमार्किंग:**

पीएसयू रिफाइनरियों का निष्पादन बेंचमार्किंग वर्ष 2010 से नियमित रूप से किया जा रहा है और पाइपलाइन और एसपीएम बेंचमार्किंग वर्ष 2018 चक्र में मैसर्स सोलोमन एसोसिएट्स (एसए), यूएसए के माध्यम से शुरू किया गया था। रिफाइनरी और पाइपलाइन दोनों के लिए चक्र वर्ष 2022 का अध्ययन प्रगति पर है। पेट्रोरसायन बेंचमार्किंग की भी योजना तैयार की जा रही है।

**2. रिफाइनरी के निष्पादन में सुधार**

**2.1. पीएसयू रिफाइनरी के ऊर्जा दक्षता सुधार संबंधी अध्ययन**

**2.1.1. पीएटी (निष्पादन, उपलब्धि और व्यापार)**

पीएटी चक्र –2 में रिफाइनिंग क्षेत्र के लिए ऊर्जा कटौती लक्ष्य 5.49% अर्थात् 1.01 मिलियन टीओई के समकक्ष निर्धारित किया गया था। इसके स्थान पर 8.05% अर्थात् 1.48 मिलियन टीओई के समकक्ष वास्तविक ऊर्जा कमी प्राप्त की गई थी। वर्तमान पीएटी चक्र–6 (2020–21 से 2022–23) के लिए, 5.49% के क्षेत्रीय ऊर्जा कटौती लक्ष्य को बरकरार रखा गया है, जो 1.17 मिलियन टीओई के ऊर्जा बचत लक्ष्य के समकक्ष है।

**2.1.2. सार्वजनिक क्षेत्र के उपक्रम रिफाइनरियों में 2030 तक मिशन क्यू1**

सोलोमन बेंचमार्किंग के क्वार्टाइल 1 (क्यू1) में सभी रिफाइनरियों को लाने के लिए ऊर्जा खपत में सुधार हेतु पीएसयू रिफाइनरियों के लिए विशिष्ट ऊर्जा खपत पर दिशा–निर्देश तैयार किया गया है। यह लक्ष्य 2005 के आधार वर्ष की तुलना में वर्ष 2030 तक विशिष्ट ऊर्जा खपत में 45% की कमी के भारत के एनओसी लक्ष्य के साथ संरेखित है।

**2.1.3. भट्ठी की दक्षता और भाप के रिसाव संबंधी वार्षिक लेखापरीक्षा**

ऊर्जा दक्षता में सुधार और ऊर्जा की खपत को कम करने के लिए, सीएचटी प्रत्येक वैकल्पिक वर्ष में फर्नेस/बॉयलर दक्षता या भाप रिसाव के क्षेत्रों में प्रति वर्ष सर्वेक्षण आयोजित करता है। सक्षम–2022 के दौरान भाप रिसाव लेखा परीक्षा के क्षेत्र में सर्वेक्षण पूरा कर लिया गया था। वर्ष 2023 में फर्नेस/बॉयलर दक्षता सर्वेक्षण भी पूरा हो गया है।

**2.1.4. जल खपत मानदंडों का विकास और ईआईएल के माध्यम से रिफाइनरियों के लिए पानी की छाप में कमी लाने का** कार्य किया गया है। अल्पावधि में 2,901 एम3/घंटे के लक्ष्य की तुलना में 2,369 एम3/घंटे की बचत हुई है। दीर्घकालिक (2023–25) लक्ष्य में पानी के छाप में होने कमी को कम करने का काम प्रगति पर है।

2.1.5. **पीएसयू रिफाइनरियों के निष्पादन संबंधी सुधार कार्यक्रम:** 7 पीएसयू रिफाइनरियों (एचपीसी–मुंबई और विशाख, बीपीसी–मुंबई और केची, आईओसी पानीपत, पारादीप और मथुरा) ने पहले चरण में अध्ययन शुरू किया है। दूसरे चरण में शेष 8 रिफाइनरियों (आईओसी–बरौनी, गुजरात, हल्दिया, बोंगाईगांव, गुवाहाटी, डिगबोई, सीपीसीएल–मनाली और एनआरएल) में इस संबंध में कार्रवाई की जाएगी।

3. **ऊर्जा प्रौद्योगिकी सम्मेलन (ईटीएम):**

25वां ऊर्जा प्रौद्योगिकी सम्मेलन (ईटीएम) जिसे पहले रिफाइनिंग एंड पेट्रोकेमिकल्स टेक्नोलॉजी मीट (आरपीटीएम) के नाम से जाना जाता था, दिनांक 15–17 सितंबर, 2022 के दौरान मुंबई में एचपीसीएल के साथ आयोजित किया गया था। बैठक का विषय "नई ऊर्जा युग में परिष्करण" रखा गया था। इस कार्यक्रम में 15 तकनीकी सत्रों 78 मौखिक पत्रों और पोस्टर सत्रों में 59 दस्तावेजों सहित 16 प्रदर्शनी स्टालों की प्रस्तुति दी गई और इसमें भारत और विदेश से आमंत्रित लगभग 1,200 प्रतिनिधियों ने भाग लिया।

4. **स्वदेशी प्रौद्योगिकी के नवाचार और विकास को संवर्धन करना:**

सीएचटी राष्ट्रीय महत्व वाले परियोजनाओं सहित अनुप्रवाह हाइड्रोकार्बन क्षेत्र के लिए अनुसंधान परियोजनाओं की पहचान और वित्तपोषण में एमओपीएंडएनजी के हाइड्रोकार्बन वैज्ञानिक सलाहकार समिति (एसएसी) के कार्यकलापों का समन्वय करता है।

4.1. **हाइड्रोजन अनुसंधान:** सीएचटी ने विभिन्न मार्गों से हाइड्रोजन के उत्पादन , वाहन निर्माता के साथ–साथ परिवहन प्रचालकों के साथ गठजोड़ में ईंधन सेल बसों के विकास, हाइड्रोजन के भंडारण और वितरण, दिल्ली में एचसीएनजी उत्पादन और एचसीएनजी ईंधन वाली बसों का प्रदर्शन के लिए विभिन्न परियोजनाओं को वित्त पोषित किया है।

सीएचटी ने भारत सरकार की विज्ञान, प्रौद्योगिकी और नवाचार नीति (एसटीआईपी) के विकास के लिए निविष्ट प्रदान किया है।

5. **पुरस्कार**

सीएचटी भारत सरकार के पेट्रोलियम और प्राकृतिक गैस मंत्रालय द्वारा स्थापित निम्नलिखित वार्षिक पुरस्कारों से सक्रिय रूप से जुड़ा हुआ है:

- रिफाइनरी निष्पादन संबंधी सुधार पुरस्कार
- सक्षम पुरस्कार (भाप रिसाव और फर्नेस दक्षता सर्वेक्षण पर आधारित)
- नवाचार पुरस्कार

6. **पीएम जी–वन योजना का क्रियान्वयन**

प्रधानमंत्री जी–वन योजना की घोषणा मार्च, 2019 में 2जी एथेनॉल प्रौद्योगिकी को बढ़ावा देने के लिए की गई थी। पीएम जी वन योजना के लिए सीएचटी की स्थायी समिति ने 6 वाणिज्यिक परियोजनाओं और 3 प्रदर्शन परियोजनाओं के लिए वीजीएफ/वित्तीय सहायता को मंजूरी दी थी। शेष 6 वाणिज्यिक और 7 प्रदर्शन परियोजनाओं के लिए आरएफएस जारी किया गया।

7. **कार्यकलाप समिति की बैठकें (एसीएम)/वेबिनार**

सर्वोत्तम प्रचालन कार्यप्रणाली को साझा करने और नवीनतम विकास संबंधी जानकारी के सुधार और प्रसार के उद्देश्य से, सीएचटी रिफाइनिंग क्षेत्र और पाइपलाइन संचालन में विभिन्न एसीएम/महत्वपूर्ण क्षेत्रों/प्रौद्योगिकियों में वेबिनार आयोजित करता है।

## 14.4.7. आरजीआईपीटी–राजीव गांधी पेट्रोलियम प्रौद्योगिकी संस्थान, अमेठी

**14.4.7.1. नए शैक्षणिक कार्यक्रम:**

संस्थान ने पिछले एक वर्ष में कंप्यूटर विज्ञान और डिजाइन अभियांत्रिकी, सूचना प्रौद्योगिकी, नवीकरणीय ऊर्जा पर ध्यान देते हुए रसायन अभियांत्रिकी, भू–विज्ञान और अभियांत्रिकी और ई–वाहन प्रौद्योगिकी पर ध्यान देते हुए इलैक्ट्रिकल अभियांत्रिकी में बी–टेक को आरजीआईपीटी द्वारा

कंप्यूटर विज्ञान और इंजीनियरिंग में बी.टेक सहित एकीकृत दोहरी डिग्री कार्यक्रम और आर्टिफिशियल इंटेलिजेंस में एम–टेक कार्यक्रम भी शुरू किया गया है। इसके अतिरिक्त, संस्थान ने पीएचडी छात्रों की अध्येतावृत्ति, उद्योग प्रायोजित पीएचडी अध्येतावृत्ति, बी.टेक कार्यक्रमों में नाबालिग का प्रावधान और सहायक संकाय की नियुक्ति में भी वृद्धि की है।

**14.4.7.2. अनुसंधान और विकास:**

आरजीआईपीटी पारस्परिक रूप से लाभकारी अनुसंधान क्षेत्रों में राष्ट्रीय और अंतरराष्ट्रीय उद्योगों को आसानी से अपनी औद्योगिक अनुसंधान और परामर्श सेवाएं प्रदान कर सकता है। संकाय सदस्य विज्ञान और प्रौद्योगिकी विभाग, विज्ञान और अभियांत्रिकी अनुसंधान बोर्ड, परमाणु ऊर्जा विभाग, वैज्ञानिक और औद्योगिक अनुसंधान परिषद, पेट्रोलियम संरक्षण अनुसंधान संघ, वैज्ञानिक और औद्योगिक अनुसंधान विभाग, अल्पसंख्यक कार्य मंत्रालय, ऑयल इंडिया लिमिटेड तेल और प्राकृतिक गैस लिमिटेड और एनटीपीसी ऊर्जा प्रौद्योगिकी अनुसंधान गठबंधन द्वारा प्रायोजित परियोजनाओं में शामिल हैं।

आरजीआईपीटी के अनुसंधान लेख अमेरिकन केमिकल सोसाइटी, रॉयल सोसाइटी ऑफ केमिस्ट्री, एल्सेवियर, विली इंटर–साइंस और स्प्रिंगर आदि जैसी अंतरराष्ट्रीय स्तरीय प्रतिष्ठित प्रकाशकों द्वारा प्रकाशित किए गए हैं। संकाय सदस्यों को राष्ट्रीय और अंतरराष्ट्रीय दोनों स्तरों पर व्याख्यान देने के लिए आमंत्रित किया गया है।

**14.4.7.3. हरित हाइड्रोजन:**

वर्ष 2020 में नेशनल थर्मल पावर कॉर्पोरेशन लिमिटेड से ₹ 98 लाख के बजट की महत्वपूर्ण परियोजना प्राप्त हुई और सफलतापूर्वक पूरी कर ली गई। उत्पाद की व्यावसायिक क्षमता दिखाने के लिए, मेम्ब्रेन के बिना इलेक्ट्रोलाइज़र के माध्यम से प्रोटोटाइप प्रवाह बाद में बनाया गया था। प्रौद्योगिकी की सुरक्षा के लिए एनटीपीसी में चार पेटेंट आवेदनों पर कार्रवाई की जा रही है।

**14.4.7.4. केन्द्रीय अनुसंधान सुविधा:**

आरजीआईपीटी के कार्यक्षेत्र में सुविज्ञ इंस्ट्रूमेंटेशन सुविधाओं की श्रृंखला सहित समर्पित केंद्रीय अनुसंधान सुविधा है। परिसर में उपलब्ध इन सुविधाओं से संस्थान ऊर्जा के अग्रणी क्षेत्रों में अनुसंधान कार्यकलापों को करने के लिए अच्छी तरह से सुसज्जित है।

**14.4.7.5. आरजीआईपीटी अब भारत हाइड्रोकार्बन मूल्यांकन कार्यक्रम (आई–एचएपी) का केंद्र है:**

पेट्रोलियम और प्राकृतिक गैस मंत्रालय द्वारा 'भारतीय हाइड्रोकार्बन मूल्यांकन कार्यक्रम (आई–एचएपी)' की संकल्पना की गई थी और फिर इसे शुरू किया गया था, जिसका उद्देश्य तलछटी घाटियों का पूर्ण मानचित्रण करना और भारत की हाइड्रोकार्बन क्षमता का आकलन करना था। आरजीआईपीटी को विभिन्न एजेंसियों के साथ समन्वय करने और कार्यक्रम को निष्पादित करने के लिए केंद्रीय एजेंसी बनाया गया है।

**14.4.7.6. ऊर्जा शक्ति:**

ऊर्जा शक्ति पुरस्कार 25 से अधिक वर्षों के काम करने वाली महिला ऊर्जा पेशेवरों को सम्मानित करने के लिए दिया जाता है। हमें यह घोषणा करते हुए बेहद गर्व हो रहा है कि ऊर्जा शक्ति जीवनकाल उपलब्धि पुरस्कार–2021 इंडियन ऑयल कॉर्पोरेशन लिमिटेड की पहली महिला निदेशक सुश्री सुकला मिस्त्री को प्रदान किया गया।

**14.4.7.7. ऊष्मायन और कौशल विकास केंद्र का उद्घाटन:**

यह देश भर में प्रेरित उद्यमियों के लिए विज्ञान, प्रौद्योगिकी और प्रबंधन के क्षेत्र में स्टार्ट–अप कार्यकलापों के प्रचार और समर्थन हेतु मंच प्रदान करने के लिए अत्याधुनिक केंद्र है। केंद्र लोगों के तकनीकी कौशल को उन्नत करने में भी काम करेगा, जिससे उन्हें उद्योग के लिए तैयार होने में मदद मिलेगी।

**14.4.7.8. प्रारूपण और नवाचार केन्द्र (डीआईसी):**

डीआईसी अत्याधुनिक ऊर्जा अनुसंधान के निष्पादन को संवर्धित करता है और इस प्रकार ऊर्जा नवाचार की संस्कृति को बढ़ावा देता है। रूपरेखा और नवाचार केंद्र ऊर्जा अनुसंधान में वैज्ञानिक और अभियांत्रिकी चुनौतियों का समाधान करने के लिए स्नातक छात्रों द्वारा चलाया जाता है। वर्तमान में, संस्थान से प्राप्त वित्तीय सहायता से 55 डीआईसी परियोजनाओं को निष्पादित किया जा रहा है। यह ध्यान दिया जाना चाहिए कि बी–टेक छात्रों को युवा वैज्ञानिकों के रूप में मान्यता दी जा रही है और उनके कार्यों को अमेरिकन केमिकल सोसाइटी, एल्सेवियर और विली की प्रतिष्ठित अंतरराष्ट्रीय पत्रिकाओं में प्रकाशित किया जा रहा है।

**14.4.7.9. राष्ट्रीय/अंतरराष्ट्रीय संस्थानों के साथ समझौता ज्ञापन:**

आरजीआईपीटी और गुजरात एनर्जी रिसर्च एंड मैनेजमेंट इंस्टीट्यूट (जीईआरएमआई) ने कई क्षेत्रों की पहचान की है, जहां वे अपनी मूल शक्ति को संयुक्त कर सकते हैं और प्रत्येक संस्थान को अपनी कार्यकलापों को आगे बढ़ाने और पेट्रोलियम, रिफाइनिंग, पेट्रोरसायन, ईंधन सेल, ऊर्जा नीति, थिंक टैंक, बैटरी ऊर्जा भंडारण, ई–गतिशीलता और नवीकरणीय ऊर्जा क्षेत्र में समग्र रूप से सहायता कर सकते हैं।

**14.4.7.10. उद्योग–शैक्षणिक सहयोग:**

उद्योगों और संस्थानों के साथ इस तरह के मजबूत सहयोग को सुदृढ़ बनाने के लिए, आरजीआईपीटी ने हाल ही में निम्नलिखित कई समझौता ज्ञापनों पर हस्ताक्षर किए हैं–

***आईओसीएल (व्यापार प्रभाग) और आईओसीएल (रिफाइनरी प्रभाग) के साथ समझौता ज्ञापन***

***ड्रिलिंग प्रौद्योगिकी संस्थान (आईडीटी), ओएनजीसी के साथ समझौता ज्ञापन***

***नैसकॉम के साथ समझौता ज्ञापन***

***निहिलेंट लिमिटेड के साथ समझौता ज्ञापन***
***कैपजेमिनी के साथ समझौता ज्ञापन***

**14.4.7.11. मंगोल रिफाइनरी, मंगोलिया के लिए अंतरराष्ट्रीय प्रशिक्षण कार्यक्रम:**

आरजीआईपीटी ने मंगोल रिफाइनरी के कामकाजी पेशेवर के लिए आईओसीएल (व्यापार प्रभाग) के सहयोग से 'उन्नत पेट्रोलियम रिफाइनिंग प्रौद्योगिकी' पर एक प्रशिक्षण कार्यक्रम आयोजित किया। इस कार्यक्रम में वैश्विक ऊर्जा परिदृश्य, उन्नत रिफाइनिंग प्रक्रिया संबंधी प्रौद्योगिकियां, रिफाइनरी योजना और समन्वय, ऊर्जा बेंचमार्किंग, प्रक्रिया संबंधी रूपरेखा और प्रक्रिया गहनता जैसे विषयों को शामिल किया गया था।

**14.4.7.12.** ऊर्जा संस्थान, बेंगलुरु (आरजीआईपीटी केंद्र, जायस, अमेठी)

**प्रस्तावना:**

ऊर्जा संस्थान, बेंगलुरु (ईआईबी), आरजीआईपीटी केंद्र जायस, वर्तमान में, विद्या नगर क्रॉस, बेंगलुरु में स्थित पारगमन परिसर से संचालित है। ईआईबी को ऊर्जा के क्षेत्र में प्रौद्योगिकी प्रेरित शैक्षणिक और अनुसंधान कार्यक्रमों को बढ़ावा देने के लिए प्रतिष्ठित शैक्षणिक और अनुसंधान संस्थान होने की परिकल्पना की गई है। यह समाज की क्षेत्रीय आवश्यकताओं के अनुरूप आवश्यक तकनीकी विशेषज्ञता विकसित करके प्रतिभाशाली और कुशल जनशक्ति उत्पादन करने का प्रयास करता है। ईआईबी अनुसंधान और विकास कार्यकलाप, ऊर्जा नवाचार और उद्यमिता के माध्यम से सामाजिक विकास को प्रेरित करने का इरादा रखता है। इस संस्थान का उद्देश्य ऊर्जा के क्षेत्र में अग्रणी औद्योगिक, प्रौद्योगिकी और मौलिक अनुसंधान का संचालन करना है, छात्रों को गुणवत्तापूर्ण शिक्षा प्रदान करना है, ऊर्जा के क्षेत्र में औद्योगिक पेशेवरों को अल्पकालिक प्रशिक्षण पाठ्यक्रम प्रदान करना है।

**1. शैक्षिक कार्यक्रम:**

ईआईबी वर्तमान में चार एमटेक कार्यक्रम प्रदान करता है अर्थात् नवीकरणीय ऊर्जा, इलेक्ट्रिक वाहन प्रौद्योगिकी, ऊर्जा में आंकड़े विज्ञान संबंधी विशेषज्ञता और ऊर्जा में कृत्रिम बुद्धिमत्ता विशेषज्ञता। केंद्र इलेक्ट्रिकल और इलेक्ट्रॉनिक्स अभियांत्रिकी, यांत्रिक अभियांत्रिकी, रसायन अभियांत्रिकी और सामग्री विज्ञान और अभियांत्रिकी के विषयों में पीएचडी कार्यक्रम भी प्रदान करता है।

वर्तमान में केंद्र के हरित ऊर्जा, संधारणीय परिवहन और ऊर्जा प्रणाली में कृत्रिम बुद्धिमत्ता के अनुप्रयोगों के क्षेत्र में काम करने वाले कुल 47 एमटेक छात्र और 13 पीएचडी करने वाले छात्र हैं।

**2. ईआईबी परिसर का निर्माण:**

कर्नाटक सरकार ने ईआईबी परिसर के निर्माण के लिए 150 एकड़ भूमि आवंटित की है। ईआईबी परिसर के निर्माण को पूरा करने के लिए सभी प्रयास कर रहा है और वर्ष 2023 के अंत तक परिसर का निर्माण कार्य पूरा होने की उम्मीद है।

**14.4.7.13. असम ऊर्जा संस्थान (एईआई), शिवसागर: आईजीआईपीटी केंद्र, जायस, अमेठी**

**1. शैक्षिक कार्यक्रम:**

असम ऊर्जा संस्थान (एईआई), शिवसागर (आरजीआईपीटी केंद्र, जायस, अमेठी) पेट्रोलियम अभियांत्रिकी, रसायन अभियांत्रिकी, यांत्रिक अभियांत्रिकी, आग और सुरक्षा अभियांत्रिकी और इलेक्ट्रॉनिक्स एंड इंस्ट्रूमेंटेशन अभियांत्रिकी में तीन वर्ष के पॉलिटेक्निक डिप्लोमा पाठ्यक्रम प्रदान करता है। इन पाठ्यक्रमों में प्रवेश

तकनीकी शिक्षा निदेशालय, असम सरकार द्वारा आयोजित पॉलिटेक्निक प्रवेश परीक्षा के आधार पर किया गया है। छात्रों का डिप्लोमा तीसरा बैच अगस्त–2022 में उत्तीर्ण हुआ है।

2. **एईआई में निर्माण कार्यकलाप:**

एईआई में चारदीवारी और द्वार, शैक्षिक भवन (विंग बी), डाइनिंग हॉल, दो बालिका छात्रावास और तीन बाल छात्रावास जैसे निर्माण संबंधी कार्यकलाप वर्तमान में सीपीडब्ल्यूडी द्वारा किए जा रहे हैं।

## 14.4.8. आईआईपीई–भारतीय पेट्रोलियम और ऊर्जा संस्थान, विशाखापत्तनम

### 14.4.8.1. प्रस्तावना:

भारतीय पेट्रोलियम और ऊर्जा संस्थान (आईआईपीई) की स्थापना भारत सरकार द्वारा पेट्रोलियम और प्राकृतिक गैस मंत्रालय के तत्वावधान में, वर्ष 2016 में विशाखापत्तनम में 'आंध्र प्रदेश पुनर्गठन अधिनियम, 2014' में किए गए प्रावधानों के अनुसार की गई है। इस संस्थान का मुख्य उद्देश्य पेट्रोलियम क्षेत्र के लिए कुशल जन शक्ति की आपूर्ति में मात्रात्मक और गुणात्मक अंतर को पूरा करना और शेल गैस, कोल बेड मीथेन, गैस हाइड्रेट्स और नवीकरणीय ऊर्जा आदि जैसी उभरते हुए क्षेत्रों में केंद्रीय अनुसंधान विशिष्ट संस्थान के रूप में चुनौतियों को पहचानने वाले क्षेत्र के विकास के लिए आवश्यक अनुसंधान कार्यकलापों को बढ़ावा देना है। संस्थान को प्रमुख तेल पीएसयू अर्थात् एचपीसीएल, ओएनजीसी, ओआईएल, गेल और आईओसीएल द्वारा ऊर्जा केंद्रीय विशिष्ट संस्थान के रूप में सह–संवर्धित किया जाता है।

भारतीय पेट्रोलियम और ऊर्जा संस्थान अधिनियम, 2017 (2018 की संख्या 3) संसद द्वारा अधिनियमित है जो आईआईपीई को 'राष्ट्रीय महत्वपूर्ण संस्थान' घोषित करता है।

**कार्यक्रम/पाठ्यक्रम:** आईआईपीई वर्तमान में पीएचडी शोध पाठ्यक्रमों के अतिरिक्त पेट्रोलियम अभियांत्रिकी और रसायन अभियांत्रिकी में 4 वर्षीय बी.टेक कार्यक्रम पेश कर रहा है। छात्रों को उनकी जेईई (एडवांस्ड) रैंकिंग के आधार पर बी.टेक पाठ्यक्रमों में प्रवेश दिया जाता है। बीटेक छात्रों के तीसरे बैच (2018–22) को जून 2022 में स्नातक घोषित किया गया था। शैक्षणिक वर्ष 2022–23 के लिए, बीटेक में कुल 111 अभ्यर्थियों को प्रवेश दिया गया, जिनमें से 58 अभ्यर्थियों को रसायन अभियांत्रिकी में और 53 अभ्यर्थियों को पेट्रोलियम अभियांत्रिकी में प्रवेश दिया गया है।

**नियोजन:** वर्ष के दौरान संस्थान ने 2018–22 बैच के 98.64% छात्रों के नियोजित किया है। इस शैक्षणिक सत्र में 61 कंपनियों ने 117 छात्रों को नियोजन की पेशकश की। उच्चतम सीटीसी 24 एलपीए है और औसत सीटीसी 9.53 एलपीए है। छात्रों को नियोजन प्रदान करने के लिए तेल और ऊर्जा क्षेत्रों और विश्लेषणात्मक और परामर्श से कई नई प्रमुख कंपनियों को शामिल किया गया है। वर्ष 2019–23 बैच (100%) के सभी छात्रों को ओएनजीसी, एचपीसीएल, आईओसीएल, एमआरपीएल और बीपीसीएल जैसी कंपनियों में औद्योगिक इंटर्नशिप की पेशकश की गई थी।

**अनुसंधान और विकास:** इस शैक्षणिक वर्ष में, कुल 44 प्रकाशन शोध लेख, पुस्तक अध्याय, पुस्तकें और सम्मेलन दस्तावेज के रूप में किए गए थे। वर्ष के दौरान आईसीएमआर, डीएसटी, एनबीएचएम (डीएई), एमओईएस, डीबीटी और एनआरएफ (सिंगापुर) द्वारा प्रायोजित कुल नौ परियोजनाएं ₹ 4,26,76,952 के कुल परिव्यय से चल रही है। संस्थान के संकाय ने ₹ 11,81,20,104 के अनुमानित बजट सहित प्रायोजित परियोजनाओं के लिए 29 प्रस्ताव प्रस्तुत किए। शोध संस्कृति को प्रोत्साहित करने के लिए, संस्थान ने संस्थान अनुसंधान अनुदान (आईआरजी) शुरू किया, जो संकाय सदस्यों के लिए बीज अनुदान के रूप में कार्य करता है।

आईआईपीई ने विदेशी सहयोग को बढ़ावा देने के लिए संचयी आकस्मिकता और सैंडविच पीएचडी कार्यक्रम शुरू किया है। इस वर्ष संस्थान ने ग्रीष्मकालीन इंटर्नशिप कार्यक्रम (एसआईपी) शुरू किया और इस कार्यक्रम में 6 इंटर्न का चयन किया गया है।

**समझौता ज्ञापन:** इस वर्ष आईआईपीई ने अनुसंधान सहयोग और संकाय और छात्रों के आदान–प्रदान कार्यक्रमों के लिए आईआईटी–मद्रास और 'पेट्रोलियम अनुसंधान संस्थान, नॉर्वे (एनएफआईपी)' के साथ समझौता ज्ञापनों पर हस्ताक्षर किए हैं। आईआईपीई ने जैसे विभिन्न बहु विशेषता अस्पतालों केयर अस्पताल, सेवनहिल्स अस्पताल, मेडिकोवर अस्पताल और विशाखा आई अस्पताल के साथ समझौता ज्ञापन पर हस्ताक्षर किए हैं ताकि संकाय, कर्मचारियों और उनके आश्रितों और छात्रों को क्रेडिट आधार पर सीजीएचएस दरों के समान बाह्य रोगी चिकित्सा सेवाएं प्रदान की जा सकें।

**जनशक्ति और महिला कर्मचारी:** संस्थान ने इस वर्ष 11 संकाय सदस्यों और 14 गैर–शिक्षण कर्मचारियों की भर्ती की है। आईआईपीई में वर्तमान में नियमित

आधार पर 27 संकाय सदस्य और 21 गैर–शिक्षण कर्मचारी है, जिनमें से 06 महिला कर्मचारी हैं।

**14.4.8.2. सर्वोत्तम कार्यप्रणाली:**

i. संस्थान के शैक्षणिक कैलेंडर को अब तिथि विशिष्ट के बजाय दिन विशिष्ट बनाया गया है। पाठ्यक्रमों को शीर्ष स्तरीय संस्थानों के साथ बेंच मार्क किया जा रहा है।

ii. सार्वजनिक क्षेत्र की तेल कंपनियों या इसरो और आईआईटी आदि जैसी संस्थानों में प्रत्येक छात्र को इंटर्नशिप प्रदान की जाती है।

iii. विद्यार्थियों को व्यक्तित्व विकास कार्यक्रम प्रदान करने के लिए रोजगार विकास में शामिल विभिन्न समाज/संगठनों के विशेषज्ञों को आमंत्रित किया जाता है।

iv. वर्तमान परिदृश्य में ई–पुस्तकालय संसाधनों, ऑनलाइन पुस्तकों और प्रकाशनों के प्रावधान के साथ–साथ डिजिटल शिक्षण और ऑनलाइन शिक्षण को अपनाया गया है।

v. प्रत्येक छात्र को संकाय संरक्षक के साथ नामांकित किया जाता है और छात्रों की वास्तविक समय के आधार पर शैक्षणिक रूप से निगरानी की जाती है।

**14.4.8.3. भावी योजना:**

i. वर्ष 2023 से नए परिसर के निर्माण की शुरुआत और अस्थायी परिसर से वर्ष 2024/25 तक नए स्थायी परिसर में स्थानांतरण करना;

ii. वर्ष 2023 तक पेटेंट प्राप्त करने के लिए विश्व प्रसिद्ध संस्थानों/विश्वविद्यालयों के साथ समझौता ज्ञापनों का कार्यान्वयन और गुणवत्ता अनुसंधान को प्रोत्साहित करना।

iii. संस्थान अनुसंधान पाठ्यक्रमों के लिए विदेशी नागरिकों से भी आवेदन पत्र आमंत्रित करेगा।

## 14.4.9. पेट्रोलियम योजना और विश्लेषण प्रकोष्ठ (पीपीएसी)

**14.4.9.1. प्रस्तावना:** पेट्रोलियम योजना एवं विश्लेषण प्रकोष्ठ (पीपीएसी) की स्थापना एमओपीएंडएनजी के संबद्ध कार्यालय के रूप में पेट्रोलियम क्षेत्र में प्रशासित मूल्य निर्धारण तंत्र (एपीएम) को समाप्त करने और तत्कालीन तेल समन्वय समिति (ओसीसी) को समाप्त करने के बाद दिनांक 01 अप्रैल, 2002 से की गई थी। सचिव, पीएंडएनजी की अध्यक्षता में शासी निकाय और एमओपीएंडएनजी के वरिष्ठ अधिकारी और सदस्य के रूप में प्रमुख तेल और गैस पीएसयू के मुख्य कार्यकारी अधिकारी, पीपीएसी के कामकाज में आवश्यक पर्यवेक्षण और दिशानिर्देश प्रदान करते हैं। हाइड्रोकार्बन क्षेत्र में आंकड़े और नीति विश्लेषण के लिए प्रामाणिक स्रोत होने की दृष्टि से पीपीएसी से अन्य बातों के साथ–साथ निम्नलिखित कार्यों के निर्वहन में भारत सरकार की सहायता करने की उम्मीद है;

क. तेल और गैस क्षेत्र से संबंधित सूचना आंकड़े बैंक का अनुरक्षण।

ख. अंतरराष्ट्रीय तेल बाजार और घरेलू कीमतों में रुझानों का विश्लेषण।

ग. पीओएल मांग संबंधी पूर्वानुमान।

घ. तेल और गैस और ऊर्जा क्षेत्र में अध्ययन आयोजित करना।

ङ. पेट्रोलियम आयात और निर्यात रुझानों का पूर्वानुमान और मूल्यांकन।

च. विशेष रूप से पेट्रोलियम उत्पादों के मूल्य निर्धारण और पीएमयूवाई सहित राजसहायता योजनाओं के प्रशासन पर सरकार को निविष्ट प्रदान करना।

छ. सरकार के दिशानिर्देशों के अनुसार छमाही आधार पर घरेलू प्राकृतिक गैस मूल्य और एचटी एचपी गैस मूल्य का अधिकतम सीमा निर्धारण और अधिसूचना।

**14.4.9.2. तेल और गैस क्षेत्र संबंधी नियमित एमआईएस रिपोर्ट का महत्वपूर्ण डेटाबेस तैयार करना और इसका प्रसार करना:** पीपीएसी कच्चे तेल और पेट्रोलियम उत्पादों और तेल अवसंरचना के उत्पादन, खपत, आयात और निर्यात से संबंधित आंकड़े एकत्रित करता है। यह प्राकृतिक गैस के उत्पादन, एलएनजी के आयात और प्राकृतिक गैस की खपत और सीजीडी क्षेत्र से संबंधित आंकड़े भी एकत्रित करता है। पीपीएसी के अधिदेश के अंतर्गत, कई दैनिक, पाक्षिक, मासिक, छमाही और वार्षिक रिपोर्ट पीपीएसी की वेबसाइट http://ppac.gov.in के साथ–साथ ऐप्पल ऐप स्टोर और गुगल प्लेस्टोर पर उपलब्ध मोबाइल ऐप 'पीपीएसीई' पर प्रकाशित की जाती हैं। ये रिपोर्ट कच्चे तेल और पेट्रोलियम उत्पादों की दैनिक कीमतों, पीओएल उत्पादों की खपत और उद्योग बिक्री समीक्षा, एलपीजी बिक्री, कच्चे तेल के प्रसंस्करण और उत्पादन, पीओएल उत्पादों के आयात और निर्यात, प्राकृतिक गैस की खपत और आयात आदि से संबंधित हैं। पेट्रोलियम उत्पाद से संबंधित नियमित रिपोर्ट और निविष्टि के अतिरिक्त,

पीपीएसी, एमएस, एचएसडी, एलपीजी, गैस आदि की मांग, आपूर्ति, परिवहन और मूल्य निर्धारण पर कई अध्ययन भी करता है। पीपीएसी द्वारा प्रस्तुत रिपोर्ट नीति निर्माताओं की सहायता करती है और उद्योग द्वारा इसकी काफी मांग की जाती है और साथ ही तेल और गैस क्षेत्र में अन्य संस्थान और संगठन द्वारा भी सराहना की जाती है।

**14.4.9.3. पेट्रोलियम उत्पादों के मूल्य रुझान और राजसहायता/कम वसूली का प्रभाव:**

**1. कच्चा तेल:**

घरेलू मांग को पूरा करने के लिए आयात पर भारत की निर्भरता के कारण अंतरराष्ट्रीय बाजारों में कच्चे तेल और पेट्रोलियम उत्पादों की कीमतों का पेट्रोलियम उत्पादों की घरेलू कीमतों पर निर्णायक प्रभाव पड़ता है। कच्चे तेल की कीमतें, लगातार तीन वर्षों से $ 100 प्रति बीबीएल से अधिक के स्तर पर रहने के बाद, वर्ष 2014 की दूसरी छमाही के दौरान तेजी से गिरने लगीं। परिणामस्वरूप, 2015–16, 2016–17 और 2017–18 के दौरान भारतीय कच्चे तेल की बास्केट की औसत कीमत क्रमशः 46.17 $/बीबीएल, 47.56 $/बीबीएल और 56.43 $/बीबीएल दर्ज की गई थी। वर्ष 2018–19 के दौरान कीमत बढ़कर 69.88 $/बीबीएल हो गई और वर्ष 2019–20 में गिरकर 60.47 $/बीबीएल हो गई। कीमतें अप्रैल 2020 के दौरान 19.90 $/बीबीएल के निचले स्तर से मार्च 2021 के दौरान 64.73 $/बीबीएल के उच्च स्तर तक बढ़ गईं और 2020–21 में इसकी औसत 44.82 $/बीबीएल हो गई, फिर 2021–22 के दौरान बढ़कर 79.18 $/बीबीएल हो गई और यह वर्ष 2022–23 के दौरान (31 जनवरी 2023 तक) 95.91 $/बीबीएल है।

**2. पेट्रोल और डीजल:**

पेट्रोल और डीजल की कीमतों को क्रमशः 26.06.2010 और 19.10.2014 से बाजार–निर्धारित किया गया है। तब से, सार्वजनिक क्षेत्र की तेल विपणन कंपनियां (ओएमसी) अंतरराष्ट्रीय उत्पाद कीमतों और अन्य बाजार स्थितियों के अनुरूप पेट्रोल और डीजल के मूल्य निर्धारण पर उचित निर्णय लेती हैं। तेल विपणन कंपनियों ने न केवल पेट्रोल और डीजल की कीमतों में वृद्धि की है, बल्कि पेट्रोलियम उत्पाद की अंतरराष्ट्रीय कीमतों और रुपये डॉलर विनिमय दर आदि में बदलाव के अनुरूप पेट्रोल और डीजल की कीमतों में कमी भी की है।

दिनांक 16 जून 2017 से पूरे देश में पेट्रोल और डीजल की प्रतिदिन के आधार पर मूल्य निर्धारण लागू कर दी गई है।

**3. घरेलू एलपीजी (आर्थिक सहायता प्राप्त राजसहायता):**

- पहल (डीबीटीएल)–1 जनवरी, 2015 से प्रभावी पहल (डीबीटीएल) योजना, 2014 पूरे देश में लागू की गई, जिसमें पात्र उपभोक्ताओं को घरेलू एलपीजी पर राजसहायता सीधे उनके बैंक खातों में अंतरित की जाती है।

  मई, 2020 से डीबीटीएल योजना के अंतर्गत घरेलू एलपीजी (दिल्ली के बाजार में) पर उपभोक्ता को राजसहायता नहीं दी जा रही है। तथापि, दूर–दराज के क्षेत्रों और कुछ अन्य बाजारों में, मुख्य रूप से पत्तन से बॉटलिंग संयंत्र तक अंतर्देशीय माल ढुलाई के कारण कुछ राजसहायता दी जा रही है।

  इसके अतिरिक्त, वित्त वर्ष 2022–23 में, पीएमयूवाई उपभोक्ताओं के लिए 14.2 किलोग्राम घरेलू एलपीजी सिलेंडर की प्रभावी लागत 12 सिलेंडर तक गैर पीएमयूवाई उपभोक्ताओं के लिए प्रभावी लागत से ₹ 200 कम कर दी गई और अंतर राशि को पीएमयूवाई उपभोक्ताओं को राजसहायता के रूप में उनके बैंक खाते में जमा कर दिया जाता है।

  इसके अतिरिक्त, भारत सरकार ने घरेलू एलपीजी में कम वसूली की पीएसयू ओएमसी के लिए ₹ 22,000 करोड़ के एकमुश्त अनुदान को भी मंजूरी दी है।

- **पीएमयूवाई योजना**–प्रधानमंत्री उज्ज्वला योजना (पीएमयूवाई) को दिनांक 1 मई, 2016 को गरीबी रेखा से नीचे (बीपीएल) परिवारों से संबंधित महिलाओं और जिनका नाम सामाजिक–आर्थिक जाति जनगणना 2011 में है उनको तेल विपणन कंपनियों (ओएमसी) द्वारा निःशुल्क एलपीजी कनेक्शन प्रदान करने के लिए शुरू किया गया था। उक्त योजना को मार्च, 2018 में संशोधित किया गया था। संशोधित योजना के अंतर्गत, निम्नलिखित श्रेणी के किसी एक श्रेणी के अंतर्गत शामिल बीपीएल परिवारों के अतिरिक्त समावेश से 4 वर्षों की अवधि (2019–20 तक) में कुल 8 करोड़ बीपीएल परिवारों को शामिल किया गया था:

  क) अंत्योदय अन्न योजना (एएवाई)

  ख) प्रधानमंत्री आवास योजना (ग्रामीण)

  ग) अनुसूचित जाति/अनुसूचित जनजाति के परिवार

घ) वनवासी

ङ) अति पिछड़ा वर्ग

च) चाय और पूर्व–चाय बागान जनजातियाँ

छ) द्वीपों और नदी द्वीपों में रहने वाले लोग।

इस योजना का उद्देश्य सभी गरीब परिवारों को स्वच्छ ईंधन प्रदान करना था।

दिसंबर, 2018 में उक्त योजना को फिर से संशोधित किया गया था। नवीनतम दिशानिर्देशों के अंतर्गत, लाभ ऐसे गरीब परिवारों को दिया जाना था जो मार्च, 2018 में संशोधित दिशानिर्देशों के अनुसार एसईसीसी सूची या विस्तारित श्रेणियों में शामिल नहीं थे।

सितंबर 2019 में 8 करोड़ कनेक्शन का लक्ष्य प्राप्त कर लिया गया है, जिसे लक्ष्य पूरा होने की तारीख से काफी पहले पूरा कर लिया गया है।

- **उज्ज्वला 2.0 :** केंद्रीय बजट 2021–22 में, इस योजना को 1 करोड़ और लाभार्थियों को शामिल करने के लिए विस्तारित किया गया है। इस चरण में प्रवासी परिवारों को विशेष सुविधा दी गई है जिसमें गैस कनेक्शन प्राप्त करने के लिए केवल स्व–घोषणा की आवश्यकता होती है। इसके पश्चात, सरकार ने पीएमयूवाई (उज्ज्वला 2.0) के अंतर्गत अतिरिक्त 60 लाख कनेक्शन जारी करने की मंजूरी दी है।

- **पीएमजीकेवाई :** कोरोना वायरस के विरुद्ध लड़ाई लड़ने में गरीबों की मदद करने के लिए, सरकार ने प्रधानमंत्री गरीब कल्याण योजना के अंतर्गत 3 महीने की अवधि के लिए प्रधानमंत्री उज्ज्वला योजना (लगभग 8 करोड़) के अंतर्गत लाभार्थियों को निःशुल्क गैस सिलेंडर प्रदान करने का निर्णय लिया था। शुरुआत में इन सिलेंडरों की आपूर्ति अप्रैल–जून 2020 की अवधि में की गई थी।

  इस योजना को दिनांक 1 जुलाई 2020 से 30 सितंबर 2020 तक 3 महीने के लिए उन लाभार्थियों के लिए विस्तारित किया गया था, जिन्हें पहला/दूसरा सिलेंडर खरीदने के लिए अग्रिम राशि दी गई थी, लेकिन वे 30 जून 2020 तक निःशुल्क सिलेंडर खरीद नहीं सके थे।

  इस योजना को 1 अक्टूबर 2020 से 31 दिसंबर 2020 तक 3 महीने के लिए उन लाभार्थियों के लिए आगे बढ़ा दिया गया था, जिन्हें पहला/दूसरा सिलेंडर खरीदने के लिए अग्रिम राशि दी गई थी, लेकिन वे 30 सितंबर 2020 तक मुफ्त सिलेंडर खरीद नहीं पाए थे।

4. **भारत में व्यापारिक जहाजों को झंडी दिखाने के संवर्धन हेतु योजना**

   सरकारी नौभार के आयात के लिए मंत्रालयों और सीपीएसई द्वारा जारी वैश्विक निविदाओं में भारतीय पोतपरिवहन कंपनियों को राजसहायता सहायता प्रदान करने के लिए इस योजना को दिनांक 14.07.2021 से शुरू किया गया था। यह योजना 5 वर्ष की अवधि के लिए होगी और वैश्विक निविदाओं में भारतीय पोत परिवहन कंपनियों को राजसहायता सहायता के रूप में ₹ 1,624 करोड़ की बजटीय सहायता 5 वर्ष की अवधि में प्रदान की जाएगी। एमओपीएंडएनजी के अंतर्गत यह योजना दो उत्पादों अर्थात् एलपीजी और कच्चा तेल के आयात के लिए लागू है।

5. **पीडीएस मिट्टी का तेल**

   दिनांक 1 अक्टूबर, 2016 से पीडीएस मिट्टी का तेल योजना 2016 (डीबीटीके) झारखंड राज्य के 4 जिलों में प्रत्यक्ष लाभ अंतरण लागू किया गया था। इस योजना को 1 अप्रैल, 2017 से प्रभावी 6 अन्य जिलों में विस्तारित किया गया था और पूरे झारखंड राज्य को 1 जुलाई, 2017 से डीबीटीके के अंतर्गत शामिल किया गया था।

   मार्च 2020 से, पीडीएस मिट्टी का तेल का खुदरा बिक्री मूल्य अखिल भारतीय आधार पर वसूली स्तर के अंतर्गत शून्य पर बरकरार रखा गया है।

6. **राजसहायता/अल्प वसूली**

   वर्ष 2021–22 में पेट्रोलियम उत्पादों पर कुल राजसहायता/अल्प वसूली (डीबीटीएल राजसहायता, पीएमयूवाई राजसहायता, पूर्वोत्तर के लिए प्राकृतिक गैस राजसहायता और भारत में व्यापारिक जहाजों को ध्वजांकित करने की योजना सहित) वर्ष 2020–21 में ₹ 12,231 करोड़ की तुलना में ₹ 2,237 करोड़ थी।

**14.4.9.4. महत्वपूर्ण कार्यकलाप: पीपीएसी द्वारा वर्ष 2021–22 के दौरान की गई कुछ महत्वपूर्ण कार्यकलाप निम्नानुसार थीं:**

1. **गहरे पानी, अति–गहरे पानी और उच्च दबाव–उच्च तापमान क्षेत्रों में खोजों से उत्पादित गैस के लिए घरेलू प्राकृतिक गैस मूल्य निर्धारण और अधिकतम मूल्य सीमा: नए घरेलू प्राकृतिक गैस मूल्य निर्धारण दिशानिर्देश, 2014 के प्रावधानों के अधीन अधिसूचित करना और निर्गमन:**

   घरेलू प्राकृतिक गैस की कीमतों को नए घरेलू प्राकृतिक गैस मूल्य निर्धारण दिशानिर्देश, 2014 के अनुरूप 01.04.2022 से 30.09.2022, 01.10.2022 से 31.03.2023 की अवधि के लिए अधिसूचित किया गया था।

पेट्रोलियम और प्राकृतिक गैस मंत्रालय ने दिनांक 21 मार्च 2016 की अधिसूचना के तहत गहरे पानी, अति गहरे पानी और उच्च दबाव–उच्च तापमान वाले क्षेत्रों में खोज से उत्पादित गैस के लिए वैकल्पिक ईंधन की पहुंच मूल्य के आधार पर अधिकतम मूल्य के अध्यधीन मूल्य निर्धारण स्वतंत्रता सहित विपणन स्वतंत्रता की अनुमति दी। उक्त अधिसूचना के अंतर्गत पीपीएसी द्वारा अप्रैल 2022 से सितंबर 2022 और अक्टूबर 2022 से मार्च 2023 की अवधि के लिए गैस मूल्य की अधिकतम सीमा अधिसूचित की गई थी।

| अवधि | घरेलू गैस मूल्य (अमेरीकी $/ एमएमबीटीयू) | गहरा पानी/अत्यंत गहरा पानी (अधिकतम मूल्य सीमा) (अमेरीकी $/एमएमबीटीयू) |
|---|---|---|
| 01 नवंबर, 2014–31 मार्च, 2015 | 5.05 | – |
| 0 अप्रैल, 2015–30 सितंबर, 2015 | 4.66 | – |
| 01 अक्टूबर, 2015–31 मार्च, 2016 | 3.82 | – |
| 01 अप्रैल, 2016–30 सितंबर, 2016 | 3.06 | 6.61 |
| 01 अक्टूबर, 2016–31 मार्च, 2017 | 2.5 | 5.3 |
| 01 अप्रैल, 2017–30 सितंबर, 2017 | 2.48 | 5.56 |
| 01 अक्टूबर, 2017–31 मार्च, 2018 | 2.89 | 6.3 |
| 01 अप्रैल, 2018–30 सितंबर, 2018 | 3.06 | 6.78 |
| 01 अक्टूबर, 2018–31 मार्च, 2019 | 3.36 | 7.67 |
| 01 अप्रैल, 2019–30 सितंबर, 2019 | 3.69 | 9.32 |
| 01 अक्टूबर, 2019–31 मार्च, 2020 | 3.23 | 8.43 |
| 01 अप्रैल, 2020–30 सितंबर, 2020 | 2.39 | 5.61 |
| 01 अक्टूबर, 2020–31 मार्च, 2021 | 1.79 | 4.06 |
| 01 अप्रैल, 2021–30 सितंबर, 2021 | 1.79 | 3.62 |
| 01 अक्टूबर, 2021–31 मार्च, 2022 | 2.9 | 6.13 |
| 01 अप्रैल, 2022–30 सितंबर, 2022 | 6.1 | 9.92 |
| 01 अक्टूबर, 2022–31 मार्च, 2023 | 8.57 | 12.46 |

2. **ऊर्जा में आयात निर्भरता को कम करने के लिए दिशा–निर्देश:** पीपीएसी ऊर्जा में आयात निर्भरता को कम करने के लिए दिशा–निर्देश पर एक कार्यनीतिक दस्तावेज तैयार कर रहा है। इससे पहले, मार्च 2015 में ऊर्जा संगम में माननीय प्रधान मंत्री द्वारा दिए गए स्पष्ट आह्वान पर काम करते हुए, एक समिति ने अप्रैल 2016 में 'ऊर्जा में आयात निर्भरता को कम करने के लिए दिशा–निर्देश; तेल और गैस क्षेत्र में आयात निर्भरता में कमी करने के लिए पांच व्यापक कार्यनीतियों को रेखांकित करते हुए अपनी रिपोर्ट प्रस्तुत की थी। तथापि, वर्तमान वैश्विक परिदृश्यों, बदलती गतिशीलता और तेल एवं गैस क्षेत्र में आयात निर्भरता को कम करने में मदद करने वाले नए क्षेत्रों को जोड़ने के लिए संशोधित कार्यनीतिक दस्तावेज माननीय मंत्री, पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय की अध्यक्षता में आईएमएसी (एकीकृत निगरानी एवं सलाहकार समिति) के निदेशों के अनुसार तैयार किया जा रहा है।

पुनर्मूल्यांकन कार्यनीतियां समग्र ऊर्जा क्षेत्र में तेल/गैस/कोयला के आयात को कम करने के दिशानिर्देशों की उपलब्धि के लिए वित्त वर्ष 2016 से वित्त वर्ष 2020 तक संबंधित मंत्रालयों/विभागों द्वारा की गई विभिन्न पहलों के अध्ययन,

विश्लेषण और मात्रा निर्धारण संबंधी प्रभाव हेतु आईएमएसी द्वारा गठित छह कार्य समूहों से प्राप्त निविष्टि हैं। इन रिपोर्टों को एकत्रित और संकलित किया गया है और तेल और गैस के आयात में कमी के लिए भारत की कार्यनीति पर एक एकीकृत दृष्टिकोण प्रस्तुत किया जा रहा है। यह रिपोर्ट आयात में कमी के दिशानिर्देशों में परिकल्पित नीतियों/उपायों का समग्र पुनर्मूल्यांकन है और जो वर्ष 2024–25 तक आयात निर्भरता को कम करने के लिए पुनः मूल्यांकन दिशा–निर्देशों को लागू करने के लिए समय सीमा सहित ऊर्जा की मांग और बचत पर उनके प्रभाव के संदर्भ में इन कार्यनीतियों/पहलों के कारण सभी कार्रवाई योग्य बिंदुओं का मानचित्रण करता है। प्राइस वाटरहाउसकूपर्स (पीडब्ल्यूसी) को पेट्रोलियम आयोजन और विश्लेषण प्रकोष्ठ (पीपीएसी) द्वारा अक्टूबर 2021 में व्यापक रिपोर्ट तैयार करने के लिए विदेशी सहायता प्रदान करने हेतु नियुक्त किया गया था।

3. **समानांतर एलपीजी विपणन:** दिनांक 30 मई 2019 के आदेश के अंतर्गत भारत में एलपीजी की समानांतर विपणन प्रणाली से संबंधित विभिन्न मुद्दों पर ध्यान देने के लिए एमओपीएनजी द्वारा भारत में एलपीजी की समानांतर विपणन प्रणाली की समीक्षा करने के लिए एक विशेषज्ञ समिति का गठन किया गया था। पीपीएसी ने अपनी रिपोर्ट को अंतिम रूप देने में विशेषज्ञ समिति के सदस्यों को सहायता प्रदान की है। विशेषज्ञ समिति की रिपोर्ट मई 2022 में एमओपीएनजी को सौंप दी गई है।

4. **भारत में एलपीजी व्याप्ति का अनुमान लगाने के लिए संशोधित कार्यप्रणाली:** देश के वर्तमान एलपीजी व्याप्ति का आकलन करने के लिए, देश में वर्तमान में एलपीजी कनेक्शन वाले परिवारों की संख्या के लिए कोई प्रत्यक्ष मानचित्रण उपलब्ध नहीं है। वर्ष 2011 में पिछली जनगणना से, वर्ष 2021 तक वास्तविक घरेलू संख्या उपलब्ध नहीं है। पीपीएसी ने वित्त वर्ष 2020–21 के अपने वार्षिक कार्यक्रम के अंश के रूप में वर्ष 2030 तक एलपीजी दृष्टिकोण पर एक अध्ययन किया था जिसमें अन्य बातों के साथ–साथ भारत में एलपीजी व्याप्ति का अनुमान लगाने के लिए कार्यप्रणाली की समीक्षा पर एक रिपोर्ट शामिल थी। पीपीएसी ने तदनुसार देश में एलपीजी व्याप्ति का अनुमान लगाने के लिए पीएसयू ओएमसी की कार्यप्रणाली की समीक्षा की है। समीक्षा से यह निष्कर्ष निकला है कि वर्तमान कार्यप्रणाली की कुछ सीमाएं है और इसमें वैकल्पिक कार्य प्रणाली विकसित करना आवश्यक था जो भारत में अधिक सटीक एलपीजी व्याप्ति को दर्शाती है। पीपीएसी ने नई कार्यप्रणाली से जिलेवार एलपीजी व्याप्ति की गणना की है।

5. **ऊर्जा मांग अनुमान संबंधी रूपरेखा (ईडीपीएम):** पीपीएसी ने '2040 तक रिफाइनिंग क्षमता बढ़ाने' संबंधी कार्य समूह के 'पेट्रोलियम उत्पादों की मांग' उपसमूह के अंश के रूप में छह तरफ 3 अलग–अलग परिदृश्यों (बेसलाइन, संक्रमण और स्वच्छ ईंधन के लिए ऊर्जा संक्रमण के आधार पर परिवर्तन) को शामिल करते हुए उपयोग मांग वाले क्षेत्रों (अर्थात परिवहन, खाना पकाने, उद्योग, कृषि, दूरसंचार और भवन) में पेट्रोलियम उत्पादों की कुल अंतिम खपत के दीर्घकालिक अनुमानों (5 वर्ष के अंतराल सहित 2020–2045) को विकसित किया है। 2015 के आधार वर्ष सहित पहले की रूपरेखा को 2020 के आधार वर्ष से अद्यतन किया गया था और इसे देश की वर्तमान गतिशीलता और ऊर्जा नीतियों के अनुरूप पुनर्गठित किया जा रहा है।

6. **तेल और गैस संबंधी आंकड़ों के लिए आभासी विश्लेषण संबंधी रूपरेखा:** पीपीएसी का विज़न देश में हाइड्रोकार्बन क्षेत्र संबंधी आंकड़े और नीति विश्लेषण के लिए सबसे प्रामाणिक आधिकारिक स्रोत होना है। पीपीएसी विभिन्न ओएमसी, सरकारी विभागों और मंत्रालयों से तेल और गैस संबंधी आंकड़े लेता है और रिपोर्ट तैयार करता है, जो रुझानों का विश्लेषण करने और निर्णय और नीतियां बनाने में मदद करता है।

   अपनी प्रक्रिया को सुदृढ़ बनाने के लिए, पीपीएसी नवीनतम प्रौद्योगिकी, सॉफ्टवेयर और कार्यप्रणाली का उपयोग करता है। इसके अनुरूप, पीपीएसी ने विभिन्न ओएमसी से एकत्रित आंकड़े के शीर्ष पर एसएएस आभासी विश्लेषण संबंधी रूपरेखा को तैनात किया है। जानकारी व्यक्त करने के आधुनिक ग्राफिकल तरीकों के साथ आभासी विश्लेषण क्षमताएं, पीपीएसी में उपयोगकर्ताओं को रिपोर्ट बनाने और कुशलतापूर्वक और तेज़ी से अंतर्दृष्टि की पहचान करने में मदद करती है।

   आंकड़े संग्रहण, भंडारण और प्रसार की पूरी प्रक्रिया को मानकीकृत किया गया है; और विभिन्न जाँचों और सत्यापन से, स्वच्छ और सटीक आंकड़ों का उपयोग विभिन्न प्रकार की सांख्यिकीय रिपोर्ट तैयार करने और सार्थक अंतर्दृष्टि और प्रवृत्तियों के लिए किया जाता है। कहीं भी, कभी भी आंकड़ों और रिपोर्ट की उपलब्धता से यह प्रक्रिया आसान, प्रभावी और पहले से काफी कारगर हो गई है।

7. **तेल और गैस क्षेत्र के लिए कई कार्यनीतिक समितियों/अध्ययन समूहों में पीपीएसी की भागीदारी:** पीपीएसी में खुदरा दुकानों और एलपीजी डिस्ट्रीब्यूटरशिप नेटवर्क की दर निर्धारण, रिमोट खुदरा दुकानों का सत्यापन, प्राकृतिक गैस की निरंतर व्यवहार्यता के उपाय प्राथमिक ऊर्जा मिश्रण में गैस की खपत की हिस्सेदारी बढ़ाने के लिए वर्ष 2014 के दिशानिर्देशों और कार्यनीतियों के संदर्भ में नामांकन क्षेत्रों से प्राकृतिक गैस उत्पादन के निरंतर व्यवहार्यता के उपाय जैसी विभिन्न अध्ययनों/कार्यकलाप शामिल हैं। पीपीएसी राष्ट्रीय सुरक्षा परिषद सचिवालय (एनएससीएस) के तत्वावधान में किए गए 'युद्ध स्थिति के दौरान पोत परिवहन के मार्ग में परिवर्तन' पर बहु एजेंसी अध्ययन में भी शामिल था और सचिव पत्तन, पोत परिवहन पोर्ट, शिपिंग और जलमार्ग की अध्यक्षता वाली दिक परिवर्तन समिति के सदस्य और कार्य स्तरीय दिक परिवर्तन भी स्थिति के नियमित अद्यतन संबंधी डीजी, नौसेना प्रचालन के डीजी की अध्यक्षता में समिति के सदस्य भी थे।

## 14.4.10. पेट्रोलियम और प्राकृतिक गैस विनियामक बोर्ड (पीएनजीआरबी)

पेट्रोलियम और प्राकृतिक गैस विनियामक बोर्ड (पीएनजीआरबी) का गठन पीएनजीआरबी अधिनियम, 2006 के अधीन किया गया था, जिसे 31 मार्च, 2006 की राजपत्रित अधिसूचना के माध्यम से अधिसूचित किया गया था। यह अधिनियम पीएनजीआरबी की स्थापना के लिए प्रावधान करता है ताकि उपभोक्ताओं और पेट्रोलियम, पेट्रोलियम उत्पादों और प्राकृतिक गैस जैसी विनिर्दिष्ट कार्यकलापों से संबंधित संस्थाओं के हितों की रक्षा की जा सके और प्रतिस्पर्धी बाजारों और उससे जुड़े या प्रासंगिक मामलों को बढ़ावा दिया जा सके। अधिनियम के अंतर्गत बोर्ड को कच्चे तेल और प्राकृतिक गैस के उत्पादन को छोड़कर पेट्रोलियम, पेट्रोलियम उत्पादों और प्राकृतिक गैस के शोधन, प्रसंस्करण, भंडारण, परिवहन, वितरण, विपणन और बिक्री को विनियमित करना है ताकि देश के सभी भागों में पेट्रोलियम, पेट्रोलियम उत्पाद और प्राकृतिक गैस की निर्बाध और पर्याप्त आपूर्ति सुनिश्चित की जा सके। पीएनजीआरबी का विजन निम्नानुसार है:

'कम से कम लागत पर पेट्रोलियम, पेट्रोलियम उत्पादों और प्राकृतिक गैस के दक्षतापूर्ण परिवहन और वितरण के लिए अवसंरचना में निवेश के प्रवाह की सुविधा के माध्यम से और तेजी से और व्यवस्थित विकास सहित जीवंत ऊर्जा बाजार बनाया जा सके और निष्पक्ष व्यापार कार्यप्रणालियों के माध्यम से उपभोक्ता हितों की उच्च स्तरीय सुरक्षा और संस्थाओं के बीच प्रतिस्पर्धा बनायी रखी जा सके ताकि भारतीय अर्थव्यवस्था की बढ़ी हुई प्रतिस्पर्धा और ग्राहकों की संतुष्टि सुनिश्चित की जा सके।''

पीएनजीआरबी ने दिसंबर 2022 तक पूरे देश में 33,527 किलोमीटर प्राकृतिक गैस पाइपलाइन का नेटवर्क प्राधिकृत किया है। 22,335 कि.मी. पाइपलाइन चालू है जिसमें कॉमन कैरियर टाई–इन कनेक्टिविटी, डेडिकेटेड पाइपलाइन और सब ट्रांसमिशन पाइपलाइन शामिल हैं और शेष पाइपलाइन निर्माणाधीन हैं।

पीएनजीआरबी ने भी देश भर में दिसंबर 2022 तक 13,330 किमी का पेट्रोलियम और पेट्रोलियम उत्पाद पाइपलाइन को प्राधिकृत किया है, इसमें से 8,939 किलोमीटर पाइपलाइन चालू हैं और शेष पाइपलाइन निर्माणाधीन हैं।

सीजीडी नेटवर्क के व्याप्ति का विस्तार करने के लिए, पीएनजीआरबी ने 11वें सीजीडी बोली दौर के अंतर्गत 61 जीए और 11वें सीजीडी बोली दौर के अंतर्गत 6 जीए के लिए प्राधिकरण प्रदान किया है। अब तक देश भर में सीजीडी नेटवर्क के विकास के लिए 297 जीए को अधिकृत किया गया है।

बोर्ड ने पीएनजीआरबी (प्राकृतिक गैस पाइपलाइन टैरिफ की समाप्ति) संशोधन विनियमन, 2022 के माध्यम से दिनांक 18 नवंबर, 2022 को एकीकृत टैरिफ विनियमन के प्रारंभ की सूचना दी थी।

इसके अतिरिक्त, बोर्ड ने एकीकृत टैरिफ को भी अधिसूचित किया है, जिसका अर्थ है कि किसी इकाई की लागत से अधिक पाइपलाइन जो सीधे आपस में जुड़ी हुई हैं ऐसे संबंधित पाइपलाइनों को कई प्रशुल्क के स्थान पर एक प्रशुल्क के माध्यम से आपस में जोड़ा जाएगा। जबकि एकीकृत प्रशुल्क के मामले में, राष्ट्रीय गैस ग्रिड के अंश वाली विभिन्न संस्थाओं की प्राकृतिक गैस पाइपलाइनों का एक ही प्रशुल्क होगा। एकीकृत प्रशुल्क व्यापक प्रशुल्क को समाप्त कर देगा और ग्राहकों को प्राकृतिक गैस ग्रिड प्रणाली पर विभिन्न संस्थाओं की कई आपस में जुड़ी पाइपलाइनों में किसी भी टर्मिनल/स्रोत से गैस स्रोत की सुविधा प्रदान करेगा और ग्राहकों को भौगोलिक स्थानों के संदर्भ में विशेष रूप से प्राकृतिक गैस के स्रोत से दूर भौगोलिक स्थानों में उपभोक्ता संबंधी, समस्या का समाधान करने में सक्षम बनाएगा।

पीएनजीआरबी ने पेट्रोलियम खुदरा दुकानों पर एलएनजी, एलएनजी और श्रेणी 'ख' पेट्रोलियम उत्पादों के साथ–साथ ईवी चार्जिंग और बैटरी

स्वैपिंग सुविधाओं के वितरण के लिए विनियमों को अधिसूचित किया है। इसके अतिरिक्त, नवीनतम प्रौद्योगिकी संबंधी घटनाक्रम, घटनाओं से सीखने, सीजीडी नेटवर्क, पाइपलाइनों, विपणन प्रतिष्ठानों आदि के सुरक्षित संचालन, आपातकालीन संचालन और घटनाओं की पुनरावृत्ति को रोकने के लिए सर्वोत्तम कार्यप्रणाली आदि को साझा करने के लिए उद्योगों के साथ संयुक्त रूप से ज्ञान साझा करने वाली कार्यशालाओं का आयोजन किया गया था।

बोर्ड ने वर्ष के दौरान खुदरा दुकानों, एलएनजी सुविधाओं और क्षमता निर्धारण के लिए तकनीकी विनियमनों में संशोधनों को भी अधिसूचित किया था।

## 14.4.11. ब्रह्मपुत्र क्रैकर एंड पॉलिमर लिमिटेड (बीसीपीएल)

असम गैस क्रैकर प्रोजेक्ट (एजीसीपी) की शुरुआत 15 अगस्त, 1985 को अखिल असम छात्र संघ (एएएसयू) और अखिल असम गण संग्राम परिषद (एएजीएसपी) के साथ केंद्र सरकार द्वारा हस्ताक्षरित समझौता ज्ञापन के अनुसरण में की गई थी। लेपेटकाटा, डिब्रूगढ़ जिले में स्थित एजीसीपी को दिनांक 18 अप्रैल, 2006 को आर्थिक कार्य मंत्रिमंडल समिति (सीसीईए) द्वारा अनुमोदित किया गया था। परियोजना को कार्यान्वित करने के लिए संयुक्त उद्यम कंपनी, अर्थात् मेसर्स ब्रह्मपुत्र क्रैकर एंड पॉलिमर लिमिटेड (बीसीपीएल) को दिनांक 8 जनवरी, 2007 को निगमित किया गया था। यह परियोजना दिनांक 2 जनवरी, 2016 को ₹ 9,965 करोड़ की लागत से शुरू की गई थी और दिनांक 5 फरवरी, 2016 को माननीय प्रधानमंत्री द्वारा राष्ट्र को समर्पित की गई थी।

गेल (इंडिया) लिमिटेड बीसीपीएल का मुख्य प्रवर्तक है, जिसकी 70% इक्विटी भागीदारी है और शेष 30% इक्विटी में ऑयल इंडिया लिमिटेड (ओआईएल), नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल) और असम सरकार की समान भागीदारी है। परिसर में मैसर्स ओआईएल और मैसर्स ओएनजीसी से फीडस्टॉक के रूप में प्राकृतिक गैस उत्पादन करना है और मैसर्स एनआरएल से फीडस्टॉक के रूप में और नाफ्था उत्पादन करना है। परिसर को प्रतिवर्ष 2,20,000 टन (टीपीए) एलएलडीपीई/एचडीपीई (रैखिक कम घनत्व पॉलीथीन/उच्च घनत्व पॉलीथीन) और प्रतिवर्ष 60,000 टन (टीपीए) पीपी (पॉली प्रोपलीन) का उत्पादन करने के लिए प्राकृतिक गैस और नेफ्था को प्रसंस्करण करने हेतु तैयार किया गया है। बीसीपीएल का मुख्य परिसर असम के डिब्रूगढ़ जिले के लेपेटकटा में स्थित है।

यह परियोजना भारत सरकार की केंद्रीय क्षेत्र की योजना है पूंजीगत राजसहायता और फीडस्टॉक राजसहायता के माध्यम से सहायता की जाती है। दिनांक 24.12.2019 को आयोजित अपनी बैठक में सीसीईए के एक निर्णय के अनुसार, बीसीपीएल का प्रशासनिक नियंत्रण रसायन और पेट्रो रसायन विभाग, रसायन और उर्वरक मंत्रालय से पेट्रोलियम और प्राकृतिक गैस मंत्रालय को स्थानांतरित कर दिया गया था। संयंत्र को पिछले चार वर्षों से 100% से अधिक क्षमता पर संचालित किया जा रहा है। वित्त वर्ष 2021–22 के दौरान, कंपनी ने ₹ 691 करोड़ का लाभ कमाते हुए ₹ 3,243 करोड़ का राजस्व अर्जित किया है। दिनांक 31.03.2022 तक की स्थिति के अनुसार कंपनी की कुल संपत्ति ₹ 3,281 करोड़ है।

बीसीपीएल ने डिब्रूगढ़ में ₹ 386 करोड़ की लागत से दो मूल्यवर्धन परियोजनाओं अर्थात् ब्यूटेन–1 और पायरोलिसिस गैसोलिन (एचपीजी) संयंत्रों का द्वितीय चरण हाइड्रोजनीकरण को क्रियान्वित किया है, जो आने वाले समय में बेहतर लाभ और उत्पाद उम्मीद की प्राप्ति के लिए मूल्य वर्धित उत्पादों और उप–उत्पादों का उत्पादन करने में मदद करेगा।

## 14.4.12. इंद्रधनुष गैस ग्रिड लिमिटेड (आईजीजीएल)

इन्द्रधनुष गैस ग्रिड लिमिटेड (आईजीजीएल), आईओसीएल, ओएनजीसी, गेल, ओआईएल और एनआरएल की समान इक्विटी अंशदान वाली संयुक्त उद्यम कंपनी है, जिसे दिनांक 10.08.2018 को प्रतिष्ठित नॉर्थ ईस्ट गैस ग्रिड (एनईजीजी) परियोजना के कार्यान्वयन के लिए निगमित किया गया था। जिसमें ₹ 9,265 करोड़ की अनुमानित लागत पर 4.75 एमएमएससीएमडी की क्षमता वाली लगभग 1,656 कि.मी. लंबी प्राकृतिक गैस पाइपलाइन ग्रिड शामिल है। इस परियोजना की परिकल्पना पूर्वोत्तर के आठ पूर्वोत्तर राज्यों अर्थात् असम, अरुणाचल प्रदेश, मेघालय, त्रिपुरा, मिजोरम, नागालैंड, मणिपुर और सिक्किम को राष्ट्रीय गैस ग्रिड और पूर्वोत्तर के स्वदेशी गैस स्रोतों के साथ जोड़ने के लिए हाइड्रोकार्बन विजन 2030 के अनुरूप की गई थी। एनईजीजी की आधारशिला माननीय प्रधानमंत्री श्री नरेंद्र मोदी द्वारा दिनांक 09.02.2019 को रखी गई थी और मंत्रिमंडल आर्थिक कार्य समिति (सीसीईए) ने दिनांक 08.01.2020 को एनईजीजी परियोजना के लिए ₹ 5,559 करोड़ की व्यवहार्यता अंतर निधियन/पूंजीगत अनुदान (अनुमानित कुल लागत का 60% अर्थात् ₹ 9,265 करोड़) को मंजूरी दी थी। एनईजीजी परियोजना के कार्यान्वयन के लिए अंतिम दिनांक 17.11.2020 को प्राधिकरण पीएनजीआरबी से प्राप्त हुआ था।

एनईजीजी परियोजना की निर्माण कार्यकलाप जोरों पर हैं और इसका मार्च, 2024 तक पूरा होने की संभावना है। एनईजीजी परियोजना कार्यनीतिक महत्व की परियोजना है और परियोजना के कार्यान्वयनाधीन है। जिससे पूर्वोत्तर क्षेत्र में औद्योगिक, नगर गैस वितरण नेटवर्क, जिनसे पर्यावरण के संरक्षण और पूर्वोत्तर में गैस आधारित अर्थव्यवस्था के विकास के लिए सरकार के पूरक प्रयासों के साथ–साथ क्षेत्र के आर्थिक विकास को बढ़ावा देने की उम्मीद है। यह उपभोक्ताओं को विश्वसनीय और निर्बाध प्राकृतिक गैस की आपूर्ति सुनिश्चित करेगी।

## 14.4.13. इंडियन कार्यनीतिक पेट्रोलियम रिजर्व्स लिमिटेड (आईएसपीआरएल)

भारत सरकार ने देश की ऊर्जा सुरक्षा के कार्यनीतिक उद्देश्य को पूरा करने के हित में दिनांक 7 जनवरी, 2004 को कार्यनीतिक पेट्रोलियम रिजर्व (एसपीआर) सुविधाओं का निर्माण करने का निर्णय लिया था। चूंकि भारत आर्थिक कार्यकलापों और विकास का समर्थन करने और अपने नागरिकों की ऊर्जा जरूरतों को पूरा करने के लिए कच्चे तेल के आयात पर अत्यधिक निर्भर है, इसलिए ये एसपीआर आपूर्ति श्रृंखला व्यवधानों से संबंधित किसी भी स्थिति से निपटने के लिए बफर के रूप में काम करेंगे, विशेषकर बाह्य कारणों से। इस तरह के आपातकालीन भंडार देश को कच्चे तेल के आयात में व्यवधान के बावजूद अपनी रिफाइनरियों को कच्चे तेल से सिंचित रखने में सक्षम बनाएंगे और देश भर में पेट्रोलियम उत्पादों की निर्बाध आपूर्ति सुनिश्चित करेंगे। असाधारण परिस्थितियों में, कच्चे तेल के बफर स्टॉक का उपयोग वैश्विक तेल की कीमतों में असामान्य वृद्धि को आंशिक रूप से अपनाने के लिए किया जा सकता है।

एसपीआर सुविधाओं के निर्माण के लिए भारत सरकार के निर्णय को कार्यान्वित करने के लिए, इंडियन ऑयल कॉर्पोरेशन लिमिटेड की सहायक कंपनी के रूप में दिनांक 16 जून 2004 को विशेष प्रयोजन तंत्र (एसपीवी) इंडियन कार्यनीतिक पेट्रोलियम रिजर्व लिमिटेड (आईएसपीआरएल) की स्थापना की गई थी। इसके पश्चात जनवरी 2006 में, आईएसपीआरएल तेल उद्योग विकास बोर्ड (ओआईडीबी) की पूर्ण स्वामित्व वाली सहायक कंपनी बन गई।



भूमिगत बड़ी गुफा का दृश्य

**आईएसपीआरएल चरण–I**

एसपीआर कार्यक्रम के चरण–I के अंतर्गत आईएसपीआरएल ने आंध्र प्रदेश में विशाखापत्तनम (1.33 एमएमटी) और कर्नाटक में मंगलौर (1.5 एमएमटी) और पादुर (2.5 एमएमटी) शीर्षक वाली तीन स्थानों पर 5.33 एमएमटी क्षमता वाली भूमिगत चट्टान गुफाओं में कच्चे तेल का निर्माण और भरने का कार्य पूरा किया।

सभी तीन सुविधाएं अर्थात विशाखापत्तनम, मैंगलोर और पादुर क्रमशः जून 2015, अक्टूबर 2016 और दिसंबर 2018 में शुरु की गई हैं। इन तीनों सुविधाओं को माननीय प्रधान मंत्री द्वारा दिनांक 01 फरवरी, 2019 को राष्ट्र को समर्पित किया गया था।

आईएसपीआरएल कच्चे तेल को पहली बार अगस्त 2019 में आईएसपीआरएल मैंगलोर बड़ी गुफाओं से मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल) के लिए जारी किया गया था। इसके पश्चात अक्टूबर 2019 में पादुर से भी एमआरपीएल को कच्चा तेल जारी किया गया था।

कार्यनीतिक कच्चे तेल की निर्गमन/बिक्री सचिव, पेट्रोलियम और प्राकृतिक गैस मंत्रालय की अध्यक्षता में एक अंतर–मंत्रालयी सशक्त समिति के माध्यम से की जाती है, जिसमें सचिव, व्यय विभाग, वित्त मंत्रालय; सचिव, गृह मंत्रालय सचिव, योजना आयोग; सचिव, रक्षा, सचिव, राष्ट्रीय सुरक्षा परिषद और सचिव, पोत परिवहन मंत्रालय सदस्य के रूप में शामिल है।

30% तक पट्टे/किराए के माध्यम से वाणिज्यिक स्टॉक जारी करने और क्षमता के 20% तक कच्चे तेल की बिक्री/खरीद निदेशकों की समिति द्वारा की जाती है जैसा कि आईएसपीआरएल बोर्ड द्वारा समय–समय पर निर्धारित किया जाता है जिसमें एलएसपीआरएल के निदेशक शामिल होते है।

कोविड–19 महामारी जिसने दुनिया को जकड़ लिया था, और वैश्विक स्तर पर लॉकडाउन किया गया था, जिसने दुनिया भर में कच्चे तेल की मांग को प्रभावित किया और इससे भारत भी प्रभावित हुआ था। पेट्रोलियम उत्पादों की मांग में भारी कमी के परिणामस्वरूप रिफाइनरियां न्यूनतम क्षमता पर संचालित हुई हैं। इसमें कच्चे तेल की आपूर्ति में वृद्धि को संपूरक किया जिसके फलस्वरूप मांग आपूर्ति असंतुलन उत्पन्न हुआ, जिसने दुनिया भर में कच्चे तेल की कीमतों को कम कर दिया। कच्चे तेल की मौजूदा कम कीमतों का लाभ उठाने के लिए, कार्यनीतिक भंडार मध्य पूर्व के देशों से कच्चे तेल की खरीद कर कार्यनीतिक भंडारों को भर दिया गया।

आईएसपीआरएल प्रधान महत्वपूर्ण सरकारी कच्चे तेल भंडार के संरक्षक के रूप में भंडारण सुविधाओं का संचालन करता है। यह आपूर्ति व्यवधानों के दौरान कार्यनीतिक कच्चे तेल के स्टॉक का निर्गमन और पुनःपूर्ति का समन्वय भी करता है।



पादुर की बड़ी गुफा क्षेत्र में ज़मीन के ऊपर स्थित इकाई का दृश्य



संयुक्त सचिव (आईसी) एमओपीएनजी द्वारा मैंगलोर स्थल पर वृक्षारोपण

### 14.4.13.1. अबू धाबी नेशनल ऑयल कंपनी (एडीएनओसी) के साथ करार

दिनांक 10 जनवरी 2018 को एडीएनओसी और आईएसपीआरएल के बीच एक करार पर हस्ताक्षर किया गया था, जिसमें एडीएनओसी को मैंगलोर में एक विभाग का उपयोग करने की अनुमति दी गई थी। करार के अनुसार, एडीएनओसी ने वर्ष 2018 में आईएसपीआरएल की मैंगलोर गुफा में 5.8 मिलियन बैरल कच्चा तेल भरा था। एडीएनओसी इस तेल का एक अंश का उपयोग भारत में अपने ग्राहकों को वाणिज्यिक आपूर्ति के रूप में कर सकता है, जबकि शेष कार्यनीतिक भंडारण के रूप में रहेगा, जिसे भारत सरकार के निदेशों पर निर्गमन किया जाएगा ताकि प्राकृतिक आपदा या भू–राजनीतिक कारक के कारण आपूर्ति में व्यवधान जैसी आपात परिस्थितियों का सामना किया जा सके।

मैंगलोर सुविधा में 0.75 एमएमटी के दो विभाग हैं। जिसमें से एक विभाग का उपयोग अबू धाबी नेशनल ऑयल कंपनी (एडीएनओसी) द्वारा किया जा रहा है।

एडीएनओसी और आईएसपीआरएल के बीच की गई करार के अनुसार दिसंबर 2019 में एचपीसीएल, विजाग को अपनी पहली वाणिज्यिक खेप सफलतापूर्वक भेज दी गई थी। इसके पश्चात एडीएनओसी मैंगलोर एसपीआर से विभिन्न भारतीय रिफाइनरियों को नियमित रूप से कच्चे तेल की खेप बेच रहा है और संविदात्मक शर्तों के अनुसार फिर से क्षतिपूर्ति कर रहा है।

### 14.4.13.2. व्यावसायीकरण : एमआरपीएल और एचपीसीएल द्वारा आईएसपीआरएल से क्रूड का उत्थान

मंत्रिमंडल ने 8 जुलाई, 2021 को कार्यनीतिक पेट्रोलियम भंडार (एसपीआर) के चरण–1 के अंतर्गत तैयार किए गए पेट्रोलियम भंडार के अंश का उपयोग व्यावसायीकरण संचालन के लिए करने के प्रस्तावों पर विचार किया है।

आईएसपीआरएल ने अगस्त 2021 से राज्य आधारित रिफाइनरों एचपीसीएल और एमआरपीएल को कच्चा तेल निर्गमन करना शुरू कर दिया है। आईएसपीआरएल ने भारत सरकार के भारतकोष खाते में ₹ 4,900.60 करोड़ की राशि जमा की, जिसे कच्चे तेल की बिक्री से राजस्व के रूप में प्राप्त किया गया था।




मैंगलोर की बड़ी गुफा पोर्टल स्थल पर संयुक्त सचिव (रिफाइनरी), एमओपीएनजी का दौरा



आईएसपीआरएल विशाखापत्तनम इकाई संयंत्र का दृश्य

**आईएसपीआरएल चरण–II**

दिनांक 08 जुलाई 2021 को, मंत्रिमंडल सचिवालय ने चांदीखोल, ओडिशा (4 एमएमटी) और पदुर–II, कर्नाटक (2.5 एमएमटी) और समर्पित एसपीएम और पीपीपी मोड के अंतर्गत रूपरेखा, निर्मित, वित्त, संचालन और हस्तांतरण (डीबीएफओटी) आधार पर संबद्ध पाइपलाइन के चरण–II के अंतर्गत वाणिज्यिक सह सामरिक पेट्रोलियम भंडार के विकास के लिए अपनी मंजूरी दे दी है। वित्त वर्ष 2019–20 की खपत के आंकड़ों के अनुसार इससे भारत की ऊर्जा सुरक्षा में और 12 दिनों की वृद्धि होने की उम्मीद है।

दोनों स्थानों पर चरण–II के लिए आईएसपीआरएल भारत सरकार से बजटीय सहायता के माध्यम से भूमि का अधिग्रहण करेगा और भूमि अधिग्रहण हो जाने के बाद, इसे एकल चरण बोली के माध्यम से सफल बोलीदाता को सौंप दिया जाएगा। रियायतग्राही कच्चे तेल का निर्माण करेगा, उसे भरेगा और उसका संचालन करेगा।

दोनों स्थानों चांदीखोल, ओडिशा और पदुर–II, कर्नाटक की भूमि अधिग्रहण की प्रक्रिया प्रगति पर है। पादुर में एसपीएम के लिए समुद्री सर्वेक्षण किया गया है। नीरी ने दोनों स्थानों में ईआईए किया है। आईएसपीआरएल देश में एसपीआर क्षमता बढ़ाने के लिए और गुफाएं जोड़ने की व्यवहार्यता भी तलाश रहा है।

### 14.4.13.3. यूएस ऊर्जा विभाग के अधिकारियों द्वारा आईएसपीआरएल विशाखापत्तनम का दौरा

कार्यनीतिक भंडार से निपटने वाले ऊर्जा विभाग (डीओई) के एक वरिष्ठ अमेरिकी प्रतिनिधिमंडल ने दिनांक 14 और 15 नवंबर 2022 को नोएडा के आईएसपीआरएल कार्यालय और विशाखापत्तनम के उत्पादन केंद्रों का दौरा किया। यूएस प्रतिनिधिमंडल ने नमक की गुफा के संचालन संबंधी अनुभव साझा किए। दोनों पक्षों ने गुफाओं के संचालन से संबंधित चुनौतियों पर चर्चा की।

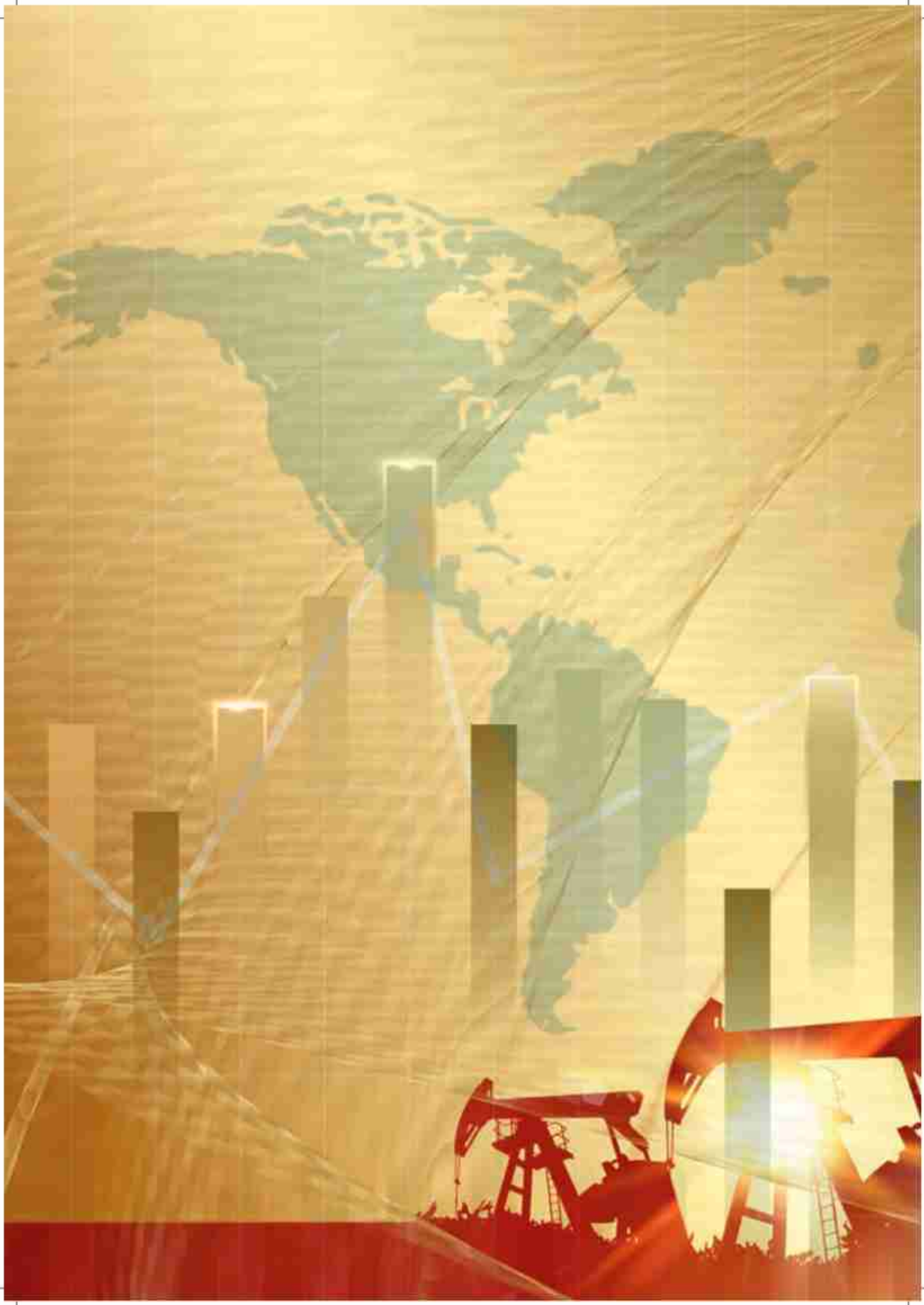
आईएसपीआरएल ने अमेरिका द्वारा समन्वित निर्गमन घोषणा के दौरान एसपीआर से कच्चा तेल निर्गमन किया था।



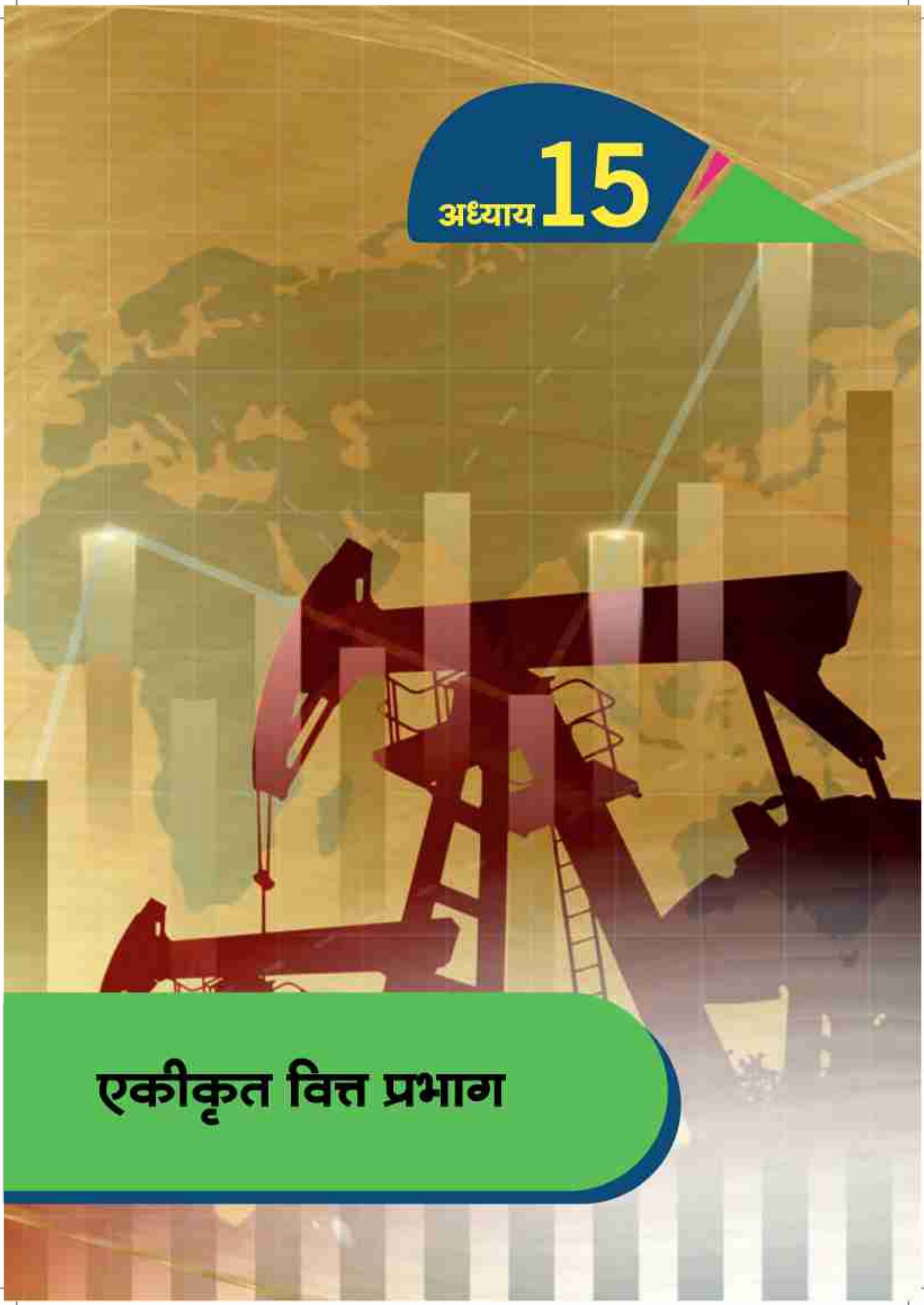
आईएसपीआरएल विशाखापत्तनम गुफा पोर्टल में ऊर्जा विभाग के यूएस ऊर्जा विभाग के कार्मिकों का दौरा



आईएसपीआरएल मुख्यालय में ऊर्जा विभाग के कार्मिकों के साथ यूएस के ऊर्जा विभाग के अधिकारी



अध्याय 15



# एकीकृत वित्त प्रभाग

# 15 एकीकृत वित्त प्रभाग

अपर सचिव एवं वित्त सलाहकार के नेतृत्व में आईएफडी को प्रशासनिक मंत्रालय/विभाग के सचिव को सहायता प्रदान करने के साथ-साथ वित्त मंत्रालय का प्रतिनिधित्व करने की दोहरी जिम्मेदारी सौंपी गई है।

वित्तीय सलाहकारों से प्रशासनिक सचिवों को निम्नलिखित पर सलाह देने की अपेक्षा की जाती है:–

i) नीति के वित्तीय प्रभावों पर ध्यान देने के साथ नीति निर्माण और

ii) वित्त मंत्रालय द्वारा निर्धारित समग्र मैक्रो–फ्रेमवर्क में विभागीय लक्ष्यों और उद्देश्यों के अनुसार सिफारिशें करना।

इसके कारण, आईएफडी को मंत्रालय/विभाग की नीतियों और प्राथमिकताओं की पूरी समझ होना और दैनिक आधार पर लेन–देन संबंधी निर्णय लेने में सचिव का मार्गदर्शन करना अपेक्षित है। वित्त मंत्रालय द्वारा परिभाषित वित्तीय औचित्य के दायरे में, इस प्रभाग को बजटीय सत्यनिष्ठा से समझौता किए बिना क्षेत्रीय प्राथमिकताओं/लक्ष्यों/उद्देश्यों/परिणामों को ध्यान में रखना चाहिए।

इस उत्तरदायित्व का निर्वहन निम्नलिखित कार्य आबंटन के अनुसार दो अनुभागों के माध्यम से किया जाता है:–

i) मंत्रालय के मुख्य बजट को तैयार करने और इसे अंतिम रूप देने के संबंध में बजट संबंधी कार्य।

ii) नीतिगत सलाह

iii) संसद से संबंधित कार्य

iv) अन्वेषण संबंधी नीतिगत मामलों पर सलाह

v) लेखा परीक्षा मामले

vi) पेट्रोलियम और प्राकृतिक गैस मंत्रालय के प्रशासनिक, स्थापना और व्यक्तिगत मामलों की वित्तीय सहमति/पुनरीक्षण।

vii) सीपीएसई से संबंधित नीतिगत मामलों पर सलाह

viii) अन्य नीतिगत मामलों पर सलाह



एमआरपीएल की मैंगलोर रिफाइनरी का चित्र

## पेट्रोलियम और प्राकृतिक गैस मंत्रालय की वार्षिक रिपोर्ट 2022–23 के लिए इनपुट (बजट अनुमान)

(₹ करोड़ में)

| योजना/मद का नाम | वास्तविक व्यय 2021-22 | बजट अनुमान 2022–23 | वास्तविक व्यय 2022-23 (31.1.2023 तक) |
|---|---|---|---|
| **राजस्व** | | | |
| सचिवालय–आर्थिक सेवाएं | 36.86 | 49.16 | 34.11 |
| एलपीजी के लिए डीबीटी | 177.06 | 4000.00 | 10.95 |
| पूर्वोत्तर क्षेत्र सहित अन्य देय राजसहायता (घरेलू प्राकृतिक गैस) | 391.00 | 811.00 | 744.29 |
| परियोजना प्रबंधन व्यय | 241.65 | 64.00 | 9.88 |
| केरोसिन के लिए डीबीटी | 1.53 | 0.0 | 0.00 |
| पूर्वोत्तर क्षेत्र सहित देय अन्य राजसहायता (मिट्टी का तेल) | 0.00 | 0.0 | 0.00 |
| बीसीपीएल/असम को फीडस्टॉक राजसहायता गैस क्रैकर कॉम्प्लेक्स | 1,042.92 | 137.5 | 116.88 |
| गरीब परिवारों को एलपीजी कनैक्शन की योजना (पीएमयूवाई) | 1,568.44 | 800.00 | 680.00 |
| इंडियन स्ट्रेटेजिक पेट्रोलियम रिजर्व लिमिटेड को भुगतान (ओ एंड एम) | 129.49 | 210.58 | 123.27 |
| गेल अथोरिटी ऑफ इंडिया– फूलपुर धामरा हल्दिया पाइपलाइन परियोजना | 589.55 | 0.00 | 0 |
| इंद्रधनुष गैस ग्रिड लिमिटेड (आईजीजीएल) पूर्वोत्तर प्राकृतिक गैस पाईपलाइन ग्रिड का हिस्सा | 850.00 | 1,798.27 | 1,528.53 |
| प्रधान मंत्री जी–वन योजना | 151.50 | 314.36 | 0.00 |
| राष्ट्रीय जैव–ईंधन निधि | 0.00 | 1.00 | 0.00 |
| पेट्रोलियम नियामक बोर्ड (पीएनजीआरबी) | 0.00 | 0.00 | 0.00 |
| 2. सोसाइटी फॉर पेट्रोलियम लेबोरेट्री | 1.69 | 2.88 | 0.00 |
| भारतीय पेट्रोलियम ऊर्जा संस्थान (आईआईपीई) विशाखापत्तनम की स्थापना | 23.75 | 150.00 | 0 |
| राजीव गांधी पेट्रोलियम और प्रौद्योगिकी संस्थान (आरजीआईपीटी) असम की स्थापना | 100.00 | 0.00 | 0.00 |
| ऊर्जा उत्कृष्टता केन्द्र, बैंगलोर की स्थापना | 100.00 | 0.00 | 0.00 |
| राज्य सरकारों को विभेदक रॉयल्टी का भुगतान | 0.88 | 1.11 | 1.11 |
| घरेलू एलपीजी परिचालन में कम वसूली के लिए तेल विपणन | 0 | 0 | 22,000.00 |
| नुमालीगढ़ रिफाइनरी विस्तार परियोजना | 0.00 | 0.00 | 0.00 |
| भारत में मर्चेन्ट शिप की शुरुआत के संवर्धन के लिए योजना | 0.00 | 0.00 | 0.00 |
| **कुल** | **5,406.32** | **8,339.86** | **25,249.02** |
| **पूंजी** | | | |
| इंडियन स्ट्रेटेजिक पेट्रोलियम रिजर्व लिमिटेड (आईएसपीआरएल) को भुगतान | 0.00 | 0.00 | 0.00 |
| कावेर्न्स चरण–II के निर्माण के लिए आईएसपीआरएल को भुगतान | 210.00 | 600.00 | 0.00 |
| तेल विपणन कंपनियों के लिए पूंजीगत समर्थन | 0.00 | 0.00 | 0.00 |
| बीको–लॉरी को ब्याज मुक्त ऋण | | | |
| सचिवालय–आर्थिक सेवाएं | 0.00 | 0.00 | 0.00 |
| राष्ट्रीय भूकंपीय कार्यक्रम | 137.31 | 0.00 | 0 |
| **कुल** | **347.31** | **600.00** | **0.00** |
| **कुल योग (राजस्व+पूंजी)** | **5,753.63** | **8,939.86** | **25,249.02** |

## 16.2. राजस्व पूंजी प्राप्तियां*

(₹ हज़ार में)

| छः माह की कुल प्राप्तियां | | विस्तृत शीर्षों तक | कुल प्राप्तियां | | | 2022-2023 | | 2023-2024 |
|---|---|---|---|---|---|---|---|---|
| अप्रैल–सितंबर | अप्रैल–सितंबर | | | | | | | |
| 2021-2022 | 2022-2023 | | 2019-2020 | 2020-2021 | 2021-2022 | बजट अनुमान | संशोधित अनुमान | बजट अनुमान |
| 43374786 | 50347606 | लाभ पेट्रोलियम | 44777421 | 37458596 | 86749572 | 60334434 | 96655918 | 90406807 |
| 28597449 | 49895403 | रॉयल्टी | 56259001 | 35585349 | 57194897 | 57114446 | 77547598 | 81533062 |
| 102300 | 100000 | पीईएल शुल्क | 142133 | 330000 | 204600 | 175584 | 150000 | 150000 |
| 13100 | 13500 | पीएलपी | 40829 | 30200 | 26200 | 25400 | 27000 | 27000 |
| **7,20,87,635** | **10,03,56,509** | कुल | **10,12,19,384** | **7,34,04,145** | **14,41,75,269** | **11,76,49,864** | **17,43,80,516** | **17,21,16,869** |

*दिनांक 30.11.2022 तक ली गयी जानकारी/डाटा



## राजस्व प्राप्तियां–लाभांश (दिनांक 30.11.2022 तक)

(₹ हज़ार में)

| क्र. सं. | सीपीएसई/बैंक का नाम | दिनांक 31.3.2022 की स्थिति के अनुसार पीपंकालिक उधारियां | दिनांक 31.3.2022 की स्थिति के अनुसार ऋण इक्विटी अनुपात | 2021-2022 के लिए सरकार को संदत्त लाभांश | | 2021-22 के लिए संदत्त कुल लाभांश (कॉलम क+ख का योग) | 2021-22 में संदत्त/ भुगतान किया जाने वाला 2021-22 के लिए अन्तरिम लाभांश | 2021-22 के दौरान संदत्त कुल लाभांश (कॉलम ख+घ का योग) | 31.03.22 की स्थिति के अनुसार नगदी/ नगदी समकक्ष | 31.03.22 की स्थिति के अनुसार सामान्य आरक्षिती | 2022-23 के दौरान पूंजीगत व्यय | 2023-24 के लिए अनुमानित पूंजीगत व्यय |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2021-2022 में अंतरिम लाभांश | 2021-2022 में संदत्त/ भुगतान किया जाने वाला अंतिम लाभांश | | | | | | | |
| | | | | क | ख | ग=क+ख | घ | ङ | | | | |
| 1 | ओएनजीसी | 63969020 | 0.03:1 | 55097161 | 24078818 | 79175979 | 75851593 | 99930411 | 501050 | 2166081370 | 299500037 | 301250046 |
| 2 | ओआईएल इंडिया लि. | 116356435 | 0.43 | 5682984 | 307188 | 5990172 | 9200000 | 9507188 | 6567109 | 258941166 | 43020000 | 44500000 |
| 3 | आईओसीएल | 633158400 | 0.84:1 | 43632900 | 17453280 | 61086180 | 0 | 17453280 | 8829800 | 1024788900 | 285490000 | 284761900 |
| 4 | एचपीसीएल | 349769261 | 0.90:1 | 0 | 0 | 0 | 0 | 0 | 1072195 | 0 | 145000000 | 120000000 |
| 5 | बीपीसीएल | 154819725 | 0.49:1 | 11491836 | 6895102 | 18386938 | 0 | 6895102 | 7675379 | 327755617 | 100000000 | 100000000 |
| 6 | ईआईएल | 0 | 0 | 576917 | 288459 | 865376 | 576917 | 865376 | 13202317 | 16440253 | 160000 | 980000 |
| 7 | बीएलआईएल | 0 | 0 | 0 | 1111525 | 1111525 | 0 | 1111525 | 469425 | 2990369 | 264924 | 400000 |
| 8 | गेल | 48300866 | 0.15 | 20561311 | 2258387 | 22819697 | 10287588 | 12545974 | 13675625 | 35054938 | 76500000 | 77500000 |
| | कुल | **1,31,80,72,841** | | **11,64,81,798** | **5,01,34,372** | **16,66,16,170** | **8,56,28,510** | **13,57,62,882** | **3,83,17,275** | **3,79,69,97,675** | **87,34,34,961** | **85,18,91,946** |

## पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय
### सीएस बजट आवंटन और रुझान विश्लेषण

वित्त वर्ष 2021–22 में पेट्रोलियम और प्राकृतिक गैस मंत्रालय का वास्तविक व्यय भारत सरकार के वास्तविक व्यय का 0.15% था। वित्त वर्ष 2022–23 में, पेट्रोलियम और प्राकृतिक गैस मंत्रालय के बजट का 97.7% केंद्रीय क्षेत्र की 11 योजनाओं के लिए आवंटित किया गया है।

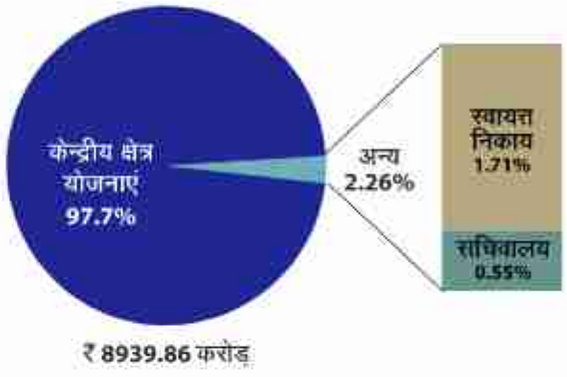
**मंत्रालय संबंधी व्यय 2010-21**
एमओपीएनजी

रुपये में ₹




*टिप्पणी: वर्ष 2021-22 के लिए आंकड़े बजट अनुमान* है और वर्ष 2022-23 के लिए आंकड़े बजट अनुमान^ है।*
*स्रोत: केन्द्रीय बजट 2021-22; पी आर एस*

**अनुदानों की मांगे 2022-23**
एमओपीएनजी

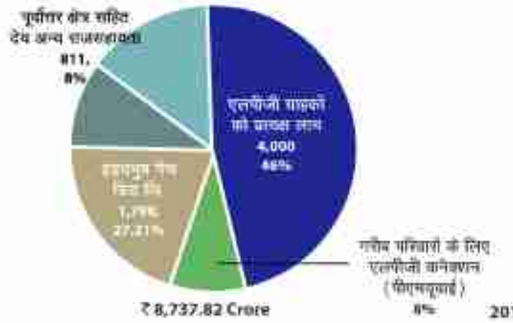



*शून्य बजट योजनाओं को योजनाओं की गिनती में शामिल नहीं किया गया।
*स्रोत: अनुदानों की मांगे, बजट (2022-23)*

## पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय
### सीएस बजट आवंटन और रुझान विश्लेषण

पेट्रोलियम और प्राकृतिक गैस मंत्रालय के 2022–23 के सीएस बजट आवंटन में शीर्ष 4 योजनाओं का योगदान 85% से अधिक है

**अनुदानों की मांगे 2022-23**
एमओपीएनजी | उपयोजनाए




- केन्द्रीय योजना 2022–23 बजट आवंटन में शीर्ष 03 योजनाए अर्थात एलपीजी के लिए प्रत्यक्ष लाभ अंतरण, पूर्वोत्तर क्षेत्र सहित देय अन्य राजसहायता और इन्द्रधनुष गैस लिमिटेड 78% का आवंटन करते हैं।

**सीएस बजट रुझान (वि.व.19-23)**
एमओपीएनजी | 5 वर्षों का रुझान | उप योजनाए

करोड़ रुपये में




- प्रत्यक्ष लाभ अंतरण–एलपीजी वि.व. 22–23 बा.अ. पर बजट वित्त वर्ष 21–22 वास्तविक की तुलना में 22 गुणा बढ़ाया गया है।
- वित्त वर्ष 22–23 में अन्य योजनाओं अर्थात् पीपीसीएल/असम जीसीसी और राष्ट्रीय भूकंपीय कार्यक्रम के लिए फीडस्टॉक राजसहायता पर व्यय काफी कम किया गया है।
- पीपीसीएल/असम जीसीसी को फीडस्टॉक राजसहायता हाल ही में रसायन और उर्वरक मंत्रालय से पीएनजी मंत्रालय को अंतरित की गई थी।
- इन्द्रधनुष गैस ग्रीड लिमिटेड का बजट वि.व. 21–22 वास्तविक की तुलना में वि.व. 22–23 बा.अ. में 2 गुणा बढ़ा गया है।

*बा.अ.–संशोधित अनुमान, ब.अ.–बजट अनुमान | स्रोत–अनुदानों की मांगे, बजट (2018–19, 19–20, 20–21, 21–22, 22–23)*

## वर्ष 2022–23 से कार्रवाई मदें

**घरेलू अन्वेषण में तेजी लाना**

- 09 डीएसएफ बोली राउंड–84 संविदा क्षेत्र
- ओपन एकरेज पॉलिसी (ओएएलपी) के 07 बोली राउंड हुए–134
- विशेष सीबीएम बोली राउंड–2021 और 2022 – 04 सीबीएम ब्लॉक एवार्ड किए गए और एक ब्लॉक ऑफर के अधीन।
- नो–गो क्षेत्र होने वाले 99% क्षेत्र में अन्वेषण गतिविधियों को खोल दिया गया।

**गैस अर्थव्यवस्था का संवर्धन**

- अतिरिक्त ~13,029 किमी पाइपलाइन निर्माणाधीन, गैस को पूरा करने के लिए 2026–27 तक आगामी और बिछाए जाने का प्रस्ताव
- विभिन्न प्रवेशों द्वारा अतिरिक्त 22.3 एमएमटीपीए एलएनजी आयात क्षमता निर्माणाधीन है

**रिफाइनिंग**

- नुमालीगढ़ रिफाइनरी का 3.0 एमएमटीपीए से 9.0 एमएमटीपीए तक क्षमता विस्तार

**एथेनॉल मिश्रण**

- वित्त वर्ष 2022–23 में 10% एथेनॉल मिश्रण हासिल किया गया और अब 20% मिश्रण लक्ष्य अधिसूचित किया गया
- 6 वाणिज्यिक 2जी पपरियोजना–3 डेमो परियोजनाओं के लिए कुल ₹ 895 करोड़ की वित्तीय सहायता अनुमोदित

**सुधार**

- हरित हाइड्रोजन मिशन
- स्कोप 1 और स्कोप 2 उत्सर्जन
- डबल बर्नर सोलर कुकटॉप
- ई20 ईंधन वितरण
- एकल उपयोग प्लास्टिक का पुनर्चक्रण
- नवीकरणीय ऊर्जा परियोजना

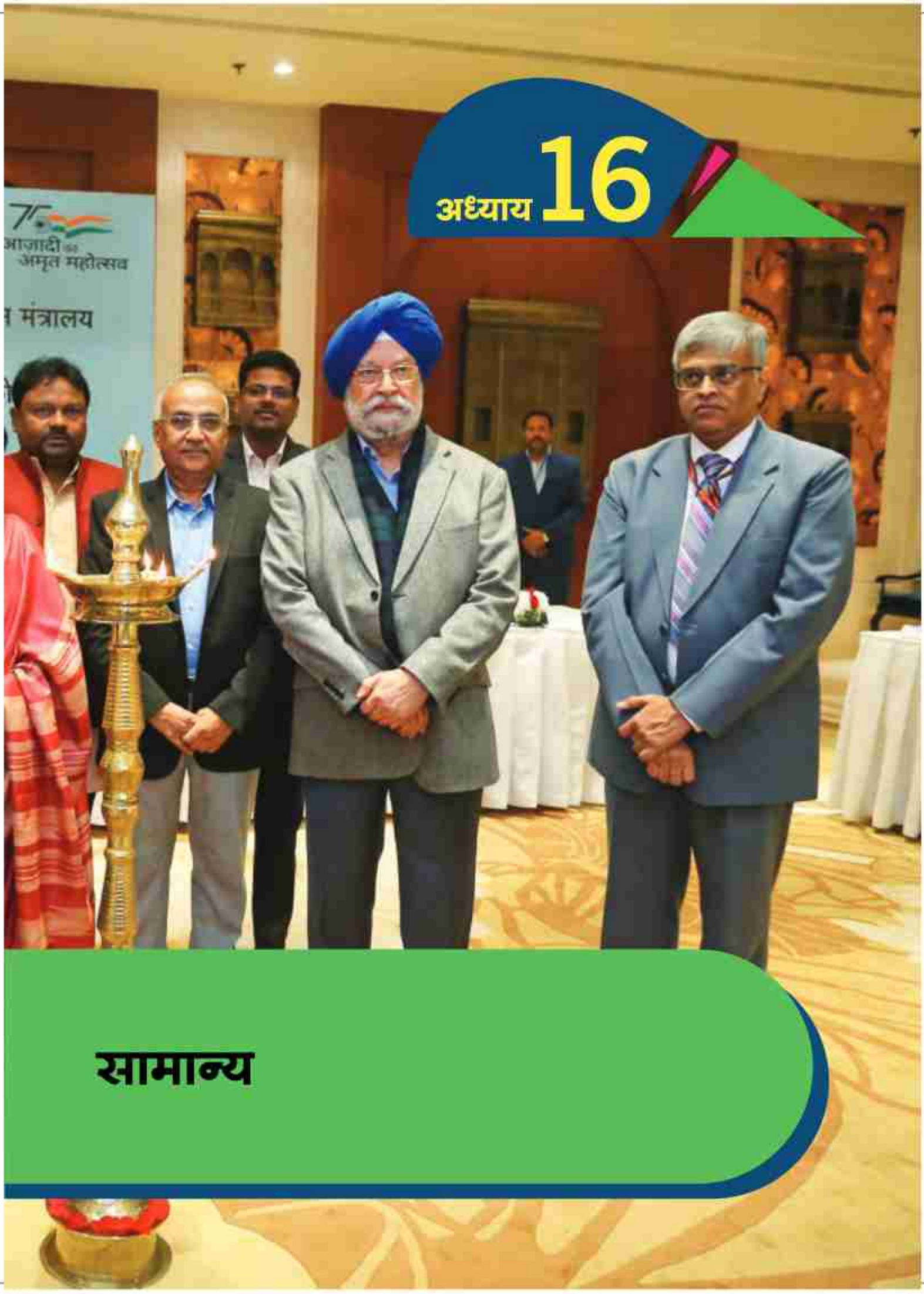
**दीर्घावधिक आपूर्ति सुरक्षा**

- वैकल्पिक ईंधनों पर ध्यान केंद्रित कर कच्चे तेल एवं प्राकृतिक गैस स्रोतों के आयात को कम करने के लिए कदम उठाना
- पेट्रोरसायन का निवल निर्यातक बनना

**सामान्य**

- गोबरधन (गेलवेनाइजिंग) ऑर्गेनिक बायो–एग्रो रिसोर्सेज चेन) के तहत 500 नए "वेस्ट वेल्थ" संयंत्र
- ऊर्जा के भंडारण और 24x7 उपयोग के लिए इन–हाउस बैटरी इंफ्रास्ट्रक्चर द्वारा समर्थित खाना पकाने के लिए रूफ टॉप सोलर का लाभ उठाने के लिए एक हाइब्रिड मॉडल की संभावना तलाशना


ट्रोलियम और प्राकृतिक गैस
की
हिन्दी सलाहकार समिति की




अध्याय 16

# सामान्य

# 16 सामान्य

## सरकारी कामकाज में हिंदी का प्रगामी प्रयोग

**16.1.1.** मंत्रालय और इसके उपक्रमों में आधिकारिक कामकाज में राजभाषा हिंदी को बढ़ावा देने के लिए पेट्रोलियम और प्राकृतिक गैस मंत्रालय ने हिंदी के उपयोग को बढ़ाने के लिए कई कदम उठाए हैं। इन कदमों में हिंदी कार्यशालाओं का आयोजन, मंत्रालय और उसके उपक्रमों के अनुभागों का मौके पर निरीक्षण, हिंदी पखवाड़े का आयोजन, हिंदी सलाहकार समिति, राजभाषा कार्यान्वयन समिति आदि की बैठकें आयोजित करना शामिल है।

**16.1.2.** मंत्रालय में माननीय पेट्रोलियम और प्राकृतिक गैस मंत्री की अध्यक्षता में एक हिंदी सलाहकार समिति कार्यरत है। माननीय पेट्रोलियम और प्राकृतिक गैस राज्य मंत्री इस समिति के उपाध्यक्ष हैं। समिति में छह संसद सदस्य, नौ गैर–सरकारी सदस्य हैं, इसके अलावा मंत्रालय और मंत्रालय के अधीन सार्वजनिक क्षेत्र के उपक्रमों के वरिष्ठ अधिकारी इसके आधिकारिक सदस्य हैं। समिति का कार्य सरकारी कामकाज में राजभाषा को बढ़ावा देने के लिए मंत्रालय को सलाह प्रदान करना है। इस समिति की बैठक दिनांक 25.11.2022 को नई दिल्ली में आयोजित की गयी थी।

**16.1.3.** मंत्रालय ने इसके अधीन सार्वजनिक उपक्रमों के लिए एक राजभाषा शील्ड योजना शुरू की थी ताकि ये अपने–अपने संगठनों में आधिकारिक कामकाज में हिंदी के उपयोग के लिए एक दूसरे के साथ प्रतिस्पर्धा कर सकें। माननीय मंत्री जी द्वारा 25 नवम्बर 2022 को पुरस्कार वितरण किया गया।

**16.1.4.** इसी प्रकार मंत्रालय में संयुक्त सचिव (सामान्य एवं प्रशासन) की अध्यक्षता में एक राजभाषा कार्यान्वयन समिति भी कार्य कर रही है। इस समिति का कार्य मंत्रालय और इसके उपक्रमों में राजभाषा की प्रगति की समीक्षा करना और इसके प्रचार–प्रसार के लिए सुझाव देना है। समीक्षाधीन वर्ष के दौरान समिति की नियमित बैठकें आयोजित की गईं और समिति के सुझावों पर अनुवर्ती कार्रवाई की गई।

**16.1.5.** संसदीय राजभाषा समिति ने हमारे सार्वजनिक क्षेत्र के उपक्रमों के लगभग 41 कार्यालयों का दौरा किया जिसमें ओआईएल, ओएनजीसी, आईओसीएल, बीपीसीएल, एचपीसीएल, गेल, बामर लॉरी, ओएनजीसी विदेश लिमिटेड, सीएचटी और ईआईएल आदि के कार्यालय शामिल हैं और इन कार्यालयों में राजभाषा की प्रगति की समीक्षा की। समिति ने अनेक अवसरों पर हिंदी के प्रचार–प्रसार



के लिए इन कार्यालयों द्वारा किए गए प्रयासों की सराहना की। इन कार्यालयों द्वारा समिति को दिए गए आश्वासनों पर अनुवर्ती कार्रवाई की गई है। इन बैठकों में मंत्रालय के वरिष्ठ अधिकारियों ने भी भाग लिया।

**16.1.6.** समीक्षाधीन वर्ष के दौरान, मंत्रालय ने राजभाषा नियम, 1976 के नियम 10(4) के तहत हमारे पीएसयू के कुछ कार्यालयों को अधिसूचित किया। हमारे पीएसयू में राजभाषा की प्रगति का आकलन करने और निर्धारित लक्ष्यों के अनुसरण में राजभाषा विभाग द्वारा जारी वार्षिक कार्यक्रम 2022–23 में मंत्रालय के वरिष्ठ अधिकारियों ने हमारे पीएसयू के 35 से अधिक कार्यालयों का निरीक्षण किया और इन कार्यालयों में हिंदी की प्रगति की समीक्षा की। मौके पर ही संबंधित अधिकारियों को कमियों को दूर करने के सुझाव दिए गए।

**16.1.7.** अधिकारियों को हिंदी में अधिक से अधिक कार्य करने में सहायता करने और ऐसा करने में उनके संकोच को दूर करने के लिए मंत्रालय में नियमित हिंदी कार्यशालाएं आयोजित की गईं। इन कार्यशालाओं में बड़ी संख्या में अधिकारियों ने भाग लिया और इन कार्यशालाओं में दिए गए सुझावों से लाभान्वित हुए। इसके परिणामस्वरूप मंत्रालय में हिंदी पत्राचार का प्रतिशत काफी बढ़ गया है।

**16.1.8.** राजभाषा विभाग के निर्देशानुसार मंत्रालय में दिनांक 14 सितम्बर से 28 सितम्बर 2022 तक हिन्दी पखवाड़े का आयोजन किया गया। इस अवसर पर, हमारे सभी अधिकारियों के साथ–साथ सभी पीएसयू को माननीय मंत्री जी का एक संदेश जारी किया गया। इस पखवाड़े के दौरान विभिन्न हिंदी प्रतियोगिताओं सहित विभिन्न गतिविधियों का आयोजन किया गया। इन प्रतियोगिताओं में बड़ी संख्या में मंत्रालय के अधिकारियों ने भाग लिया और सफल उम्मीदवारों को पुरस्कार दिए गए।

**16.1.9.** दिनांक 09.09.2022 को नई दिल्ली में संयुक्त सचिव (सामान्य एवं प्रशासन) की अध्यक्षता में तीसरा पेट्रोलियम राजभाषा सम्मेलन सफलतापूर्वक आयोजित किया गया। पेट्रोलियम और प्राकृतिक गैस मंत्रालय के प्रशासनिक नियंत्रण के अधीन सभी पीएसयू/संगठनों के कई राजभाषा अधिकारियों ने इस कार्यक्रम में भाग लिया।

**16.1.10.** मंत्रालय के विभिन्न दस्तावेजों का अनुवाद करना मंत्रालय के हिंदी प्रभाग को सौंपे गए महत्वपूर्ण कार्यों में से एक है। हिंदी प्रभाग ने इन दायित्वों का सफलतापूर्वक निर्वहन किया। संसद प्रश्न, कैबिनेट नोट और संसदीय स्थायी समिति संबंधी सामग्री, एमओयू आदि सहित विभिन्न दस्तावेजों का अनुवाद समय पर किया गया।

## 16.2. सूचना का अधिकार

भारत सरकार की दिनांक 15 जून, 2005 की राजपत्र अधिसूचना के अनुसार पेट्रोलियम और प्राकृतिक गैस मंत्रालय में सूचना का अधिकार (आरटीआई) अधिनियम–2005 लागू किया गया है। आरटीआई अधिनियम अन्य बातों के साथ–साथ लोक प्राधिकरणों के कामकाज में पारदर्शिता और जवाबदेही को बढ़ावा देने के लिए बनाया गया है।

सूचना का अधिकार अधिनियम–2005 के प्रावधान के अनुसार, पेट्रोलियम और प्राकृतिक गैस मंत्रालय में अवर सचिव/सहायक निदेशक को उनके कार्य आबंटन के संबंध में केंद्रीय लोक सूचना अधिकारी (सीपीआईओ) के रूप में नामित किया गया है। तदनुसार, पेट्रोलियम और प्राकृतिक गैस मंत्रालय में निदेशक/उप सचिव/आर्थिक सलाहकार को प्रथम अपीलीय प्राधिकारी (एफएए) के रूप में नामित किया गया है। कार्य के आबंटन में परिवर्तन को ध्यान में रखते हुए इस मंत्रालय के सीपीआईओ/एफएए की सूची को नियमित रूप से अद्यतन किया जा रहा है।

आरटीआई अधिनियम 2005 की धारा 4(2) के तहत सूचना अर्थात जनता को स्वतः संज्ञान लेकर नियमित अंतराल पर सूचना प्रदान करने के लिए मंत्रालय की वेबसाइट को नियमित रूप से अद्यतन किया जा रहा है।

कार्मिक और प्रशिक्षण विभाग द्वारा आरटीआईएमआईएस नामक एक ऑनलाइन प्रणाली शुरू की गई है। इस ऑनलाइन प्रणाली की सहायता से जनता से प्राप्त आवेदनों एवं अपीलों का निर्धारित समय–सीमा में निस्तारण किया जा रहा है। नागरिकों को समयोचित और परेशानी मुक्त तरीके से जानकारी प्रदान करने और पारदर्शिता को बढ़ावा देने के लिए, इस मंत्रालय के प्रशासनिक नियंत्रण के अधीन सभी तेल और गैस सार्वजनिक उपक्रम और अन्य संगठन अब डीओपीटी के ऑनलाइन आरटीआईएमआईएस पोर्टल पर हैं।

अभिलेखों का डिजिटलीकरण सुनिश्चित करने के लिए, त्वरित और समय पर निपटान के लिए भौतिक रूप में प्राप्त आरटीआई आवेदनों और अपीलों को स्कैन, अपलोड और मंत्रालय के संबंधित सीपीआईओ और एफएए को अग्रेषित किया जा रहा है।

जनवरी से दिसंबर 2022 के दौरान, मंत्रालय में आरटीआई अधिनियम, 2005 के तहत 1,820 आवेदन/प्राप्तियां और 94 अपीलें प्राप्त हुई हैं।

## 16.3. स्टार्ट–अप इंडिया

तेल और गैस क्षेत्र की स्टार्ट–अप इंडिया पहल के तहत, वित्त पोषण और सलाह के लिए व्यक्तिगत सार्वजनिक उपक्रमों द्वारा खुले विज्ञापनों के माध्यम से प्रस्ताव/आवेदन आमंत्रित किए जाते हैं। प्रस्तावों के विषयों में तेल पीएसयू के अपस्ट्रीम/मिडस्ट्रीम/डाउनस्ट्रीम कार्यों में सामाजिक प्रासंगिकता के विषयों के अलावा, इंटरनेट ऑफ थिंग्स (आईओटी) का लाभ उठाना, बिजनेस प्रोसेस का डिजिटलीकरण, हरित ईंधन, वैकल्पिक ऊर्जा, हाइड्रोकार्बन उद्योग के लिए बेहतर प्रौद्योगिकियां शामिल हैं। स्टार्ट–अप आवेदन प्राप्त करने के दौर से पहले, तेल पीएसयू भी समय–समय पर स्टार्ट–अप के लिए अपनी प्रतिभा दिखाने और नवीन विचार प्रदान करने के लिए हैकथॉन/ आइडिएशन चैलेंज का आयोजन करते हैं।

पेट्रोलियम और प्राकृतिक गैस मंत्रालय के अधीन सार्वजनिक क्षेत्र के उपक्रमों ने ₹ 405 करोड़ का स्टार्टअप फंड तैयार किया है। वर्तमान में तेल और गैस पीएसयू द्वारा लगभग 208 करोड़ रुपये के संवितरित कोष मूल्य के साथ 232 स्टार्टअप को वित्त पोषित किया जा रहा है। तेल और गैस पीएसयू द्वारा समर्थित कुछ स्टार्टअप पहले ही परिपक्व हो चुके हैं।

## 16.4. कौशल विकास

कौशल भारत पहल के तहत, दिनांक 26.04.2016 को सोसायटी रजिस्ट्रीकरण अधिनियम, 1860 के तहत हाइड्रोकार्बन क्षेत्र कौशल परिषद (एचएसएससी) की स्थापना की गई थी। कौशल विकास के क्षेत्र में सहयोग के लिए पेट्रोलियम और प्राकृतिक गैस मंत्रालय तथा कौशल विकास और उद्यमिता मंत्रालय के बीच 28 नवंबर, 2016 को एक समझौता ज्ञापन पर हस्ताक्षर किए गए।

राष्ट्रीय व्यावसायिक मानक (एनओएस)/योग्यता पैक (क्यूपी) विकास के लिए उद्योग सदस्यों के परामर्श से कई उच्च प्राथमिकता वाले ट्रेडों की पहचान की गई। अब तक, 20 क्यूपी को राष्ट्रीय



कौशल योग्यता समिति (एनएसक्यूसी) द्वारा अनुमोदित किया गया है। हाइड्रोकार्बन क्षेत्र के लिए छह शहरों अर्थात भुवनेश्वर, विजाग, कोच्चि, अहमदाबाद, गुवाहाटी और रायबरेली में कौशल विकास संस्थान (एसडीआई) स्थापित किए गए हैं। सितंबर 2022 तक, इन एसडीआई में 23,000 से अधिक प्रशिक्षुओं को प्रशिक्षित किया जा चुका है। कौशल विकास संस्थान (एसडीआई), भुवनेश्वर का स्थायी परिसर, जो एक उद्योग के लिए तैयार प्रतिभा पूल बनाने के लिए अत्याधुनिक अवसंरचना और प्रौद्योगिकी का उपयोग करके विश्व स्तरीय उद्योग आधारित कौशल प्रशिक्षण प्रदान करने की परिकल्पना करता है, 20 अगस्त, 2021 को राष्ट्र को समर्पित किया गया था।

## 16.5. मेक इन इंडिया

इस मंत्रालय ने उद्योग संवर्धन और आंतरिक व्यापार विभाग के सार्वजनिक क्रय (मेक इन इंडिया को वरीयता) आदेश, 2017 के अनुरूप तेल और गैस क्षेत्र में सार्वजनिक खरीद को संरेखित किया है।

## 16.6. लोक शिकायत

मंत्रिमंडल सचिवालय, भारत सरकार के दिशा–निर्देशों के अनुसार, पेट्रोलियम और प्राकृतिक गैस मंत्रालय में लोक शिकायत प्रकोष्ठ कार्यशील है। यह प्रकोष्ठ इस मंत्रालय के प्रशासनिक नियंत्रण के अधीन सार्वजनिक क्षेत्र की तेल और गैस कंपनियों और अन्य संगठनों के विरुद्ध जन सदस्यों की शिकायतों को संभालता है।

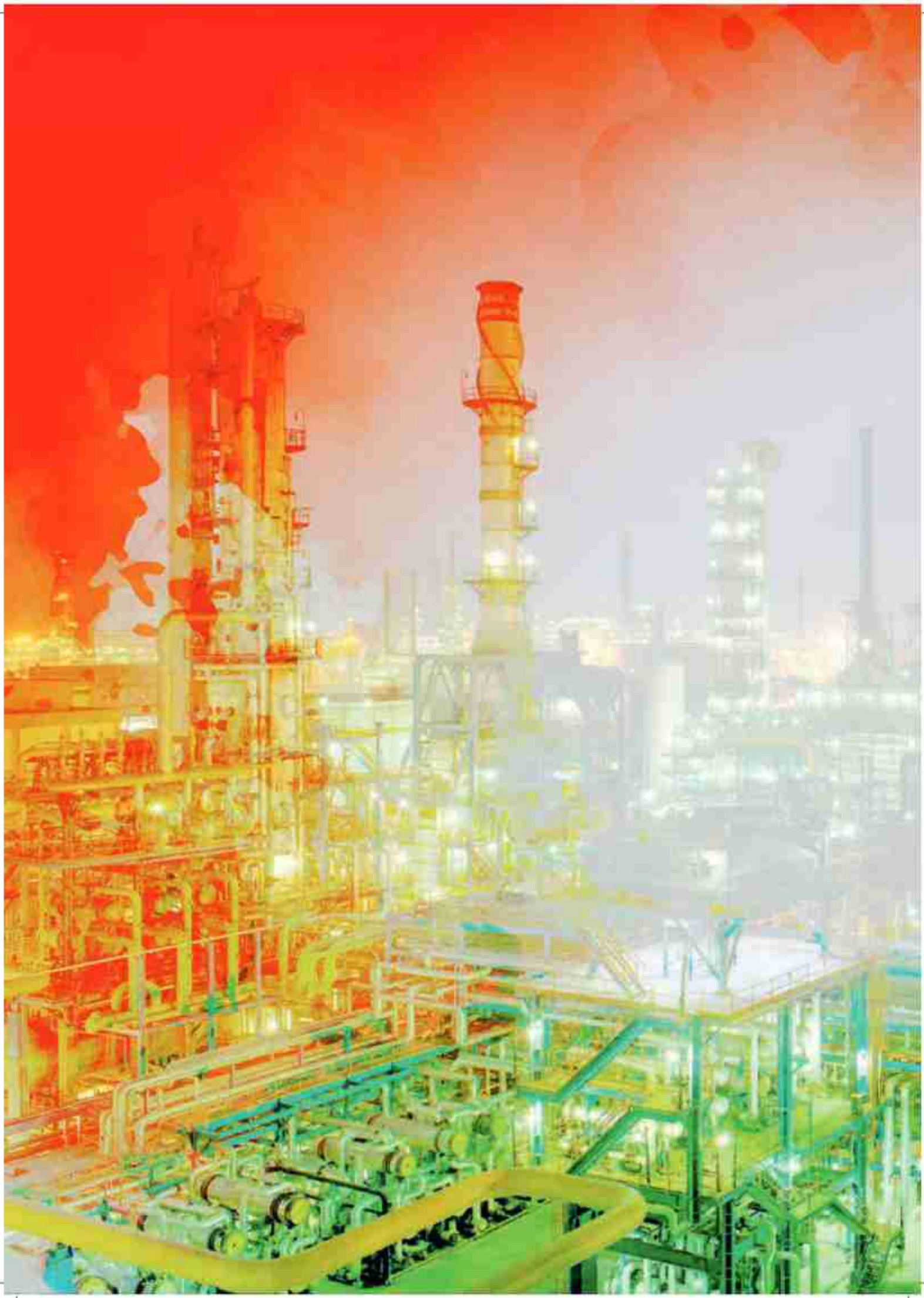
लोक शिकायत विभाग, प्रशासनिक सुधार और लोक शिकायत विभाग और सरकार के अन्य विभागों के साथ–साथ जनता के सदस्यों के माध्यम से प्राप्त जन शिकायतों की नियमित निगरानी सुनिश्चित करने के लिए हर संभव प्रयास किए जा रहे हैं।

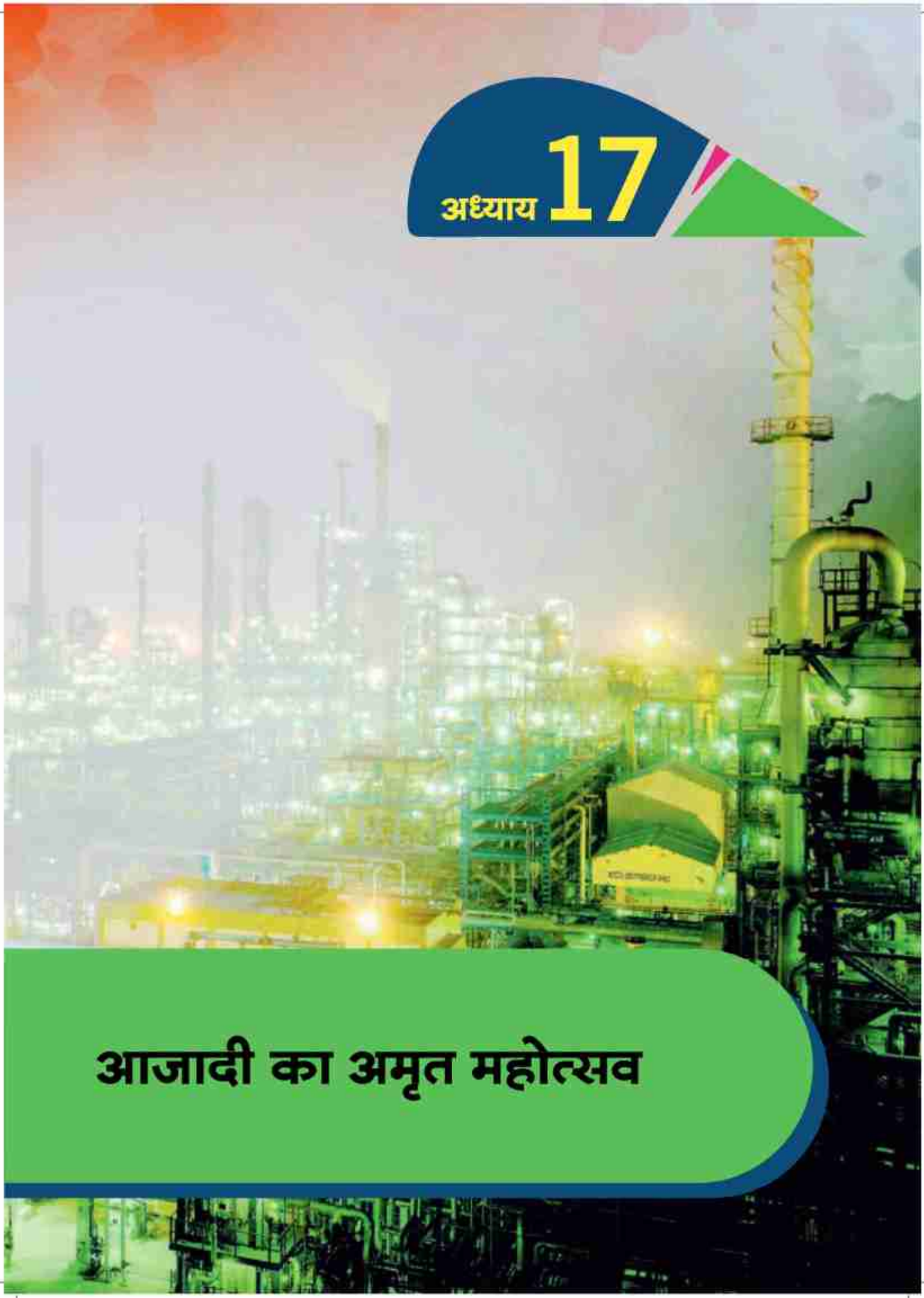
जून, 2008 में "केन्द्रीकृत लोक शिकायत निवारण और निगरानी प्रणाली" (सीपीग्राम्स) नामक एक ऑनलाइन प्रणाली शुरू की गई है। सीपीग्राम्स की सहायता से, जनता और अन्य लोगों से लोक शिकायतों को तेजी से प्राप्त किया जाता है, इसके विषय के अनुसार तुरंत विश्लेषण किया जाता है और शीघ्र निवारण के लिए संबंधितों को अग्रेषित किया जाता है।

इसके अलावा, पेट्रोलियम और प्राकृतिक गैस मंत्रालय में एक व्यवस्थित तंत्र भी विकसित किया गया है ताकि लोक शिकायतों का त्वरित और शीघ्र निवारण सुनिश्चित किया जा सके। पेट्रोलियम और प्राकृतिक गैस मंत्रालय और तेल एवं गैस पीएसयू में लंबित लोक शिकायतों की समीक्षा वरिष्ठ अधिकारियों द्वारा नियमित रूप से की जाती है।

जनवरी से दिसंबर 2022 के दौरान प्राप्त कुल 17,843 लोक शिकायतों में से 31 दिसंबर, 2022 तक 95% का निपटान हो चुका है।







अध्याय 17

# आजादी का अमृत महोत्सव

# 17 आजादी का अमृत महोत्सव

1. आज़ादी का अमृत महोत्सव प्रगतिशील भारत और इसके लोगों, संस्कृति और उपलब्धियों के गौरवशाली इतिहास के 75 साल को मनाने और स्मरणोत्सव के लिए भारत सरकार की एक पहल है। आजादी का अमृत महोत्सव, भारत की सामाजिक–सांस्कृतिक, राजनीतिक और आर्थिक पहचान के बारे में वह सब जो प्रगतिशील है, की अभिव्यक्ति है। "आजादी का अमृत महोत्सव" की आधिकारिक यात्रा भारत की आजादी की 75वीं वर्षगांठ के लिए 75 सप्ताह की अवधि शेष रहते हुए 12 मार्च, 2021 से शुरू हुई। यह 15 अगस्त, 2023 को समाप्त होगी।

2. पेट्रोलियम और प्राकृतिक गैस मंत्रालय और इसके प्रशासनिक नियंत्रण के अधीन संगठन आजादी का अमृत महोत्सव मनाने के लिए विभिन्न कार्यक्रमों/गतिविधियों का आयोजन कर रहे हैं। पेट्रोलियम और प्राकृतिक गैस मंत्रालय के अधीन सार्वजनिक क्षेत्र के तेल संबंधी उपक्रमों (ओपीएसयू) ने दिसंबर, 2022 तक 257 गतिविधियों का संचालन किया है। पेट्रोलियम और प्राकृतिक गैस मंत्रालय के अधीन (ओपीएसयू) द्वारा आयोजित कार्यक्रमों/गतिविधियों का विवरण नियमित आधार पर निर्दिष्ट अकाम वेबसाइट (amritmahotsav.nic.in) पर समय पर अद्यतन किया जा रहा है।

3. पेट्रोलियम उत्पादों की जागरूकता, प्रभाव, विकास और सुरक्षा पर जोर देते हुए विभिन्न जनसांख्यिकी के लोगों को शामिल करने के लिए विभिन्न कार्यक्रम/गतिविधियां आयोजित की गईं। ये गतिविधियां निम्नलिखित पर आधारित हैं:

   - रिफाइनरी, एलपीजी संयंत्र और अन्य तेल प्रतिष्ठानों के अध्ययन दौरे में छात्रों को शामिल करना।
   - उज्ज्वला, एलपीजी सुरक्षा, पीएनजी, सीएनजी, सीजीडी पर जागरूकता कार्यक्रम।
   - जैव–ईंधन, सतत आदि पर प्रदर्शनियां।

   इन गतिविधियों ने भारत को बदलने में मंत्रालय के योगदान और भारत की भविष्य की ऊर्जा सुरक्षा के प्रति इसकी प्रतिबद्धता को उजागर किया।

   इस अवधि के दौरान पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के तत्वावधान में विभिन्न कार्यक्रम आयोजित किए गए, जो इस प्रकार हैं:

## इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)

i. मथुरा में 16 से 28 मार्च, 2022 तक स्वतंत्रता के 75 वर्ष मनाने की योजना बनाई गई थी।

   16 से 28 मार्च, 2022 तक की अवधि के लिए मथुरा के स्थानीय स्कूलों के 25 छात्रों के 5 समूहों के दौरे की योजना बनाई गई थी। उन्हें संयंत्र की सुरक्षा संबंधी वीडियो दिखाए गए और उन्हें बॉटलिंग संयंत्र के सुरक्षित संचालन के बारे में शिक्षित किया गया। छात्रों के समूह के साथ ईंधन संरक्षण के संबंध में चर्चा की गई। कार्यक्रम के दौरान संयंत्र का दौरा किया गया और उन्हें संयंत्र संचालन, सिलेंडर भरने की प्रक्रिया, एसक्यूसी, सिलेंडर के प्रकार और कंपोजिट सिलेंडर आदि के बारे में भी शिक्षित किया गया।

ii. इंफाल, मणिपुर में दिनांक 25.04.2022 को पूर्वोत्तर भारत के लिए जैव ईंधन परिप्रेक्ष्य पर प्रदर्शनी

   ओएमसीएस ने दिनांक 25.04.2022 को इंडियनऑयल के इंफाल डिपो में पूर्वोत्तर भारत के लिए जैव ईंधन परिप्रेक्ष्य पर एक प्रदर्शनी की मेजबानी की। प्रदर्शनी में जैव ईंधन क्षेत्र में भारत की यात्रा और उपलब्धियों, पेट्रोलियम और प्राकृतिक गैस मंत्रालय के तत्वावधान में की गई तकनीकी प्रगति और नई परियोजनाओं पर प्रकाश डाला गया।

   इस कार्यक्रम में ओएमसीएस के वरिष्ठ अधिकारियों, संबंधित उद्यमियों, स्थानीय मीडिया, ट्रांसपोर्टरों, स्थानीय आरओ डीलरों और आम लोगों की भी सक्रिय भागीदारी देखी गई। इंडियनऑयल के अधिकारियों ने प्रतिभागियों के साथ बातचीत की और बायोडीजल, संपीड़ित बायोगैस, बायोडीजल और एथेनॉल संयंत्रों की स्थापना के लिए उद्यमियों को प्रोत्साहित करने के लिए सरकार द्वारा की जा रही विभिन्न गतिविधियों और हमारे पर्यावरण की रक्षा करने और जीवाश्म ईंधन पर आयात निर्भरता को कम करने के लिए जैव ईंधन कैसे आवश्यक हैं, इस बारे में जागरूकता स्तर बढ़ाया।

iii. आईओसीएल डिगबोई, असम में दिनांक 29.04.2022 को जैव ईंधन पर प्रदर्शनी और एम–15 मिश्रित एमएस की पहली खेप की रवानगी

   डिगबोई ऐतिहासिक रूप से महत्वपूर्ण है क्योंकि 19वीं शताब्दी के अंत में यहां कच्चे तेल की खोज की गई थी और एशिया का पहला तेल कूप वर्ष 1866 में यहां खोदा गया था। यह वर्ष 1901 की शुरुआत में हमारी पहली रिफाइनरी का स्थान भी है। इंडियनऑयल द्वारा दिनांक 28.04.2022 को एम–15 मेथनॉल मिश्रित एमएस ट्रक के अपने पहले बैच की लोडिंग और संप्रेषण के साथ डिगबोई में एक अन्य उपलब्धि हासिल की गयी। दिनांक 29.04.2022 को आईओसीएल डिगबोई डिपो, असम में जैव ईंधन पर एक प्रदर्शनी आयोजित की गई।

iv. बरौनी रिफाइनरी, बिहार में इंडियन ऑयल कॉर्पोरेशन लिमिटेड द्वारा की गई गतिविधियाँ

| | | |
|---|---|---|
| 1 | 11.03.2022 | डिप्टी सीएलसी, पटना द्वारा संविदा श्रमिकों के लिए जागरूकता कार्यक्रम। |
| 2 | 01.05.2022 | ईपीएफओ, मुजफ्फरपुर द्वारा संविदाकारों के लिए जागरूकता कार्यक्रम |
| 3 | 16.06.2022 | बेगसराय के गांवों और बेगुसराय करबे के निवासियों के बीच जिज्ञासा क्विज के संबंध में जागरूकता सृजन के लिए जिज्ञासा रथ |
| 4 | 10–11.06.2022 | जन वृक्षारोपण |

v. दोईमुख (ईटानगर) अरुणाचल प्रदेश में दिनांक 05.05.2022 को जैव ईंधन पर प्रदर्शनी,

दिनांक 05.05.2022 को इंडियन ऑयल कॉर्पोरेशन लिमिटेड के दोईमुख (ईटानगर) डिपो, अरुणाचल प्रदेश में आयोजित जैव ईंधन प्रदर्शनी के साथ एनईआर में अकाम का प्रतिष्ठित कार्यक्रम समारोह संपन्न हुआ। इस कार्यक्रम का उद्घाटन श्री ओपेक गाओ, सचिव एफसीएस, अरुणाचल प्रदेश सरकार द्वारा किया गया और सरकारी अधिकारियों, ओएमसी के वरिष्ठ अधिकारियों, ट्रांसपोर्टरों, स्थानीय आरओ डीलरों और आम लोगों ने इसमें भाग लिया।



vi. हल्दिया रिफाइनरी द्वारा दिनांक 31.05.2022 को "जिज्ञासा क्विज रथ" की रवानगी

आजादी का अमृत महोत्सव मनाते हुए, इंडियनऑयल ने संस्कृति मंत्रालय तथा पेट्रोलियम और प्राकृतिक गैस मंत्रालय के साथ 'जिज्ञासा: अकाम क्विज' शुरू किया है, जिसमें विजेताओं को 55 लाख रुपये की छात्रवृत्ति की पेशकश की गयी है। 13 से 18 आयु वर्ग के प्रतिभागी प्री–क्वालिफायर राउंड खेलने के पात्र हैं। प्रौद्योगिकी, नवाचार और समावेशी शिक्षा के माध्यम से भारतीय विरासत के बारे में जागरूकता पैदा करने और ज्ञान को आगे बढ़ाने के लिए अप्रैल 2022 में जिज्ञासा क्विज शुरू किया गया है।

राष्ट्रीय स्तर की प्रश्नोत्तरी में भाग लेने के लिए 13 से 18 आयु वर्ग के बच्चों को प्रोत्साहित करने के लिए हल्दिया रिफाइनरी लगभग 650 स्कूलों के साथ लगातार संवाद और समन्वय कर रही है। भारत द्वारा आयोजित इस सबसे बड़ी क्विज प्रतियोगिता में भाग लेने के लिए व्यापक प्रचार और पूर्व मेदिनीपुर जिले के अधिकतम प्रतिभागियों को प्रोत्साहित करने के उद्देश्य से यह पहल भारत की समृद्ध सांस्कृतिक विरासत, सभ्यता, साहित्य, वास्तुकला और विरासत में मिले ज्ञान, जिसका मूल प्राचीन भारत में है, के बारे में जागरूकता उत्पन्न करने पर लक्षित करना है।




vii. हल्दिया रिफाइनरी ने दिनांक 10.06.2022 को हल्दिया में स्कूली छात्रों के लिए अध्ययन दौरा किया

आजादी का अमृत महोत्सव के भाग के रूप में, असेंबली ऑफ गॉड चर्च स्कूल–हल्दिया के छात्रों के लिए महामारी–सामान्य स्थिति के बाद समावेशी शिक्षा के लिए ऑफलाइन प्रयास करते हुए, हल्दिया रिफाइनरी का एक अध्ययन दौरा। पेट्रोलियम और प्राकृतिक गैस मंत्रालय के दिशानिर्देशों के अनुसार आसपास के विभिन्न स्कूलों और कॉलेजों के छात्रों के कई समूहों को विभिन्न बैच में रिफाइनरी स्थानों के अध्ययन दौरे के लिए शामिल किया गया।

viii. 3 जून, 2022 को लेह में आजादी का अमृत महोत्सव के तहत एलपीजी जागरूकता कार्यक्रम

लेह एलपीजी बीपी में आजादी का अमृत महोत्सव के तहत एलपीजी पर जागरूकता कार्यक्रम आयोजित किया गया जिसमें एडवोकेट ताशी ग्यालसन, अध्यक्ष/सीईसी, एलएएचडीसी लेह, श्री जामयांग त्सोरिंग नामग्याल, एमपी लद्दाख, श्री अरविंद नाथ झा, उप सचिव (सामान्य), पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय, आईओसीएल के वरिष्ठ और अन्य अधिकारियों ने भाग लिया।

सीईसी ताशी ग्यालसन ने एमपी लद्दाख के साथ कार्यक्रम आयोजित करने के लिए आईओसीएल की सराहना की और ऐसे लोगों के लिए अतिरिक्त तनाव और लागत को कम करने के लिए लद्दाख के दूरदराज के क्षेत्रों में रिफिलिंग के दौरान एलपीजी सिलेंडरों के परिवहन के लिए एक प्रभावी योजना की आवश्यकता पर बल दिया। उन्होंने लद्दाख को कार्बन–तटस्थ बनाने के माननीय प्रधानमंत्री जी के विजन के बारे में भी बात की और लद्दाख में भीषण सर्दियों के मौसम के दौरान हीटिंग सिस्टम के लिए प्रभावी ईंधन के विकल्प खोजने में आईओसीएल जैसे हितधारकों से सहायता का अनुरोध किया।

श्री अरविंद नाथ झा, उप सचिव (सामान्य), पेट्रोलियम और प्राकृतिक गैस मंत्रालय ने विभिन्न सरकारी योजनाओं के बारे में लाभार्थियों के साथ विस्तृत बातचीत की।




## ऑयल एंड नैचुरल गैस कॉर्पोरेशन लिमिटेड (ओएनजीसी)

i. दिनांक 5 जनवरी, 2022 को पूर्वोत्तर में अगरतला, त्रिपुरा में ओएनजीसी गैस प्रतिष्ठान/कूप में केंद्रीय विद्यालय के छात्रों का अध्ययन दौरा।

केंद्रीय विद्यालय (ओएनजीसी नॉर्थ कॉलोनी, अगरतला) के छात्रों ने आजादी के 75 साल के महोत्सव के लिए नियोजित कार्यक्रमों की आजादी का अमृत महोत्सव श्रृंखला के अध्ययन दौरा कार्यकलाप के भाग के रूप में दिनांक 05.01.2022 को त्रिपुरा एसेट्स एडीबी प्रतिष्ठान का दौरा किया। दौरे के दौरान कोविड उपयुक्त व्यवहार का सख्ती से पालन किया गया।

ii. 28 फरवरी–4 मार्च, 2022 के दौरान राजामुंदरी एसेट, आंध्र प्रदेश में तेल प्रतिष्ठान/रिग के लिए छात्रों का अध्ययन दौरा।

ओएनजीसी राजमुंदरी एसेट ने तातीपाका मिनी रिफाइनरी और केसनपल्ली जीसीएस में 35–50 छात्रों के पांच समूहों के लिए एक अध्ययन दौरे का आयोजन किया। यह दौरा 28 फरवरी–4 मार्च 2022 को आंध्र प्रदेश के पूर्वी और पश्चिमी गोदावरी जिले और कृष्णा जिले के छात्रों के लिए आयोजित किया गया था।



iii. 23 मार्च, 2022 को कॉमर्स कॉलेज, शिवसागर के छात्रों का ओएनजीसी असम एसेट में गेलेकी फील्ड के उत्पादन प्रतिष्ठान और ड्रिलिंग रिग का अध्ययन दौरा।

भारत की आजादी के 75 साल के महोत्सव को जारी रखते हुए, दिनांक 23.03.2022 को शिवसागर कॉमर्स कॉलेज, शिवसागर असम से संबंधित छात्रों के लिए एसडीसी, ओएनजीसी असम एसेट द्वारा अध्ययन दौरे की व्यवस्था की गई। तीन अलग–अलग स्तरों जैसे बी.ए., बी.कॉम और एम.कॉम से संबंधित 125 छात्रों ने इस कार्यक्रम में भाग लिया।

iv. 11 और 12 अप्रैल, 2022 को पूर्वोत्तर में जोरहाट एसेट, असम में ओएनजीसी के तेल/गैस प्रतिष्ठान और फायर स्टेशन और 21 और 22 अप्रैल, 2022 के दौरान ओएनजीसी मेहसाणा, गुजरात में भारत/75 के महोत्सव के लिए छात्रों के अध्ययन दौरे का आयोजन किया गया।

## गेल (इंडिया) लिमिटेड

i. 15 मार्च 2022 को देहरादून में पीएनजी/सीजीडी पर जागरूकता कार्यक्रम/सेमिनार

गेल ने दिनांक 15.03.2022 को आजादी का अमृत महोत्सव समारोह के भाग के रूप में शहर गैस संवितरण पर जागरूकता कार्यक्रम (पेट्रोलियम और प्राकृतिक गैस मंत्रालय के तत्वावधान में) का आयोजन किया। शिव नादर विश्वविद्यालय, आरजीआईपीटी, आईआईपीई और यूपीईएस जैसे विभिन्न विश्वविद्यालयों के छात्र समुदाय के बीच गेल के विभिन्न सीजीडी ग्राहकों ने कार्यक्रम में भाग लिया। "शहर गैस संवितरण– सुरक्षा पहलू" पर सत्र आयोजित किया गया था।

ii. 27 मई 2022 को जम्मू में संपीड़ित प्राकृतिक गैस (सीएनजी) पर जागरूकता कार्यक्रम

गेल ने दिनांक 27.05.2022 को आजादी का अमृत महोत्सव समारोह के भाग के रूप में शहर गैस संवितरण पर जागरूकता कार्यक्रम का आयोजन किया। कार्यक्रम का आयोजन भारतीय प्रौद्योगिकी संस्थान जम्मू में किया गया। कार्यक्रम में आईआईटी, जम्मू और आईआईएम, जम्मू के छात्रों ने भाग लिया।

iii. गेल ने दिनांक 28.07.2022 को लखनऊ में आजादी का अमृत महोत्सव समारोह के भाग के रूप में शहर गैस संवितरण पर जागरूकता कार्यक्रम का आयोजन किया। कार्यक्रम का आयोजन टीम गेल प्रशिक्षण संस्थान, नोएडा और सीएसआर द्वारा किया गया था। जागरूकता अभियान का आयोजन 25 ऑटो रिक्शा का उपयोग करते हुए किया गया और ऑटो रिक्शा पर सीएनजी जागरूकता पर जागरूकता कार्यक्रम का विषय प्रदर्शित किया गया था, साथ ही प्रत्येक ऑटो रिक्शा चालक को स्थानीय जनता को वितरण के लिए कैलेंडर के साथ सीएनजी की जानकारी और उपयोग वाले 200 पैम्फलेट दिए गए थे।


AAS PAAS / CITY FOCUS

INBRIEF

## सीएनजी के प्रयोग को लेकर फैलाई जागरूकता

**LUCKNOW:** भारत की आजादी के 75 साल पूरे होने के अवसर पर देश भर में आजादी का अमृत महोत्सव मनाया जा रहा है। इसी कड़ी में पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के तत्वाधान में गेल इंडिया लिमिटेड, लखनऊ कार्यालय से सीएनजी जागरूकता अभियान का आयोजन गेल ट्रेनिंग इंस्टिट्यूट, नोएडा एवं सीएसआर विभाग द्वारा किया गया। जिसके अंतर्गत ऑटो चालकों ने सीएनजी के प्रयोग को बढ़ावा देने के लिए पूरे लखनऊ शहर में पत्रक वितरित किये। इस अवसर पर संजय गुप्ता (वरिष्ठ प्रबंधक, गेल) ने मुख्य अतिथि अमित कुमार सिंह (मुख्य महाप्रबंधक, गेल) एवं उपस्थित सभी का स्वागत किया। मुख्य अतिथि अमित कुमार सिंह ने ऑटो रिक्शा की कतार को हरी झंडी दिखाकर रवाना किया। इस अवसर पर संजय गुप्ता (महाप्रबंधक, गेल) एवं वसीम खत्री (उप महाप्रबंधक, गेल) के द्वारा आजादी के अमृत महोत्सव तथा सीएनजी जागरूकता अभियान पर चर्चा की गई।

iv. गेल ने 4 राज्यों अर्थात् उत्तर प्रदेश, उत्तराखंड, मध्य प्रदेश और पंजाब में विभिन्न स्थानों पर स्वास्थ्य और स्वच्छता पर जागरूकता अभियान के साथ वंचित जनता को मोबाइल चिकित्सा इकाइयों के माध्यम से मुफ्त स्वास्थ्य जांच और दवाओं के वितरण सहित स्वास्थ्य और कल्याण अभियान का आयोजन किया।


गेल की फर्स्ट लेडी द्वारा स्वास्थ्य शिविर का शुभारम्भ

सभी कार्यक्रमों और पहलों से 13 स्थानों पर 700 से अधिक लाभार्थी लाभान्वित हुए। लाभार्थियों को न केवल अमृत काल के अर्थ का सार समझाया गया बल्कि उन्हें उनके दरवाजे पर गुणवत्तापूर्ण स्वास्थ्य सेवाएं भी प्रदान की गईं।


पत्रिका

आजादी के अमृत महोत्सव के उपलक्ष्य में शिविर लगाकर की स्वास्थ्य की जांच

18.11.2022


शिविर में छात्रों की जांच करते डॉक्टर।

गुना: आजादी के अमृत महोत्सव के उपलक्ष्य में गुरुवार को गेल स्किल इंस्टिट्यूट गुना में अध्ययनरत 150 छात्रों की कैंप लगाकर स्वास्थ्य की जांच की गई। शिविर डॉ. कपिल सिंह और उनकी टीम द्वारा गेल के सीएसआर प्रोजेक्ट आरोग्य के अंतर्गत आयोजित किया गया था। इसमें छात्रों की सामान्य बीमारियों का उपचार करते हुए दवाईया दी गई और उनके स्वास्थ्य की भी जांच की गई। इस स्वास्थ्य शिविर का शुभारंभ गेल के दिल्ली स्थित कार्यालय से आए मुख्य महाप्रबंधक (प्रशिक्षण) संजय अग्रवाल ने किया। आज ही के दिन मुख्य अतिथि अग्रवाल ने यहां के छात्रावास में रह रहे बच्चों की सुविधा के लिए कैफेटेरिया का लोकार्पण भी किया। ज्ञात हो कि आज ही गेल स्किल इंस्टीट्यूट गुना में सीएनजी ट्रेड के दूसरे बैच की शुरूआत की गई तथा उससे संबंधित 35 लाभार्थियों को एजुकेशन किट भी प्रदान किया गया। उपरोक्त कार्यक्रम की कड़ी में अपने उद्बोधन में गेल–दिल्ली से आए उच्च अधिकारी श्री संजय अग्रवाल ने प्रशिक्षणार्थियों का मनोबल बढ़ाया तथा उनके आगे बढ़ने के लिए प्रेरित किया। इस आयोजन में गेल विजयपुर के डीजीएम सीएसआर ए एम त्रिपाठी गेल की अधिकारी नमिता तथा कार्यप्रदायी संस्था के रीजनल मैनेजर यशोधर सिंह मौजूद रहे।

## हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल)

i. एचपीसीएल नागपुर एलपीजी क्षेत्रीय कार्यालय ने 4 मार्च 2022 को नागपुर में एलपीजी सुरक्षा संगोष्ठी का आयोजन किया। रिसाव के मामले में आपातकालीन उपाय, एलपीजी सुरक्षा और संरक्षण युक्तियाँ, उज्ज्वला–2.0 योजना का संक्षिप्त विवरण, एलपीजी संस्थापन के लिए क्या करें और क्या न करें, बुकिंग और रिफिल के भुगतान के लिए विभिन्न डिजिटल तरीके, टोल फ्री रिसाव शिकायत संख्या और ग्राहक शिकायत नम्बर, रिफिल पोर्टेबिलिटी पर सूचना, एक्रोस दि काउंटर कनेक्शन (माध्यमिक) आदि, भावी संदर्भ के लिए ग्राहकों को सुरक्षा पैम्फलेट का वितरण आदि जैसी गतिविधियों का आयोजन किया गया।



कार्यक्रम में 200 से अधिक व्यक्तियों ने भाग लिया। 10 अन्य स्थानों पर भी कार्यक्रम आयोजित किया गया, जिसमें 350 से अधिक प्रतिभागियों ने वर्चुअल माध्यम से सेमिनार में भाग लिया। उक्त कार्यक्रम की कुछ झलकियाँ नीचे उल्लिखित है:

ii. 06 अप्रैल 2022 को झुंझुनू जिले के सुल्ताना ग्राम में एलपीजी जागरूकता कार्यक्रम आयोजित किया गया। कार्यक्रम में एचपीसीएल के अधिकारियों, वितरकों, ग्रामीणों और ग्राम पंचायत सुल्ताना के पदाधिकारियों और लगभग 250 प्रतिभागियों ने भाग लिया।

iii. हिमाचल प्रदेश के कुल्लू में एचपीसीएल शिमला रिटेल आरओ द्वारा दिनांक 28.10.2022 को आजादी का अमृत महोत्सव के तहत छात्रों के लिए ऊर्जा संरक्षण पर जागरूकता कार्यक्रम आयोजित किया गया। शिक्षकों सहित 250 से अधिक छात्र–छात्राएं उपस्थित थे। ऊर्जा संरक्षण विषय पर चित्रकला, भाषण, प्रश्नोत्तरी एवं नारा लेखन प्रतियोगिता में लगभग 60 विद्यार्थियों ने उत्साहपूर्वक भाग लिया। पुरस्कार व प्रमाण पत्र भी वितरित किए गए।

iv. हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड ने दिनांक 16.09.2022 को आजादी का अमृत महोत्सव के भाग के रूप में विशाख रिफाइनरी में केंद्रीय विद्यालय के छात्रों का फील्ड दौरा आयोजित किया। कार्यक्रम में पेट्रोलियम और प्राकृतिक गैस मंत्रालय के वरिष्ठ अधिकारियों ने भाग लिया। उन्होंने ऊर्जा संरक्षण के विशेष पहलुओं पर जोर दिया। उन्होंने कहा कि भविष्य में ऊर्जा क्षेत्र में रोजगार के अवसरों का विस्तार होगा।



## मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल)

एमआरपीएल ने मैंगलोर नगर निगम के साथ मिलकर दिनांक 14.05.2022 को 'आजादी का अमृत महोत्सव' के बैनर तले तटीय कर्नाटक के स्वतंत्रता सेनानियों की स्मृति और सम्मान के लिए एक कार्यक्रम और भारत के संविधान पर एक वार्ता का आयोजन किया। भारतीय संविधान के वास्तविक मूल्यों के बारे में लोगों को जागरूक करने के लिए कन्नड़ और अंग्रेजी दोनों भाषाओं में भारत के संविधान पर पुस्तकें वितरित की गईं।

## चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड (सीपीसीएल)

i. वेलाम्मल इंजीनियरिंग कॉलेज, चेन्नई के छात्रों का अध्ययन समूह दौरा–27 मई 2022

सीपीसीएल ने वेलाम्मल इंजीनियरिंग कॉलेज, चेन्नई के 45 इंजीनियरिंग छात्रों के लिए पहला अध्ययन दौरा आयोजित किया। छात्रों को क्रूड रिफाइनिंग में शामिल विभिन्न प्राथमिक और माध्यमिक प्रक्रियाओं और रिफाइनरी से उत्पादित उत्पादों की श्रेणी के बारे में जानकारी दी गई। उन्हें देश की ऊर्जा सुरक्षा सुनिश्चित करने की दिशा में सीपीसीएल की भूमिका से भी अवगत कराया गया, जिससे राष्ट्र निर्माण में योगदान मिला। इसके पश्चात, प्रक्रिया इकाइयों के वास्तविक समय नियंत्रणों पर एक्सपोजर प्रदान करने के लिए छात्रों को एक नियंत्रण कक्ष का दौरा कराया गया।




ii. श्री वेंकटेश्वर कॉलेज ऑफ इंजीनियरिंग, चेन्नई के छात्रों का अध्ययन समूह दौरा–7 जून 2022।

सीपीसीएल ने दो बैचों में श्री वेंकटेश्वर कॉलेज ऑफ इंजीनियरिंग, चेन्नई के 75 इंजीनियरिंग छात्रों के लिए दूसरे और तीसरे अध्ययन दौरे का आयोजन किया, जिसमें एक बैच में स्नातक छात्र और दूसरे बैच में स्नातकोत्तर छात्र शामिल थे। छात्रों को कच्चे तेल की रिफाइनिंग में शामिल विभिन्न रिफाइनरी प्रक्रियाओं और रिफाइनरी से उत्पादित पेट्रोलियम और मूल्य वर्धित उत्पादों की विस्तृत श्रृंखला के बारे में जानकारी प्रदान की गई। छात्रों को सीपीसीएल की स्थापना के बाद से इसकी यात्रा और कुटीर उद्योगों से लेकर रक्षा क्षेत्र तक इसके विभिन्न योगदानों के माध्यम से राष्ट्र निर्माण में इसके योगदान से अवगत कराया गया।

iii. राष्ट्र निर्माण और सीपीएसई पर अकाम–प्रदर्शनी, 9–12 जून 2022

सीपीसीएल ने आज़ादी का अमृत महोत्सव के तत्वावधान में डीपीई स्कोप द्वारा आयोजित "राष्ट्र–निर्माण और सीपीएसई" पर प्रदर्शनी में गर्व से भाग लिया। सीपीसीएल ने आज़ादी के बाद से राष्ट्र निर्माण में अपने योगदान को प्रदर्शित किया और अपनी तरह की पहली पहल का प्रदर्शन किया। प्रदर्शनी का आयोजन 9 से 12 जून, 2022 के बीच महात्मा मंदिर सम्मेलन और प्रदर्शनी केंद्र, गांधी नगर, गुजरात में 4 दिवसीय कार्यक्रम के रूप में किया गया था।

iv. अध्ययन समूह दौरा–एसएसएन कॉलेज ऑफ इंजीनियरिंग, चेन्नई–10 जून 2022

सीपीसीएल ने एसएसएन कॉलेज ऑफ इंजीनियरिंग, चेन्नई के 75 इंजीनियरिंग छात्रों के लिए चौथा अध्ययन दौरा आयोजित किया। छात्रों को रिफाइनरी के बारे में जानकारी दी गई, जिसके बाद रिफाइनरी का निर्देशित दौरा कराया गया। छात्र ने संवाद किया और सीपीसीएल ने पेट्रोलियम उद्योग के भविष्य और जैव ईंधन और इलेक्ट्रिक वाहनों जैसे वैकल्पिक ईंधन सहित ऊर्जा क्षेत्र में नई तकनीकों के प्रभाव पर एक झलक प्रदान की। पेट्रोलियम उत्पादों का उपयोग करने के दौरान कार्यस्थल और घर पर सुरक्षा के महत्व पर भी जोर दिया गया।

## ऑयल इंडिया लिमिटेड (ओआईएल)

i. केंद्रीय विद्यालय के छात्रों ने 21 और 22 मार्च, 2022 को मधुबन, असम में ओआईएल के सेकेंडरी टैंक फार्म का दौरा किया

ओआईएल ने केंद्रीय विद्यालय, दुलियाजान के ग्यारहवीं और बारहवीं कक्षा के छात्रों के चार बैचों के लिए अपने सेकेंडरी टैंक फार्म (एसटीएफ), मधुबन, असम में अध्ययन दौरे का आयोजन किया, जिसका उद्घाटन श्री नरेंद्र मोदी, माननीय प्रधानमंत्री ने 22 फरवरी 2021 को किया था। ओआईएल का एसटीएफ, एक एकीकृत संयंत्र है, जहां बिजली उत्पादन, जल निकासी, और उपचार, भाप उत्पादन आदि जैसी अधिकांश उपयोगिता आवश्यकताओं को घर में ही पूरा किया जाता है। यह दौरा आजादी का अमृत महोत्सव के तहत चल रहे समारोहों के एक भाग के रूप में 21 और 22 मार्च 2022 के दौरान आयोजित किया गया था।

इस दौरे के दौरान, छात्रों को एसटीएफ का दौरा कराया गया और उन्हें एसटीएफ संयंत्र के प्राथमिक उद्देश्य अर्थात् कच्चे तेल को निर्जलित करना और आधार तलछट और पानी की मात्रा को कम करना, के बारे में जानकारी दी गई है। इंस्टालेशन इंजीनियरों ने छात्रों को उस प्रक्रिया के बारे में बताया जिसके माध्यम से कच्चे तेल को निर्जलित किया जाता है और इसे एफ्लुएंट ट्रीटमेंट संयंत्र (ईटीपी) में शोधित किया जाता है ताकि इसे जल निस्तारण कूपों और जल अंतःक्षेपण कूपों में निस्तारण के लिए उपयुक्त बनाया जा सके।

ii. आईटीआई लाहोवाल के छात्र ने 26.04.2022 को ओआईएल के फील्ड इंजीनियरिंग विभाग का दौरा किया

ओआईएल ने आईटीआई लाहौल के छात्रों के लिए ओआईएल के फील्ड इंजीनियरिंग विभाग में एक अध्ययन दौरे का आयोजन किया। ये दौरे भारत की आजादी के 75 साल के महोत्सव के भाग के रूप में आजादी का अमृत महोत्सव (एकेएएम) अभियान के तहत ओआईएल द्वारा आयोजित किए जा रहे छात्रों के विभिन्न अध्ययन दौरों में से एक है।

इन दौरों के दौरान, छात्रों को उद्योग में उपयोग की जाने वाली विभिन्न प्रकार की मशीनरी के बारे में जानकारी देने के लिए विभिन्न विभागों का दौरा कराया गया, ओआईएल के इंजीनियरों ने छात्रों को इन मशीनरी के विभिन्न पहलुओं और प्रकार्यों के बारे में जानकारी दी। छात्रों ने ओआईएल की कर्मशाला (वर्कशॉप) का भी दौरा किया। यह दौरा छात्रों के लिए ज्ञानार्जन अनुभव था।



## भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल)

i. बीपीसीएल मुंबई रिफाइनरी ने आजादी का अमृत महोत्सव के भाग के रूप में कॉलेज के छात्रों के लिए रिफाइनरी के अध्ययन दौरे का आयोजन किया। विभिन्न कॉलेज/स्कूलों के 313 छात्रों और चेंबूर के स्वामी विवेकानंद कॉलेज ऑफ पॉलिटेक्निक के 192 छात्रों के लिए अध्ययन दौरे का आयोजन किया गया था। अध्ययन दौरे के दौरान, छात्रों को दौरे के उद्देश्य से परिचित कराया गया, सुरक्षा के महत्व पर प्रस्तुति दी गई, प्रक्रियाओं और उत्पादों के साथ रिफाइनरी का अवलोकन, विभिन्न उत्पादों की प्रदर्शनी, रिफाइनरी का निर्देशित दौरा, प्रत्येक छात्र को अध्ययन सामग्री की प्रस्तुति दी गई।

छात्र–छात्राएं इस दौरे से अभिभूत हुए और उन्होंने आभार व्यक्त किया। रिफाइनिंग और पेट्रोलियम के क्षेत्र में देश द्वारा किए गए विकास से वे आश्चर्यचकित थे।

ii. बीपीसीएल के बरेली क्षेत्र ने दिनांक 16.03.2022 को "आजादी का अमृत महोत्सव" के तहत लखीमपुर खीरी, उत्तर प्रदेश में "एलपीजी सुरक्षा संगोष्ठी" का आयोजन किया। 350 प्रतिभागियों की उपस्थिति में उज्जवला कार्यक्रम आयोजित किया गया और लगभग 600 प्रतिभागी यूट्यूब/वर्चुअल मोड के माध्यम से लाइव रूप से शामिल हुए। उज्जवला के संबंध में उज्ज्वला–2.0 योजना, रिसाव के मामले में आपातकालीन उपाय, एलपीजी संरक्षण युक्तियाँ, एलपीजी संस्थापन के लिए क्या करें और क्या न करें आदि पर जागरूकता कार्यक्रम आयोजित किए गए।

## नुमालीगढ़ रिफाइनरी लिमिटेड (एनआरएल)

i. 27 मई, 2022 को रिफाइनरी में छात्रों का अध्ययन दौरा

एनआरएल ने एनआरएल में रिफाइनरी प्रक्रियाओं का अध्ययन करने के लिए आठवीं से बारहवीं कक्षा के 25 छात्रों के 5 समूहों का एक अनुभव दौरा आयोजित किया। यह कार्यक्रम 27 मई, 2022 को आयोजित किया गया और गोलाघाट जिला (असम) के अधीन 4 विभिन्न स्कूलों के छात्रों ने इसमें भाग लिया। स्थल के दौरे के बाद, एनआरएल के अधिकारियों ने श्रव्य–दृश्य प्रस्तुतीकरण का आयोजन किया।

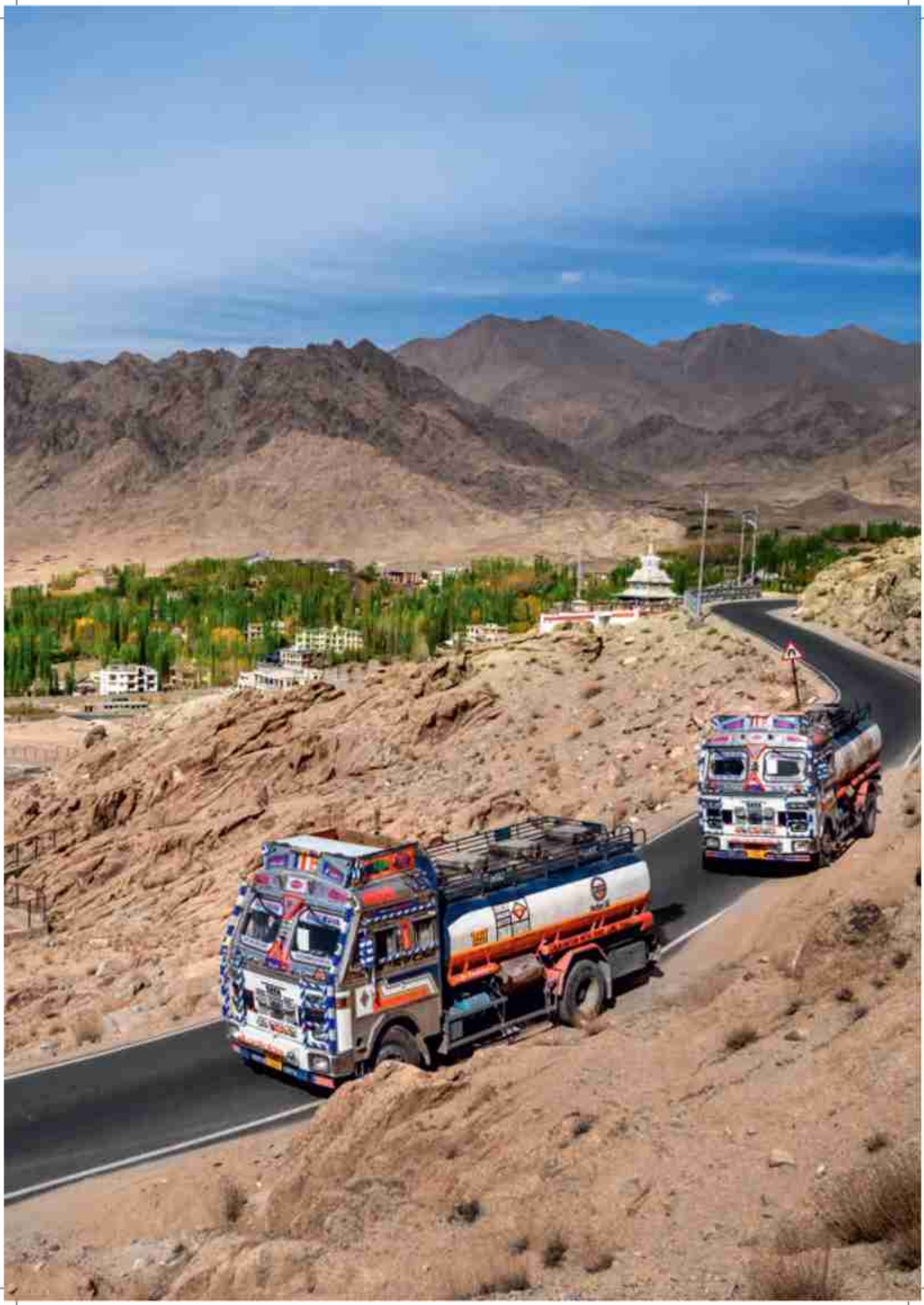
ii. स्वास्थ्य सेवा को बढ़ावा देने के लिए पहल

दिसंबर, 2022 माह में, एनआरएल ने स्वास्थ्य सेवाओं की आवश्यकताओं को पूरा करने के लिए अरुणाचल प्रदेश के 2 जिलों अर्थात् कुरुंग कुमे जिला और लोअर सियांग जिला में 2 सुसज्जित एम्बुलेंस वाहन प्रदान किए। सुचारू संचालन और प्रबंधन के लिए, वाहनों को कुरुंग कुमे जिले के जिला अस्पताल और लोअर सियांग जिले के अंतर्गत कांगकू सर्किल को सौंप दिया गया।

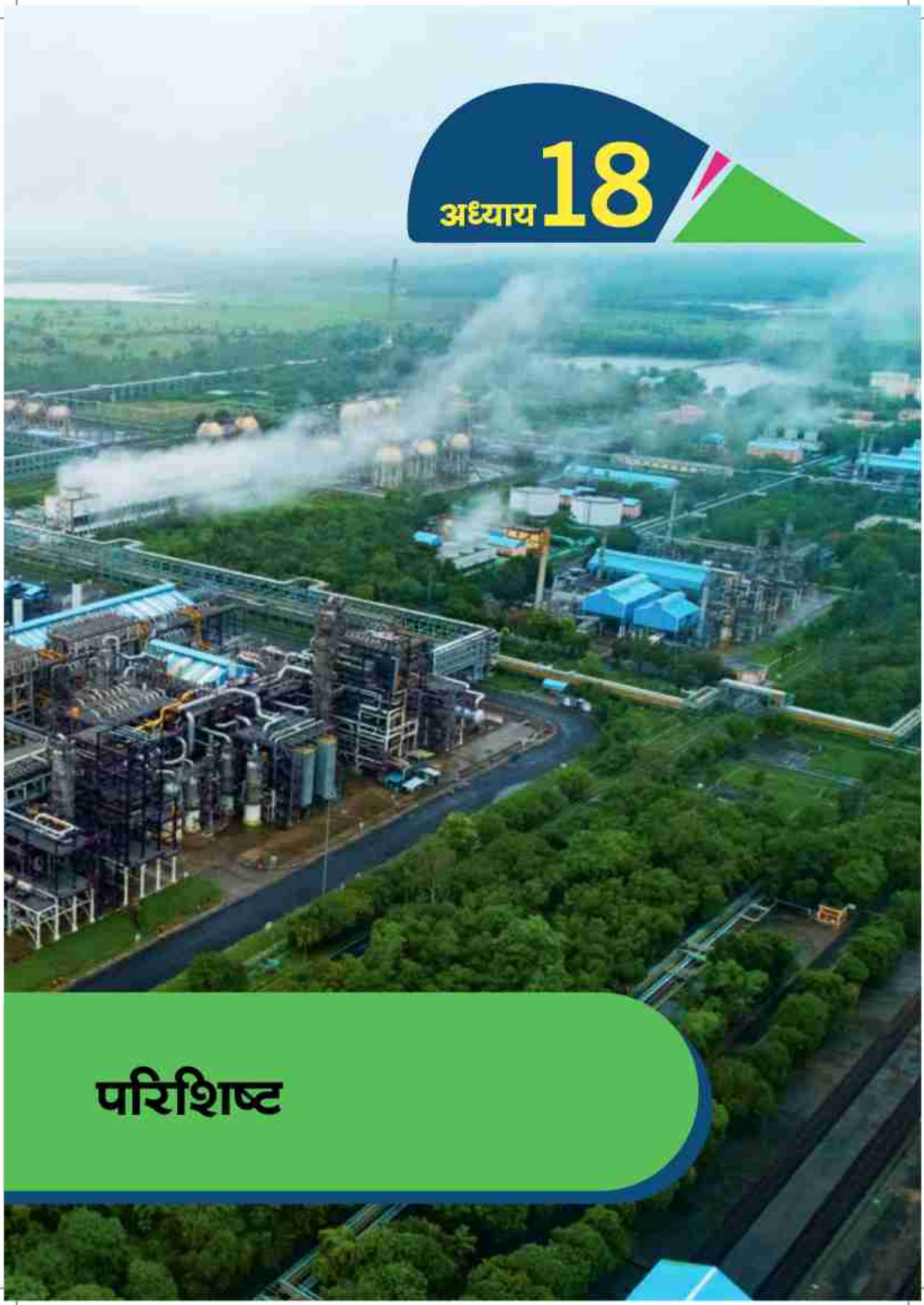
केंद्रीय कानून और न्याय मंत्री, श्री किरेन रिजिजू ने 30 दिसंबर 2022 को अरुणाचल प्रदेश के नाहरलागुन में दोनों एम्बुलेंस को रवाना किया।











अध्याय 18

# परिशिष्ट

# 18 परिशिष्ट

## परिशिष्ट-I

**पेट्रोलियम और प्राकृतिक गैस मंत्रालय**

**(पेट्रोलियम और प्राकृतिक गैस मंत्रालय)**

1. प्राकृतिक गैस और कोल बेड मीथेन, गैस हाइड्रेट्स और शेल गैस सहित पेट्रोलियम संसाधनों का अन्वेषण और दोहन।
2. प्राकृतिक गैस, कोल बेड मीथेन और पेट्रोलियम उत्पादों सहित पेट्रोलियम का उत्पादन, आपूर्ति, वितरण, विपणन और मूल्य निर्धारण।
3. ल्यूब संयंत्रों सहित तेल रिफाइनरियां।
4. पेट्रोलियम और पेट्रोलियम उत्पादों के लिए योजक।
5. जैव–ईंधन के लिए मिश्रण और मिश्रण निर्देश के साथ–साथ इस तरह के मिश्रण के लिए मानक निर्धारित करना।
6. जैव ईंधन और उसके मिश्रित उत्पादों का विपणन, वितरण और खुदरा बिक्री।
7. जैव–ईंधन से संबंधित समग्र समन्वय, जैव–ईंधन संबंधी राष्ट्रीय नीति, जैव–ईंधन की नीति, जैव–ईंधन के निर्माण में सहायता के लिए नीति/योजना, राष्ट्रीय जैव–ईंधन विकास बोर्ड की स्थापना और मौजूदा संस्थागत तंत्र को मजबूत करना और जैव–ईंधन के परिवहन, स्थैतिक और अन्य अनुप्रयोगों पर अनुसंधान, विकास और प्रदर्शन।
8. ल्यूब मिश्रण और ग्रीस।
9. पेट्रोलियम उत्पादों का संरक्षण।
10. मंत्रालय के तहत सभी उद्योगों की योजना, विकास, नियंत्रण और सहायता।
11. विदेशों में तेल और गैस की इक्विटी हासिल करके और अंतरराष्ट्रीय तेल और गैस पाइपलाइन परियोजनाओं में भागीदारी करके ऊर्जा सुरक्षा को मजबूत करना।
12. इंडियन स्ट्रेटेजिक पेट्रोलियम रिजर्व लिमिटेड (आईएसपीआरएल) के माध्यम से कार्यनीतिक पेट्रोलियम रिजर्व का निर्माण और नियंत्रण।
13. पेट्रोलियम योजना और विश्लेषण प्रकोष्ठ (पीपीएसी)।
14. हाइड्रोकार्बन महानिदेशालय (डीजीएच), उच्च प्रौद्योगिकी केंद्र (सीएचटी), तेल उद्योग विकास बोर्ड (ओआईडीबी), पेट्रोलियम संरक्षण अनुसंधान संघ सहित सूची में निर्दिष्ट किसी भी विषय से संबंधित सभी संबद्ध या अधीनस्थ कार्यालय या अन्य संगठन (पीसीआरए), आदि।
15. तेल क्षेत्र सेवाओं की योजना, विकास और विनियमन।
16. भारत के इंजीनियरों का प्रशासन, उनकी सहायक कंपनियों और संयुक्त उद्यम शामिल हैं।
17. इस सूची में शामिल विषय के अंतर्गत आने वाली सार्वजनिक क्षेत्र की परियोजना, ऐसी परियोजनाओं को छोड़कर जो किसी अन्य मंत्रालय/विभाग को विशेष रूप से आवंटित की गई हैं।
18. तेल क्षेत्र (विनियमन और विकास) अधिनियम, 1948 (1948 का 53)।
19. तेल और प्राकृतिक गैस आयोग (उपक्रम का अंतरण और निरसन) अधिनियम, 1993 (1993 का 65)।
20. पेट्रोलियम पाइपलाइन (भूमि में उपयोगकर्ता के अधिकार का अधिग्रहण) अधिनियम, 1962 (1962 का 50)।
21. ईएसएसएसओ (भारत में उपक्रम का अधिग्रहण) अधिनियम, 1974 (1974 का 4)।
22. तेल उद्योग (विकास) अधिनियम, 1974 (1974 का 47)।
23. बर्मा–शैल (भारत में उपक्रम का अधिग्रहण) अधिनियम, 1976 (1976 का 2)।
24. कैलटेक्स (कैल्टेक्स ऑयल रिफाइनिंग (इंडिया) लिमिटेड और भारत में कैलटेक्स (इंडिया) लिमिटेड के उपक्रम के शेयरों का अधिग्रहण अधिनियम, 1977।
25. पेट्रोलियम अधिनियम, 1934 (1934 का 30) और उसके अधीन बनाए गए नियमों का प्रशासन।
26. बामर लॉरी इन्वेस्टमेंट लिमिटेड और बामर लॉरी एंड कंपनी लिमिटेड का प्रशासन।
27. पेट्रोलियम और प्राकृतिक गैस नियामक बोर्ड अधिनियम, 2006।
28. ब्रह्मपुत्र क्रैकर एंड पॉलीमर लिमिटेड से संबंधित मामले।
29. सतत (सतत) पहल से संबंधित मामले।
30. गैस अथॉरिटी ऑफ इंडिया लिमिटेड (गेल) से संबंधित मामले।
31. प्राकृतिक गैस पाइपलाइनों से संबंधित मामले।
32. एलएनजी टर्मिनलों से संबंधित मामले।
33. राजीव गांधी पेट्रोलियम प्रौद्योगिकी संस्थान (आरजीआईपीटी) अधिनियम, 2007।
34. भारतीय पेट्रोलियम और ऊर्जा संस्थान (आईआईपीई), अधिनियम 2017 (2018 का 3) से संबंधित मामले।
35. द्रवीकृत पेट्रोलियम गैस (आपूर्ति और वितरण का विनियमन) आदेश, 2000।
36. एलपीजी (डीबीटीएल) पहल के प्रत्यक्ष लाभ अंतरण से संबंधित मामले।
37. मिट्टी के तेल (डीबीटीके) में प्रत्यक्ष लाभ अंतरण से संबंधित मामले।
38. प्रधानमंत्री उज्ज्वला योजना (पीएमयूवाई) से संबंधित मामले।

## परिशिष्ट-II

पेट्रोलियम और प्राकृतिक गैस मंत्रालय के प्रशासनिक नियंत्रण के अधीन सार्वजनिक क्षेत्र के उपक्रमों और अन्य संगठनों की सूची।

### I. तेल कंपनियां जिनमें 31.03.2022 तक की स्थिति के अनुसार भारत सरकार की शेयरधारिता है

1. तेल एवं प्राकृतिक गैस निगम लिमिटेड 58.91%
2. इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल) 51.50%
3. भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड 52.98%
4. गेल (इंडिया) लिमिटेड 51.45%
5. इंजीनियर्स इंडिया लिमिटेड 51.32%
6. ऑयल इंडिया लिमिटेड 56.66%
7. बामर लॉरी एंड कंपनी लिमिटेड

   बामर लॉरी एंड कंपनी लिमिटेड में भारत सरकार की कोई प्रत्यक्ष हिस्सेदारी नहीं है। बामर लॉरी इंवेस्टमेंट्स लिमिटेड (बीएलआईएल), जो एक सरकारी कंपनी है, बामर लॉरी एंड कंपनी लिमिटेड में 61.8% शेयर की धारक है। केंद्रीय सरकार, बामर लॉरी इन्वेस्टमेंट्स लिमिटेड में 59.57% की शेयरधारक है।

### II. सहायक और अन्य कंपनियां।

1. ओएनजीसी विदेश लिमिटेड–ओएनजीसी के पूर्ण स्वामित्व वाली कंपनी।
2. मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड–ओएनजीसी की सहायक कंपनी।
3. हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल)–ओएनजीसी की सहायक कंपनी।
4. पेट्रोनेट एमएचबी लिमिटेड (पीएमएनबीएल)–ओएनजीसी की सहायक कंपनी।
5. भारत पेट्रो रिसोर्सेज लिमिटेड–बीपीसीएल की सहायक कंपनी।
6. बीपीसीएल–केआईएएल फ्यूल फार्म फैसिलिटी प्राइवेट लिमिटेड–बीपीसीएल की सहायक कंपनी।
7. नुमालीगढ़ रिफाइनरीज लिमिटेड–ओआईएल इंडिया लिमिटेड की सहायक कंपनी।
8. चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड–आईओसीएल की सहायक कंपनी।
9. सर्टिफिकेशन इंजीनियर्स इंटरनेशनल लिमिटेड–ईआईएल की पूर्ण स्वामित्व वाली सहायक कंपनी।
10. गेल गैस लिमिटेड–गेल के पूर्ण स्वामित्व वाली कंपनी।
11. ब्रह्मपुत्र क्रैकर एंड पॉलिमर लिमिटेड–गेल की सहायक कंपनी।
12. कोंकण एलएनजी लिमिटेड–गेल की सहायक कंपनी।
13. त्रिपुरा नेचुरल गैस कंपनी लिमिटेड–गेल की सहायक कंपनी।
14. बंगाल गैस कंपनी लिमिटेड–गेल की सहायक कंपनी।

### III. अन्य संगठने

1. तेल उद्योग विकास बोर्ड
2. पेट्रोलियम संरक्षण अनुसंधान संघ
3. तेल उद्योग सुरक्षा निदेशालय
4. उच्च प्रौद्योगिकी केंद्र
5. पेट्रोलियम योजना एवं विश्लेषण प्रकोष्ठ
6. हाइड्रोकार्बन महानिदेशालय
7. राजीव गांधी पेट्रोलियम और प्रौद्योगिकी संस्थान
8. पेट्रोलियम और प्राकृतिक गैस नियामक बोर्ड
9. भारतीय पेट्रोलियम ऊर्जा संस्थान

परिशिष्ट-III

## कच्चे तेल और प्राकृतिक गैस का उत्पादन

| राज्य/क्षेत्र | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल-दिस.)(पी) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| I. कच्चे तेल का उत्पादन (टीएमटी) | | | | | | | |
| आंध्र प्रदेश | 276 | 322 | 296 | 243 | 195 | 202 | 177 |
| अरुणाचल प्रदेश | 55 | 50 | 43 | 56 | 53 | 48 | 34 |
| असम | 4203 | 4345 | 4309 | 4093 | 3902 | 3988 | 3119 |
| गुजरात | 4605 | 4591 | 4626 | 4707 | 4651 | 4627 | 3640 |
| राजस्थान | 8165 | 7887 | 7667 | 6653 | 5891 | 5887 | 3931 |
| तमिलनाडु | 284 | 345 | 395 | 415 | 410 | 367 | 249 |
| त्रिपुरा | - | - | - | - | - | 3 | 2 |
| पश्चिम बंगाल | - | - | - | - | - | 0.05 | 0.01 |
| अपतटीय | 18421 | 18145 | 16868 | 16003 | 15391 | 14569 | 10927 |
| **कच्चे तेल का कुल उत्पादन** | **36,009** | **35,684** | **34,203** | **32,170** | **30,494** | **29691** | **22078** |
| जिसमें से | | | | | | | |
| ओएनजीसी–नामांकन | 22218 | 22249 | 21042 | 20627 | 20183 | 19451 | 14722 |
| ओआईएल–नामांकन | 3258 | 3376 | 3293 | 3107 | 2937 | 2987 | 2360 |
| प्राइवेट / जेवी–पीएससी+आरएससी / सीबीएम | 10532 | 10059 | 9868 | 8436 | 7374 | 7253 | 4995 |
| II. प्राकृतिक गैस का उत्पादन (एमएमएससीएम) | | | | | | | |
| आंध्र प्रदेश | 868 | 959 | 1081 | 912 | 827 | 809 | 544 |
| अरुणाचल प्रदेश | 28 | 30 | 28 | 46 | 55 | 58 | 41 |
| असम | 3128 | 3219 | 3289 | 3141 | 2995 | 3371 | 2689 |
| गुजरात | 1580 | 1607 | 1402 | 1342 | 1138 | 1017 | 700 |
| झारखंड (सीबीएम) | 3 | 4 | 4 | 5 | 2 | 4 | 7 |
| मध्य प्रदेश (सीबीएम) | 6 | 200 | 357 | 345 | 334 | 290 | 202 |
| राजस्थान | 1277 | 1442 | 1483 | 1883 | 2040 | 2619 | 1747 |
| तमिलनाडु | 983 | 1207 | 1208 | 1097 | 911 | 1067 | 846 |
| त्रिपुरा | 1430 | 1440 | 1554 | 1473 | 1634 | 1531 | 1238 |
| पश्चिम बंगाल (सीबीएम) | 555 | 531 | 350 | 306 | 307 | 389 | 303 |
| अपतटीय | 22038 | 22011 | 22117 | 20635 | 18429 | 22869 | 17551 |
| **प्राकृतिक गैस का कुल उत्पादन** | **31,897** | **32,649** | **32,873** | **31,184** | **28,673** | **34,024** | **25,868** |
| जिसमें से | | | | | | | |
| ओएनजीसी–नामांकन | 22088 | 23429 | 24675 | 23746 | 21872 | 20629 | 15057 |
| ओआईएल–नामांकन | 2937 | 2881 | 2722 | 2668 | 2480 | 2893 | 2295 |
| पीएससी व्यवस्था | 6872 | 6338 | 5477 | 4770 | 4321 | 10502 | 8516 |

पी: अनंतिम

टिप्पण: 1. कच्चे तेल के उत्पादन में कंडेनसेट शामिल है।

2. हो सकता है कि राउंडिंग ऑफ के कारण आंकड़े मेल नहीं खाता हो।

स्रोत: ओएनजीसी, ओआईएल और डीजीएच

## परिशिष्ट-IV

## संस्थापित क्षमता और रिफाइनरी अपरिकृत थ्रोपुट (कच्चा तेल संसाधित)

(आंकड़े टीएमटी में)

| रफाइनरी | संस्थापित क्षमता | रिफाइनरी अपरिकृत थ्रुपुट | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 01.04.2022 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल-दिस.)(पी) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **(क) सार्वजनिक क्षेत्र** | **1,51,716** | **1,43,748** | **1,51,942** | **1,56,692** | **1,52,629** | **1,33,693** | **1,45,491** | **1,18,676** |
| 1. आईओसीएल, गुवाहाटी, असम–1962 | 1000 | 864 | 1024 | 863 | 892 | 849 | 730 | 803 |
| 2. आईओसीएल, बरौनी, बिहार–1964 | 6000 | 6526 | 5819 | 6661 | 6516 | 5469 | 5620 | 5060 |
| 3. आईओसीएल, कोयाली, गुजरात–1965 | 13700 | 13994 | 13811 | 13505 | 13075 | 11603 | 13474 | 11748 |
| 4. आईओसीएल, हल्दिया, पश्चिम बंगाल–1975 | 8000 | 7689 | 7655 | 7965 | 6463 | 6759 | 7305 | 6394 |
| 5. आईओसीएल मथुरा, उत्तर प्रदेश–1982 | 8000 | 9230 | 9240 | 9737 | 8948 | 8926 | 9123 | 7129 |
| 6. आईओसीएल, डिगबोई, असम–1901 | 650 | 533 | 666 | 676 | 664 | 605 | 708 | 534 |
| 7. आईओसीएल, पानीपत, हरियाणा–1998 | 15000 | 15638 | 15654 | 15281 | 15038 | 13181 | 14849 | 9969 |
| 8. आईओसीएल, बोंगाईगाँव, असम–1974 | 2700 | 2486 | 2402 | 2513 | 2045 | 2450 | 2639 | 2031 |
| 9. आईओसीएल, पारादीप, ओडिशा–2016 | 15000 | 8230 | 12730 | 14616 | 15778 | 12508 | 13217 | 9563 |
| **कुल आईओसीएल** | **70,050** | **65,191** | **69,001** | **71,816** | **69,419** | **62,351** | **67,665** | **53,231** |
| 10. बीपीसीएल, मुंबई, महाराष्ट्र–1955 | 12000 | 13541 | 14054 | 14773 | 15017 | 12941 | 14437 | 10504 |
| 11. बीपीसीएल, कोच्चि, केरल–1963 | 15500 | 11820 | 14095 | 16051 | 16515 | 13282 | 15402 | 11535 |
| 12. बीओआरएल, बीना, मध्य प्रदेश–2011 | 7800 | 6360 | 6708 | 5716 | 7913 | 6190 | 7410 | 5770 |
| **कुल बीपीसीएल** | **35,300** | **31,722** | **34,857** | **36,539** | **39,445** | **32,412** | **37,248** | **27,810** |
| 13. एचपीसीएल, मुंबई, महाराष्ट्र–1954 | 9500 | 8510 | 8641 | 8671 | 8065 | 7374 | 5558 | 7289 |
| 14. एचपीसीएल, विशाखापत्तनम, आंध्र प्रदेश–1957 | 8300 | 9335 | 9635 | 9773 | 9115 | 9050 | 8410 | 6843 |
| **कुल एचपीसीएल** | **17,800** | **17,846** | **18,276** | **18,444** | **17,180** | **16,425** | **13,968** | **14,132** |
| 15. सीपीसीएल, मनाली, तमिलनाडु–1965 | 10500 | 9725 | 10289 | 10271 | 10161 | 8243 | 9040 | 8364 |
| 16. सीपीसीएल–सीबीआर, नागीमनम तमिलनाडु–1993 | 0 | 531 | 500 | 423 | 0 | 0 | 0 | 0 |
| **कुल सीपीसीएल** | **10,500** | **10,256** | **10,789** | **10,695** | **10,161** | **8,243** | **9,040** | **8,364** |
| 17. एनआरएल, नुमालीगढ़, असम–1999 | 3000 | 2683 | 2809 | 2900 | 2383 | 2707 | 2624 | 2358 |
| 18. एमआरपीएल, मैंगलोर, कर्नाटक–1996 | 15000 | 15965 | 16130 | 16231 | 13953 | 11475 | 14871 | 12724 |
| 19. ओएनजीसी, तटीपाका, आंध्र प्रदेश–2001 | 66 | 86 | 80 | 66 | 87 | 81 | 75 | 56 |
| **(ख) निजी और संयुक्त उद्यम क्षेत्र** | **99,500** | **1,01,614** | **99,993** | **1,00,513** | **1,01,757** | **88,080** | **96,212** | **69,896** |
| 20. आरआईएल, जामनगर, गुजरात–1999 | 33000 | 32823 | 33153 | 31752 | 33019 | 34100 | 34757 | 26187 |
| 21. आरआईएल, जामनगर (एसईजेज), गुजरात–2006 | 35200 | 37351 | 37317 | 37393 | 35876 | 26841 | 28264 | 20511 |
| **कुल आरआईएल** | **68,200** | **70,174** | **70,470** | **69,145** | **68,895** | **60,941** | **63,021** | **46,699** |
| 22. एनईएल, वाडीनार, गुजरात–2006 | 20000 | 20919 | 20693 | 18896 | 20620 | 17067 | 20164 | 13697 |
| 23. एचएमईएल, बठिंडा, पंजाब–2012 | 11300 | 10521 | 8830 | 12473 | 12242 | 10072 | 13027 | 9500 |
| **कुल योग** | **2,51,216** | **2,45,362** | **2,51,935** | **2,57,205** | **2,54,386** | **2,21,773** | **2,41,703** | **1,88,572** |

टिप्पण: हो सकता है कि राउंडिंग ऑफ के कारण आंकड़े मेल नहीं खाता हो।

पी: अनंतिम

## परिशिष्ट-V

### पेट्रोलियम उत्पादों का उत्पादन

(आंकड़े टीएमटी में)

| उत्पाद | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल-दिस.)(पी) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| एलपीजी | 11326 | 12380 | 12786 | 12823 | 12072 | 12238 | 9558 |
| मोटर स्प्रिट | 36593 | 37784 | 38039 | 38616 | 35779 | 40238 | 31275 |
| नेफ्था | 19946 | 20006 | 19786 | 20679 | 19403 | 19994 | 12838 |
| एटीएफ | 13831 | 14594 | 15479 | 15238 | 7092 | 10294 | 10746 |
| केरोसीन | 6041 | 4408 | 4072 | 3211 | 2393 | 1916 | 763 |
| एचएसडी | 102484 | 107904 | 110535 | 111221 | 100441 | 107175 | 83909 |
| एलडीओ | 629 | 562 | 702 | 620 | 729 | 805 | 443 |
| कुल ईंधन तेल | 9962 | 9486 | 10032 | 8609 | 7242 | 8327 | 6953 |
| जिसमें से | | | | | | | |
| क) फर्नेस ऑयल | 9694 | 9019 | 9598 | 8214 | 6882 | 7587 | 6083 |
| ख) एलएसएचएस/एचएवएस/आरएफओ | 268 | 468 | 434 | 395 | 360 | 741 | 870 |
| ल्यूब ऑयल | 1029 | 1036 | 949 | 932 | 1069 | 1173 | 944 |
| बिटुमन | 5185 | 5277 | 5803 | 5244 | 5245 | 5111 | 3586 |
| पेट्रोलियम कोक | 13936 | 14754 | 14676 | 15528 | 12655 | 15508 | 11810 |
| अन्य | 22589 | 26215 | 29503 | 30219 | 29393 | 31525 | 23310 |
| **पेट्रोलियम उत्पादों का कुल उत्पादन** | **2,43,551** | **2,54,405** | **2,62,361** | **2,62,940** | **2,33,513** | **2,54,305** | **1,96,135** |
| जिसमें से | | | | | | | |
| **रिफाइनरी** | **2,39,256** | **2,49,797** | **2,57,430** | **2,58,181** | **2,29,301** | **2,50,254** | **1,93,478** |
| **क्रैकशनेटर्स** | **4,294** | **4,608** | **4,931** | **4,760** | **4,212** | **4,051** | **2,657** |

टिप्पण: हो सकता है कि राउंडिंग ऑफ के कारण आंकड़े मेल नहीं खाता हो।
पी: अनंतिम
स्रोत: सीपीएसई

## परिशिष्ट-VI

### पेट्रोलियम उत्पादों का उपभोग

(आंकड़े टीएमटी में)

| उत्पाद | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 (अप्रैल-दिस.)(पी) |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| एलपीजी | 21608 | 23342 | 24907 | 26330 | 27558 | 28330 | 21256 |
| मोटर स्प्रिट | 23765 | 26174 | 28284 | 29975 | 27969 | 30849 | 26264 |
| नेफ्था | 13241 | 12889 | 14131 | 14268 | 14100 | 14277 | 9491 |
| एसकेओ | 5397 | 3845 | 3460 | 2397 | 1798 | 1494 | 393 |
| एटीएफ | 6998 | 7633 | 8300 | 7999 | 3698 | 5008 | 5387 |
| एचएसडीओ | 76027 | 81073 | 83528 | 82602 | 72713 | 76687 | 63924 |
| एलडीओ | 449 | 524 | 598 | 628 | 855 | 1020 | 542 |
| ईंधन तेल (एफओ+एलएसएचएस) | 7150 | 6721 | 6564 | 6302 | 5586 | 6255 | 5107 |
| ल्यूब्स/ग्रीस | 3470 | 3884 | 3668 | 3833 | 4097 | 4570 | 3391 |
| बिटुमन | 5935 | 6086 | 6708 | 6720 | 7524 | 7874 | 11496 |
| पेट्रोलियम कोक | 23964 | 25657 | 21346 | 21708 | 15605 | 15772 | 11496 |
| अन्य | 6593 | 8339 | 11723 | 11365 | 12791 | 12099 | 6120 |
| **कुल उपभोग** | **1,94,597** | **2,06,166** | **2,13,216** | **2,14,127** | **1,94,295** | **2,04,233** | **1,64,868** |

टिप्पण: उपभोग में तेल कंपनियों द्वारा बिक्री, स्वयं की खपत और प्रत्यक्ष निजी आयात शामिल है।
पी: अनंतिम
स्रोत: पीपीएसी

# कच्चे तेल और पेट्रोलियम उत्पादों का आयात/निर्यात

| वस्तु | 2017-18 | | | 2018-19 | | | 2019-20 | | | 2020-21 | | | 2021-22 (पी) | | | 2022-22 (अप्रैल–दिस.) (पी) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | टीएमटी | ₹ करोड़ | मिलियन अमरीकी $ | टीएमटी | ₹ करोड़ | मिलियन अमरीकी $ | टीएमटी | ₹ करोड़ | मिलियन अमरीकी $ | टीएमटी | ₹ करोड़ | मिलियन अमरीकी $ | टीएमटी | ₹ करोड़ | मिलियन अमरीकी $ | टीएमटी | ₹ करोड़ | मिलियन अमरीकी $ |
| **आयात** | | | | | | | | | | | | | | | | | | |
| **1. कच्चे तेल का आयात** | **2,20,433** | **5,66,450** | **87,803** | **2,26,498** | **7,83,183** | **1,11,915** | **2,26,955** | **7,17,001** | **1,01,376** | **1,96,461** | **4,59,779** | **62,248** | **2,12,382** | **9,01,262** | **1,20,675** | **1,72,398** | **9,93,713** | **1,24,989** |
| **2. एलएनजी आयात** | **20,709** | **52,122** | **8,051** | **21,691** | **71,867** | **10,253** | **25,575** | **67,383** | **9,489** | **24,929** | **58,129** | **7,864** | **23,227** | **1,00,011** | **13,382** | **15,392** | **1,13,525** | **14,300** |
| **3. पेट्रोलियम उत्पादों का आयात** | **35,461** | **88,374** | **13,637** | **33,348** | **1,13,665** | **16,341** | **43,788** | **1,25,742** | **17,689** | **43,248** | **1,09,430** | **14,770** | **42,062** | **1,88,636** | **25,240** | **32,873** | **1,63,353** | **20,912** |
| | | | | | | | | | | | | | | | | | | |
| एलपीजी | 11380 | 37875 | 5849 | 13235 | 49939 | 7178 | 14809 | 50347 | 7070 | 16476 | 53752 | 7242 | 17120 | 91899 | 12293 | 13554 | 78799 | 9905 |
| एमएस | 174 | 581 | 91 | 670 | 3104 | 445 | 2146 | 9610 | 1357 | 1351 | 4950 | 674 | 671 | 3895 | 519 | 1069 | 8117 | 1001 |
| नेफ्था | 2212 | 8161 | 1261 | 2082 | 9665 | 1391 | 1662 | 6678 | 941 | 1199 | 3844 | 518 | 1268 | 7137 | 959 | 1296 | 6998 | 921 |
| एटीएफ | 300 | 1159 | 178 | 259 | 1392 | 200 | 65 | 309 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| एसकेओ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 12 | 2 | 0 | 1 | 0 | 0 | 1 | 0 |
| एचएसडी | 1361 | 4269 | 660 | 555 | 2486 | 360 | 2796 | 11679 | 1632 | 648 | 1960 | 265 | 75 | 425 | 57 | 313 | 3305 | 422 |
| एलओबीएस / ल्यूब्स ऑयल | 2539 | 12075 | 1860 | 2457 | 13349 | 1910 | 2675 | 11869 | 1673 | 2693 | 12170 | 1647 | 3106 | 20166 | 2704 | 2362 | 15517 | 2074 |
| ईंधन तेल | 1213 | 3231 | 499 | 1419 | 4782 | 696 | 4583 | 11791 | 1650 | 6454 | 14312 | 1936 | 9024 | 32958 | 4398 | 6204 | 26255 | 3332 |
| बिटुमन | 950 | 1902 | 293 | 877 | 2149 | 309 | 1630 | 3634 | 510 | 2055 | 4325 | 586 | 2638 | 7850 | 1052 | 1998 | 5977 | 800 |
| पेटकोक | 12777 | 11100 | 1709 | 7926 | 10350 | 1494 | 10674 | 9713 | 1374 | 8256 | 6410 | 861 | 5739 | 11741 | 1570 | 4304 | 8805 | 1178 |
| अन्य | 2556 | 8020 | 1237 | 3869 | 16449 | 2358 | 2749 | 10172 | 1438 | 4112 | 7695 | 1038 | 2421 | 12564 | 1688 | 1773 | 9578 | 1280 |
| **कुल आयात (1+2+3)** | **2,76,602** | **7,06,946** | **1,09,491** | **2,81,537** | **9,68,716** | **1,38,508** | **2,96,317** | **9,10,125** | **1,28,554** | **2,64,638** | **6,27,338** | **84,883** | **2,77,671** | **11,89,909** | **1,59,297** | **2,20,655** | **12,70,591** | **1,60,202** |
| | | | | | | | | | | | | | | | | | | |
| एलपीजी | 359 | 1501 | 231 | 417 | 1976 | 283 | 463 | 1970 | 277 | 452 | 1797 | 241 | 513 | 3214 | 430 | 393 | 2882 | 364 |
| एमएस | 14036 | 54580 | 8464 | 12885 | 60419 | 8641 | 12710 | 54512 | 7708 | 11606 | 36530 | 4977 | 13482 | 81649 | 10879 | 9101 | 74307 | 9404 |
| नेफ्था | 8951 | 29075 | 4505 | 6963 | 28893 | 4137 | 8897 | 31509 | 4439 | 6509 | 18643 | 2530 | 6861 | 37231 | 4984 | 4454 | 26382 | 3337 |
| एविएशन / टर्बाइन ऑयल | 7183 | 25348 | 3931 | 7389 | 34030 | 4867 | 6906 | 28458 | 4021 | 3544 | 9377 | 1287 | 5186 | 27112 | 3661 | 5260 | 44554 | 5578 |
| केरोसीन | 17 | 68 | 10 | 19 | 98 | 14 | 176 | 560 | 78 | 15 | 48 | 7 | 14 | 77 | 10 | 9 | 82 | 10 |
| डीजल | 29735 | 99492 | 15426 | 27931 | 123882 | 17675 | 31653 | 123919 | 17481 | 30576 | 81611 | 11132 | 32407 | 164741 | 22088 | 21913 | 186574 | 23488 |
| ल्यूब्स | 13 | 118 | 18 | 8 | 106 | 15 | 8 | 96 | 13 | 15 | 93 | 12 | 10 | 114 | 15 | 11 | 122 | 15 |
| ईंधन तेल | 2525 | 5291 | 817 | 2197 | 6537 | 923 | 1527 | 3811 | 537 | 1177 | 2318 | 313 | 1757 | 6633 | 890 | 1445 | 6267 | 782 |
| बिटुमन | 64 | 119 | 18 | 23 | 72 | 10 | 25 | 89 | 13 | 7 | 23 | 3 | 6 | 28 | 4 | 6 | 29 | 4 |
| पेटकोक / सीबीएफएस | 561 | 687 | 107 | 1124 | 3255 | 463 | 465 | 1096 | 155 | 577 | 292 | 39 | 187 | 553 | 74 | 139 | 351 | 45 |
| अन्य | 3387 | 9110 | 1412 | 2140 | 8429 | 1208 | 2854 | 7998 | 1128 | 2290 | 6436 | 865 | 2330 | 10449 | 1402 | 3001 | 18539 | 2330 |
| **पेट्रोलियम उत्पादों का निर्यात** | **66,833** | **2,25,388** | **34,940** | **61,096** | **2,67,697** | **38,236** | **65,685** | **2,54,018** | **35,848** | **56,769** | **1,57,168** | **21,406** | **62,755** | **3,31,801** | **44,438** | **45,730** | **3,60,089** | **45,358** |
| **निवल आयात** | **2,09,770** | **4,81,558** | **74,551** | **2,20,441** | **7,01,019** | **1,00,272** | **2,30,632** | **6,56,108** | **92,706** | **2,07,869** | **4,70,170** | **63,476** | **2,14,916** | **8,58,108** | **1,14,859** | **1,74,924** | **9,10,503** | **1,14,844** |
| **पेट्रोलियम उत्पाद का निवल निर्यात** | **31,372** | **1,37,014** | **21,303** | **27,747** | **1,54,031** | **21,895** | **21,898** | **1,28,276** | **18,159** | **13,521** | **47,738** | **6,636** | **20,693** | **1,43,165** | **19,198** | **12,857** | **1,96,736** | **24,446** |

पी: अनंतिम

2. अन्य निर्यात में पीजीओ, बेंजीन, एमटीओ और सल्फर शामिल है।

स्रोत: पेट्रोलियम योजना एवं विश्लेषण प्रकोष्ठ।

परिशिष्ट-VIII

## आंतरिक एवं बाहरी बजटीय संसाधन

(राशि ₹ करोड़ में)

| सीपीएसई | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | |
|---|---|---|---|---|---|---|---|---|
| | वास्तविक | वास्तविक | वास्तविक | वास्तविक | वास्तविक | वास्तविक | बीई | वास्तविक (अप्रैल-दिस.) |
| (1) | (2) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| सीपीएसई-वार आंतरिक एवं अतिरिक्त बजट संसाधन | | | | | | | | |
| ओएनजीसी | 28006 | 72902 | 29450 | 29538 | 26859 | 27741 | 29950 | 19153 |
| ओवीएल | 17617 | 6798 | 5827 | 5435 | 5734 | 4681 | 8180 | 1970 |
| ओआईएल | 11083 | 8154 | 3181 | 4247 | 13332 | 4367 | 4302 | 2902 |
| गेल | 1814 | 3680 | 7143 | 4562 | 6253 | 7148 | 7500 | 6188 |
| आईओसीएल | 20737 | 21457 | 28208 | 31421 | 28684 | 30391 | 28549 | 24495 |
| बीपीसीएल | 16949 | 8998 | 10993 | 11064 | 11064 | 11860 | 10000 | 8930 |
| एचपीसीएल | 5757 | 7210 | 12438 | 16311 | 14700 | 16771 | 14500 | 8849 |
| एमआरपीएल | 616 | 1281 | 1072 | 1318 | 2179 | 674 | 815 | 339 |
| सीपीसीएल | 1269 | 1020 | 1314 | 961 | 583 | 636 | 584 | 461 |
| एनआरएल | 503 | 420 | 465 | 529 | 1029 | 3605 | 6774 | 4273 |
| बीएल | 74 | 83 | 132 | 46 | 43 | 22 | 40 | 30 |
| ईआईएल | * | * | 87 | 171 | 733 | 70 | 160 | 40 |
| **कुल (आई और ईबीआर)** | **1,04,426** | **1,32,004** | **1,00,309** | **1,05,603** | **1,11,194** | **1,07,968** | **1,11,354** | **77,631** |
| अन्वेषण और उत्पादन क्षेत्र | 72383 | 95455 | 49613 | 44769 | 52994 | 46376 | 50536 | 31612 |
| रिफाइनिंग और विपणन क्षेत्र | 30524 | 32794 | 46990 | 56668 | 51446 | 54948 | 53876 | 39737 |
| पेट्रो-रसायन क्षेत्र | 1446 | 3672 | 3487 | 3949 | 5979 | 6551 | 6742 | 6211 |
| इंजीनियरिंग क्षेत्र | 74 | 83 | 219 | 217 | 776 | 93 | 200 | 70 |
| **कुल (आई और ईबीआर)** | **1,04,426** | **1,32,004** | **1,00,309** | **1,05,603** | **1,11,194** | **1,07,968** | **1,11,354** | **77,631** |

टिप्पण: व्यय बजट दस्तावेज 2021– 22 में यथा मुद्रित बजट अनुमान आईईबीआर 2021–22।

*: आईईबीआर की रिपोर्टिंग के उद्देश्य से, वर्ष 2018–19 से पहली बार ईआईएल की शुरूआत की गई।

स्रोत: केंद्रीय सार्वजनिक क्षेत्र के उपक्रम।

## परिशिष्ट-IX

### वित्त वर्ष 2020–21 की तुलना में वित्त वर्ष 2021–22 के लिए कर पूर्व लाभ (पीबीटी) और कर पश्चात लाभ (पीएटी) में पीएसयू–वार भिन्नता

#### ऑयल एंड नेचुरल गैस कर्पोरेशन (ओएनजीसी)

वित्त वर्ष 2021–22 के लिए ओएनजीसी के पीबीटी और पीएटी में वित्त वर्ष 2020–21 के पीबीटी और पीएटी की तुलना में वृद्धि हुई है, जो मुख्य रूप से कच्चे तेल पर बेहतर मूल्य प्राप्ति ($42.78 प्रति बैरल की तुलना में $76.62 प्रति बैरल), वीएपी कीमतों में तदनुरूपी वृद्धि और प्राकृतिक गैस पर बेहतर प्राप्ति ($2.09 प्रति एमएमबीटीयू की तुलना में $2.35 एमएमबीटीयू) के परिणामस्वरूप हुई। इसके अलावा, वित्त वर्ष 2021–22 की दूसरी तिमाही के दौरान, कंपनी ने वित्त वर्ष 2020–21 से आयकर अधिनियम, 1961 की धारा 115 खकक के तहत निम्नतर कर व्यवस्था का विकल्प चुनने का निर्णय किया था।

तदनुसार, कंपनी ने कर व्यय के लिए प्रावधान की समीक्षा की है और अपनी निवल आस्थगित कर देयताओं को पुनः मापा है जिससे वित्त वर्ष 2021–22 के लिए पीएटी में और सुधार हुआ है।

#### इंडियन ऑयल कॉर्पोरेशन लिमिटेड (आईओसीएल)

वित्त वर्ष 2021–22 के लिए पीबीटी ₹ 31,733.07 करोड़ था जबकि वित्त वर्ष 2020–21 में यह ₹ 29,715.65 करोड़ था और वित्त वर्ष 2020–21 में ₹ 21,836.04 करोड़ के मुकाबले वित्त वर्ष 2021–22 के लिए पीएटी ₹ 24,184.10 करोड़ था।

वित्त वर्ष 2020–21 की तुलना में वित्त वर्ष 2021–22 के लिए लाभ में भिन्नता, मुख्य रूप से वित्त वर्ष 2021–22 में जारी इन्वेंट्री लाभ से उत्पन्न कीमतों में और तेजी के परिणामस्वरूप हुई है।

इस वर्ष रिफाइनरी और गैस मार्जिन में उल्लेखनीय सुधार देखा गया लेकिन विपणन और पेट्रोकेमिकल मार्जिन में गिरावट के कारण यह काफी सीमा तक प्रति–संतुलित हो गया। लाभप्रदता में समग्र वृद्धि, पिछले वर्ष में लाभ की तुलना में वर्ष में विनिमय घाटे और वित्त और अन्य लागतों में वृद्धि के कारण कम थी।

#### गेल (इंडिया) लिमिटेड

गेल का कर पूर्व लाभ (पीबीटी) 113% बढ़कर वित्त वर्ष 2021–22 में ₹ 13,590 करोड़ हो गया जबकि वित्त वर्ष 2020–21 में यह ₹ 6,386 करोड़ था। वित्त वर्ष 2020–21 के ₹ 4,890 करोड़ की तुलना में वित्त वर्ष 2021–22 में कर पश्चात् लाभ (पीएटी) 112% बढ़कर ₹ 10,364 करोड़ हो गया, जो मुख्य रूप से बढ़ी हुई गैस विपणन और पारेषण मात्रा, बेहतर गैस विपणन प्रसार और उच्च उत्पाद कीमतों के परिणामस्वरूप हुआ। वित्त वर्ष 2021–22 के दौरान, कंपनी ने पिछले वित्तीय वर्षों की तुलना में अब तक का सर्वाधिक राजस्व, पीबीटी और पीएटी हासिल किया।

#### ऑयल इंडिया लिमिटेड (ओआईएल)

वर्ष 2021–22 का कर पूर्व लाभ (पीबीटी) वर्ष 2020–21 के ₹ 723.07 करोड़ की तुलना में ₹ 4,986.50 करोड़ था। यह वृद्धि मुख्य रूप से कच्चे तेल और प्राकृतिक गैस की कीमतों में वर्ष 2021–22 में क्रमशः $34.98 प्रति बैरल और 0.26 अमरीकी डॉलर प्रति एमएमबीटीयू की बेहतर प्राप्ति के परिणामस्वरूप हुई है। वर्ष 2021–22 के लिए कर पश्चात लाभ (पीएटी) ₹ 3,887.31 करोड़ है।

#### भारत पेट्रोलियम कॉर्पोरेशन लिमिटेड (बीपीसीएल)

वित्त वर्ष 2021–22 के लिए कर पूर्व लाभ (पीबीटी) (15,672 करोड़ रुपये) ख्वीओआरएल विलय और बीजीआरएल विलय के बाद पुनर्निर्धारित, वित्त वर्ष 2020–21 (22,618 करोड़ रुपये) की तुलना में कम है, जो मुख्य रूप से वित्त वर्ष 2020–21 में असाधारण मदों के कारण लगभग ₹ 6,449 करोड़, जो मुख्य रूप से सहायक कंपनियों में से एक (नुमालीगढ़ रिफाइनरी लिमिटेड) में निवेश के निपटान पर एकमुश्त लाभ और इसकी सहायक कंपनी (भारत पेट्रो रिसोर्सेज लिमिटेड) में निवेश की हानि से संबंधित था, के कारण है। इसके अलावा, वित्त वर्ष 2021–22 में लाभप्रदता, कम विपणन मार्जिन, सहायक कंपनियों–बीओआरएल और बीजीआरएल–के विलय, वित्त वर्ष 2020–21 की तुलना में उच्च रिफाइनिंग मार्जिन से प्रभावित हुई थी। वित्त वर्ष 2021–22 के दौरान, बीपीसीएल ने पिछले किसी भी वित्त वर्ष की तुलना में ₹ 4,32,422 करोड़ [पुनःनिर्धारित] का अब तक का सर्वाधिक प्रचालन से राजस्व प्राप्त किया है। वित्त वर्ष 2021–22 के लिए कर उपरांत लाभ (पीएटी) ₹ 11,363 करोड़] [पुनःनिर्धारित] है।

#### इंजीनियर्स इंडिया लिमिटेड (ईआईएल)

पीबीटी और पीएटी में भिन्नता का कारणः

इंजीनियर्स इंडिया लिमिटेड, दो खंडों नामतः परामर्श और इंजीनियरिंग खंड तथा टर्नकी खंड में परियोजनाओं के तहत एक तकनीकी परामर्शदाता संगठन है। कंपनी के राजस्व की मान्यता मौजूदा ऑर्डरों के साथ–साथ कंपनी द्वारा सुरक्षित किए गए नए ऑर्डरों पर निर्भर करती है। हाल के वर्षों के दौरान लाभप्रदता मार्जिन कम हो गया है क्योंकि कंपनी टर्नकी खंड में प्रमुख ऑर्डर निष्पादित कर रही है। इसके अलावा, कोविड के प्रभाव के कारण, नए निवेशों के साथ–साथ मौजूदा परियोजनाओं के निष्पादन में कुछ मंदी आई है, जिसके कारण वित्त वर्ष 2021–22 के दौरान राजस्व में गिरावट आई है।

तथापि, वित्त वर्ष 2021–22 के लिए कंपनी का कर पूर्व लाभ (पीबीटी) और कर पश्चात् लाभ (पीएटी) बढ़कर क्रमशः ₹ 447.84 करोड और ₹ 344.41 करोड हो गया है, जबकि वित्त वर्ष 2020–21 में कर पूर्व लाभ (पीबीटी) और कर उपरांत लाभ (पीएटी) क्रमशः ₹ 350.57 करोड़ और ₹ 259.50 करोड़ था। वित्त वर्ष 2020–21 के दौरान पीएफ निवेशों में संभावित भावी मूल्यन बूकों के लिए प्रावधान के कारण ₹ 154.96 करोड़ की एक बारगी असाधारण मद के प्रभाव के कारण मुख्य रूप से लाभप्रदता में गिरावट आई थी।

## ओएनजीसी विदेश लिमिटेड (ओवीएल)

वित्त वर्ष 2020–21 की तुलना में वित्त वर्ष 2021–22 में कच्चे तेल की अधिक कीमतों के कारण कंपनी का कर पूर्व लाभ (पीबीटी) ₹ 2,338 करोड़ से बढ़कर ₹ 4,295 हो गया है। कर पश्चात लाभ (पीएटी) वित्त वर्ष 2020–21 के ₹ 1,886 करोड़ से कम होकर वित्त वर्ष 2021–22 में ₹ 1,494 करोड़ हो गया है जिसका मुख्य कारण उच्च कर और क्षतिग्रस्तता हानि है।

## हिंदुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड (एचपीसीएल)

वित्त वर्ष 2021–22 के लिए, एचपीसीएल ने ₹ 8,204 करोड़ का कर पूर्व लाभ (पीबीटी) संसूचित किया है जबकि वित्त वर्ष 2020–21 के लिए यह ₹ 14,247 करोड़ था। एक चुनौतीपूर्ण परिदृश्य में आगे बढ़ते हुए, एचपीसीएल ने वित्त वर्ष 2020–21 के दौरान स्टैंडअलोन आधार पर ₹ 10,664 करोड़ की तुलना में वित्त वर्ष 2021–22 के दौरान ₹ 6,383 करोड का कर पश्चात लाभ (पीएटी) दिया है। यह भिन्नता लंबे समय तक रूस यूक्रेन संघर्ष से उत्पन्न होने वाले भू–राजनीतिक तनावों के कारण है, जिसके परिणामस्वरूप वित्तीय अस्थिरता में वृद्धि हुई, जिससे कच्चे तेल की कीमतों में काफी वृद्धि हुई। पिछले वर्ष की तुलना में, वर्ष के दौरान विपणन लाभ कम रहा क्योंकि अंतरराष्ट्रीय कीमतों में वृद्धि का भार पूरी तरह से उपभोक्ताओं पर नहीं डाला गया। इसके अलावा, अन्य महत्वपूर्ण आय अर्थात् अमेरिकी डॉलर के मुकाबले रुपये की मूल्यवृद्धि पर दर्ज ईआरवी लाभ, रुझानों के प्रत्यावर्तन पर वित्त वर्ष 2021–22 में काफी कम हो गया था।

## मैंगलोर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड (एमआरपीएल)

वित्त वर्ष 2021–22 की शुरूआत पिछले वर्ष की पृष्ठभूमि में हुई जब कोविड महामारी के कारण औसत बेंचमार्क जीआरएम ₹ 0.53 प्रति बैरल था। कोविड महामारी की दूसरी लहर के कारण हुए लॉकडाउन और यात्रा प्रतिबंधों के कारण वित्त वर्ष 2021–22 की शुरुआत में एमआरपीएल का क्षमता उपयोग प्रभावित हुआ था। पहली छमाही में क्षमता उपयोग 80% से थोड़ा ऊपर था और $ 3.33 प्रति बैरल का जीआरएम दर्ज किया गया था। इसी अवधि के लिए बेंचमार्क जीआरएम $ 2.92 अमरीकी डॉलर प्रति बैरल था। यात्रा प्रतिबंधों को हटाने, औद्योगिक गतिविधि में तेजी लाने और ईंधन की मांग में सुधार के साथ दूसरी छमाही में क्षमता उपयोग सराहनीय था और वर्ष के अंत में कंपनी का निवल थ्रूपुट 100% पर रहा। उत्पाद में वर्ष के दौरान सुधार हुआ और कंपनी पिछले वर्ष के घाटे से उबरी और ₹ 2,955 करोड़ का लाभ दर्ज किया। वित्त वर्ष 2021–22 के लिए, कंपनी का कर पूर्व लाभ (पीबीटी) ₹ 2,708.33 करोड और कर पश्चात लाभ (पीएटी) ₹ 2,955.27 करोड़ था।

## बामर लॉरी एंड कंपनी लिमिटेड (बीएल)

वित्त वर्ष 2021–22 के लिए कर पूर्व लाभ, वित्त वर्ष 2020–21 के दौरान ₹ 15,664.97 लाख के कर पूर्व लाभ और ₹ 11,645.10 लाख के कर पश्चात लाभ की तुलना में क्रमशः ₹ 17,014.45 लाख और ₹ 12,280.65 लाख था। वित्त वर्ष 2021–22 के लिए वित्त वर्ष 2020–21 की तुलना में पीबीटी में 8.61% का और पीएटी में 5.46% का सकारात्मक विचरण, एसबीयू–यात्रा और छुट्टियों के प्रदर्शन पर कोविड–19 महामारी के प्रभाव में सरलता के परिणामस्वरूप प्राप्त हुआ है, जो कि वित्त वर्ष 2020–21 में इसके कारण गंभीर रूप से प्रभावित हुआ था तथा साथ ही साथ ही विनिर्माण व्यवसायों के टर्नओवर और लाभप्रदता में वृद्धि हुई।

## चेन्नई पेट्रोलियम कॉर्पोरेशन लिमिटेड (सीपीसीएल)

सीपीसीएल ने वित्त वर्ष 2020–21 के दौरान ₹ 1,277 करोड़ की तुलना में वित्त वर्ष 2021–22 के लिए ₹ 1,832 करोड़ का सर्वकालिक उच्च पीबीटी संसूचित किया है। यह मुख्य रूप से वित्त वर्ष की पहली छमाही में जारी कोविड / ओमिक्रॉन के खतरे की पृष्ठभूमि में धीमी मांग वसूली के बीच मजबूत संचालन और परिष्कृत उत्पादों पर उच्च क्रेक्स के परिणामस्वरूप था।

## परिशिष्ट-X

दिनांक 31.12.2021 तक इस मंत्रालय के विरुद्ध 07 निरीक्षण रिपोर्टों के कुल 53 पैरा बकाया थे। इस दौरान वित्त वर्ष 2021–22 के लिए 06 पैरा का निराकरण कर 8 नए पैरा जोड़े गए हैं। इसके अलावा सीएंडएजी ने अपनी निरीक्षण रिपोर्ट में वित्त वर्ष 2017–18 और 2018–19 के लिए 02 शेष पैरा भी शामिल किए हैं। इसलिए, दिनांक 17.11.2022 को लेखापरीक्षा द्वारा नवीनतम सूचना के अनुसार, वर्ष 2021–22 के लिए नए पैरा सहित 08 आईआर से कुल 62 आईआर पैरा लंबित दिखाए गए हैं।

वार्षिक रिपोर्ट के साथ–साथ पूर्ववर्ती वार्षिक रिपोर्ट में शामिल लेखापरीक्षा टिप्पणियों के संबंध में की गई कार्रवाई की स्थिति।

| क्र. सं. | वर्ष | पैरा/पीए रिपोर्टों के पैरा की संख्या जिन पर पीएएसी/ सीओपीयू को लेखापरीक्षा द्वारा पुनरीक्षण के उपरांत एटीएन प्रस्तुत की गई है | पैरा/पीए रिपोर्टों का विवरण, जिन पर एटीएन लंबित है | | |
|---|---|---|---|---|---|
| | | | उन एटीएन की संख्या जो पहली बार भी मंत्रालय को नहीं भेजे गए हैं | उन एटीएन की संख्या जो भेजी गई है, लेकिन टिप्पणियों के साथ वापस भेज दी गई है और लेखापरीक्षा, मंत्रालय द्वारा उनके निपटान की प्रतीक्षा कर रही है | उन एटीएन की संख्या, जिनका लेखापरीक्षा द्वारा अंतिम पुनरीक्षण कर दिया गया है, परंतु मंत्रालय द्वारा उन्हें पीएसी/सीओपीयू को भेजा गया है |
| 1. | 2008 | 23 | - | 3 | - |
| 2. | 2009-10 | 14 | - | 3 | - |
| 3. | 2010-11 | 5 | - | 2 | - |
| 4. | 2011-12 | 4 | - | 4 | - |
| 5. | 2012-13 | 4 | - | 3 | - |
| 6. | 2013 | - | 1 | 4 | - |
| 7. | 2014 | - | 2 | 5 | - |
| 8. | 2015 | - | 9 | - | - |
| 9. | 2016 | 3 | 12 | - | - |
| 10. | 2017 | 3 | 3 | 18 | 6 |
| 11. | 2018 | 9 | 6 | 19 | - |
| 12. | 2019 | 11 | 13 | 14 | 3 |
| 13. | 2020 | 12 | 6 | 4 | 2 |
| 14. | 2021 | 6 | 6 | 5 | 3 |
| 15. | 2022 | 3 | 2 | 9 | 2 |

अनुपालन लेखापरीक्षा टिप्पणियों पर भारत के नियंत्रक और महालेखापरीक्षक (सीएंडएजी) की वर्ष 2021 की रिपोर्ट संख्या 14 में सीएंडएजी के अधिकारियों द्वारा कंपनी अधिनियम 2013 की धारा 143(6) या विभिन्न निगमों को नियंत्रित करने वाले कानून के तहत केंद्र सरकार के स्वामित्व वाली कंपनियों और निगमों के लेखाओं और अभिलेखों की नमूना जांच के परिणामस्वरूप पाए गए महत्वपूर्ण लेखापरीक्षा निष्कर्ष शामिल हैं।

### उपभोक्ताओं से टर्नओवर कर की वसूली के माध्यम से अनुचित संवर्धन

इंडियन ऑयल कॉर्पोरेशन लिमिटेड ने आंध्र प्रदेश सामान्य बिक्री कर अधिनियम, 1957 के कानूनी प्रावधानों का उल्लंघन करते हुए आंध्र प्रदेश में उपभोक्ताओं से ₹ 262.60 करोड़ का टर्नओवर कर वसूला और बाद में ₹ 262.60 करोड़ के कुल अधिरोपित जुर्माने के सापेक्ष ₹ 65.65 करोड़ (25 प्रतिशत) का भुगतान करके तेलंगाना सरकार के साथ कानूनी मामला सुलझाया, इस प्रकार इंडियन ऑयल कॉर्पोरेशन लिमिटेड को ₹ 196.95 करोड़ का अनुचित संवर्धन हुआ।

(पैरा 2.1)

### प्रदूषण मंजूरी की वैधानिक आवश्यकता का पालन न करने के परिणामस्वरूप निष्फल व्यय हुआ

दो पुराने और कम कुशल तेल से चलने वाले बॉयलरों को बदलने के लिए, इंडियन ऑयल कॉर्पोरेशन लिमिटेड ने अपनी गुवाहाटी रिफाइनरी (रिफाइनरी) के लिए ₹ 132.58 करोड़ की अनुमानित लागत (मार्च, 2018 में संशोधित ₹ 163.09 करोड़) पर पेटकोक से चलने वाला बॉयलर (बॉयलर) संस्थापित करने का निर्णय (जून, 2015) लिया। नए बॉयलर से रिफाइनरी के विद्युत उत्पादन और भाप की लागत में प्रति वर्ष ₹ 79.40 करोड़ की कमी होने की उम्मीद थी। बॉयलर के निर्माण से पहले संबंधित राज्य प्रदूषण नियंत्रण बोर्ड से 'संस्थापना की सहमति / अनापत्ति प्रमाण पत्र' प्राप्त करना आवश्यक था। हालाँकि, इंडियन ऑयल कॉर्पोरेशन

लिमिटेड ने अप्रैल 2018 में प्रदूषण नियंत्रण बोर्ड, असम में 'संस्थापना की सहमति/अनापत्ति प्रमाणपत्र' के लिए आवेदन किया था, जब परियोजना पहले ही 70–80 प्रतिशत तक पूरी हो चुकी थी। इसके बाद, प्रदूषण नियंत्रण बोर्ड, असम ने इंडियन ऑयल कॉर्पोरेशन लिमिटेड को तत्काल प्रभाव से बॉयलर परियोजना से संबंधित सभी गतिविधियों को रोकने के निर्देश के साथ एक कारण बताओ नोटिस (अगस्त 2018) जारी किया। इस प्रकार, इंडियन ऑयल कॉर्पोरेशन लिमिटेड द्वारा सांविधिक आवश्यकता का अनुपालन न करने के परिणामस्वरूप उस समय तक परियोजना पर किया गया ₹ 120.38 करोड़ का संपूर्ण व्यय निष्फल हो गया, जबकि बॉयलर को चालू न करने के कारण प्रति वर्ष ₹ 79.40 करोड़ के लागत लाभ भी अप्राप्त रहा।.

(पैरा 2.2)

## हाई प्रेशर गैस की फ्लेयरिंग के कारण नुकसान

मुंबई उच्च अपतटीय क्षेत्रों की अपतटीय प्रक्रिया प्रणाली में तेल, जल और गैस के पृथक्करण की प्रक्रिया में विकसित उच्च दाब वाली गैस को प्रक्रिया गैस कंप्रेशर्स में और संपीड़ित किया जाता है और गैस लिफ्ट उद्देश्य के लिए कूपों में अंतःक्षेपित किया जाता है। इस प्रक्रिया में, शेष गैस को आगे की प्रक्रिया और उपभोक्ताओं को बिक्री के लिए उरण स्थित ऑयल एंड नेचुरल गैस कॉर्पोरेशन लिमिटेड के गैस प्रसंस्करण संयंत्र में ले जाया जाता है। संपीड़न में किसी भी व्यवधान से मूल्यवान उच्च दाब वाली गैस निकलती है जिसका पर्यावरण पर भी प्रतिकूल प्रभाव पड़ता है। वर्ष 2012–13 से 2019–20 की अवधि के दौरान, स्टैंडबाय प्रोसेस गैस कम्प्रेसर की अनुपलब्धता, बिजली बंद होने और प्रोसेस गैस कम्प्रेसर के बार–बार ट्रिप होने के कारण ₹ 816.08 करोड़ मूल्य की हाई प्रेशर गैस, मुंबई हाई फील्ड में फ्लेयर की गई थी।

(पैरा 2.4)

## नियमित केलसग पाइपों की खरीद में देरी के कारण परिहार्य व्यय

ऑयल एंड नैचुरल गैस कॉर्पोरेशन लिमिटेड के मुंबई हाई एसेट और बेसिन और सैटेलाइट एसेट्स ने कॉर्पोरेट सामग्री प्रबंधन समूह को वर्ष 2015–16 और 2016–17 के लिए केसिंग पाइप की खरीद के लिए मांगपत्र भेजा। कॉर्पोरेट सामग्री प्रबंधन ने दोनों वर्षों के मांगपत्रों को मिला दिया और एक निविदा जारी की और 176 दिनों के निर्दिष्ट समय के सापेक्ष निविदा को अंतिम रूप देने में 782 दिनों से अधिक का समय लगा। क्रय आदेश करने और सामग्री की प्राप्ति में देरी के परिणामस्वरूप केसिंग पाइपों का उपयोग महंगा (2 से 2.5 गुना) हो गया, जिसके कारण कंपनी को ₹ 21.56 करोड़ का परिहार्य व्यय करना पड़ा।

(पैरा 2.6)

## महानदी–बंगाल–अंडमान बेसिन, कोलकाता में विभागीय रिग के निष्क्रिय रहने और त्रिपुरा एसेट में एक अन्य रिग को किराए पर लेने के कारण परिहार्य व्यय

कोलकाता में ऑयल एंड नैचुरल गैस कॉर्पोरेशन लिमिटेड के महानदी–बंगाल–अंडमान बेसिन ने टाइप–I विभागीय रिग (ड्रिलिंग गहराई क्षमता 3,050 मीटर तक) का उपयोग करके ड्रिलिंग गतिविधियों को अंजाम दिया। बैरकपुर कूप, जो एक गहरा कूप था और उपलब्ध टाइप–I विभागीय रिग की क्षमता से परे था, में न्यूनतम कार्य कार्यक्रम को पूरा करने के लिए अगरतला से कोलकाता तक टाइप–III रिग (6,100 मीटर तक की ड्रिलिंग गहराई क्षमता) लगाने का निर्णय लिया गया था। इसलिए, टाइप–III रिग को मई 2020 में त्रिपुरा एसेट से जारी किया गया था और जनवरी 2020 में चालू किया गया था। चूंकि महानदी–बंगाल–अंडमान बेसिन, कोलकाता में तैयार स्थान उपलब्ध नहीं था, इसलिए रिग 213 दिनों तक निष्क्रिय रही। इसके अलावा, त्रिपुरा एसेट में अपने संचालन को जारी रखने के लिए, ऑयल एंड नैचुरल गैस कॉर्पोरेशन लिमिटेड ने एक और रिग किराए पर लिया। इस प्रकार अनुचित योजना के कारण, ऑयल एंड नैचुरल गैस कॉर्पोरेशन लिमिटेड ने ₹ 29.69 करोड़ का परिहार्य व्यय किया।

(पैरा 2.7)

## पर्याप्त सुविधाओं का निर्माण न करने के परिणामस्वरूप कम दाब वाली गैस का परिहार्य प्रवाह

ऑयल एंड नैचुरल गैस कॉर्पोरेशन लिमिटेड की मेहसाणा एसेट संबद्ध और मुक्त गैस का उत्पादन करती है जिसे या तो आंतरिक उपयोग के लिए उपयोग किया जाता है, उपभोक्ताओं को बेचा जाता है या फ्लेयर किया जाता है। मेहसाणा एसेट में पर्याप्त सुविधाओं के निर्माण में देरी और गैर–निर्माण के परिणामस्वरूप 193 लाख मानक घन मीटर गैस का परिहार्य प्रवाह हुआ, जिसके कारण ऑयल एंड नैचुरल गैस कॉर्पोरेशन लिमिटेड को अप्रैल 2016 से मार्च 2020 की अवधि के दौरान ₹ 15.13 करोड़ के राजस्व का परिहार्य नुकसान हुआ।

(पैरा 2.8)

## भारतीय स्टेट बैंक द्वारा निर्धारित ऋण–इक्विटी अनुपात को न बनाए रखने के कारण दंडात्मक ब्याज का परिहार्य भुगतान

ऑयल एंड नैचुरल गैस कॉर्पोरेशन लिमिटेड की एक संयुक्त उद्यम कंपनी, ओएनजीसी पेट्रो एडिशंस लिमिटेड (ओपीएएल) ने ₹ 21,396 करोड़ की अनुमानित लागत के साथ एक परियोजना शुरू की और भारतीय स्टेट बैंक के नेतृत्व में बैंकों के संघ के साथ

रुपया ऋण करार (जनवरी 2013) पर हस्ताक्षर किए। और बाद में (जुलाई 2014) परियोजना लागत को संशोधित कर ₹ 27,011 करोड़ किया गया। तदनुसार, ओपीएएल ने एसबीआई और कंसोर्टियम बैंकों के साथ एक संशोधित करार पर हस्ताक्षर किए और निर्धारित वाणिज्यिक प्रचालन की तारीख 30 जून 2015 निर्धारित की और सहमति व्यक्त की कि समग्र परियोजना लागत को 31 दिसंबर 2015 तक 66:34 के ऋण–इक्विटी अनुपात के साथ और उसके बाद 58:42 के रूप में वित्त पोषित किया जाएगा, जिसके विफल होने पर बैंकों द्वारा 01 जून 2015 से प्रति वर्ष 1 प्रतिशत का अतिरिक्त ब्याज वसूल किया जाएगा। ओपीएएल, विस्तारित समय अवधि के भीतर भी आवश्यक इक्विटी हिस्सेदारी को स्थापित नहीं कर सका और ₹ 25.81 करोड़ के परिहार्य दंडात्मक ब्याज का वहन किया।

**(पैरा 2.9)**

## सीवीसी के दिशा–निर्देशों का उल्लंघन कर कार्य एवार्ड करके निजी पार्टियों को अनुचित लाभ दिया गया

ओएनजीसी विदेश लिमिटेड ने केंद्रीय सतर्कता आयोग के दिशा–निर्देशों का उल्लंघन करते हुए नामांकन के आधार पर निजी पार्टियों को ₹ 10.60 करोड़ मूल्य के अपने तेल और गैस मंडार की लेखापरीक्षा का कार्य एवार्ड किया, जिससे निजी पार्टियों को अनुचित लाभ मिला।

**(पैरा 2.10)**



सीएनजी पर चलने के लिए परिवर्तित पर्यटक नावों के संभरण के लिए नमो घाट, वाराणसी में गेल का भारत का अब तक का पहला फ्लोटिंग सीएनजी टर्मिनल

परिशिष्ट-XI

## भारतीय सार्वजनिक क्षेत्र के उपक्रमों द्वारा विदेशों में अधिगृहीत परिसंपत्तियों की सूची

| क्र. सं. | देश | परिसंपत्ति का नाम | कंपनी का नाम | प्रतिभागी कंपनियां और उनकी पीआई |
|---|---|---|---|---|
| 1 | रूस | इम्पीरियल एनर्जी | ओवीएल | ओएनजीसी विदेश–100% |
| 2 | | सखालिन–1 | ओवीएल | ओएनजीसी विदेश: 20%, ईएनएल(ओ): 30%, सोडेको: 30%, रोसनेफ्ट सब्सिडियरी: 20% (एसएमएनजी–111.5 और आरएन अख–8.5) |
| 3 | | | वेंकोरनेफ्ट | ओएनजीसी विदेश: 26% ओआईएल, आईओसीएल और बीपीआरएल का कंसोर्टियम: 23.9% ओवीएलवोस्तोक ऑयल एलएलसी: 50.1% ऑपरेटर: आरएन वैंकोर (रोसनेफ्ट का एक संबद्ध) दिसंबर 2020 से |
| 4 | दक्षिण सूडान | जीपीओसी | ओवीएल | ओएनजीसी विदेश: 25%, सीएनपीसी: 40% पेट्रोनास: 30%, निलेपेट: 5% |
| 5 | | एसपीओसी | ओवीएल | ओएनजीसी विदेश: 24.125% पेट्रोनास: 67.875%, निलेपेट: 8% |
| 6 | सीरिया | एएफपीसी | ओवीएल | एसएसपीडी (ओ): 62.5–66.67% (शैल:सीएनपीसी–65:35) एचईएसबीवी: 37.5–33.3% (ओएनजीबीवी:सीएनपीसी– 50:50) |
| 7 | | ब्लॉक 24 | ओवीएल | ओएनजीसी विदेश: 60% आईपीआरएमईएल (ओ): 25%, टीओएम: 15% |
| 8 | संयुक्त अरब अमीरात | लोअर जाकुम कंसेशन | ओवीएल | भारतीय कंसोर्टियम: 10% (ओएनजीसी विदेश 4%, आईओसी–3%, बीपीआरएल%, एडीएनओसी (ओ): 60%, आईएनपीईएक्स: 10% सीएनपीसी: 10%, ईएनआई: 5%, टीओटीएएल: 5% |
| 9 | | एसीजी | ओवीएल | ओएनजीसी विदेश: 2.31%, बीपी (ओ): 30.374551%, एजएसीजी: 25%, एमओएल: 9.569102%, आईएनपीईएक्स: 9.307229%, इक्विनोर अप्सरॉन एएस: 7.269034%, एक्सॉनमोबिल: 6.791381%, टीपीएओ: 5.729798%, इतोचु: 3.648905% |

| क्र. सं. | देश | परिसंपत्ति का नाम | कंपनी का नाम | प्रतिभागी कंपनियां और उनकी पीआई |
|---|---|---|---|---|
| 10 | अजरबेजान | बीटीसी पाइपलाइन | ओवीएल | ओएनजीसी बीटीसी लिमिटेड: 2.36%,<br>बीपी (ओ): 30.1%,<br>एजबीटीसी: 25%, एमओएल: 8.9%,<br>इनपेक्स: 2.5%,<br>इक्विनोर अप्सरॉन एएस: 8.71%<br>टीपीएओ: 6.53%,<br>इटोचु: 3.4%,<br>टीओटीएएल: 5%,<br>ईएनआई: 5%,<br>एक्सॉन: 2.5% |
| 11 | लीबिया | ब्लॉक 43 | ओवीएल | ओएनजीसी विदेश: 100% |
| 12 | कोलंबिया | एमईसीएल | ओवीएल | ओएनजीसी विदेश: 50%, एसाआईपीसी: 50% |
| 13 | | ब्लॉक आरसी–10 | ओवीएल | ओएनजीसी विदेश: 50% (ऑपरेटर),<br>इकोपेट्रोल : 50% |
| 14 | | ब्लॉक सीपीओ–5 | ओवीएल | ओएनजीसी विदेश: 70% (ऑपरेटर),<br>जियोपार्क: 30% |
| 15 | | ब्लॉक एसएसजेएन–7 | ओवीएल | ओएनजीसी विदेश: 50%<br>कैनाकोल एनर्जी लिमिटेड (ऑपरेटर) 50% |
| 16 | वेनेजुएला | सैन क्रिस्टोबाल | ओवीएल | ओएनजीसी विदेश: 40%,<br>सीवीपी–पीडीवीएसए: 56%<br>पीडीवीएसए सोशल: 4% |
| 17 | | काराबोबो– 1 | ओवीएल | पीडीवीएसए: 71%, रेप्सोल: 11%<br>ओएनजीसी विदेश: 11%,<br>आईओसी: 3.5%, ओआईएल: 3.5% |
| 18 | ब्राजील | बीसी–10 | ओवीएल | ओएनजीसी विदेश: 27%,<br>शेल(ओ): 50%<br>कतर एनर्जी: 23% |
| 19 | | ब्लॉक बीएम–सील–4 | ओवीएल | ओएनजीसी विदेश: 25%,<br>पेट्रोब्रास (ऑपरेटर): 75% |
| 20 | ईरान | ब्लॉक फरजाद–बी | ओवीएल | ओएनजीसी विदेश (ओ): 40%<br>आईओसी: 40%, ओआईएल: 20% |
| 21 | वियतनाम | ब्लॉक 06.1 | ओवीएल | ओएनजीसी विदेश: 45%,<br>जरुबेझनेफ्ट ईपी वियतनाम बीवी: 35%,<br>पेट्रो वियतनाम: 20% |
| 22 | | ब्लॉक 128 | ओवीएल | ओएनजीसी विदेश: 100% |

| क्र. सं. | देश | परिसंपत्ति का नाम | कंपनी का नाम | प्रतिभागी कंपनियां और उनकी पीआई |
|---|---|---|---|---|
| 23 | म्यांमार | ब्लॉक ए1 | ओवीएल | ओएनजीसी विदेश: 17%,<br>एमओजीई: 15% |
| 24 | | ब्लॉक ए3 | ओवीएल | पोस्को अंतरराष्ट्रीय (ओ): 51%,<br>कोगास: 8.5%, गेल: 8.5% |
| 25 | | ब्लॉक बी–2 | ओवीएल | ओएनजीसी विदेश 97% (ऑपरेटर),<br>एम एंड एस 3% (कैरीड) |
| 26 | | ब्लॉक ईपी–3 | ओवीएल | ओएनजीसी विदेश 97% (ऑपरेटर),<br>एम एंड एस 3% (कैरीड) |
| 27 | | पिपेको 1 | ओवीएल | ओएनजीसी विदेश: 17%,<br>एमओजीई: 15%,<br>पॉस्को अंतरराष्ट्रीय (ओ): 51%,<br>कोगास: 8.5%, गेल: 8.5% |
| 28 | | पिपेको 2 | ओवीएल | ओएनजीसी विदेश: 8.347%,<br>सीएनयूओसी(ओ)–50.9%,<br>एमओजीई: 7.365%,<br>पॉस्को इंटरनेशनल: 25.041:,<br>गेल: 4.1735%,<br>केजी–एसईएजीपी: 4.1735% |
| 29 | बांग्लादेश | एसएस–04 | ओवीएल | ओएनजीसी विदेश: 45% (ऑपरेटर),<br>ऑयल इंडिया लिमिटेड (ओआईएल): 45%,<br>बीएपीईएक्स: 10% (कैरीड) |
| 30 | | एसएस–09 | ओवीएल | ओएननजीसी विदेश: 45% (ऑपरेटर),<br>ऑयल इंडिया लिमिटेड (ओआईएल): 45%,<br>बीएपीईएक्स: 10% (कैरीड) |
| 31 | इराक | ब्लॉक 20 | ओवीएल | ओएनजीसी विदेश: 100% |
| 32 | मोज़ाम्बिक | रोवुमा एरिया–1 | ओवीएल | कुल ऊर्जा (ओ): 26.5%<br>ओएनजीसी विदेश रोवुमा लिमिटेड: 10%<br>बीआरईएमएल: 10%<br>(ओएनजीसी विदेश: 6%<br>और तेल: 4%),<br>ईएनएच: 15%,<br>मित्सुई: 20%,<br>बीपीआरएल: 10%,<br>पीटीटीईपी: 8.5% |



# 19 सोशल मीडिया आउटरीच




सुशासन दिवस का आयोजन (श्री अटल बिहारी वाजपेयी जी का जन्मदिवस)




पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय द्वारा वीर बाल दिवस पर श्रद्धांजलि



माननीय मंत्री, राज्य मंत्री और सचिव, पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय द्वारा भारतीय पेट्रोलियम और प्राकृतिक गैस सांख्यिकी 2021-22 के 56वें संस्करण का लोकार्पण




रोजगार मेला के दौरान पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के अधीन सार्वजनिक क्षेत्र के उपक्रमों में 3000 से अधिक नियुक्ति पत्र जारी किए गए



माननीय मंत्री श्री हरदीप सिंह पुरी सलकता पखवाड़ा पुरस्कार स्वीकार करते हुए



एलपीजी सप्ताह, सेक्टर नोएडा में माननीय मंत्री श्री हरदीप सिंह पुरी



बॉन्ड टू डीकार्बोनाइज, भारत ऊर्जा सप्ताह के लिए एक रन-अप कार्यक्रम



बेंगलुरु में आईईडब्ल्यू का शुभारम्भ कार्यक्रम



वित्त वर्ष 2022–23 के लिए पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय तथा ओएनजीसी के बीच समझौता–ज्ञापन पर हस्ताक्षर




भारत ऊर्जा सप्ताह की शुरुआत से पहले संकेत




एलपीजी सप्ताह, पेट्रोलियम मंत्रालय के सचिव, श्री पंकज जैन द्वारा उज्ज्वला मंडप और प्रदर्शनी का शुभारम्भ



माननीय प्रधानमंत्री, श्री नरेंद्र मोदी द्वारा आंध्र प्रदेश और तेलंगाना में विभिन्न तेल और गैस परियोजनाओं का शुभारम्भ



ऐर एथलीट अंजु बॉबी जॉर्ज स्पोर्ट्स अथॉरिटी का निरीक्षण करते हुए माननीय मंत्री श्री हरदीप सिंह पुरी



एजीआईपीसी–2022 में सचिव, श्री पंकज जैन



सचिव, पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय, श्री पंकज जैन द्वारा ब्राजील में सार्थक विचार–विमर्श



श्री हरदीप सिंह पुरी द्वारा स्वदेशी रूप से विकसित एचजीएएस 100 एलएस का शुभारम्भ



सचिव, पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय, श्री पंकज जैन द्वारा बेंगलुरु में एचएआईएच कार्यालय का दौरा



कुनो नेशनल पार्क में चीता छोड़ते हुए माननीय प्रधानमंत्री, श्री नरेंद्र मोदी



माननीय मंत्री, श्री हरदीप सिंह पुरी द्वारा एडीएनओसीकी संयुक्त अरब अमीरात में भारतीय मिशन का उद्घाटन



माननीय मंत्री, श्री हरदीप सिंह पुरी द्वारा वाशिंगटन में एशिया के विज्ञानाम कृषि अवशिष्ट आधारित बायोगैस संयंत्र का उद्घाटन




पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय द्वारा साइबर जागृति दिवस का आयोजन



ह्यूस्टन में तृतीय गोल मेज भारत-अमेरिका सामरिक साझेदारी में भाग लेते माननीय मंत्री, श्री हरदीप सिंह पुरी




माननीय राज्य मंत्री, श्री रामेश्वर तैली द्वारा पीएमयूवाई 2.0 के तहत सिक्किम में उज्ज्वला कनेक्शन का वितरण




माननीय मंत्री श्री हरदीप सिंह पुरी द्वारा मिलान, इटली में गैसटेक कार्यक्रम में प्रतिभाग




माननीय प्रधानमंत्री, श्री नरेंद्र मोदी द्वारा नगालैंड में परियोजनाओं का उद्घाटन




स्वतंत्रता दिवस समारोह



हर घर तिरंगा



पानीपत, हरियाणा में दूसरी पीढ़ी के एथेनॉल संयंत्र को राष्ट्र को समर्पित करते माननीय प्रधानमंत्री, श्री नरेंद्र मोदी



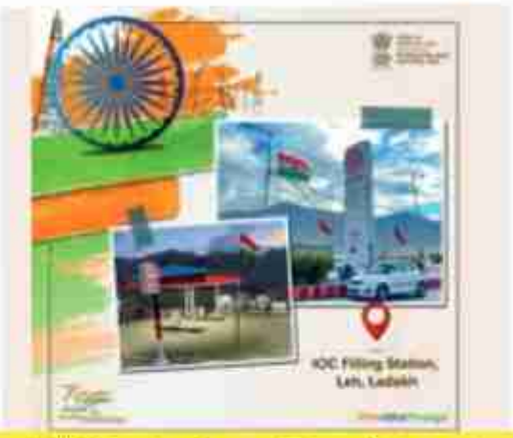

पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय द्वारा राष्ट्रमंडल खेलों 2022 में भारतीय दल के प्रदर्शन पर शुभकामनाएं




अफ्रीकी चीता के अंतरमहाद्वीपीय स्थानांतरण के लिए आईओसीएल और एनटीसीए के बीच समझौता ज्ञापन पर हस्ताक्षर




विदेश स्थित परिसरों (ईआईएल अबू धाबी) में 'हर घर तिरंगा' का आयोजन




आईओसी फिलिंग स्टेशन, लेह लद्दाख में 'हर घर तिरंगा' का आयोजन



विश्व जैव–ईंधन दिवस के अवसर पर
माननीय मंत्री श्री हरदीप सिंह पुरी का संबोधन



कॉर्पेन ग्रु. न्यूयार्क के साथ 'हर घर तिरंगा' मनाते हुए
माननीय मंत्री, श्री हरदीप सिंह पुरी



14 राज्यों में 168 सीएनजी स्टेशनों का वर्चुअल उद्घाटन करते हुए
माननीय मंत्री, श्री हरदीप सिंह पुरी



माननीय प्रधानमंत्री, श्री नरेंद्र मोदी द्वारा झारखंड में
ऊर्जा अवसंरचना परियोजनाओं का उद्घाटन



अटारी-वाघा बॉर्डर पर बीएसएफ के साथ स्वच्छता पखवाड़ा



राजकीय विद्यालय एनीकुत्तम में स्वच्छता पखवाड़े पर संबोधित करते हुए उप सचिव, श्री अरविंद नाथ झा



सचिव, पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय, श्री पंकज जैन द्वारा बीपीसीएल के स्वच्छता पखवाड़े का शुभारम्भ



पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय द्वारा स्वच्छता पखवाड़ा का आयोजन



गो गो एरिया में कमी



डिगबोई रिफाइनरी का आसमा दर्शन




लंदन इन्वेस्टर मीट के अवसर पर सचिव, पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय, श्री पंकज जैन द्वारा संबोधन



स्वच्छता पखवाड़ा रथ को झंडी दिखाकर रवाना करते हुए माननीय राज्य मंत्री, श्री रामेश्वर तेली



असम को बाढ़ राहत दान



स्वच्छता किट वितरण और शपथ ग्रहण



सूर्य लुब्रा मोबर ग्रीसिंग सिस्टम का शुभारम्भ



योग दिवस समारोह



पेट्रोलियम एवं प्राकृतिक
गैस मंत्रालय
भारत सरकार