8

MINISTRY OF PETROLEUM AND NATURAL GAS

SUPPLY AND DISTRIBUTION OF NATURAL GAS-CHALLENGES AND PROSPECTS

COMMITTEE ON ESTIMATES
(2026-27)

EIGHTH REPORT

(EIGHTEENTH LOK SABHA)

LOK SABHA SECRETARIAT
NEW DELHI

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(Presented to Lok Sabha on 07.08.2026)

LOK SABHA SECRETARIAT

NEW DELHI

07 August, 2026/ Sravana 16, 1948 (Saka)

CONTENTS

		Page No.
Composition of the Committee on Estimates (2024-25)		(ii)
Composition of the Committee on Estimates (2025-26)		(iii)
Composition of the Committee on Estimates (2026-27)		(iv)
Introduction		(vi)

PART-I

Chapter-1	Introductory	1
Chapter-2	Reserves and Exploration of Natural Gas	5
Chapter-3	Production and import of Natural Gas in the Country	35
Chapter-4	Demand and Use of Natural Gas	68
Chapter-5	National Gas Grid and City Gas Distribution (CGD)	84
Chapter-6	Skill Development Initiatives and Employment Generation in Natural gas Economy	108

PART-II

	Observations/Recommendations	113

Part-III

Annexures

Annexure-I	-	List of CBG projects commissioned under SATAT	135

APPENDICES

(i)	Minutes of the sitting of the Committee held on 04-11-2024	146
(ii)	Minutes of the sitting of the Committee held on 09-06-2025	149
(iii)	Minutes of the sitting of the Committee held on 03-08-2026*	

* Not appended in the Report

COMPOSITION OF THE COMMITTEE ON ESTIMATES (2024-25)

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3. Shri M. Mallesh Babu
4. Shri Kalyan Banjerjee
5. Shri Pradan Baruah
6. Shri Charanjit Singh Channi
7. Shri P.P. Chaudhary
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24. Dr. Rajkumar Sangwan
25. Shri Arvind Ganpat Sawant
26. Kumari Selja
27. Dr. Bhola Singh
28. Dr. Indra Hang Subba
29. Shri Manoj Tiwari
30. Shri Ve Vaithilingam

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29. Shri Ve Vaithilingam
30. Shri Surendra Prasad Yadav

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2.	Shri Sumesh Kumar	-	Director
3.	Smt Sonia Khanna	-	Deputy Secretary
4.	Shri Srikanth Singh R	-	Assistant Executive Officer

INTRODUCTION

I, the Chairperson of the Committee on Estimates, having been authorized by the Committee to submit the Report on their behalf, do present this 8th Report on the subject 'Supply and Distribution of Natural Gas-Challenges and Prospects'.

2. Energy plays a pivotal role in shaping the economic development and social well-being of the country. India, being one of the fastest-growing economies, faces the dual challenge of meeting the rising energy demand while ensuring affordability, sustainability, and security. Natural gas, with its relatively clean profile compared to coal and oil, has emerged as a transitional fuel capable of contributing to economic growth and environmental objectives simultaneously.

3. Natural gas currently accounts for only about 6 percent of India's primary energy mix, compared to the global average of 23 percent The Government has accordingly set the target of raising the share of natural gas in the energy basket to 15 percent by 2030. Achieving this target requires addressing both supply and demand side constraints viz. rapid expansion of the gas transmission network, LNG regasification capacity, and city gas distribution systems, which are at present uneven and concentrated in certain regions.

4. In the aforesaid backdrop, the Committee on Estimates (2024-25) selected the subject 'Supply and Distribution of Natural Gas-Challenges and Prospects' for in-depth examination on the progress made in realizing the full potential of natural gas in India's energy future and report to the House. The Committee on Estimates (2025-26) and Committee on Estimates (2026-27) continued with examination of the subject.

5. In this Report, the Committee have undertaken a comprehensive examination of various aspects related to supply and distribution of natural gas considering its critical importance to the nation's energy security, economic development, and environmental sustainability. With regard to supply of natural gas, the Committee have dealt with issues like domestic production and exploration constraints, increased import dependence, Market Volatility and affordability, pricing framework, regulatory constraints etc. Further, with regard to distribution of natural gas, the Committee have dealt on issues like constraints in expansion of gas transmission network, LNG regasification capacity, city gas distribution infrastructure issues, digitalization and technology adoption issues, issues in expanding access to PNG and promoting clean cooking fuels etc. The Committee have analyzed these issues/points in detail and have made observations/recommendations in the Report.

6. The Committee held two sittings on 04-11-2024 and 09-06-2025 to take oral evidence of the representatives of the Ministry of Petroleum and Natural Gas on the subject. The Committee also held informal discussion on the subject during study visit to Mumbai on 28.12.2024 and Kolkata on 26.04.2025. The draft Report was considered and adopted by the Committee on Estimates (2026-27) at their sitting held on 03 August, 2026.

7. The Committee wish to place on record their appreciation of the assistance rendered to them in the matter by the Committee Secretariat. The Committee also wish to place on record their sincere thanks to the representatives of the Ministry of Petroleum and Natural Gas and Oil Marketing Companies (OMCs) viz. Oil and Natural Gas Corporation (ONGC), Hindustan Petroleum Corporation Limited (HPCL) and Bharat Petroleum Corporation Limited (BPCL) etc. for placing their considered views and requisite information required in connection with the examination of the subject.

8. For facility of reference and convenience, the Observations/Recommendations of the Committee have been printed in bold in Part-II of the Report

NEW DELHI
03 August, 2026
12 Sravana, 1948 (Saka)

DR. SANJAY JAISWAL
CHAIRPERSON
COMMITTEE ON ESTIMATES

Abbreviations

Abbreviation	Full form
APM	Administered Price Mechanism
BCM	Billion Cubic Meters
BP	British Petroleum
CBG	Compressed Bio Gas
CBO	Compressed Bio Gas Obligation
CGD	City Gas Distribution
CNG(T)	Compressed Natural Gas(Transport)
DPI	Development of Pipeline Infrastructure
E&P	Exploration and Production
GA	Geographical Area
GCV	Gross Calorific Value
GST	Goods and Service Tax
HELP	Hydrocarbon Exploration and Licensing Policy
HP-HT	High Pressure and High Temperature
IEA	International Energy Agency
IGX	Indian Gas Exchange Ltd.
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MMBTU	Million British Thermal Units
MMSCM	Million Metric Standard Cubic Meters
MMSCMD	Million Metric Standard Cubic Meters per Day
MMTPA	Million Metric Tonnes Per Annum
MoPNG	Ministry of Petroleum and Natural Gas
Mtoe	Million Tonnes of Oil Equivalent
NELP	New Exploration Licensing Policy
OGMC	Oil and Gas Marketing Companies
PNG(D)	Piped Natural Gas(Domestic)
PNGRB	Petroleum and Natural Gas Regulatory Board
PPAC	Petroleum Planning & Analysis Cell
SATAT	Sustainable Alternative Towards Affordable Transportation
Toe	Tonnes of Oil Equivalent

Chapter 1

Introductory

Energy is considered as bedrock of human civilization. Availability and control of energy sources often determined level of growth and development in a Country. Energy has been the driving force behind the evolution of human civilisation. The day human started to control fire as an energy source, it started shaping course of human civilization. From the first controlled use of fire—enabling warmth, protection, and the cooking of food—to the domestication of plants and animals that powered early agricultural societies, energy innovations have consistently reshaped human life. The Industrial Revolution marked a watershed moment, as coal and later oil powered massive industrial machines, railways, and ships, propelling economies into an era of unprecedented productivity and growth. In the modern digital era, energy underpins every facet of life, from data centres and communication networks to smart cities and advanced manufacturing, making reliable and sustainable energy supply fundamental to economic development and national progress.

1.2. Within the global energy landscape today, natural gas has assumed an increasingly important role. As the world strives to balance energy security with environmental sustainability, natural gas stands out as a cleaner-burning fossil fuel compared to coal and oil. Globally, natural gas constitutes around 22–25% of primary energy consumption, reflecting its significant contribution to electricity generation, industry, residential use and as a transitional fuel towards lower-carbon energy systems. Recognizing the strategic importance of natural gas as a transition fuel and its potential to reduce the carbon intensity of the economy, the Committee considers it timely and necessary to undertake an in-depth study of the sector. The aim is to comprehensively assess existing challenges and prospects and to contribute informed recommendations for ensuring affordable, reliable, and sustainable energy for India's long-term development.

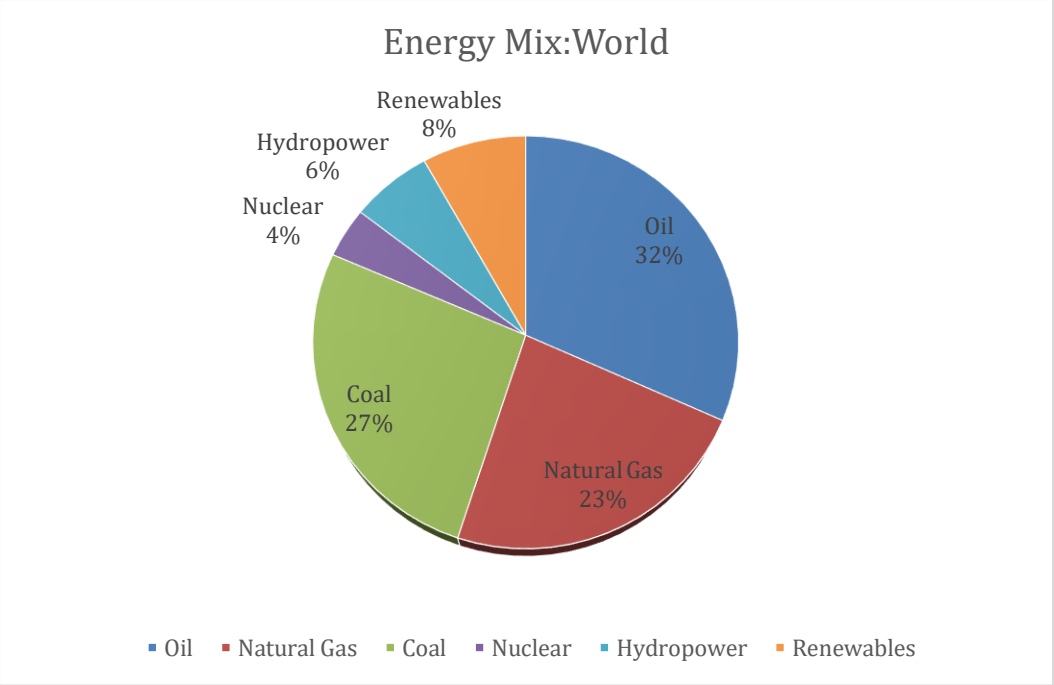
Energy Matrix of India

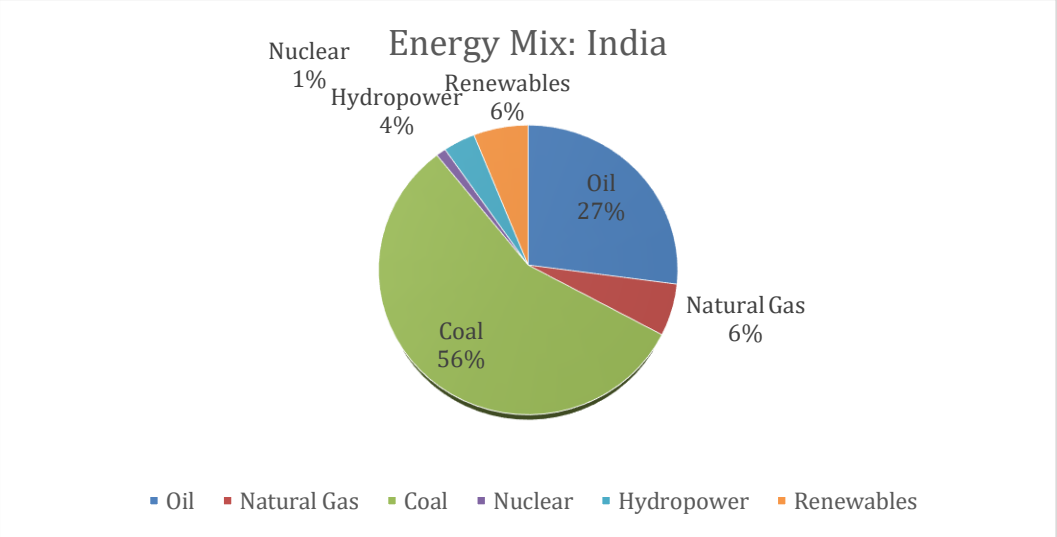
1.3. Energy is acknowledged as a key input towards raising the standard of living of citizens of any country, as is evident from the correlation between per capita electricity (a proxy for all energy forms) consumption and Human Development Index (HDI). India's Human Development Index currently stands at 0.644.25 Based on various forms of energy mixes and

energy efficiency scenarios, it is estimated that the minimum level of per capita final energy requirement for India to become a developed country with an HDI of 0.9 must be in the range of 45.7 to 75 gigajoules per year.

1.4 India has achieved noteworthy economic milestones in recent years. India, the world's fourth-largest economy, has emerged as the fastest-growing major economy and is on track to become the world's third largest economy with a projected GDP of $7.3 trillion by 2030. Considering the importance of energy in shaping India's economic development and social well-being, it is imperative to ensure adequate availability of various energy while ensuring affordability and sustainability. India's total primary energy consumption reached 932 Mtoe in 2022–23, reflecting the scale of energy required for its expanding economy. Yet, with per-capita energy consumption at only 0.67 toe in 2023—significantly lower than the global average of 1.84 toe—there remains substantial latent demand that is expected to rise as living standards improve and industrialization deepens.

1.5 In order to achieve its vision of a developed Country, India is striving towards ensuring energy justice through accessibility and affordability which will be the key driver towards increasing per-capita energy demand in near future. The Hon'ble PM has envisaged four pillars of India's energy future – energy access, energy efficiency, energy sustainability and energy security. These four pillars are crucial for India as it marches ahead in its ambition to become an economic powerhouse in the world. As of now, India's energy matrix is dominated by fossil fuel. India' energy is met mostly by fossil fuels, which accounts for 88.2% of India's primary energy requirement. As per the Energy Institute's 74th edition Statistical Review of World Energy-2025, Coal accounts for 59.3% of the energy mix, Oil and Gas account for 28.1% and 6.5% respectively.





Source: World Statistical Review 2024

It may be seen from above, share of Natural gas in energy basket is only 6 % as compared to 23 % in world basket. India is the world's third largest energy consumer (after China and USA), consuming around 932Mtoe energy in the year 2023. Further, it is also projected by BP Energy Outlook and IEA that under all scenarios, there is strong growth in primary energy led by renewables and natural gas. The primary energy projections by 2050 do

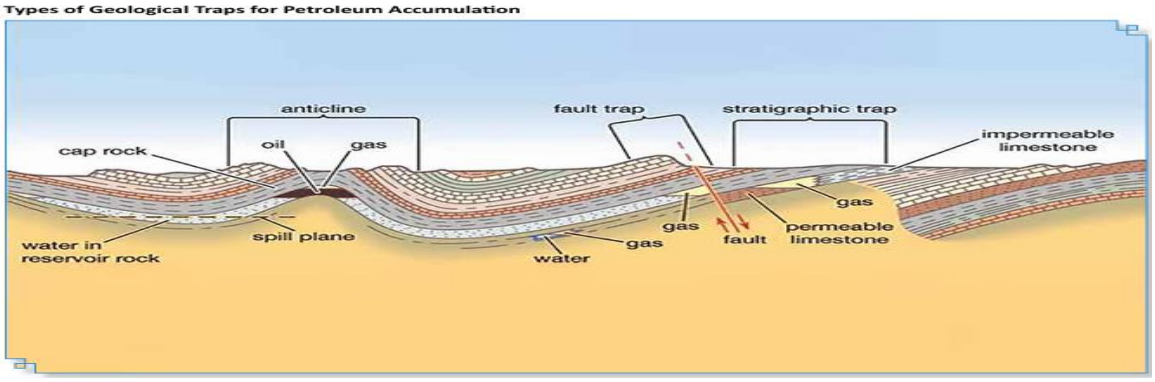
undergo changes to accommodate the rising concern of energy transition and climate change pledges undertaken by the Nation. Even in the business-as-usual scenario of BP Energy Outlook, by 2050, the share of coal and oil will decrease to 34% and 19 % respectively, while that of natural gas and renewables energy increase to 12% and 31% respectively.

Chapter 2

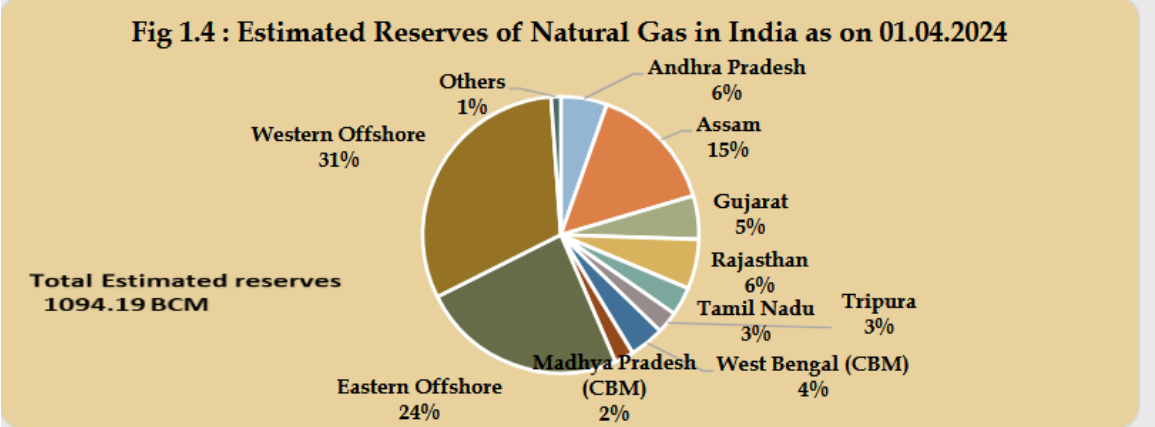
Reserves and Exploration of Natural Gas

A. Natural Gas Reserves in the Country

Oil and natural gas are primarily found in porous sedimentary rock formations (sandstone, limestone, dolomite) located both onshore and offshore, often trapped by impermeable rock layers deep beneath the Earth's surface.



2.2 As per Energy Statistics 2025 (Ministry of Statistics and Programme Implementation), the estimated reserves of natural gas were 1,094.19 billion cubic meters. The largest reserves of natural gas in India are located in the Western Offshore region, which holds approximately 31% of the total natural gas reserves. This is followed by the Eastern Offshore, which accounts for 24% of the reserves as shown in figure 1.4.



State-wise estimated reserves of Natural Gas in the Country are as follows: -

Table 1.3: Statewise Estimated Reserves of Crude Oil and Natural Gas (As on 1st April)

States/ UTs/ Region	Crude Oil (Million Tonnes)				Natural Gas (Billion Cubic Metres)			
	2023		2024		2023		2024	
	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)	Estimated Reserves	Distribution (%)
Andhra Pradesh	11.11	1.66	7.69	1.15	63.16	5.53	59.27	5.42
Arunachal Pradesh	2.97	0.44	2.88	0.43	7.24	0.63	7.33	0.67
Assam	148.13	22.13	145.41	21.66	165.68	14.51	164.51	15.03
Guiarat	120.33	17.97	118.86	17.70	56.60	4.96	55.46	5.07
Nagaland	2.38	0.36	2.38	0.35	0.09	0.01	0.09	0.01
Rajasthan	116.68	17.43	131.50	19.59	63.96	5.60	63.55	5.81
Tamil Nadu	8.72	1.30	8.54	1.27	37.54	3.29	36.57	3.34
Tripura	0.07	0.01	0.07	0.01	28.93	2.53	28.18	2.58
West Bengal	0.11	0.02	0.15	0.02	0.00	0.00	0.00	0.00
West Bengal (CBM)	0.00	0.00	0.00	0.00	79.33	6.95	44.37	4.06
Jharkhand (CBM)	0.00	0.00	0.00	0.00	4.87	0.43	4.86	0.44
Madhya Pradesh (CBM)	0.00	0.00	0.00	0.00	25.18	2.21	24.38	2.23
Eastern Offshore	40.54	6.06	40.67	6.06	262.36	22.98	263.34	24.07
Western Offshore	218.42	32.63	213.26	31.76	346.80	30.37	342.29	31.28
Total	**669.47**	**100.00**	**671.40**	**100.00**	**1141.73**	**100.00**	**1094.19**	**100.00**

CBM : Cold Bed Methane (Jharkhand, West Bengal and M.P.)

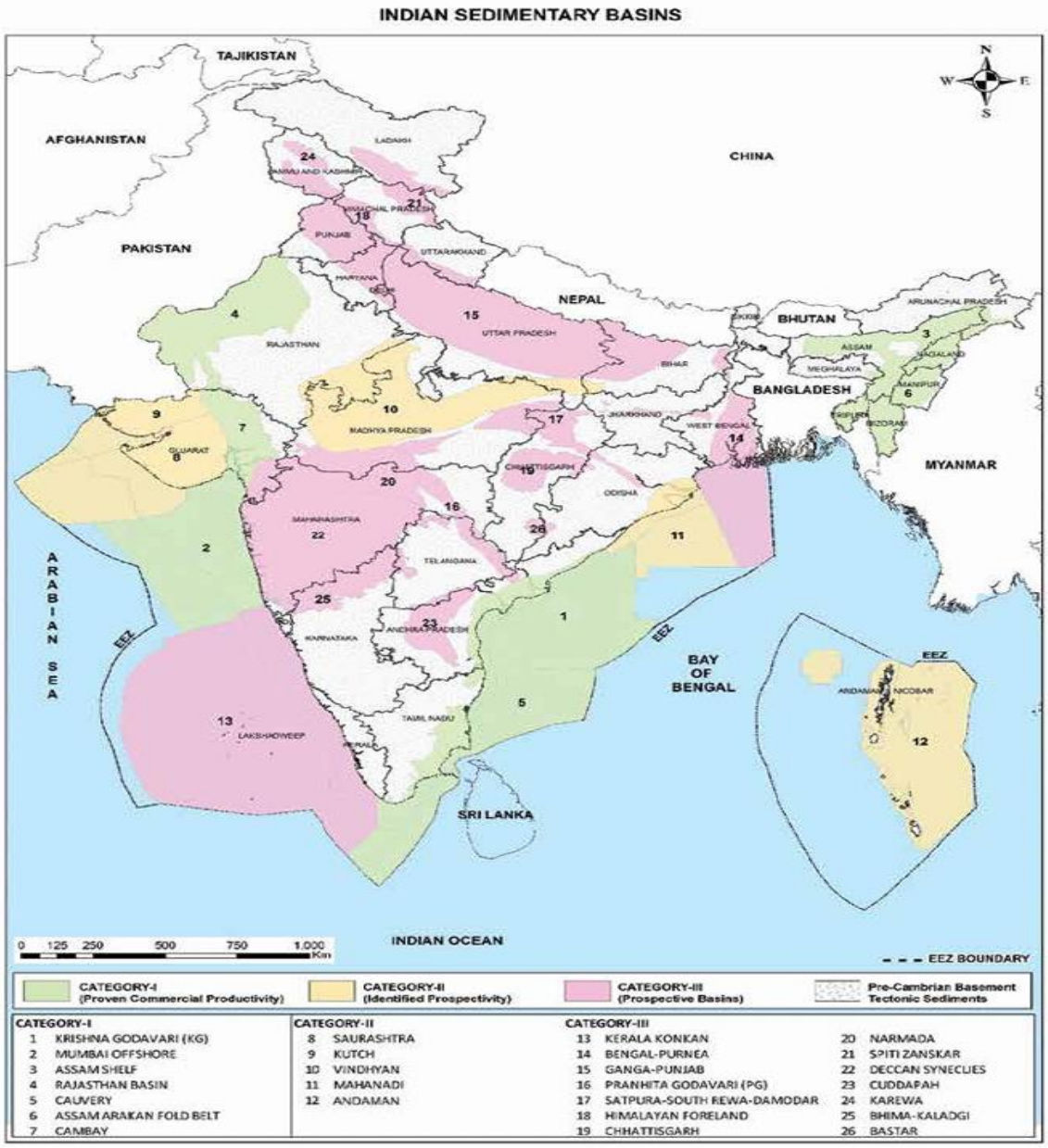
1. Western offshore includes Gujarat offshore
2. Total may not tally due to rounding off

Source: M/o Petroleum & Natural Gas

2.3 On the query of the Committee regarding numbers of sedimentary basin with potential for production of crude oil and Natural Gas in the Country, the Ministry in their Annual report (2024-25) stated as under: -

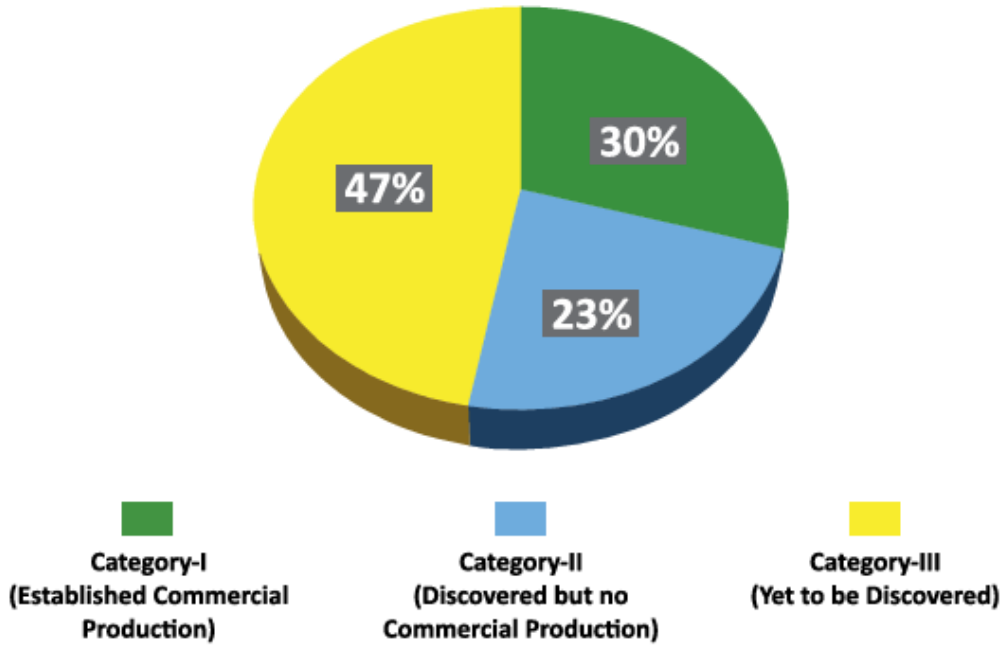
> "India has 26 sedimentary basins covering an area of 3.36 million square kilometers. The onland sedimentary basins of India have an acreage of about 1.63 million square kilometers; offshore sedimentary basins, up to the 400 meters isobath have an aerial extent of about 0.41 million square kilometers and in the deepwater beyond 400 meters isobath, the sedimentary area has been estimated to be about 1.32 million square kilometers. The Indian sedimentary basins have been broadly divided into three categories based on their degree of prospectivity as presently known, which is as under:

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	Discovered accumulation of hydrocarbons but no commercial production as yet	Kutch, Mahanadi-NEC, Andaman, Vindhyan, Saurashtra
Category III (14 Basins)	15,86,150	No known accumulation of hydrocarbon yet. Prospective by analogy	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**		



2.4 While further elaborating on the above issue, the Ministry informed as under: -

"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 production is yet to commence from these basins. The distribution of total Indian sedimentary area of 3.36 million square kilometer under different categories is presented as under: -



B. Assessment of Natural Gas Reserves in India

2.5 The Ministry has informed that the last hydrocarbon resources assessment exercise was carried out approximately two decades ago (1995-96). During the course of implementation of pre-NELP and NELP rounds and other exploration and production activities, substantial geoscientific data have been generated. New oil and gas fields have also been discovered by utilizing improved geological understanding and new technology. With the increase in exploration spread and quantum jump in availability of geo-scientific data generated under NELP, there was a need to revisit the hydrocarbon resource assessment of all sedimentary basins of India. A Multi Organization Team (MOT) comprising of representatives of ONGC, OIL and DGH has carried out estimation of hydrocarbon resource potential in the country. The exercise of re-assessment of hydrocarbon resources for all the sedimentary basins in the country was completed in 2017. The prognosticated conventional hydrocarbon resources in 26 sedimentary basins of the country are of the order of 41.87 billion tonnes (oil and oil equivalent of gas), which is about 49% increase as compared to earlier estimates of 28.08 billion tonnes. The basin-wise details are as under:

Basin Category	No.	Basin Name	Prognosticated Resource (MMTOE) Estimate (2017)	Total Area, Sq. km.	Active Area (PEL/PML), Sq. Km.

Category I	**1**	Assam Arakan Fold Belt	1,632.80	80,825.00	12,785.66
(Basins with reserves being produced and exploited)	**2**	Assam Shelf	6,001.20	56,000.00	30,369.48
	3	Cambay	2,585.60	53,500.00	20,646.49
	4	Cauvery	1,964.40	2,40,000.00	20,904.8
	5	Krishna Godavari	9,554.50	2,30,000.00	20,940.07
	6	Mumbai Offshore	9,646.00	2,12,000.00	56,548.69
	7	Rajasthan	4,126.00	1,26,000.00	24,220.88
Category I Total			**35,510.50**	**9,98,325.00**	**1,86,416.07**
Category II	**8**	Andaman	371.40	2,25,918.00	23,262
(Basins with contingent resources to be developed and monetized)	**9**	Kutch	898.40	58,554.00	13,359.3
	10	Mahanadi	650.60	99,500.00	28,609.73
	11	Saurashtra	1,325.20	1,94,114.00	10,883
	12	Vindhyan	632.50	2,02,888.00	13,722
Category II Total			**3,878.10**	**7,80,974.00**	**89,836.03**
Category III	**13**	Bastar	1.30	5,360.00	
(Basins with only prospective resources to be explored and discovered)	**14**	Bengal-Purnea	828.30	1,21,914.00	17,428.40
	15	Bhima-Kaladgi	3.20	14,100.00	
	16	Chhattisgarh	25.00	32,000.00	
	17	Cuddapah	5.10	40,100.00	3,306
	18	Deccan-Syneclise	11.00	2,37,500.00	
	19	Ganga-Punjab	128.40	3,04,000.00	2,428
	20	Himalayan Foreland	44.40	30,110.00	666
	21	Karewa	4.00	6,671.00	

	22	Kerala Konakan	1,244.60	5,80,000.00	11,350
	23	Narmada	18.00	95,215.00	2,999
	24	Pranhita Godavari	95.40	30,000.00	
	25	Satpura-S.Rewa-Damodar	63.00	57,180.00	906
	26	Spiti-Zanskar	11.10	32,000.00	
Category III Total			**2,482.80**	**15,86,150.00**	**39,083.4**
Total (MMTOE)			**41,871.40**	**33,65,449.00**	**3,15,335.50**

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

2.6 When asked about efforts made to acquire geo-scientific data in India's sedimentary basins, the Ministry in their Annual Report 2025 stated as under:-

i.National Seismic Programme (NSP):

National Seismic programme (NSP) was launched on 12th October 2016 with an objective to appraise the unappraised onland basinal areas of the country. 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).

Acquisition, Processing and Interpretation of 46,960 LKM (~97%) 2D seismic data could be acquired out of the total target of 48,243 LKM. Gujarat Energy Research and Management Institute (GERMI), Gandhinagar carried out a Third-Party evaluation study of NSP data and submitted a report to NDR.

To cover the inaccessible and hostile geographical areas (where seismic data could not be acquired due to inaccessible terrain and hostile environment) under NSP project, a volume of 40,000 flight LKM Airborne Geophysical Survey had also been planned with approximate cost of INR 80 crores. On behalf of Ministry, Oil India Ltd (OIL) carried out Airborne Gravity Gradiometry and Gravity Magnetic (AGG & GM) data survey and

completed the API (Acquisition, Processing and Interpretation) of 42944 Flight LKM of AGG & GM Survey.

The sector wise/state-wise break-up of AGG & GM targets and achievements are tabulated below:

Area	Target	Achievement (in Flight LKM)
AS-AP	2064	2064.46
AS-AP-NL	8131	8131.15
AS-ML-MN-NL	11240	11227.83
MZ-TR	5606	5573.59
North-East India Total	27,041	26,997.03
Cauvery	11888	12295.14
Bastar	1764	1833.99
Karewa	1710	1816.93
Spiti*	7392	-
Rest of India Total	**22,754**	**15,946.06**
Project Total	**49,795**	**42,943.09**

*Test flight was conducted to analyses the risk involved over high altitudes in Spiti valley, however, due to the HSE concerns, data in Spiti valley was not acquired.

a. Deep Andaman offshore Project:

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. 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). 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. and accordingly, Deep Andaman offshore survey was launched by GoI. The project was implemented through M/s Oil India Limited. A total of 22,500 LKM seismic data was acquired in deep Andaman offshore. Project was completed in month of March, 2023 and the data has been uploaded on NDR portal.

ii. **Reduced No-Go Area:** The Government has been successful in reducing "No-GO" areas by 99% in April 2022, hitherto not available for E&P activities. This made more than 1 million sq. km. area of India's EEZ available for exploration.

iii. **Exclusive Economic Zones (EEZ) survey:** Approximately 1.13 Million sq. km. area of offshore Basinal Areas of Indian sedimentary basins up to EEZ was lying unapprised. In order to assess the entirety of the offshore basin area extending up to the Exclusive Economic Zone (EEZ) of the nation, efforts were undertaken to conduct a 2D broadband seismic survey covering an area of approximately 80,000 LKM. It was implemented by ONGC and a total of approximately 79,540 LKM of 2D seismic data acquisition processing and interpretation completed in June, 2024.

iv. **Mission Anveshan (Ongoing):** To comprehensive appraisal of the Indian sedimentary basins, closed 2D seismic profiles have been planned in 07 onland sedimentary basins under ongoing Mission Anveshan. The objective of this project is to infer comprehensive appraisal of the basins and bring out the hydrocarbon prospectivity. The project is for closed grid 2D seismic API (Acquisition, Processing & Interpretation) 20275 LKM in 07 onland sedimentary basins with outlay of INR 792 crores has been formulated. Till 31st March 2025, a total of 2954 GLKM of seismic data has been acquired.

v. **Extended Continental Shelf (Ongoing):** A good quality high resolution seismic data with close spacing in Continental shelf in Western and Eastern offshore beyond EEZ boundary will provide valuable inputs regarding the presence of sediments and help to ascertain hydrocarbons potential in the Continental Shelf area. All these inputs will be useful for formulating the long-term energy policy in offshore areas

C. National Data Repository (NDR)

2.7 The National Data Repository (NDR) is a vital, centralized digital infrastructure in the oil and gas sector designed to securely store, manage, and disseminate exploration and production (E&P) data. By preserving decades of geological and geophysical records, it facilitates informed decision-making, promotes investment through easier data access for bidding and accelerates the development of hydrocarbon resources. On the query of the Committee regarding steps taken by the Ministry for compilation of National Data Repository of oil & gas sector in the Country, the Ministry of Petroleum and Natural Gas in their Annual Report, 2025 have stated as under: -

"Under HELP, the Government has launched the Open Acreage Licensing (OALP) mechanism, which allows the investors to carve out blocks of their choice by assessing E&P data available in the National Data Repository (NDR). National Data Repository (NDR) is thus a pre-requisite and key component for making OALP operational. 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 to various stakeholders for commercial exploration, research & development and academic purposes. The Cumulative data loaded in NDR as on 31.03.2025 is as follows:

a. 2D Seismic Data : 4.011 Million LKM
b. 3D Seismic Data : 1.258 Million SKM
c. Well and Log Data : 24,434 No. of Wells
d. Well Reports : 52,941 Nos. of reports

D. Future-Ready National Data Repository 2.0 [NDR 2.0]

2.8 Since its operationalization in June 2017, NDR has been successfully meeting the demands of all its stakeholders such as investors, operators, service-providers, R&D institutes, academia, and government bodies. The increasing volumes of both pre and post stack data acquired and assimilated in the intervening years coupled with ageing hardware and software has necessitated its upgradation to next generation IT platform which is scalable to grow with time and equipped with enhanced storage, compute and network resources. Accordingly, in order to bring efficiency in data management and better serve its global users with enhanced functionalities of anytime, anywhere access, DGH has decided to upgrade the present client server platform to Next Generation cloud based National Data Repository. Next generation National Data Repository (NDR 2.0) aims to substantially improve the data accessibility (downloading), data reporting, submission (uploading), enhance storage (for all E&P data types including seismic field data) and create a cloud-enabled database platform. The upgradation of the present NDR to a cloud-based system will allow global investors and stakeholders, anywhere anytime access to data and a virtual data room.

E. Reforms in Exploration and Licensing Policy

2.9 The Ministry of Petroleum and Natural Gas in their Annual Report, 2025 have submitted following on the issue of reforms in exploration and licensing Policy to expedite discovery and production for Natural Gas in the Country.

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:

a. 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.

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

viii. Re-assessment Resources, 2017.

ix. Site of Hydrocarbon Restoration and abandonment guidelines for Petroleum Operations, 2017.

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

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

xxii. The Government of India has brought the Oilfield (Regulation and Development) Amendment Act, 2025 to amend the Oilfield (Regulation and Development) Act, 1948 to meet the current needs and market conditions and to make the sector more attractive to investors so that exploration and production of oil and gas could be increased further

b. Short-Term Initiatives:

i. Early Monetization of Existing Discoveries

ii. Enhancement of Recovery Factor through the implementation of IOR/ EOR techniques and redevelopment of existing mature fields.

iii. Drilling of infill oil/ gas wells.

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

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

vi. Induction of suitable technologies in selective fields.

vii. Implementation of Enhancement Contracts.

viii. Production Implementation of IOR/ EOR techniques

F. Initiatives clearances/ for facilitating approvals and enhanced coordination

2.10 On the above issue, the Ministry of Petroleum and Natural Gas in their Annual Report, 2025 have stated as under:-

i. “Empowered Coordination Committee (ECC): This committee has been constituted under the chairmanship of Cabinet Secretary to discuss the defense, environment, license etc. related issues pertaining to the Hydrocarbon sector.

ii. Joint Working Group (JWG): Ministry of Petroleum and Natural Gas (MoPNG) constituted the Joint Working Group (JWG) to assess and address issues affecting the EoDB (Ease of Doing Business) in upstream oil and gas sector. The working group comprises representatives from key E&P operators and government. JWG has submitted its interim report in April, 2025.

iii. Creation of ‘Hydrocarbon Clearance Cell’ (HCC): A dedicated ‘Hydrocarbon Clearance Cell’ has been institutionalized within DGH. The cell liaises with Central/State Government authorities for expeditious grant of clearances/ approvals.

iv. Creation of North-East Coordination Committee (NECC): ECC under HCC of DGH created in September 2021 and 18 Coordinators are placed with various Departments of State Govts 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.

v. 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 (Petroleum Exploration License), PML (Petroleum Mining Lease), FC (Forest Clearance), WLC (Wildlife Clearance), CTE (Consent To Establish)/ CTO (Consent To Operate), ESZ (Eco Sensitive Zone) and CRZ (Coastal Regulation Zone).

vi. Upstream India Portal: The ‘Upstream India’ portal was launched to provide support to E&P operators. It offers services such as sharing of facilities and infrastructure available at DGH, creation of a Knowledge Sharing Platform, and organization of regular workshops, seminars, conferences, training sessions, and discussions on the latest government policies, technologies, and usage of inventories.

vii. Urja Suraksha Samanvay: GIS based monitoring and decision support system for swift information exchange. 1.11: Natural Gas Marketing Reforms."

G. Pricing reforms:

2.11 Government has made several gas pricing reforms aiming to encourage domestic production. As per the revised natural gas pricing guidelines in the gazette notification dated April 7, 2023:

- The price of natural gas is set at 10% of the monthly average of the Indian Crude Basket price.
- For gas produced by ONGC and OIL from their nomination blocks, the price is subject to a floor of $4.0/MMBTU and a ceiling of $6.5/MMBTU.
- Gas produced from new wells or well interventions in nomination fields is allowed a premium of 20% over the APM price.

2.12 On the query of the Committee regarding impact of these reform measures, the Ministry submitted as under:

"The Government of India, in April 2023, introduced significant pricing reforms for natural gas with the objective of stabilizing domestic gas prices while ensuring fair returns for producers. The revised pricing framework links natural gas prices to 10% of the monthly average price of the Indian Crude Basket, replacing the earlier method based on international gas trading hub prices. This approach ensures better alignment with India's consumption patterns and domestic energy priorities. Below are the key impacts of the pricing reforms:

(a) Impact of the Monthly Pricing Mechanism on Consumer Affordability

i. **Enhanced Visibility and Price Stability:** The monthly pricing mechanism has brought predictability and stability to gas prices, ensuring affordability for end consumers. Prices of CNG and PNG, which directly affect a large consumer base, saw an immediate reduction post-implementation. Stability in these prices has also been maintained, shielding consumers from global market volatility.

ii. **Positive Consumer Reception:** As per GAIL, the reforms have been largely welcomed by consumers due to the relative affordability of domestically produced natural gas compared to imported gas.

iii. **No Contract Decline for ONGC's Direct Consumers:** ONGC, which supplies gas to GAIL and a few direct customers from small and isolated fields, reported no decline in contract renewals among its direct customers after the pricing reforms, indicating sustained consumer confidence in the new pricing mechanism.

(b) Impact of Ceiling and Floor Prices on Market Stability

i. **Mitigation of Price Volatility:** The introduction of a price floor ($4/MMBTU) and ceiling ($6.5/MMBTU) has successfully insulated consumers from the extreme fluctuations observed in global gas prices. This stability has enabled entities to plan their operations with greater certainty, contributing to market stability.

ii. **Enhanced Planning Capabilities:** GAIL reported that customers have benefited from the ability to forecast costs accurately, further driving operational stability across various sectors reliant on natural gas.

(c) Effectiveness of the 20% Higher Price Incentive for New Wells/Well Intervention

i. **Encouragement for Marginal Fields and Projects:** The 20% higher price incentive for gas from new wells or well interventions in nomination fields has provided a financial impetus for upstream operators like ONGC. This incentive enables investments in projects that were previously considered commercially unviable.

ii. Sustaining Domestic Gas Production: ONGC has indicated that the improved price realization will support the long-term sustainability of domestic gas production, ensuring that older fields continue to contribute to the country's energy supply."

H. Goals of the Hydrocarbon Exploration and Licensing Policy (HELP)

2.13 When asked about goals of the Hydrocarbon Exploration and Licensing Policy (HELP) introduced by the Government and success achieved by Hydrocarbon Exploration and Licensing Policy (HELP) been in attracting investments and increasing domestic production since its notification in March 2016, the Ministry submitted as under:

> "The Government of India has notified Hydrocarbon Exploration Licensing Policy (HELP) on 30th March 2016 for the award of exploration acreages to boost the Indian Exploration and Production (E&P) Sector shifting from Production Sharing mechanism to Revenue Sharing mechanism. It was a giant step towards the goal of improving the 'Ease of Doing Business' in the Indian E&P sector as Government does not interfere in the day-to-day business activities of Contractor.
>
> The salient features of the HELP are listed below: -
>
> a) Single license for all types of hydrocarbon
> b) Revenue Sharing Model
> c) Freedom to carve out blocks
> d) Submission of Expression of Interests throughout the year
> e) Pricing and Marketing freedom
> f) Exploration rights for full contract life
>
> To make policy more attractive, Government further notified the policy reforms on 28th February 2019, where many of the processes and approvals were relaxed to promote "Ease of Doing Business". These reforms provide many other benefits in addition to the above mentioned. Some of the features are as follows:
>
> a) More weightage to Work Programme than the Revenue Share.
> b) Revenue Share from Category II & III type of basins were removed except in case of windfall gain.
> c) Concession in Royalty rates
> d) Flexibility to revise FDP
> e) Liberal freedom to Transfer/Exit the blocks

f) No obligation to run Drill Stem Test

To enhance the participation, the amendments in the bid documents for OALP bid round VIII has been carried out. The objective of such amendments is to address the issues of existing operators which they are facing in existing contractual framework and to make them compatible for the needs of global E&P players so that the bid documents can be made globally competitive. Moreover, these amendments bring in more ease of doing business in the upstream sector of India. Major of the modifications are listed below: -

- Larger acreage areas for play based exploration
- Modifications in Bidding Parameters, Evaluation Criteria, Exploration timelines and Work Programm Flexibility in Category-II and III Basins.
- To reduce the risk of exploration, Only Seismic Survey is biddable under work programme commitment in Cat-II and III.
- Modification in modalities for carving out open acreage blocks with partial 1'x1' unit.
- Modifications in Operatorship Experience for Deep/ Ultra-deep blocks bidding to maximize the participation.
- Removal of Dual Liquidated Damage for commencement of Development and Production Operations
- Enhanced Stabilization Period for incentivizing early monetization of Discoveries.
- Modified provisions for change in Consortium during EOI and bidding stage.
- Enhanced Scope of Force Majeure

The main goals of HELP are as follows:

- Augment the production of oil and gas in the Indian sedimentary basin and reduction in import dependency
- Enhance Ease of Doing Business in the Indian Exploration and Production (E&P) sector
- Shifting from Cost Recovery to Revenue Sharing Mechanism

Exploration and Production (E&P) reforms in India can significantly contribute to reducing the country's dependence on imported oil and gas through various mechanisms. E&P reform will attract both domestic and international companies which will enhance the investment and advance the exploration technologies. These will likelihood of discovering new hydrocarbon reserves and boosting domestic production.

Increased exploration activities play a crucial role in boosting the chances of discovering new hydrocarbon reserves, thereby enhancing production capabilities. By venturing into previously unexplored or underexplored regions the likelihood of finding significant oil and gas deposits increases. This not only contributes to the growth of the E&P industry but also helps in meeting the country's energy demands more effectively.

2.14 Further elaborating on the issue, the Ministry submitted as under:-

The above reforms made strides in attracting investments and increasing exploration activities in India’s oil and gas sector. In last five years, Eight OALP bid rounds have been concluded with the award of 144 exploration blocks covering 2,42,056 sq. km. area for E&P activities with total committed investment ~3.37 USD billion. OALP Round-IX with 28 Blocks spread over an area of 1,36,596 Sq.km was on offer for which 60 bids were received & blocks will be awarded to successful bidders shortly.

As a result of these efforts, a total of 13 discoveries (6 Gas + 7 Oil) has been made so far. FDP has been approved for One discovery and Operator has commenced the production. Remaining discoveries will be put up for production after successful Appraisal programme and approval of FDP. This will augment the production of the country.”

2.15 When asked about Reforms taken for enhancing Ease of Doing Business in Exploration and Production of Natural Gas in the Country, the Ministry stated as under: -

i. **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.

ii. **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.

iii. **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.

iv. A variety of applications and systems such as Production Sharing Contract Management System, Petroleum Exploration Lease/Petroleum Mining Lease Data Management System, Production Database Management System, E-bidding portal etc. have also been launched.

v. **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.

vi. **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.

I. Blocks Awarded for Exploration and Production:

2.16 On the query of the Committee regarding number of block awarded for exploration of oil & gas in the Country, the Ministry of Petroleum and Natural Gas in their Annual Report, 2025 have stated as under: -

"There have been different regimes according to which blocks/ acreages have been awarded/ granted to companies (PSUs and Private). A brief overview of different E&P regimes are given below:

a) Nomination Basis: Acreages for exploration and production were 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 Contract Areas of small/medium sized discovered fields (proven reserves were discovered by ONGC and OIL) to the private sector in August 1992. Government of India has signed 28 contracts for 29 discovered fields under Pre-NELP Discovered (Small and Medium size fields) regime.

c) **Pre-NELP Exploration Blocks:** 28 Exploration Blocks were awarded to private companies between 1990 and prior to implementation of NELP where ONGC and OIL had the rights for participation in the block after hydrocarbon discoveries.

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. A total of 254 blocks were awarded under NELP regime.

e) **Discovered Small Field (DSF) Policy:** Under Discovered Small Field Policy, Government has awarded 85 Contract areas, DSF-I, DSF-II & DSF-III Bid Rounds, based on Revenue Sharing Model.

f) **Hydrocarbon Exploration & Licensing Policy:** Under Hydrocarbon Exploration & Licensing Policy (HELP), Government has awarded 144 Exploratory Blocks on Revenue Sharing basis, in Eight bidding rounds till 31st March, 2025.

2.17 While further adding on the above, the Ministry submitted as under

Government of India has signed 310 Production Sharing Contracts (PSC) covering 29 discovered fields, 28 exploration blocks under pre-NELP Exploration

Blocks and 254 blocks under NELP regime. Also 85 Revenue Sharing Contracts (RSCs) have been signed under three DSF (Discovered Small Field) Bidding Rounds involving 85 Contract Areas. Under HELP, in OALP, Bid Round I to VIII 144 RSCs have been signed. At present, out of 310 PSCs & 229 RSCs signed so far under various bidding rounds (Discovered Field, Pre-NELP, NELP, HELP and DSF), 59 PSCs and 184 RSCs (DSF+HELP) are currently operational."

J. Status of grant of Petroleum Exploration Licence (PELs)

2.18 When asked about total numbers of PELs awarded, the Ministry of Petroleum and Natural Gas in their Annual Report, 2025 have stated as under: -

"A total of 177 PEL were to be granted in 144 blocks awarded in Eight OALP bid rounds. A total of 158 PELs for an area of 2,27,367 sq.km. have been granted till 31.03.2025. Summary of status of PELs is as under:

Table 2.11: Bid Round wise status of PEL under OALP as on 31.03.2025

OALP Bid Round	Total No of PELs	PEL Granted	PEL Pending	PEL Denied	PEL not applied	PEL Granted Area, sq. km.
OALP I	76	66	2	8**		55518
OALP II	18	17	1	0		28394
OALP III	21	15	2	4**		22678
OALP IV	7	7	0	0		18510
OALP V	13	13	0	0		19789
OALP VI	24	22	2	0		32347
OALP VII	8	8	0	0		15766
OALP VIII	10	10	0	0		34365
Total	**177**	**158**	**7**	**12**	**0**	**227367**

*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.

2.19 In Eight rounds of bid under OALP, 149 blocks were on offer and 144 exploration blocks covering an area of 2,42,056 sq. km. were awarded to successful bidders. Five (5) un-awarded blocks were offered under OALP-Round-III for CBM, however no bids were received for these CBM blocks. 252 bids were received for remaining 144 blocks that are spread over 19 Sedimentary Basins. Summary of participation in OALP rounds is as under:

Table 2.18: Details of OALP Bid Rounds

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	59,282	59,282
OALP-II	14	8	33	29,233	29,233
OALP-III	18+5*	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
OALP-VIII	10	6	13	34,365	34,365
Total	**149**	**40**	**252**	**2,44,014**	**2,42,056**

* No bid received for five CBM Blocks.

2.20 While further adding on the above issue, the Ministry submitted as under:-

"The committed investment till Round VIII is around 3.37 Billion USD. Out of the total committed Work Programme of 51,725 LKM 2D Seismic, 66,843 SKM 3D seismic and 499 Exploratory Wells 32131 LKM of 2D Seismic data, 41321 sq. km. of 3D Seismic data and drilling of 100 wells have completed till FY 31.03.2025. A total of 14 discoveries (8 oil + 6 gas) have been made so far. OALP Bid Round-IX: The Government has launched the OALP Bid Round-IX, offering 28 blocks covering an area of 1,36,596 sq. km. for International Competitive Bidding on 3rd January 2024. A total of 9 (nine) Onland Blocks, 8 (eight) Shallow-Water Blocks and 11 (eleven) Ultra Deep-Water Blocks are on offer. The bidding was closed for OALP bid round IX on 21st September 2024 and 60 bids were submitted and received. A total of Seven (7) bidders including three (3) public and four (4) private parties participated in the Bid Round. Bid Evaluation has been completed and blocks are expected to be awarded soon. Hon'ble Minister MoP&NG, launched the OALP-X round at the India Energy Week Summit 2025 on 11th February 2025 in New Delhi. In this bid round, 25 blocks spread across 13 Sedimentary Basins covering an area of 1,91,986.21 sq. km are on offer for bidding to investors. This bid round is primarily an offshore focused round, with 19 offshore blocks covering 1,75,115 sq. km falling in offshore while, 6 blocks with an area of 16,871 sq. km. lies in Onland. Moreover, notably, 16 blocks, accounting for 97,919.6 sq. km. (51%) fall within areas previously designated as "No-Go" zones. Additionally, for OALP Round X, a new e-bidding portal has been

introduced to enhance transparency and security, along with features designed to improve ease of doing business for investors."

2.21 Basin-wise status of PEL under OALP

Table 2.12: Basin wise status of PEL under OALP as on 31.03.2025

Basin	Total No of PELs	PEL Granted	PEL Pending	PEL Denied	PEL not applied	PEL Granted Area, sq. km.
Andaman-Nicobar	6	6	0	0		23262
Assam Arakan Fold Belt	17	16	1	0		4041
Assam Shelf	31	29	2	0		20832
Bengal-Purnea	6	5	1	0		14523
Cambay	26	25	1	0		12114
Cauvery	15	6	2	7**		16515
Cuddapah	1	1	0	0		3306
Ganga-Punjab	4	4	0	0		2428
Himalayan Foreland	1	1	0	0		666
Kerala Konkan	3	3	0	0		11350
Krishna Godavari	10	5	0	5*		9465
Kutch	9	9	0	0		11267
Mahanadi	10	10	0	0		27778
Mumbai Offshore	9	9	0	0		23263
Narmada	2	2	0	0		2999
Rajasthan	16	16	0	0		19482
Satpura-South Rewa-Damodar	1	1	0	0		906
Saurashtra	5	5	0	0		9909
Vindhyan	5	5	0	0		13260
Total	**177**	**158**	**8**	**12**	**0**	**227367**

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.

K. Exploratory Efforts by Private / JV companies under PSC

2.22 On the query of the Committee regarding involvement of private sector in exploratory efforts, the Ministry of Petroleum and Natural Gas in their Annual Report, 2025 have stated as under: -

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 31.03.2025 are as under:

Table 2.14: Exploratory Inputs in PSC Regime (as on 31.03.2025)

Basin	2D LKM	3D SKM	Exploratory Wells*
Andaman-Nicobar	27070	16562	6
Assam-Arakan Fold Belt	1352	613	4
Assam-Arakan Shelf	5468	2211	44
Bengal-Purnea	5247	4909	16
Cambay	29994	9167	325
Cauvery	64727	44561	51
Deccan Syneclise	476	0	0
Ganga	3876	263	4
Ganga-Punjab	2542	1420	4
Himalayan-Foreland	810	0	1
Kerela Konkan	52290	14035	7
Krishna Godavari	76106	71311	210
Kutch	2985	8345	21
Mahanadi	59542	64659	53
Mumbai	21349	27285	51
Pranhita Godavari	195	0	1
Rajasthan	14157	16396	312
Satpura-South Rewa-Damodar	2050	304	2
Saurashtra	16037	15428	16
Vindhyan	3918	858	10
Grand Total	**3,90,191**	**2,98,326**	**1,138**

Note: * Including Exploratory and Appraisal Wells

Under RSC, as on 31st March, 2025, contractors of the blocks have acquired 32,131 LKM of 2D Seismic data and 41,321 sq. km. of 3D Seismic data and have drilled 100 exploratory wells. Basin-wise details are as follows:

L. Discovered Small Field Policy (DSF):

2.23 DSF policy aims to monetize small and marginal fields that had previously been discovered but were not developed. The policy provides simplified contractual terms and fiscal incentives for quicker monetization of these fields. On the query of the Committee regarding status of implementation of the policy and success achieved so far, the Ministry of Petroleum and Natural Gas in their Annual Report, 2025 have stated as under: -

> 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 OALP Bid 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.
>
> **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

• Royalty, No Cess, Exemption from custom duty

• Eligibility: No Technical Experience Required, up to 100% participation by foreign companies.

The status of DSF rounds conducted so far are as under:

able 2.20: Status of DSF Bid Rounds as on 31.03.2025

Status	DSF-I	DSF-II	DSF-III	Total
Awarded Contract Area (CA)	30	24	31	85
Active Contract Areas (CA)	12	18	26	56
CAs where PML Pending	3	1	2	6
CA-Terminated/Relinquished	15	5	3	23

M. Challenges of Deepwater and Ultra-Deepwater Natural Gas Extraction

2.24 When asked about specific technologies or partnerships are being considered to overcome the challenges of deepwater and ultra-deepwater gas extraction, the Ministry submitted as under:

"Directorate General of Hydrocarbons (DGH) has informed the following:

Overview of Offshore producing Areas:

There are 26 sedimentary basins in India, covering a total area of 3.4 million square kilometer. The area is spread across on land, shallow water up to 400-meter water depth and deepwater farther up to Exclusive Economic Zone (EEZ). Of the total sedimentary area, 49% of total area is located on land, 12% in shallow water and 39% in the deepwater area.

There are 11 offshore producing blocks/assets across sedimentary basins which include Mumbai Offshore, Cambay, Krishna Godavari, and Cauvery and encompassing 45 fields. These blocks collectively produce 3,01,000 BOPD oil and 70 MMSCMD gas, accounting for ~50% of India's oil production and ~72% of its gas production. There are only 2 deepwater block that are in production stage. Both the blocks are in Krishna Godavari basin.

Deepwater gas block contributes approximately ~31 % of total Indigenous gas production of India.

(a) Technologies adopted in producing KG-DWN-98/2 & KG-DWN-98/3 Deepwater Blocks in Eastern Offshore:

Exploration

i. 4C-3D seismic data Ocean Bottom Node (OBN) technology: ONGC has acquired 4C-3D OBN seismic data (650 SKM) through Ocean Bottom Node (OBN) technology to understand the critical elements of reservoir sand spread/continuity and the actual potential of the discoveries. 4C-3D Ocean Bottom Node (OBN) Seismic data is a state-of-art technology, which provides enhanced fluid prediction using multi-component data with wider azimuths and ultra-high offset imaging. 4C-3D Ocean Bottom Node (OBN) seismic data acquisition has been carried out globally in Julia Field, Gulf of Mexico and Australia, resulting in improved imaging in complex geology and superior fault definition, signal-to-noise ratio (S/N) and frequency content.

Development

ii. Pipe-in-Pipe Technology: ONGC has adopted pipe-in-pipe technology for the KG-DWN-98/2 block in the Krishna Godavari basin to address the challenge of waxy crude, which complicates extraction in deepwater environments. This technology facilitates the transport of viscous crude by maintaining flow under high-pressure and low-temperature conditions. Waterflooding technique is also used to improve oil flow in reservoirs.

iii. RIL–bp partnership: RIL and bp have developed three deepwater gas projects in KG D6 (R-Cluster, Satellite Cluster, MJ) using subsea tie-backs and common hub

infrastructure. Deepwater fields are being developed via subsea production systems tied back to existing control and riser platforms and pipelines, and improving economics in deep water. The MJ field in this block operates in HP/HT conditions at depths up to 1,200 meters. Specialized equipment and completion techniques are used to manage these extreme conditions, ensuring safe and efficient production. RIL is identifying new prospects by integrating CSEM data with seismic and well data.

iv. Floating Production, Storage, and Offloading (FPSO) Units: FPSOs, such as the Armada Sterling V in the KG-DWN-98/2 block operated by ONGC and the Ruby FPSO in the KG-D6 block operated by Reliance Industries and BP, are critical for processing and storing hydrocarbons in deepwater fields. These units enable efficient production and transport of hydrocarbons.

(b)Andaman ultra-deepwater: ONGC and OIL have launched campaigns targeting ~5,000 m drilling depths, making Andaman a frontier for ultra-deepwater gas appraisal and potential development.

(c)**Advanced technologies for mapping:** Utilizing high-resolution geophysical exploration technology for detecting oil and gas deposits at great depths, reaching up to 12 km below the seabed. This enables identification and development of major deepwater and ultra-deepwater reserves.

(d)Stratigraphic wells: University of Houston, Texas, U.S.A. is engaged under GoIprogramme in research related studies for Andaman, Mahanadi and Bengal offshore areas. GoI has also engaged ONGC & OIL to coordinate with international experts from consulting agencies and IOCs to finalize and drill 4 stratigraphic wells, one each in four frontier offshore basins, including Andaman, Mahanadi, Saurashtra and Bengal.

(e) Cairn-Technip partnership: Cairn Oil & Gas formed a strategic alliance with TechnipFMC to accelerate deepwater projects in India."

2.25 When asked about timelines and investments projected for developing gas evacuation infrastructure in offshore areas like Mahanadi basin, the Ministry submitted as under:

“DGH has informed that at present, there is one field development plan for the DSF Block NEC/OSDSF/D11/2018, for drilling three wells along with ~130 KM subsea pipeline from this offshore Block to on land location for evacuation. Operator of this block Antelopus Energy Private Limited is yet to commence drilling and laying of pipeline, which is expected to take at least another three years. Capital expenditure planned to develop this block is 203 MMUSD.

ONGC is carrying out exploration in the Mahanadi basin. There have been two discoveries in OALP Block MN-DWHP-2018/1. Field development plan for the Block is yet to be submitted by the Operator. The following are the Offshore Gas Discoveries made in OALP blocks.

Block	Operator	Discovery Name	Type of Discovery	Basin	Notification of Discovery (NOD)	Potential Commercial Interest (PCI) Notice	Appraisal Program Submission	FDP Timelines
MB-OSHP-2017/1	ONGC	Amrit/ MBS171HAA-A	Gas Discovery	Mumbai Basin	06/12/22	04/04/23	29/09/23	Appraisal to be completed & intend to submit FDP to be given by 28.09.2026. FDP to be submitted within 1 year of said timeline.
MN-DWHP-2018/1	ONGC	MDW-27 / Utkal	Gas Discovery	Mahanadi Basin	03/01/24	30/04/24	17/04/25	Appraisal to be completed & intend to submit FDP to be given by 16.04.2028. FDP to be submitted within 1 year
MN-DWHP-2018/1	ONGC	MDW-26 / Konark	Gas Discovery	Mahanadi Basin	15/01/24	30/04/24	17/04/25	

								of said timeline.
MB-OSHP-2019/1	ONGC	MBS191HDA-1 / Neelmani	Gas Discovery	Mumbai Basin	15/04/24	29/04/24	24/05/24	FDP to be submitted by 28.04.2028
CY-UDWHP-2019/1	ONGC	CHOLA-1 (CYUD191H-CHAA)	Gas & Condensate Discovery	Cauvery	09/08/24	02/12/24	Yet to be received	FDP to be submitted by 01.12.2028
MB-OSHP-2018/1	ONGC	Vajramani (MBS181HNA-1)	Oil & Gas	Mumbai Offshore	19/04/25	Yet to be received		

Final Information on Timelines and investment for developing gas evacuation infrastructure can be obtained upon approval of FDPs."

2.26 When asked about status of Gas Exploration Project/work being undertaken in in Gandak/ Ganga River basin in Bihar, the Ministry submitted as under: -

(i): "In OALP under HELP Regime, one Block GV-ONHP-2021/1 is awarded in Samastipur District of Bihar. M/s. ONGC is the operator in the Block. Operator has carried out the Seismic activities as per their CWP (Committed Work Programme) and plan to drill One Well in Q4 of FY 2024-25. The Status of CWP is given below: -

Block	Committed Work Programme			Actual Work Done		
	2D Seismic API (LKM)	3D Seismic API (SKM)	Wells	2D Seismic API (LKM)	3D Seismic API (SKM)	Wells
GV-ONHP-2021/1	0	300	2	-	300	0

(ii): In OALP under HELP Regime, three Blocks in the Gandak/Ganga river basin with a total area of 2428 sq.km have been awarded to different Operators. Currently Exploration Work is in progress in these Blocks. The detailed status is as follows:-

Block	Operator	Committed Work Programme			Actual Work Done		
		2D Seismic API (LKM)	3D Seismic API (SKM)	Wells	2D Seismic API (LKM)	3D Seismic API (SKM)	Wells
GV-ONHP-2017/1	Vedanta Limited	50	0	0	-		0
GV-ONHP-2021/1	ONGC Limited	0	300	2	-	300	0
GV-ONHP-2021/2	ONGC Limited	0	303	2	-	297	0
Total		**50**	**603**	**4**	**0**	**597**	**0**

Based on the Seismic result, Operator(s) will take up the drilling activities."

Chapter-3

Production and import of Natural Gas in the Country

A . Production of Natural Gas in the Country

3.1 India, while being dependent on fossil fuels to meet its primary energy consumption, is also dependent on imports for meeting its fossil fuel requirements of oil and gas. The Country has around 50% import dependency on natural gas in the form of Liquefied Natural Gas (LNG), and the demand-supply gap is likely to widen in coming years. When asked about production and import of Natural gas in the Country, the Ministry has furnished as under: -

(in MMSCM)

	2019-20	2020-21	2021-22	2022-23 (p)	2023-24(p)	2024-25(p)
Gross Production	31,184	28,672	34,024	34,450	36,438	36,113
Net Production (net of flare and loss)	30,257	27,784	33,131	33,664	35,717	35,594
LNG Imports	32,352	33,198	31,028	26,304	31,795	36,699
Total Consumption	62,609	60,981	64,159	59,969	67,512	72,293

Source: PPAC (petroleum Planning and Analysis cell)

3.2 When asked to furnish details of Natural Gas Production during the Last 10 years, the Ministry submitted as under: -

S. No.	Year	Natural gas Production (BCM)	% Growth in Natural gas Production
1.	2014-15	33.66	-4.94
2.	2015-16	32.25	-4.18
3.	2016-17	31.90	-1.09
4.	2017-18	32.65	2.36

5.	2018-19	32.87	0.69
6.	2019-20	31.18	-5.14
7.	2020-21	28.67	-8.05
8.	2021-22	34.02	18.66
9.	2022-23	34.45	1.25
10.	2023-24	36.44	7.10
11.	2025-25 (P)	36.11	-0.91

3.3 Further elaborating on the issue, the Ministry submitted as under: -

"Natural Gas production in 2024-25 is about 36.11 BCM. About 60.8% of natural gas production is by ONGC and OIL from nomination regime and remaining 39.2% of natural gas production is from Contract Regime (PSC regime, RSC and CBM regime). The share of offshore natural gas production in FY 2024-25 is about 71.8%. 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."

3.4 On the query of the Committee regarding region and State-wise Natural Gas Production in the Country, the Ministry submitted as under: -

State-wise Natural Gas Production Trends (MMSCM)

Location Type	**State/ Location**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**2024-25**
Offshore	Eastern Offshore	1621.5	7024.8	7999.99	10823.6	11258.79
	Gujarat Offshore	147.6	163	231.93	214.375	152.08
	Western Offshore	16659.9	15681.1	15176.6	14833.12	14516.64
Offshore Total		**18429.1**	**22868.9**	**23408.6**	**25871.09**	**25927.52**

Share of PSUs		**17086.4**	**15942.9**	**15325.02**	**14978.61**	**15272.69**
Share of Private/JVs		**1342.6**	**6926**	**8083.6**	**10892.48**	**10654.83**
Onland	Andhra Pradesh	827.5	808.6	709.694	721.9115	755.98
	Arunachal Pradesh	55.4	57.7	53.314	39.634	41.59
	Assam	2995.4	3371.5	3557.47	3489.19	3551.40
	Gujarat	1138.4	1017.3	923.242	926.01	1053.16
	Rajasthan	2039.7	2618.8	2340.15	2198.923	1786.43
	Tamil Nadu	910.9	1066.5	1109.45	1015.771	1013.38
	Tripura	1633.8	1530.8	1674.94	1524.863	1224.13
Onland-CBM	Jharkhand	1.7	4	10.095	5.371	46.87
	Madhya Pradesh	333.7	290.1	263.93	234.16	293.96
	West Bengal	307	389.2	399.421	410.947	414.75
Onland Total		**10243.4**	**11154.6**	**11041.7**	**10566.78**	**10181.65**
Share of PSUs		**7265.3**	**7578.3**	**7685.2**	**7427.5**	**7264.86**
Share of Private/JVs		**2978.1**	**3576.3**	**3356.5**	**3139.28**	**2916.78**
Grand Total		**28672.4**	**34023.5**	**34450.3**	**36437.87**	**36109.17**
Share of PSUs		**24351.7**	**23521.2**	**23010.2**	**22406.11**	**22537.55**
Share of Private/JVs		**4320.7**	**10502.3**	**11440.1**	**14031.76**	**13571.61**

3.5 In India, the share of natural gas in the primary energy mix remains relatively modest hovering around 6–7% of total energy consumption, well below the global average. However, recognising its role in reducing carbon emissions, improving air quality, and enhancing energy security, the Indian government has set ambitious targets to raise this share to around 15% by 2030 through expanded infrastructure, policy reforms, and increased use across sectors such as power, industry, transport, and city gas distribution. When asked about specific timelines and strategies have been put in place to achieve this target, the Ministry submitted as under: -

“Government has set a target to raise the share of natural gas in energy mix to 15% till 2030. Various steps taken by the Government in this direction include expansion of National Gas Grid Pipeline, expansion of City Gas Distribution (CGD) network, setting up of Liquefied Natural Gas (LNG) Terminals, allocation of domestic gas to Compressed Natural Gas (Transport) / Piped Natural Gas (Domestic) CNG(T)/PNG(D) in priority sector, allowing marketing and pricing freedom to gas produced from high pressure/high temperature areas, deep water & ultra-deep water and from coal seams, Sustainable Alternative Towards Affordable Transportation (SATAT) initiatives to promote Bio-CNG, etc..

In order to increase the share of natural gas in India’s energy infrastructure to the target of 15% by 2030, PNGRB, as on 30.09.2025 has authorized approximately 34,238 km natural gas pipeline network across the country. Out of this, 25,923 km natural gas pipelines including spur lines, tie-in connectivity, Sub-Transmission Pipelines (STPL) and dedicated pipelines are operational and a total of 9,954 km length of natural gas pipeline is under various stages of construction.

Further, PNGRB has also granted authorization for development of CGD Networks across the entire country (mainland) covering 307 GAs, which will further enhance the distribution/ consumption of natural gas across the country.

Sustainable Alternative towards Affordable Transportation (SATAT) program has been launched in October, 2018 for promoting Compressed Bio Gas (CBG) to target production of 15 MMTPA of CBG in India.

As on date, eight (8) LNG regasification terminals (at Dahej, Hazira, Kochi, Dhabol, Mundra, Ennore, Dhamra and Chhara) are operational with capacity of about 52.7 MMTPA (~190 MMSCMD). Further, two (2) LNG regasification terminals (at jafrabad and Gopalpur) are under construction with a capacity of 10 MMTPA. In addition, capacity enhancement from existing 17.5 MMTPA to 22.5 MMPTA is being done at Dahej. Domestic Gas production may also be ramped up by pipeline connectivity to gas grid specially in North Eastern region.”

3.6 The total gas consumption of the country for the year 2023-2024 stands at 52 MMt out of which 52% demand is met through domestic production and 42% is met through imports of Natural Gas. The Committee observed that while India's energy consumption scenario is marked by rapid growth and expansion of access, it also reflects continued dependence on fossil fuels and heavy import requirements. The Committee enquired about the plan devised by the Ministry to reduce the import dependency, the Ministry submitted as under: -

"Government has prepared a road map to reduce the import dependency on hydrocarbons including LNG by adopting a five-pronged strategy which includes, Increasing Domestic Production, Adopting biofuels & Renewables, Energy Efficiency Norms, Improvement in Refinery Processes and Demand Substitution.

For increasing domestic gas production, Government of India has notified Hydrocarbon Exploration and Licensing policy vision (HELP) for the award of exploration acreages shifting from Production Sharing mechanism to Revenue Sharing mechanism. Government further notified the policy reforms on 28th February 2019, where many of the processes and approvals were relaxed to promote "Ease of Doing Business", Revenue Share from Category II & III type of basins were removed, except for windfall gains, 7 years Royalty Holiday for Deep & Ultra-deep blocks, concessional Royalty Rates for Deepwater and for ultra-deep water blocks, and fiscal incentives have been provided for early monetization of fields along with Marketing and Pricing freedom for natural gas. Further, Government vide notification dated 07.04.2023 allowed a premium of 20% over the Administered Price Mechanism prices for gas produced from new well and well interventions of Oil and Natural Gas Corporation Limited & Oil India Limited from their nomination fields.

Ministry of Petroleum and Natural Gas has launched "Sustainable Alternative Towards Affordable Transportation (SATAT)" initiative on 1st October 2018, with the aim of establishing an ecosystem for production of Compressed Bio Gas (CBG), which can replace natural gas, from various waste/ biomass sources and for promoting its use along with Natural Gas. Conversion of waste/ bio-mass into CBG results in multiple benefits viz. reduction in natural gas imports, reduction of Green House Gas emissions, reduction in burning of agriculture residues,

remunerative income to farmers, employment generation, effective waste management etc."

3.7 Despite these contributions, domestic production met only about 55 percent of total demand in 2023, with the balance being met through LNG imports. Imported LNG volumes touched 36 BCM in 2024, highlighting the increasing dependence on external supplies.

B. Alternatives Sources for Natural Gas

3.8 Considering the fact that the Government has set goal of achieving 15% of the fuel mix through natural gas, alternative sources such as Coal Bed Methane, Bio-gas, Shale Gas etc. can be useful to meet this target. On the query of the Committee regarding potential for India to generate a significant portion of its natural gas supply from domestic sources particularly biogas and other alternative sources, the Ministry submitted as under: -

i. "Sustainable Alternative Towards Affordable Transportation (SATAT) initiative on CBG was launched by MoP&NG on 1.10.2018, with a target to produce 15 MMTPA of CBG. This envisages producing CBG from various waste & biomass sources such as Agricultural residue, Bagasse, Sugarcane Press Mud, Animal and Poultry Waste, Spent Wash, Sewage treatment plant waste, Municipal Solid Waste (MSW), Napier Grass, etc.
ii. **Coal Bed Methane (CBM):** The prognosticated CBM resources in the country are about 92 TCF (2600 BCM), of which about 342 BCM is established potential (Gas in Place). The total average CBM production for FY 24 ~ 1.83 MMSCMD.
iii. **Shale Gas**: India has estimated potential of about 96 TCF of shale gas (~2700 BCM) but exploration and production remain nascent."

a. Bio-Gas

3.9 Compressed Biogas (CBG), also known as bio methane or renewable natural gas (RNG), is a renewable gaseous fuel produced through the anaerobic digestion of organic matter like agricultural residues, animal dung, food waste, and municipal solid waste.

Ministry of Petroleum and Natural Gas has launched "Sustainable Alternative Towards Affordable Transportation (SATAT)" initiative on 1st October 2018, with the aim of establishing an ecosystem for production of Compressed Bio Gas (CBG) from various waste/ biomass sources and for promoting its use along with Natural Gas. Under SATAT initiative Oil and Gas Marketing Companies (OGMCs) are inviting Expression of Interest (EOI) to procure CBG from potential entrepreneurs. So far 100 CBG/biogas plants have been commissioned under SATAT initiative.

Since CBG is a renewable fuel which is derived from organic waste, it offers a cleaner alternative to fossil fuels. It is used in transportation, power generation, industrial heating, and cooking, while also being injectable into gas grids. CBG reduces greenhouse gas emissions, promotes waste management, supports rural economies, and enhances energy security. Additionally, its by-product, bio-manure, improves soil fertility, making it beneficial for sustainable agriculture.

3.10 On the query of the Committee regarding financial support provided for biomass aggregation, the Ministry submitted as under: -

> "Biomass aggregation refers to the process of collecting and consolidating organic materials, such as plant matter, agricultural residues, or waste, into a larger mass or form for use in biofuels production, energy production, composting, or other applications.
>
> Government of India has introduced the Scheme for providing financial assistance to Compressed Bio Gas Producers (CBG) producers for procurement of biomass aggregation machinery to support collection of biomass with a total financial outlay of Rs. 564.75 crore for the period of FY 2023-24 to FY 2026-27.
>
> The primary goal of this scheme is to facilitate biomass aggregation and marketing, preventing the burning of surplus biomass and generating extra income for farmers. This initiative also aims to extract economic value from untapped biomass resources/ agri residue such as paddy straw by converting them into CBG and bio-manure.
>
> **Salient Features of the Scheme**

- **Eligibility Criteria of Applicants:**

- Existing & Upcoming CBG Projects using at least 50 % biomass (Agri Residue) as feedstock
- CBG production capacity of at least 2 tons per day (TPD)
- Under construction projects with at least 50% of physical progress
- Registered on GOBARdhan portal
- Not availed any other Financial Assistance /subsidy/ benefits from Central/ State Gov. for same BAM sets

- **Financial Assistance under scheme:**

- Up to 50% of procurement cost or Rs.90 lakh per set, whichever is less.
- Financial assistance of Rs.1.8 crore per 4 TPD CBG capacity project.
- Max Financial Assistance of Rs.9 crore per project.

To avail the benefits under scheme CBG producers may apply on https://bam.eil.co.in"

3.11 On the Query of the Committee regarding policy for supporting establishment of Bio-gas plants based on crop residue, the Ministry submitted as under: -

i. **"Steps taken to generate gas or other forms of energy from stubbles includes as under:**

(a) Ministry of Petroleum and Natural Gas has launched "Sustainable Alternative Towards Affordable Transportation (SATAT)" initiative on 1st October 2018, with the aim of establishing an ecosystem for generation of Compressed Bio Gas (CBG) from various waste/ biomass sources including stubble.

(b) Under this initiative Oil and Gas Marketing Companies (OGMCs) viz. IOCL, HPCL, BPCL, GAIL and IGL invite Expression of Interest (EOI) from the entrepreneurs for procurement of Compressed Bio Gas (CBG) for further marketing as transportation and industrial fuel across the country including Punjab and Haryana.

(c) In addition, Government has launched “PradhanMantri JI-VAN (JaivIndhan-VatavaranAnukoolfasalawasheshNivaran) Yojana” for providing viability gap funding to provide initial thrust to create 2G ethanol capacity in the country. One paddy straw-based 2nd Generation ethanol projects of a 100 Kilo Liter Per Day has been commissioned at Panipat, Haryana.

ii. **The details of crop residue based CBG projects (gas production centres) established under SATAT initiative are as under:**

Sr.	Name of the project	District	State	Installed CBG Production Capacity (TPD)
1	R2S Bio Products Private Limited	Rohtak	Haryana	2.5
2	Reliance Bio Energy Limited, Jhajjar	Jhajjar	Haryana	20
3	Reliance Bio Energy Limited, Panipat	Panipat	Haryana	15
4	Reliance Chemicals and Materials Limited, Hoshiarpur	Hoshiarpur	Haryana	20
5	Verbio India Pvt. Ltd.	Sangrur	Punjab	30
6	Farm Gas Private Limited	Ludhiana	Punjab	8
7	Sangrur RNG Private Limited	Sangrur	Punjab	15
8	Patiala RNG Private Limited	Patiala	Punjab	15
9	HPCL CBG Budaun Plant	Budaun	Uttar Pradesh	14.25

10	IndianOil Gorakhpur CBG Plant	Gorakhpur	Uttar Pradesh	20
11	Reliance Industries Limited	Barabanki	Uttar Pradesh	20
			Total	**179.75**

In addition, various crop residue-based CBG projects are at different stages of constructions.

3.12 India is heavily promoting the establishment of Compressed Biogas (CBG) plants to reduce reliance on imported fossil fuels, manage waste, and boost the rural economy. In presentation before the Committee, it was mentioned that there is proposal to establish 5000 CBG plants in the country, of which only 78 have been commissioned and 72 plants are under construction till date. When asked about status of achievement of targets for establishment of 5000 CBG, the Ministry submitted as under: -

"Under SATAT scheme, (OGMCs) invite Expression of Interest (EOI) from the entrepreneurs for procurement of Compressed Bio Gas (CBG) for further marketing as transportation and industrial fuel across the country. CBG plants are primarily being established by entrepreneurs and other external entities based on their techno-commercial evaluation of the projects. Availability of land, feedstock & low-cost finance, marketing of FOM/LFOM, demand of CBG in the vicinity of the production centre are some of the challenges associated with the commercial viability of the plant.

- Government has taken various steps to promote the establishment of CBG projects in other parts of country. These steps includes assured price for off-take of CBG through long term agreements with OGMCs; the Umbrella Scheme of National Bio Energy Programme by the Ministry of New and Renewable Energy, which *inter-alia* provided Central Financial Assistance to all kind of CBG/biogas plants; Additional Central Assistance for Municipal Solid Waste-based CBG projects under Swachh Bharat Mission Urban 2.0; the inclusion of bio-manure produced from CBG plants as Fermented Organic Manure and Liquid Fermented Organic Manure under Fertilizer Control Order 1985; Market Development Assistance to promote Organic Fertilizer produced from CBG

projects by Depratment of Fertilizers; the inclusion of CBG projects under 'White Category' by Central Pollution Control Board on case to case basis; the inclusion of CBG projects under Priority Sector Lending by RBI; loan products from various Banks for financing of CBG projects; etc.

- Further, the Ministry of Petroleum and Natural Gas has taken initiatives such as guidelines for synchronization of CBG with CNG in CGD Network; a scheme for the development of pipeline infrastructure (DPI) for injection of CBG into the City Gas Distribution (CGD) network; a scheme to support CBG producers for procurement of Biomass Aggregation Machinery (BAM) Scheme; and phase wise mandatory selling of CBG in CNG (T) and PNG (D) segment of CGD network.

- List of CBG projects commissioned under SATAT is enclosed as **Annexure-I.**

- Various CBG projects are not working at full capacity due to various reasons viz. availability of feed stock, technological issues, and offtake issues. In addition, other revenue streams viz. FOM/LFOM, CO_2 valorisation, carbon credit etc. are yet to be developed. Therefore, it is difficult to assess the profitability of these plants at this stage.

- As mentioned above, CBG projects are not able to work at full capacity due to various reasons viz. availability of feed stock, technological issues, and offtake issues. In order to resolve the offtake of CBG, Govt. of India has introduced the Scheme for the development of pipeline infrastructure (DPI) for injection of CBG into the City Gas Distribution (CGD) network. The primary objective of the scheme is to ensure full offtake of CBG through cost-effective pipeline transportation of CBG from production facilities to consumption centers and ensure maximum utilization of CBG produced. Its key aims include addressing financial barriers in pipeline infrastructure development, establishing a robust supply network in CBG-producing regions, and significantly reducing carbon footprints."

3.13 On the above issue representative of the Ministry of Petroleum and Natural Gas submitted the following:

> "Commencement of compressed biogas production in the country. There is a scheme for sustainable alternative transport fuel, which was launched in October 2018, under which the target was to set up a total of 5,000 CBG plants, which have been done on an LOI basis. As of today, under the SATAT scheme, approximately 78 plants have been commissioned.
>
> SATAT is a scheme of the Ministry of Petroleum and Natural Gas (MoPNG), under which gas and oil companies issue Letters of Intent (LOIs) to entrepreneurs. After that, they set up the plants, and then we assist them in the marketing of the gas. The benefits of this scheme are that it promotes a circular economy and generates significant employment. It greatly helps us in the decarbonization of the transportation sector and will significantly assist us in achieving net-zero emissions."

3.14 Further, on the mandatory blending obligations of biogas with the natural gas issue representative of the Ministry of Petroleum and Natural Gas submitted the following:

> "For the gas supplied to homes and the gas used as transport fuel, companies have been given a mandatory obligation, which will be implemented from next year and will increase to five percent by the financial year 2029 and will remain at five percent thereafter. That is, one percent in the first year, then three percent, then four percent. They have this much gas in this segment, which is going to homes and being used in CNG. They will have to mandatorily buy biogas. This will create a new type of ecosystem. The Ministry is striving to develop a new ecosystem for green certificates trading or netting, and all these things. We had mentioned earlier that the gas from the SATAT scheme or any other gas is being synchronized with the CGD network. The desynchronization means that we are trying to mix biogas with the natural gas they are receiving. Initially, this scheme was for three years. The Ministry extended it for 10 years on October 26, 2023. It has been extended for a decade. GAIL has a mandate to purchase CBG (Compressed Biogas), mix it, and sell it at a lower price with APM (Administered Price Mechanism) gas, but ensuring that producers get a good price. The scheme is already running in 47 geographical

areas. Sir, in September-October, the consumption is 41 million cubic meters per day, and by 2030, it will reach 80 million cubic meters. At the same time, we want to use more and more gas in refineries and petrochemicals. By 2030, it can grow from 56 million cubic meters per day to 94 million cubic meters per day

Sir, we had shown a map based on the Golden Quadrilateral, where we will use LNG as fuel for trucks or mining equipment, so that LNG replaces diesel. There is approximately a 50 percent difference in emissions between diesel and LNG. This will reduce emissions and help us achieve our net-zero target. LNG as an automotive fuel will become a very important fuel in the next five to seven years. A new dimension will be added to gas consumption. It is expected that by 2030, 18 billion cubic meters of gas will be used per day."

3.15 On the query of the Committee regarding mechanisms in place to monitor the utilization of financial assistance under various schemes, particularly the 50% cost support (capped at Rs.9 crore per project) for biomass aggregation machinery, the Ministry submitted as under: -

"Government has implemented "Scheme for Providing Financial Assistance to Compressed Bio Gas (CBG) producers for procurement of Biomass Aggregation Machinery (BAM).
Scheme provides financial assistance up to 50% of the procurement cost of biomass aggregation machinery sets or Rs. 90 Lakh per set, whichever is less. The maximum capping of financial assistance under the scheme is Rs. 9 crore per project.

Steering Committee: The scheme will be supervised by a Steering Committee (SC) chaired by Secretary, PNG and comprising of Secretary, DAFW, Secretary, DDWS, Secretary, MNRE or their representative as members.

Project Approval Board: Project Approval Board (PAB) for considering the projects recommended by Project Appraisal Committee (PAC). Approval of PAB shall constitute sanction for further action by Project Management Agency (PMA). PAB shall be chaired by Secretary, PNG and shall consist of Additional Secretary, PNG,

Financial Advisor, PNG, Joint Secretary (GP), Director-in-charge of CBG, IOCL, GAIL and Head, PMA.

Project Appraisal Committee: The scheme shall have a Project Appraisal Committee (PAC) for appraisal of proposals and recommending projects under the scheme and for effective planning and implementation of the scheme. The PAC shall be chaired by Additional /Joint Secretary, PNG and Joint Secretary, MMRE, Joint Secretary, DDDWS, Joint Secretary, DAFW and representatives from Oil and Gas Marketing Companies as members.
Centre for High Technology (CHT) has been nominated as PMA and Central Nodal Agency for the scheme.

Eligible beneficiary may apply on https://bam.eil.co.in portal to avail the financial assistance under the scheme."

3.16 When asked about scheme for providing financial assistance for development of pipeline connectivity of CBG plants with CGD network, the Ministry submitted as under: -

"The Government has introduced "Scheme for Development of Pipeline infrastructure for injection of Compressed Bio Gas (CBG) in City Gas Distribution (CGD) network" with financial outlay of Rs. 994.50 crore for the period of FY 2024-25 to FY 2025-26.

Financial support shall be provided for establishing pipeline connectivity with those CBG plants which fulfil the following criteria-

a. Plants have an installed CBG production capacity of at least 2 tonnes per day (TPD) and are registered on the GOBARdhan portal.
b. CBG projects above 5 TPD installed production capacity would be given preference under the scheme.
c. All the existing and upcoming CBG projects should have gas supply/ gas transportation agreement with CGD entity for supply or transportation of CBG through the CGD network. The agreement should ensure minimum 50% take or pay as well as supply or pay arrangement of the average CBG volume produced.

d. Under construction CBG projects with at least 25% of physical progress as per DPR shall be considered eligible to apply for Financial Assistance (FA).

e. CBG project proponent seeking to connect his plant with the CGD network or the concerned CGD entity shall bilaterally consider the proposal for connectivity and mutually agree on the design specifications/ capacity based on the gas supply agreement.

The scheme is intended to provide financial assistance (FA) for laying of pipeline connecting CBG plants with CGD network for CBG offtake in a cost-effective and environment friendly manner. The scheme has a total financial outlay of Rs. 994.50 crore during 2024-26 to support the development of CBG-CGD connectivity for 100 projects. Salient features of the Scheme are as follow:

(i) FA for laying of pipeline (Steel/ Medium-Density Polyethylene (MDPE)) upto 50 km will be provided @ 50% of the project cost or Rs. 0.5 crore per km, whichever is lower. In case of connectivity where only MDPE pipeline is used the FA shall be restricted to 50% of project cost or Rs 0.075 crore per km, whichever is lower.

(ii) FA for pipelines above 50 km will be provided at 50% of the additional cost for laying pipelines between 50-75 km, or Rs 0.15 crore per km, whichever is lower. In case of connectivity where only MDPE pipeline is used the FA shall be restricted to 50% of the project cost or Rs 0.075 crore per km, whichever is lower.

(iii) FA will not be provided for any pipeline length beyond 75 km. However, beneficiaries can lay the pipeline beyond 75 km at their own expense."

3.17 On the query of the Committee regarding details of CBG plants connected to the Gas grid, the Ministry submitted as under: -

"It is submitted that remote CBG plants may be connected to the gas grid through the following four modes:

i. Transportation of CBG in cascades at high pressure from CBG plant to retail outlets.

ii. Transportation of CBG in cascades at high pressure from CBG plant and subsequent injection into City Gas Distribution (CGD) network through Decompression Units (DCU).

iii. Direct pipeline connectivity from CBG plants to the CGD network.

iv. Pipeline connectivity from CBG plants or clusters to Natural Gas pipelines through Gas Gathering Station (GGS).

In order to promote cost-effective and sustainable offtake of CBG, the Ministry has launched the Scheme for Development of Pipeline Infrastructure (DPI) for facilitation of Compressed Biogas (CBG) Offtake. The scheme provides financial assistance (FA) for laying of pipelines for:

a. Injection of CBG from CBG plants into the CGD network, and

b. Injection of CBG from CBG plants/clusters by Gas Pipeline Operators into trunk pipelines.

The salient features of the scheme are as under:

Component I: Injection of CBG from CBG plant into City Gas Distribution (CGD) network

• FA upto 50 Km for steel pipeline @ 50% of cost or Rs. 50 Lakh/ Km

• FA between 50-75 Km for steel pipeline - 50% of cost or Rs. 15 Lakh/ Km

• FA upto 75 Km for MDPE pipeline @ 50% of cost or Rs. 7.5 Lakh/ Km

Component II: Injection of CBG from CBG plants/clusters by Gas Pipeline Operator into Trunk pipeline

• Steel pipeline: FA @ 50% of the project cost or Rs. 75 lakh per km

• MDPE pipeline: FA @ 50% of the project cost or Rs. 7.5 lakh per km

A milestone-based funding pattern has been proposed under the scheme to support the pipeline project since its inception."

b. Coal Bed methane (CBM)

3.18 Coal Bed Methane (CBM) is an unconventional, clean-burning natural gas (methane) trapped within coal seams, created during coalification and stored by adsorption. When asked

about potential for Coal Bed methane (CBM) generation in the Country, the Ministry submitted as under: -

"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/regions in the country. The State/region-wise details of CBM resources are as under:

Table 2.4: State/Region-wise Distribution of Coal Bed Methane Resources in India

No.	State	Estimated CBM resources (IN BCM)	Estimated CBM resources (IN TCF)	GIIP (in TCF)
1	Jharkhand	722.08	25.50	1.92
2	Rajasthan	359.62	12.70	0
3	Gujarat	351.13	12.40	0
4	Odisha	243.52	8.60	0
5	Chhattisgarh	240.69	8.50	0
6	Madhya Pradesh	218.04	7.70	3.65
7	West Bengal	218.04	7.70	4.85
8	Tamil Nadu	104.77	3.70	0
9	Telangana & Andhra Pradesh	99.11	3.50	0
10	Maharashtra	33.98	1.20	0
11	North east	8.50	0.30	0
	Total CBM Resource	**2599.48**	**91.80**	**10.42**

*Conversion factor: 1 cubic metre = 35.3147 cubic feet

3.19 When asked about production of Coal Bed Methane in the Country, the Ministry submitted as under: -

"In FY 2024-25, India's coal bed methane (CBM) production reached 755.578 MMSCM. Commercial CBM production in India began in July 2007 in the Raniganj (South) block, West Bengal. As of March 2025, the total CBM production rate from six blocks nationwide is approximately 2.22 MMSCMD, encompassing test gas from one block and commercial production from five blocks. Specifically, the Raniganj (South) block's commercial CBM production is about 0.2 MMSCMD. Other commercially producing blocks include the Raniganj (East) block, operated by ESSAR, with a production rate of 0.93 MMSCMD, and the Jharia and Bokaro blocks, operated by ONGC, contributing 0.2 MMSCMD. Additionally, the Sohagpur (West) block, operated by RIL, yields approximately 0.89 MMSCMD of CBM."

c. Shale Gas/Oil Resource:

3.20 Shale gas/oil is a form of natural gas/oil that remain unexpelled, unmigrated, and entrapped within the pore space and fractures of a source rock (commonly, shale). They are categorized as an unconventional resource due to their nature of occurrence and method of extraction. 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) are prospective from shale oil and gas point of view. Since 2011, various agencies such as United States Geological Survey (USGS), Central Mine Planning and Design Institute (CMPDI) and ONGC have carried out studies for shale gas reserve estimation in the country.

In order to understand the prospectivity and untap the Shale Gas and Oil resource potential in India, GoI announced a Shale gas and Oil exploration policy on 14th October 2013 for the National Oil Companies (NOCs), ONGC, and OIL. Under the Shale Gas Policy - 2013, ONGC identified 50 blocks in 4 basins while OIL identified 6 blocks in 2 basins A total of 34 Shale wells were drilled (30 by ONGC & 4 by OIL) in their nomination areas, however, the prospectivity of Shale Gas/oil could not be established.

3.21 On the query of the Committee regarding timeline for full-scale shale gas extraction, the Ministry submitted as under: -

> "India's shale gas activities are currently at the exploratory and pilot-testing stage, with National Oil Companies conducting pilot wells and reservoir studies in select basins containing shale gas resources. However, commercial-scale production has not yet commenced. Several challenges hinder progress:

- **Geological complexity:** Unlike the more consistent shale formations in the U.S., India's subsurface geology is highly variable, making extraction more difficult and less predictable.
- **Productivity:** Test wells have shown low output, raising doubts about the feasibility of large-scale operations.
- **Water availability:** Hydraulic fracturing requires substantial volumes of water, which are difficult to secure in many parts of India.

For full-scale commercial production, several critical steps are required, including pilot drilling and reservoir stimulation studies, appraisal drilling to confirm recoverable resources, and infrastructure development. Based on international experience, if shale gas exploration in India proves technically and commercially viable, the first commercial-scale projects could emerge depending on pilot study results, investment response, and regulatory clearances. However, the expected timeline remains uncertain due to these challenges.

Shale gas exploration is broadly similar to conventional oil and gas exploration, and therefore similar environmental safeguards are applied. The Government has instituted strict measures to ensure ecological concerns are addressed before any expansion. All projects require mandatory clearances from the Ministry of Environment, Forest & Climate Change (MoEFCC), baseline ecological and hydrogeological studies, and compliance with stringent standards for water management, well construction, and chemical disclosure. Operators are required to obtain Environmental Clearance (EC) under the provisions of the EIA Notification, 2006. Exploration proposals are classified as Category B2 and appraised at the state level by the State Environment Impact Assessment Authority (SEIAA) and the State Expert Appraisal Committee (SEAC). In contrast, development drilling proposals are designated as Category A and evaluated at the central level by the Expert Appraisal Committee (EAC), MoEF&CC. Activities in ecologically sensitive areas are subject to additional statutory scrutiny and are often avoided altogether. Independent monitoring, stakeholder consultation, and transparent reporting are mandatory. Thus, while India is progressing toward shale gas development, it will be pursued cautiously and in phases, ensuring that ecological balance and community interests are fully protected."

d. Synthesis Gas or Syngas

3.22 Syngas is the short name for a gasification product, mostly from waste biomasses, known as "synthesis gas," consisting of a mixture of H_2, CO, and CO_2 that could be used as a potential intermediate in the conversion of biomass into fuel. Synthesis gas, or syngas, is a versatile mixture primarily composed of hydrogen (H2) and carbon monoxide (CO), used as a crucial intermediate for producing fuels, ammonia, and methanol. Produced via

gasification or reforming of coal, natural gas, biomass, or waste, it acts as a building block for chemicals and a sustainable energy source, often enabling "Gas-to-Liquid" (GTL) processes.

3.23 When asked about possibility of syngas be converted in to an equivalent of natural gas for transportation through existing gas pipeline, the Ministry submitted as under: -

> "Catalytic processes combined with suitable purification process may be used to convert syngas into methane which can act as Synthetic Natural Gas (SNG). This purified SNG is a substitute for natural gas and is suitable for transmission in natural gas pipelines."

3.24 On the query of the Committee on plan to integrate syngas into the national pipeline network and technological and logistical challenges associated with this process, the Ministry submitted as under: -

> "GAIL and Coal India Limited (CIL) have entered into a Joint Venture Agreement (JVA) to produce Synthetic Natural Gas (SNG) using syngas through the surface coal gasification route at Eastern Coalfields Limited (ECL), Bardhaman, West Bengal. The produced SNG, after undergoing necessary purification processes, will be injected into the national natural gas pipeline network."

3.25 When asked about quality and blending standards for SNG and syngas with conventional natural gas in the national grid, the Ministry submitted as under: -

> "Quality of natural gas being transported through Natural Gas Pipelines shall conform to the "Gas Quality Specifications" prescribed in the PNGRB (Access Code for Common Carrier or Contract Carrier Natural Gas Pipelines) Regulations."

3.26 When asked about the ways unconventional gas sources (CBM, shale, SNG) are being integrated with mainstream supply chains, the Ministry submitted as under: -

> "In 2016, the Hydrocarbon Exploration and Licensing Policy (HELP) introduced a unified licensing framework, allowing exploration and production of both conventional and unconventional hydrocarbons. To further promote gas economy,

the 2017 Policy for Early Monetization of CBM granted operators pricing and marketing freedom, enabling them to sell CBM directly to any consumer, similar to conventional natural gas.

On the infrastructure side, CBM production in India (~2.25 MMSCMD as of August 2025) is largely connected to the national gas grid. Gas from some CBM blocks is supplied through the Urja Ganga network (operated by GAIL). In other CBM Blocks where pipeline is yet to laid, it is being transported through Cascade.

Thus existing pipelines, CGD networks and gas cascade systems are enabling the integration of unconventional gas (CBM) into the mainstream supply chain."

B. Import of Liquefied Natural Gas (LNG)

3.27 India is dependent upon import for meeting around 50% of Natural Gas requirement in the Country. When asked about import of Natural gas in the Country, the Ministry in their Annual Report 2025 furnished as under: -

	Year	Imports of LNG (MMT)	% Growth in Imports of LNG
1.	2014-15	13.29	2.06
2.	2015-16	14.38	8.19
3.	2016-17	17.78	23.69
4.	2017-18	20.18	13.46
5.	2018-19	21.54	6.78
6.	2019-20	24.42	13.33
7.	2020-21	25.05	2.61
8.	2021-22	23.42	-6.54
9.	2022-23	19.85	-15.22
10.	2023-24	24.00	20.87
11.	**2024-25 (P)**	**26.96**	**22.80**

P :Provisional

3.28 When asked about details of projected demand for Natural Gas in the Country, the Ministry submitted as under: -

India's reliance on the LNG imports is a key factor affecting the energy security and the pricing stability. India has imported around 24 MMT of LNG during FY 2023-24 (Source PPAC) which is close to ~47% of its total gas consumption in the aforesaid year. As per Platts report dated April 2024, Indian LNG demand/imports is likely to surpass 40 MMTPA by end of 2030. Further, the same report anticipates dependence on imported LNG to continue to increase in the market, thus making it vulnerable to supply disruptions and price volatility.

3.29 The Country has around 50% import dependency on natural gas in the form of Liquefied Natural Gas (LNG), and the demand-supply gap is likely to widen in the coming years. On the query of the Committee regarding risk mitigation strategies in place to shield India's LNG imports from global price volatility and supply chain shocks, the Ministry stated as under:

"India's LNG import strategy is designed to mitigate risks arising from global price volatility and supply chain disruptions through a diversified portfolio approach.

I. **Portfolio Diversification**:

The strategy comprises a mix of long-term and short term/spot contracts.

i. Long-term agreements provide price stability and supply security.
ii. Short-term/spot procurement offers flexibility to capitalize on favorable market conditions and manage disruptions.

II. **Multiple Indexation**:

Contracts are linked to diverse benchmarks, such as Crude Oil and Henry Hub, thereby reducing exposure to any single pricing mechanism.

III. **Supplier and Geographic Diversification**:

Contracts are executed with multiple counterparties across diverse geographic regions to avoid over-dependence on a single source, trade route, or country.

IV. **Ongoing Measures**:

i. Extension of existing long-term Ras Gas contracts with Qatar Energy beyond 2028 for 20 years.

ii. Continuous efforts are made to explore new sourcing opportunities and optimize the LNG supply chain to ensure reliability and resilience."

3.30 India is importing over 88% of crude oil and 50% of natural gas to meet its growing energy demand. Recognising the vulnerabilities in global crude oil supply chains, the Government has prioritised diversifying the import basket for oil and gas. Since India is a net importer of Oil & Gas, investment in overseas Oil & Gas assets is essential for ensuring energy security. India is continuously exploring opportunities for investment abroad in oil and gas assets. Till 31st March 2025, Indian Oil and Gas PSUs have 45 assets in 21 countries. Out of the 45 assets, 21 are producing, 14 are under exploration, 3 are pipeline projects, and 7 are under various phases of development. During FY 2024 25, overseas production of oil and gas was approximately 20.2 MMTOE, which represents a substantial amount of India's domestic production.

3.31 The Government of India has been actively engaged in shaping its global engagement and securing its energy needs in an increasingly interconnected world. India's energy diplomacy is not only limited to cultivating, sustaining and enhancing energy partnerships with hydrocarbon-rich countries and prominent international organisations dealing with energy matters but also fostering collaboration on hydrocarbons and clean technologies with countries of the Global South. India has been raising voices for all oil consuming countries of the global south for responsible pricing and stabilising the global oil market. This makes India a sui generis case and has driven our energy strategy, now acknowledged the world over as being pragmatic and balanced. To bolster India's energy security, the Government is actively strengthening bilateral relationships with both established oil and gas producers, including GCC and OPEC member states, as well as new entrants like Guyana. These partnerships are reinforced through sustained bilateral engagements, signing of MoUs, engagement with international organisations such as the OPEC, IEA and IEF. This comprehensive approach underscores India's commitment to ensuring energy security while navigating the global energy transition. India's quest for energy security works under the framework of four 'A's: availability, accessibility, affordability and acceptability, which is to make energy accessible to all the sections and sectors at an affordable price. India acknowledges that oil and gas will

continue to play a significant role in India's primary energy mix in the coming decade, however, India is also fostering all forms of energy including Solar, Wind, Bio-fuel and Hydrogen to ensure energy security and availability to its citizens at an affordable price in a sustainable manner. Notably, India is spearheading the Global Biofuels Alliance, underscoring India's commitment to steering the energy transition towards a sustainable future. Ministry of Petroleum and Natural Gas has been working very closely with the Ministry of External Affairs and our Embassies abroad, to strengthen energy security and safeguard India's investment. The following salient features of Energy Diplomacy merit mentioning:

- Supporting Indian refiners for securing an uninterrupted and timely supply of crude oil.
- Geographical diversification and widening of oil & gas sourcing including the acquisition of E&P assets.
- Launching initiatives to promote 'Neighbourhood first policy' in the oil and gas sector by building energy corridors and energy bridges.
- Negotiating long-term Oil and LNG deals.
- Leveraging India's relationship with international organisations such as OPEC, IEF & IEA, where India's voice can make a difference towards balancing the needs of producer and consumer nations.
- Spearheading "Global Biofuels Alliance" to promote global collaboration for the adoption of sustainable biofuels.
- Convening India Energy Week, reinforcing India's role in leading global energy dialogues among policymakers, industry players and other stakeholders.

3.32 When asked about India's reliance on LNG imports affect its energy security and pricing stability, the Ministry submitted as under:-

> "India is world's fastest-growing major economy. Accordingly, its energy demand will continue to increase in the coming years.
>
> India has imported around 24 MMT of LNG during FY 2023-24 (Source PPAC) which is close to ~47% of its total gas consumption in the aforesaid year. As per Platts report dated April 2024, Indian LNG demand/imports is likely to surpass 40 MMTPA

by end of 2030. Further, the same report anticipates dependence on imported LNG to continue to increase in the market, thus making it vulnerable to supply disruptions and price volatility.

3.33 On the query of the Committee regarding risks management for import of LNG in the event of prolonged global price surges or supply cuts, the Ministry submitted as under: -

"Oil PSUs adopt a portfolio approach wherein a mix of crude oil-linked and Henry Hub-linked contracts helps reduce exposure to any single pricing benchmark.

When further asked about the benchmarks or formulas used to determine if long-term LNG contracts remain competitive versus spot purchases, the Ministry has informed:

"The competitiveness of long-term LNG contracts is assessed by benchmarking them against projected spot market prices and relevant indices such as Brent crude or Henry Hub–linked indexation. As spot and long-term prices can vary over time, a balanced portfolio approach offers the most suitable strategy for optimizing both cost and supply security."

C. LNG Terminals

3.34 LNG terminals play a crucial role in regasification of imported LNG and serve as key infrastructure that facilitates the import, storage and regasification of LNG for ready availability of NG for distribution. These terminals act as an entry point of LNG and exit point of re-gasified LNG i.e. natural gas for down-stream distribution. LNG terminals receive the liquefied natural gas through LNG shipments and store them in large specialized cryogenic tanks at extremely low temperatures (-160 C) which is then re-gasified before entering the pipeline for distribution to the end customers.

3.35 When asked about the current operational status of LNG terminals and expansion plans in the future, the Ministry has submitted:

"At present, the country is having eight (8) operational LNG re-gasification terminals with capacity of about 52.7 MMTPA. The terminal-wise details are as under:

Location	Operator	Capacity (MMTPA)
Dahej (Gujarat)	PLL	17.5
Hazira (Gujarat)	SHELL	5.2
Kochi (Kerala)	PLL	5.0
Dhabol (Maharashtra)	GAIL (KLPL)	5.0*
Mundra (Gujarat)	GSPC LNG Ltd.	5.0
Dhamra (Odisha)	Adani LNG Pvt Ltd.	5.0
Ennore (Tamilnadu)	IOCL	5.0
Chhara (Gujarat)	HPLNG	5.0
Total Capacity (MMTPA)		**52.7**

Source: PPAC

(MMTPA – Million Metric Tonne per Annum) (MMSCM – Million Metric Standard Cubic Meter)

*To increase to 5 MMTPA with breakwater. Only HP stream capacity of 2.9 MMTPA is commissioned".

3.36 On the query of the Committee regarding adequacy of existing and upcoming LNG terminal in the Country to cater projected demand growth of Natural Gas, the Ministry submitted as under:

"India has imported around 24 MMT of LNG during FY 2023-24, resulting in 50% utilization of total available regasification capacity. Further, 20 MMTPA of additional Regasification capacity/expansions of existing terminals are under various stage of construction as per details given below. Once these plants are commissioned the regasification capacity shall reach to 68 MMTPA by end of the decade.

On the LNG demand front, as per as per a Platts report dated April 2024 Indian LNG demand/imports to surpass 40 MMTPA by end of 2030."

3.37 When asked about reasons for concentration of LNG terminal in western India despite plans to boost eastern and northeastern connectivity, the Ministry stated as under: -

"In this context, it is submitted that the location of LNG terminals depends on various factors such as:

a) Geographical Constraints: LNG terminals require deep water (with regards to draft of LNG ships) all-weather ports where LNG carriers can berth properly & safely. Hence, the coastal states having suitable ports become key destinations for setting up LNG terminals.

b) Existing Pipeline Infrastructure: LNG terminals need pipeline infrastructure connected to the natural gas pipeline network for distribution to pan India customers. As of now, Western coast of India has adequate connectivity to National Gas Grid making them preferable choices for new LNG terminals/expansions. Further, the east coast is also being connected rapidly to the main network through Pradhan Mantri Urja Ganga Gas Pipeline also known as Jagdishpur-Haldia-Bokaro-Dhamra Natural Gas Pipeline (JHBDPL). At present, while Dahej (Gujarat-PLL) , Kochi (Kerala-PLL), Dabhol (MH-KLL), Charra(Gujarat - HPCL LNG Limited (HPLNG)) and Mundra (Gujarat-GSPC) and Hazira (Gujarat-SEIPL) are operating LNG terminals in Western India, Dhamra (Odisha-DLTPL) and Ennore (TN-IOC) are the 2 operating LNG terminals on east coast of India.

c) Demand of Natural Gas: The demand of natural gas in a region may also play an important role in establishment of capital-intensive LNG terminals. Hence, concentration of major natural gas consuming sectors such as power, fertilizer, steel etc. which support the utilization of LNG regasification terminals also drive the decision of establishment of the terminals. However, with GOI's push through Pradhan Mantri Urja Ganga Gas Pipeline to develop industrial corridor in East and North-East of India is resulting in rapid expansion of Gas consuming facilities e.g. Fertiliser Plants, Power plants, CGD, Refinery and other industries. Such

development is likely to be a major boost for potential LNG terminals on East Coast of India."

3.38 When asked about criteria for proposing new LNG terminals in underserved coastal states, the Ministry stated as under: -

"As stated in the reply to LoP no. 15 above, it may be reiterated that the setting up of new LNG terminals is primarily a commercial decision of concerned entities based on various factors viz. demand potential, availability of connectivity infrastructure, land availability etc. The Government does not prescribe any fixed demand threshold or criteria for proposing new LNG terminals. However, entity concerned generally assess long-term demand outlook, potential anchor customers in power, fertilizer, CGD and industrial sectors, as well as proximity to gas pipeline networks, before proposing investments in underserved coastal states."

3.39 On the above issue representative of the Ministry of Petroleum and Natural Gas submitted the following:

"In the East, there is Dhamra and Ennore. In the West, there is Kochi, Dabhol, Hazira, Dahej, and Mundra. Two more terminals are about to be commissioned: Chhara, which is in Gujarat, and Jafrabad, which may be commissioned next year. Chhara will be commissioned in this financial year. Our total available capacity is 47.5 million tons per annum, and with the new terminals coming online, it will be 57.5 million tons, and then including Petronet Dahej, which is the largest, it will reach 62.5 million tons. In addition, work is underway on the remaining proposed LNG terminals, which will have a capacity of 25 million tons. Therefore, the total capacity in the country will be approximately 80 to 85 million tons in the next few years."

D. Transportation of LNG

3.40 When asked about the available modes of transports to various parts of the country, the Ministry replied as under:

(i): In India, natural gas is transported to various parts of the country using the following primary modes:

• Pipeline Transportation:

The most common and cost-effective method for transporting gas over long distances and are suitable for large imports and continuous supply.

• Liquefied Natural Gas (LNG) Transportation:

Natural gas is cooled to convert it into a liquid form, reducing its volume for easier transportation. LNG is transported via Cryogenic Trucks

• Compressed Natural Gas (CNG) Transportation:

Gas is compressed to high pressure and transported in cascade trucks for areas not connected by pipelines. Often used to supply CNG stations in remote or semi-urban areas.

(ii) Details of the expenditure involved:

Pipeline tariffs are regulated via PNGRB Tariff Orders for Central Government authorized Natural Gas pipelines. The tariff is determined by PNGRB for the said pipelines as per the PNGRB (Determination of Natural Gas Pipeline Tariff) Regulations, 2008.

As of 04.12.2024, the charges are Rs. 42.04 per MMBTU for Zone 1 (up to 300 km), Rs. 80.08 per MMBTU for Zone 2 (from 300 to 1,200 km), and Rs. 106.77 per MMBTU for Zone 3 (beyond 1,200 km).

The transportation cost of LNG by truck vs pipelines is as under:

Transportation cost per MMBtu (Rupees)		
KM	LNG-Truck #	NG-Pipelines *
150	138	115
200	145	115
250	153	115
300	160	115
400	175	153
500	190	153
600	205	153
700	220	153
800	235	153
900	250	153
1000	265	153
1200	295	153
1300	310	180
1400	325	180
1500	340	180

*based on prevailing Unified Tariff.(PNGRB)

based on rough estimated

As regards, the expenditure on other modes such as CNG cascades and LNG Tankers, the transportation rates are dependent on the individual contracts."

3.41 On a query of the Committee regarding transportation costs (especially pipeline tariffs and LNG trucking rates) affecting end-user pricing across regions, the Ministry has stated as under:

> "It is submitted that the transportation costs, including pipeline tariffs impacts end-user pricing of CNG and PNG across regions. Before implementation of Unified Tariff System, pipeline tariffs for end user were based on distance from the gas source. In case multiple pipelines were involved, pipeline tariffs were charged on additive basis. This created a significant price disadvantage for consumers in northern and eastern India. To address this, PNGRB implemented a Unified Tariff (UFT) system w.e.f. 01.04.2023 with an objective to standardize the transportation charge across the national grid, reducing the cost burden on consumers in distant areas and making natural gas more competitive with other fuels. Out of the total operating pipelines in the country, ~90% of the pipelines, forming part of the National Gas Grid System, are under Unified Tariff regime.

With respect to LNG trucking rates, it is submitted that neither MoPNG nor PNGRB determines LNG trucking rates. These charges are generally determined through bilateral commercial agreements between two entities."

E. LNG Retail Stations and Infrastructure Development

3.42 Easy availability of LNG plays a very crucial role to encourage vehicle owners to opt for this relatively clean fuel. When asked about details of the criteria/ basis for establishment of LNG dispensing stations at a particular location, the Ministry submitted as under: -

"The establishment of an LNG station at a specific location is determined by multiple factors, including space availability, integration with the existing retail network, the movement of long-haul trucks along the route, the requirement for LCNG or its potential role as a mother station for gas distribution to other stations or the CGD network, and proximity to supply centers, among others."

3.43 When asked about the operational status of LNG retail stations and steps taken to expand LNG dispensing stations on highways and strategic corridors, the Ministry has furnished:

"In order to cater growing Auto-LNG demand in India, Oil & Gas PSUs collectively are setting-up 49 LNG retail stations on Golden Quadrilateral and other national highways of India in Phase-1 setup by MoP&NG. Out of the 49 LNG stations, 13 are operational and 10 are ready to be commissioned as per the details below:

Sr No	Location	State	Entity	Status
1	Maliya	Gujarat	IOCL	Operational
2	Gollarahatti	Karnataka	IOCL	Operational
3	Sriperumbudur	Tamil Nadu	IOCL	Operational

4	SempulivaramPonneri	Tamil Nadu	IOCL	Operational
5	Madurai (Outskirt)	Tamil Nadu	IOCL	Operational
6	Hanuman Junction	AndhraPradesh	IOCL	Operational
7	Thimmapur	Telengana	IOCL	Ready
8	Anayara	Kerala	IOCL	Ready
9	Panacherry	Kerala	BPCL	Operational
10	Avinashi	Tamil Nadu	BPCL	Operational
11	Oran	Gujarat	HPCL	Operational
12	Mhasve	Maharashtra	HPCL	Ready
13	Barapathar	Rajasthan	HPCL	Ready
14	Prayagraj	Uttar Pradesh	HPCL	Ready
15	Ajmer	Rajasthan	GAIL/ IGL	Operational
16	Nashik	Maharashtra	GAIL	Operational
17	Mandideep	Madhya Pradesh	GAIL	Ready
18	Savroli	Maharashtra	GAIL / MGL	Operational
19	POR - NH 48 - Baroda	Gujarat	GAIL/ VL	Operational
20	Irugur	Tamil Nadu	PLL	Ready
21	Keerambur	Tamil Nadu	PLL	Ready
22	Koneripalli	Tamil Nadu	PLL	Ready
23	M K Hubli	Karnataka	PLL	Ready

In addition to the above, 10 LNG retail stations owned by Private entities are also operational. Further, more locations are being identified and planned by Oil PSUs and Private sector companies at various demand locations in India in phase-2."

3.44 The government aims to increase LNG dispensing stations from current 6 to about 1000. When asked about the timeline and implementation strategy for this significant expansion, the Ministry submitted as under:

"In order to cater growing Auto-LNG demand in India, Oil & Gas PSUs collectively are setting-up 49 LNG retail stations on Golden Quadrilateral and other national highways of India in Phase-1 setup by MoP&NG. Further, 10 LNG retail stations owned by Private entities are operational.

More locations are being identified and planned by Oil PSUs and Private sector companies at various demand locations in India in phase-2."

Chapter 4

Demand and Use of Natural Gas

A. Uses of Natural Gas in the Country

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 2023, primary energy consumption in the country was about 930 Million Tonnes of Oil equivalent (Mtoe) which has increased to 975 Mtoe during FY 2024-25. The share of Natural Gas in the energy mix is about 6.5% which is slated to increase further. 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; complete the establishment of National Gas Grid; and enhance the spread of City Gas Distribution (CGD) network across the country.

4.2 Natural gas, as one of the cleanest and most versatile energy sources, plays a pivotal role in supporting India's transition to a sustainable and low-carbon economy. Its uses span across multiple sectors, contributing significantly to economic growth, industrial development, and environmental sustainability. Natural gas has broad applications across multiple sectors due to its clean-burning properties and high energy efficiency. Some of the primary uses are:

I. **Power Generation:**

- Natural gas serves as a primary fuel in gas-based power plants, particularly in Combined Cycle Gas Turbines (CCGT), known for their high efficiency and lower emissions compared to coal and oil.
- It is also used for electricity generation as a backup for renewable energy sources like wind and solar, ensuring grid stability.

II. **Industrial Applications:**

- Used as a heat source in energy-intensive industries such as steel, cement, glass, and aluminum production.
- Acts as a crucial feedstock in producing ammonia for nitrogen-based fertilizers, methanol, and petrochemical derivatives like ethylene and propylene.

III. **Residential & Commercial Uses:**

- Delivered as Piped Natural Gas (PNG) for cooking, water heating, and appliances in homes and commercial establishments.

IV. **Transportation:**

- Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) are used as cleaner alternatives to gasoline and diesel in vehicles, particularly in heavy-duty transportation and public transit.

V. **Hydrogen Production:**

- Natural gas is a primary source of hydrogen production through steam methane reforming, essential for fuel cells and industrial processes.

VI. **Emerging Applications:**

- LNG bunkering for marine transportation and conversion to Synthetic Natural Gas (SNG) for grid integration.

3. Strategies to Enhance Economical and Technical Efficiency

I. **Infrastructure Development:**

- Strengthen nationwide gas pipeline networks and storage capacities.
- Establish additional LNG import terminals to enhance supply flexibility.

II. **Policy Support:**

- Provide subsidies and tax incentives for industries and households adopting natural gas.
- Enforce stricter emission norms to encourage a shift towards cleaner fossil fuels like natural gas.

III. **Technological Advancements:**

- Leverage digital technologies like Artificial Intelligence (AI) for pipeline monitoring, leak detection, and network optimization.
- Invest in advanced turbine technologies to improve efficiency in gas-based power plants.

IV. **Integration with Renewables:**

- Position natural gas as a transition fuel supporting renewable energy penetration while maintaining grid stability.

B. Demand for Natural Gas in the Country

4.3 The country has experienced sustained economic growth over the past few years resulting in increased industrialization, urbanization and infrastructure development along with the rise in total sales of vehicles. These are the major factors which have contributed to overall higher demand for transportation, energy, and fuel, consequently driving up fuel consumption. The Pradhan Mantri Ujjwala Yojana (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 Pipeline Natural Gas (PNG) in urban areas. The transportation sector has experienced remarkable growth in recent years, emerging as the fastest growing end-use segment. India is led for a significant expansion of its transportation infrastructure – from highways, railways and metro lines to airports and ports.

4.4 Total consumption of natural gas during the FY 2024-25 was 71.31 BCM which was 5.63% higher than the consumption (67.51 BCM) of FY 2023-24. When asked about details of consumption of Natural Gas during the last 10 years in the Country, the Ministry submitted as under: -

S.No.	Year	Consumption of Natural Gas (BCM)	% Growth in Consumption of Natural Gas
1.	2014-15	50.30	-2.94
2.	2015-16	50.18	-0.24
3.	2016-17	54.41	8.43
4.	2017-18	58.47	7.45
5.	2018-19	60.60	3.66
6.	2019-20	62.61	3.31
7.	2020-21	60.98	-2.60
8.	2021-22	64.16	5.21
9.	2022-23	59.97	-6.53

10.	2023-24	67.51	12.58
	2024-25 (P)	**71.31**	**5.63**

P – Provisional

C. Sectoral Consumption of Natural Gas

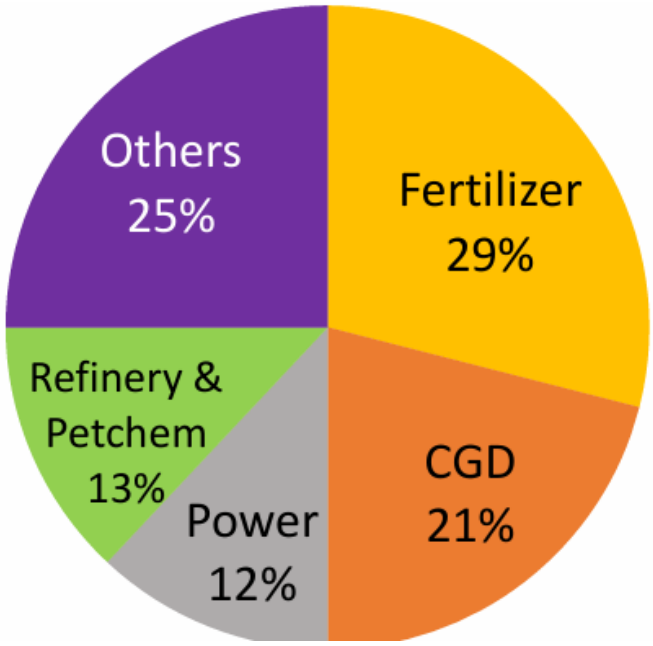
4.5 On the query of the Committee regarding sectoral consumption of Natural Gas in the Country, the Ministry submitted as under: -

NG Consumption during the FY 2024-25 (in MMSCM)			
Sector	**Domestic**	**RLNG**	**Total**
Energy Sector			
Power	6117	2775	8892
CGD	10045	5007	15051
Refinery	1501	4362	5864
I/C for P/L System	1967	2	1968
Agriculture (Tea Plantation)	153	0	153
Industrial	354	766	1120
Manufacturing	492	1191	1682
Other/Misc	9164	1212	10376
Non Energy Sectors			
Fertilizer	2876	17607	20483
Petrochemical	1183	2173	3355
LPG Shrinkage	919	0	919
Sponge Iron/Steel	485	847	1332
Total	**35254**	**35942**	**71196**

Source: Oil and Gas companies

4.6 Sectoral consumption patterns indicate that the fertilizer industry is the largest consumer of Natural Gas, followed by transport, residential use, and agriculture. Within industry, energy-intensive sectors such as steel, cement, and fertilizers dominate the consumption profile.

Transport demand is still overwhelmingly met by oil-based fuels, though natural gas and electric mobility are gradually emerging as alternatives.



4.7 On the above issue, the representative of Ministry of Petroleum and Natural Gas submitted as under:

> "52 million tons per annum, of which domestic gas is 27.2 million metric tons. The share is 52 percent, and imported gas is 24.8 million metric tons per annum. The fertilizer sector is consuming 57 million cubic meters per day out of 187. CGD is consuming 38 million cubic meters per day, power is consuming 24 million cubic meters per day, refineries and petrochemicals are consuming 22 million cubic meters per day, and the remaining other sectors are consuming 44 million cubic meters per day. ultimate objective is to reach 15 percent by 2030"

D. Allocation of natural gas to various sectors:

4.8 On the query of the Committee regarding policy of the Ministry for allocation of natural gas to various sectors of Indian economy, the Ministry submitted as under: -

> "Government of India *vide* guidelines for allocation of domestic natural gas to CGD entities for CNG (Transport) and PNG (Domestic) dated 14.11.2013

&20.08.2014, authorized GAIL to divert gas from the non-priority sector to CNG (T) and PNG (D) sector. The order of priority is as follows:

i. CNG(T) and PNG (D) segment of CGD sector
ii. Fertilizer (Urea)
iii. LPG
iv. Power
v. CGD sector (Industrial and Commercial sector)
vi. Steel, refineries and petrochemicals
vii. Others"

4.9 The Committee observed that the power plants are underutilized due to lack of constant supply of CNG/LNG. In this regard, on the query of the Committee regarding steps taken by the Ministry for increasing the supply of CNG/ LNG to power plants, the Ministry submitted as under:

"As per Central Electricity Authority (CEA), total installed capacity of power plants in India is ~475 GW. Out of this, thermal power plants accounts for ~247 GW (Coal based units: ~222 GW & Gas-based units: ~24 GW). Currently, there are 58 gas-based power plants in India, out of which, 39 plants are connected with gas grid (~20 GW), while 19 plants are connected with low pressure / regional / isolated networks (~4 GW). Further, ~ 9.3 GW of installed capacity is non-operational / under preservation.

Despite constituting a capacity of ~24 GW, the utilisation rates of gas-based power plants have remained at lower level owing to the production cost economics which makes them in competitive against other fuel based power plants (including coal) and renewable."

4.10 Further elaborating on the issue, the Ministry submitted as under: -

"The Government of India is committed to promoting the use of natural gas in power generation as part of the transition to cleaner energy. Accordingly, steps are being taken to facilitate RLNG supplies through long-term sourcing arrangements as well as short-term and spot contracts, to make provisions for

supply during peak demand periods, and to expand LNG import and pipeline infrastructure under the National Gas Grid. Further, continuous coordination is being maintained with the Ministry of Power, CEA, state utilities and power producers so that gas-based plants, while presently under-utilised, can be effectively deployed to support cleaner power generation and grid stability.

Further, GOI is taking the following steps to augment the supply of natural gas to the power sector:

1. Facilitating RLNG Supplies – Long-term RLNG sourcing arrangements have been entered into with major power utilities (e.g., NTPC, IPGCL, KPCL, PPCL), along with provisions for short-term and spot contracts to meet seasonal requirements. Supplies are also arranged under schemes such as NVVN and Section 11 of the Electricity Act, 2003, whenever directed by CEA.

2. Preparedness for Peak Demand – Arrangements have been made for augmented RLNG supplies during peak demand periods (e.g., Apr–Jun 2025) through long-term contracts, with readiness to source additional spot cargoes (currently ~US$ 11.5/MMBtu, DES) based on market conditions.

3. Expansion of LNG & Pipeline Infrastructure – Ongoing expansion of LNG regasification terminals and cross-country pipelines under the National Gas Grid to improve connectivity and reliability of supply to gas-based plants.

4. Stakeholder Coordination – Continuous engagement with the Ministry of Power, CEA, state utilities, and power generators to align gas allocation with operational readiness of plants and facilitate their role in balancing renewable energy in the grid.

These measures are intended to ensure that gas-based plants, while presently under-utilised, can contribute to cleaner power generation and support grid stability in India's transition towards a low-carbon energy system."

4.11 On the issue of Generating Electricity from Natural gas, representative of the Ministry of Petroleum and Natural Gas submitted the following:

"As far as natural gas and power are concerned, as we mentioned in the initial presentation, the electricity generated from natural gas is expensive. Therefore, it is

more expensive compared to coal. The electricity generated from coal is cheaper, and solar electricity is also cheaper. Natural gas is not proving viable for electricity generation. It is technologically viable; you don't have to heat the coal, you just turn on the gas and it starts immediately, but the cost per unit is coming out to be expensive, which is why no one is able to buy it right now."

E. Awareness Programmes for enhancing uses of Natural Gas

4.12 There is lack of awareness among the users about PNG safety primarily due to reliance on conventional LPG, limited exposure to piped gas systems in certain areas, and insufficient public education on operational and safety aspects of PNG usage. On the query of the committee about campaigns or advertisements launched to promote the use of natural gas among the masses, the Ministry submitted as under: -

"In India, various public awareness campaigns have been launched by PNGRB & CGD companies to educate and sensitize people about the advantages of using natural gas over conventional fuels like coal, wood, kerosene, and LPG. These campaigns primarily focus on the environmental, health, economic, and safety benefits of natural gas. Below are some notable public awareness campaigns:

a) Petroleum and Natural Gas Regulatory Board (PNGRB) along with City Gas Distribution entities launched a campaign from January 26th to March 31st, 2024, aimed to promote the adoption of PNG among households and to expand PNG consumer base across a broader segment of the population.

b) Door to door campaign, road shows, radio jingles, and promotional schemes like incentives on use of PNG are conducted by the CGD entities in their respective GAs.GAIL (India) Limited has launched yet another series "Waah Kya Energy Hai" to highlight the accessibility and benefits of embracing new, clean and environmentally friendly fuel options - Compressed Natural Gas (CNG) and Piped Natural Gas (PNG) offered by GAIL and its group companies"

4.13 On the issue of steps taken by the Ministry to create awareness for use of PNG by public, the Ministry submitted as under:

"In addition to the submissions made at point 6 above, various CGD entities have taken the various steps to build confidence and increase awareness about PNG in public which, *inter-alia*, include:

- Launched a new promotional scheme for Domestic PNG customers.
- Displayed hoardings at retail outlets.
- Organized registration counters and conducted camps.
- Distributed pamphlets through newspapers and other modes during the campaign.
- Organized registration camps in parks, housing complexes & malls.
- Established kiosks in retail outlets.
- Engaged the youth with quizzes and other activities to raise awareness in schools with campaign named "Catch them Young".
- Organized Walkathon for residents for PNG awareness
- Collaborated with Resident Welfare Associations (RWA) and engaged local authorities and personalities to create PNG-D awareness in housing societies.
- Distributed Gas lighters and Aprons to customers as giveaways during the Gas-in drive.
- Conducted door-to-door PNG awareness campaign.
- Nukkad Natak for PNG awareness conducted."

F. Pricing of Piped Natural Gas (PNG)

4.14 Pricing of fuel is one of important factor which determine the choice of fuel type by the majority of Indian household. On the query of the Committee regarding pricing of PNG connection, the Ministry submitted as under: -

"Exact cost structure, including meter security and consumption security deposits, varies across different CGD entities. For instance, to get a new PNG connection, IGL charges a refundable security deposit amounting Rs. 7000/-, wherein Rs. 6000/- are against the meter security deposit and the remaining ₹ 1000/- are

against the consumption security deposit. This whole amount of Rs. 7000/- is refunded to customer at the time of permanent disconnection."

4.15 When asked to furnish details of pricing mechanism for PNG and LPG cylinders, price determinants and subsidy framework, the Ministry submitted as under:

(i) "Mechanism for Determining Prices for PNG and LPG Cylinders: The pricing mechanism for Piped Natural Gas (PNG) and Liquefied Petroleum Gas (LPG) cylinders differs due to the nature of their supply chain, procurement, and subsidy framework.

PNG Pricing

The Retail Selling Price (RSP) for domestic PNG is determined by the respective authorized City Gas Distribution (CGD) entity within a Geographical Area (GA). The components influencing PNG pricing include:

- Domestic natural gas price.
- Exchange rate fluctuations.
- Natural gas transportation tariff.
- Selling and distribution costs.
- Value-added tax (VAT) and other state taxes.

LPG Pricing

The pricing of domestic LPG is linked to international market dynamics. The Government of India modulates the effective price of subsidized domestic LPG cylinders to benefit consumers under the PAHAL (DBTL) scheme. Key elements of LPG pricing include:

- The market-determined price of non-subsidized LPG.
- Distributor commissions and GST.
- Government subsidies for specific segments like PMUY beneficiaries.

- The government provides additional subsidies for PMUY beneficiaries, amounting to ₹300 per 14.2 kg cylinder, as per the notification effective from October 5, 2023."

4.16 On the query of the Committee regarding difference between the cost of PNG and LPG for households, the Ministry submitted as under**:**

"Price comparison of PNG and non-subsidized LPG Cylinders in energy terms (as on Sep, 2025) is as under:

Type of Fuel	**GCV per unit**	**Prices In Delhi**	**Equivalent Price in Rs/Kcal**	**Price Diff. (%)**
LPG	11300	853	0.0053	1.598%
PNG	9480	49.59	0.0052	

Hence, the prices are almost comparable.

However, there are certain inherent advantages with PNG that need to be highlighted: Piped Natural Gas (PNG) being supplied through pipeline, obviates the hassles of booking, handling, storing and measuring the Liquefied Petroleum Gas (LPG) cylinder. Moreover, being lighter than air, PNG is a safer fuel for cooking."

However, the LPG supplied under PMUY, as shown in the table below, tends to be economical.

Type of Fuel	**GCV per unit**	**Prices In Delhi**	**Equivalent Price in Rs/Kcal**	**Price Diff. (%)**
LPG	11300	**603**	0.0038	-27%
PNG	9480	48.59	0.0051	

(iii) Long-term Cost-Effectiveness and Sustainability:

Piped Natural Gas (PNG) being supplied through pipeline, obviates the hassles of booking, handling, storing and measuring the Liquefied Petroleum Gas (LPG) cylinder. Moreover, being lighter than air, PNG is a safer fuel for cooking. In terms of energy content per unit (kcal/kg), PNG is comparatively advantaged vis-à-vis LPG. However, while Government continues to modulate the effective price to consumer for domestic LPG, the cost of natural gas depends on several dynamic factors such as cost of gas procured, state taxes, tariff, subsidy given, transportation and distribution cost etc."

4.17 The Committee were also apprised by the Ministry that there is no subsidy being provided by the Central Government directly to PNG customers.

On the issue of pricing challenges of PNG vis-à-vis CNG/LPG, representative of the Ministry of Petroleum and Natural Gas submitted the following:

"Is PNG more expensive than CNG and LPG? First of all, we are providing piped natural gas, and there is no subsidy on piped natural gas, whereas there is a subsidy on LPG. If you look at the Ujjwala cylinder, there is a subsidy of three hundred rupees, but if a household is using Ujjwala, they will not want to switch to PNG because there is no subsidy from the Government of India on PNG. For them, PNG will actually be more expensive; the initial pipeline connection will be expensive, and the monthly bill will also be higher. There are many households that will want to continue with LPG and Ujjwala; they will never want to switch to PNG."

4.18 On the issue of reforms undertaken in Pricing of Natural Gas, representative of the Ministry of Petroleum and Natural Gas submitted the following:

"The ministry has implemented several reforms in this sector. We would like to mention some of them here. The APM gas prices were reviewed through a committee to make them comparable to market prices. It will be 10 percent of the Indian crude market price – the average price of all crude oil imported into India, which we call the Indian crude market – on an MMBtu basis. This used to be three to four dollars per MMBtu, but nowadays it is approximately seven and a half dollars. A ceiling and a floor price have also been implemented."

G. Taxation on Natural Gas

4.19 When asked about details of taxation on supply and distribution of natural gas, the Ministry submitted as under: -

a. Current Taxation Structure and Associated Challenges:

- Natural gas is currently governed by VAT/CST with varying rates across states (ranging from nil to 25%).
- Additional state-specific levies like Green Cess (Goa), Surcharge (Haryana), and Road Development Cess (Tripura) further complicate the tax structure.
- The current system involves VAT and other state-specific levies, leading to tax cascading.
- Due to tax rate differences among states, Gas from a state with lower VAT is cheaper leading to consumers preferential purchase from certain states making gas originating from high VAT states unaffordable.

b. Impact on Gas Import and Domestic Production:

1. Import-Related Issues:

- While volumerts face customs duty of 2.75% (including SWS), crude oil is subject to much lower duty of Customs (Rs.51/MT), therefore tax burden is higher on LNG.

2. Domestic Production Challenges:

- Inability to claim Input Tax Credit on GST paid for exploration and production inputs
- Increased capital and operational costs in the E&P sector due to stranded taxes
- Higher tax burden affecting the viability of difficult fields

The Ministry is regularly taking up the matter with Department of Revenue, Ministry of Finance and State Govts to bring natural gas under the GST regime with an

appropriate rate structure; rationalization of customs duty structure for imported gas etc."

4.20 On the query of the Committee regarding duty or taxes levied by the Ministry on CNG and LNG, the Ministry submitted as under**:**

"CNG is covered under Central Excise Duty which has remained constant at 14% since 2019. Natural Gas is imported as Liquefied Natural Gas (LNG) which attracts a Basic Customs Duty (BCD) of 2.5% and surcharge of 10% on BCD which has remained constant since 2019.

In order to reduce the amount of excise duties/taxes levied on CNG and LNG, this Ministry has requested Department of Revenue to consider bringing Natural Gas under the fold of GST. Further, this Ministry has also solicited the support of various State Governments and UT administration to reduce the VAT rates on Natural Gas."

4.21 When asked about status of bringing Natural Gas under the GST regime, the Ministry submitted as under**:**

"The Ministry is regularly taking up the matter with Department of Revenue, Ministry of Finance to bring natural gas under the GST regime with an appropriate rate structure.

Inclusion of natural gas in the ambit of GST is necessary for eliminating the cascading effect of different taxes on natural gas across different states, and to promote usage of natural gas. Further, uniformity of tax is required which will lead to reduction of cost of natural gas and increase in its usage across industries."

4.22 On the issue of Tariff and Taxation of Natural Gas, representative of the Ministry of Petroleum and Natural Gas submitted the following:

"Tariff means that a certain amount of rupees per unit of gas will flow through it, which the customer has to pay. Adding them up resulted in a very high amount, so the regulatory board unified it. The customer pays an average kind of rate. The pipeline owner receives the approved rate. We call this the Unified Natural Gas

Pipeline Tariff Scheme. We had introduced this for the CGD sector. Next. These are the challenges in our sector. We also import gas. High global prices have an impact on this. However, domestic gas prices remain quite stable and controlled. There is a formula, and prices are decided according to that. Global prices are high, so the capacity utilization of power plants is not being fully achieved, and consumers have considerable resistance to the price of gas. Resistance means – they see that the price of LPG, fuel oil, coal, or biomass fuel is cheaper, so they are hesitant to switch. Sir, there are also taxation issues in this section. GST is a bit high, natural gas is not under GST, there is a 14 percent excise duty on CNG, and a 2.75 percent customs duty on LNG. These things are a bit of a challenge for us."

4.23 Elaborating further on the taxation issues and challenges in the Natural Gas sector, representative of the Ministry of Petroleum and Natural Gas submitted the following:

"Taxation is a very big issue for us, for CNG and the entire gas sector. The issue was raised that different taxes are being levied on CNG, and this is absolutely true. CNG is an item on which GST is not levied, but when we mix it with natural gas, VAT is levied again on GST, CST is levied on it, every kind of tax is levied again even after GST is applied because GST is not applicable to natural gas. Through the committee, my request is that if gas is brought under GST, it will benefit citizens the most because double taxation will be eliminated. Not just double taxation, but even triple taxation will be eliminated. Bringing gas under GST is very important; this is why our gas consumption is not increasing. Let's look at the industry. If an industry shifts to natural gas, let's say it was previously using LPG or furnace oil, that company was receiving input tax credit under GST for that LPG and furnace oil. We told them, "Why are you using furnace oil or coal? Use clean fuel, we are providing you with gas." They replied, "You are giving us natural gas, but there is no GST on natural gas, so we cannot claim credit for the VAT we are paying." A dirty fuel is being used because there is a tax benefit associated with it. We are unable to use clean fuel because we haven't brought gas under GST. The day we bring gas under GST, you will see a reduction in pollution, you will see increased efficiency,

and citizens will benefit from lower prices. These are the benefits of bringing gas under GST, which are currently not available."

Chapter 5

National Gas Grid and City Gas Distribution (CGD)

Gas Pipeline infrastructure is the most economically feasible and safe 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 under development to ensure the adequate availability and equitable distribution of natural gas in all parts of the country. Efforts are being made to complete the Gas Grid in a time bound manner.

5.2 With the aim to create a National Gas Grid (One Nation, One Gas Grid) and increase the availability of natural gas across the country, Petroleum and Natural Gas Regulatory Board (PNGRB) has authorized approximately 34,238 km natural gas pipeline network across the country, about 25,923 km long gas pipeline network is under operation in the country and around 9,954 km pipeline is under various stages of construction (Till September, 2025). These pipelines are constructed by the various project proponents from their own funds keeping in view the technical and commercial feasibility following the various regulatory approvals.

5.3 When asked to furnish details of steps being taken to develop National Gas Grid in the Country, the Ministry submitted as under:

> "In order to develop gas pipeline network in the Eastern part of the country, the Cabinet Committee on Economic Affairs (CCEA) 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 project. This project started in 2016 and connected 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 have supported 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 Pradhan Mantri Urja Ganga project. The pipeline has also been extended from Barauni to Guwahati (via Siliguri & Bongaigaon), as an integral part of Jagdishpur Haldia & Bokaro Dhamra Pipeline (JHBDPL) to connect North East Region (NER) with the National Gas Grid. 726 km Barauni-Guwahati pipeline is passing through three states namely Bihar, West Bengal and Assam. Total 3306 km. pipeline i.e. Jagdishpur-Haldia & Bokaro-Dhamra including Barauni-Guwahati pipeline has been executed with the total investment of ₹17,233 crore (latest cost). Further, 253 km. of Dhamra-Haldia Pipeline section has also been authorised to GAIL as an expansion of JHBDPL Project. 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. The entire sections of Integrated JHBDPL including BGPL & Dhamra Haldia have been commissioned (3269 kms) except Kolkata-Haldia Pipeline (162 kms) and Dhamra-Haldia (103 Kms). The balance section is anticipated to be completed in the year 2025.

An 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 (NEGG). 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 ₹5559 crore to improve viability of project. Further, out of 1,670 km of NEGG, about 992 km. of lowering has been completed as on 24.03.2025. 24”x 392 km. pipeline of Guwahati – Numaligarh section is ready for commissioning.

In the Southern region, Srikakulam Angul Pipeline (SAPL) with a total length of 744 km (619 in Odisha and 125 km. in Andhra Pradesh) and capacity of 6.65 MMSCMD is being established. 421 km. (Mainline) Pipeline section completed and balance 322 km. spurline is under implementation (as of March, 2025, lowering of 258 km. is achieved) which is to be completed in the year 2025. Further, Kochi-Kootanad-Bangalore-Mangalore (KKBMPL) Natural Gas pipeline is being constructed to facilitate processing of gas in the southern region. 579 km of the pipeline is commissioned and the work is under progress for construction of remaining 322 km. in the state of Tamil Nadu. Anticipated completion date is progressively by March, 2026. IOCL has commissioned 1,080 km length of Ennore - Thiruvallur - Bengaluru - Puducherry - Nagapattinam - Madurai - Tuticorin Natural Gas Pipeline (ETBPNMTPL) for supply of natural gas to anchor customers and city gas distribution (CGD) customers in the states of Tamil Nadu, Andhra Pradesh, Karnataka and UT of Puducherry. The pipeline aims at establishing National Gas Grid in parts of Southern India, in line with the GoI vision of creating a gas-based economy. The pipeline is presently supplying gas to 7 Geographical Areas (GAs) namely Chennai & Thiruvallur; Kanchipuram; Trichy & Namakkal; Chittoor, Kolar & Vellore; Tiruvannamalai, Villupuram & Kallakurchi; Madurai, Theni and Virudhnagar; and Kanyakumari, Thoothukudi and Tiruneveli Kattabo. Connectivity to 7 more GAs is under advanced stages and likely to be commissioned in near future. Further, two spur lines under ETBPNMTPL are envisaged to supply gas to Cauvery Basin Refinery (CBR). The CCEA clearance for CBR is awaited. Construction of these spurlines will further help in catalysing the industrial growth in the Region.

PNGRB has authorised GAIL India Limited for laying of Natural Gas pipeline from Gurdaspur to Jammu on 12.07.2023. To cater the demand of Srinagar region, PNGRB has invited bids for laying of 325 km long Natural Gas Pipeline from Jammu to Srinagar, emanating from GAIL's Gurdaspur Jammu Natural Gas Pipeline. GAIL is constructiong 160 km long Gurdaspur Jammu pipeline with authorized capacity of 3.1 MMSCMD. This pipeline is envisaged to connect UT of Jammu & Kashmir with National Gas Grid to supply cleaner natural gas. The scheduled completion date is July, 2026. Additionally, PNGRB has also invited bids for laying of 875 km long Natural Gas Pipeline from Ennore, Tamil Nadu to Barshi, Maharashtra. This pipeline shall emanate from Ennore LNG Terminal and connect to East-West

pipeline at Barshi which shall also enable onward transportation of natural gas to major interconnecting pipelines in the country."

City Gas Distribution (CGD) Networks

5.4 A City Gas Distribution (CGD) network is the interconnected network of pipelines to make supply of natural gas to domestic, industrial or commercial premises and CNG stations situated in a specified Geographical Area (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. When asked about policy of the Ministry for coverage of CGD in the Country, the Ministry submitted as under: -

"Till May 2014, CGD networks was available in about 33 Geographical Areas (GAs) spread over 53 districts (part/full) in different part of the country. CGD networks are being developed based on the availability of trunk gas pipeline connectivity or gas sources and techno-commercial feasibility in a GA. In order to increase the reach of natural gas in the country, in addition to authorizing the natural gas pipelines, PNGRB has also authorized CGD entities to develop City Gas distribution network in the country. PNGRB has conducted 14 CGD bidding rounds and has authorized 307 geographical areas in the country covering almost 100 % of the country's mainland (excluding islands).

As per MWP targets, authorised entities have to provide approximately 12.6 crore PNG domestic connections and establish 18,336 CNG Stations by 2034. As on 31.01.2026, the authorized entities have provided about 1.63 crore Domestic PNG connections across the country and established 8,616 CNG Stations.

5.5 On the above issue representative of the Ministry of Petroleum and Natural Gas submitted the following:

"Contribution towards net zero can be significant, so a new plan was devised whereby these large companies will set up 195 plants, including Indian Oil, Bharat Petroleum, GAIL, Hindustan Petroleum, IGL, Petronet LNG, and OIL. They have

been given permission to build 195 state-of-the-art plants separately. Work has already started under this scheme. CNG sales in the year 2023-24 were approximately 20,000 tons. It is expected that this will double this year. These opportunities exist in the CNG sector because it is a very important segment. The ministry has approved many schemes within this sector. The first scheme is Financial Support for Biomass Aggregation, under which a budget of Rs. 565 crore has been approved for CBG producers for biomass aggregation machinery for the financial years 2024 to 2027. Under this scheme, 50 percent of the procurement cost of their bio-aggregation machinery will be provided as assistance, and this assistance will be given on a first-come, first-served basis to the first 100 CBG plants. Five proposals have already been approved under this scheme. The second scheme approved by the ministry is Financial Assistance on Development of Pipeline Connectivity of CBG Plants and CGD Network. If you can visualize it, you will see that the CBG plant is located in a geographical area, usually in a rural area, because it is more advantageous to build it there where agricultural waste is readily available. A scheme for financial assistance has been approved for the CGD authorized entities, with a budget of Rs. 994 crore, under which financial assistance will be provided to 100 projects from financial year 2024 to 2026."

5.6 When asked about steps being taken by the Ministry to promote the expansion of City gas networks and enhance the usage of natural gas in cities, the Ministry submitted as under:

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. Department for Promotion of Industry and Internal Trade (DPIIT) notified amended Rule 2018 to ease out process to set up CNG dispensing facilities at existing OMC ROs."

5.7 Further elaborating on the issue, the Ministry submitted as under: -

"Government has taken various steps to ensure the availability of Natural Gas to CNG (Transport) and PNG (Domestic) sector across the country (including tier-2, tier 3 cities and rural areas) which includes allocating domestic gas on priority basis to CNG (T)/PNG (D); diverting domestic gas from non-priority sectors to meet the requirement for CNG (T)/PNG (D) sector, expansion of City Gas Distribution (CGD) network, expansion of National Gas Grid Pipeline, setting up of Liquefied Natural Gas (LNG) Terminals, Sustainable Alternative Towards Affordable Transportation (SATAT) initiatives to promote Bio-CNG, etc. Government has also notified that gas produced from discoveries in Deepwater, Ultra Deepwater and High Pressure-High Temperature areas, in any situation which may require proportionate distribution of the gas offered under the bidding process, the contractor shall offer gas to bidders belonging to CNG (T)/PNG (D) sector on priority."

5.8 When asked about monitoring of progress of City Gas Distribution Projects, the Ministry submitted as under: -

"The Government and PNGRB monitor the progress of CGD networks based on reports submitted by the entities. If there are any delays or shortfalls, the PNGRB advises the entity to take corrective action. This includes calling them for progress review meetings or statutory hearings under existing regulations to discuss challenges and the latest updates on their MWP targets in authorized GAs.In addition, Government conducts regular interactions and meetings with State Governments for the development of CGD network in respective States and address challenges in this regard."

5.9 On enquiring about the progress of the natural gas pipeline project initiated in Ayodhya and Jammu and Kashmir, the Ministry submitted as under:

"Green Gas Limited (GGL) was authorized by PNGRB for the development of the CGD Network in the GA of Ayodhya. GGL has laid approximately 94 km of steel pipeline (10", 8", and 4") from the hooking-up point at GAIL City Gate Stations (CGS), Jagdishpur, district Amethi (NH-731) to Milkipur, passing through Musafirkhana and Khadbadiya (Tehsil Milkipur-Ayodhya). Initially, GGL proposed a stretch for laying the steel pipeline for Part-A, which was the hooking-up point from GAIL CGS Jagdishpur to Sultanpur via NH-731, and Part-B, which was from Sultanpur to Ayodhya via NH-330. However, before awarding the work for the project in September 2021, the pipeline route of Part-B was changed due to issues related to NH road widening and the long lead time for forest permissions. The new route for Part-B is from NH-731 towards Ayodhya via Musafirkhana to Khadbadiya (Tehsil Milkipur-Ayodhya), replacing the previously planned route.

At no point was the ongoing project for laying the steel pipeline halted or its route shifted, as the route had been finalized at the start of the project. Till date, GGL has laid approximately 94 km of steel pipeline (10", 8", and 4") from the hooking-up point at GAIL Jagdishpur (NH-731) to Milkipur, passing through Musafirkhana and Khadbadiya (Tehsil Milkipur-Ayodhya). GGL has planned to extend the pipeline further into the heartland of Ayodhya city and Sultanpur in coming years."

5.10 On this issue, the Ministry further submitted as under: -

"PNGRB has authorized 2 GAs which cover 100% area of Jammu and Kashmir for the development of CGD infrastructure. GA covering Jammu, Udhampur, Reasi, Samba and Kathua districts is authorized to Indian Oil Corporation Limited (IOCL) in March, 2022, with MWP targets of 14,52,352 PNG (Domestic) connections, to be achieved by 30.09.2034 while the GA covering Anantnag, Bandipora, Baramulla, Budgam, Doda, Ganderbal, Kishtwar, Kulgam, Kupwara, Poonch, Pulwama, Rajouri, Ramban, Shopian and Shrinagardistricts has been authorized to Bharat Petroleum Corporation Limited in April 2024, with MWP targets of 30,804 PNG (Domestic) connections, to be achieved by 30.06.2032.

The Gas have been recently authorized as such the development of the PNG pipeline projects (CGD network) is presently in its early stages."

5.11 When asked about reasons for slow rollout of the PNG pipeline in districts like Hazaribagh and Ramgarh and steps taken to expedite the PNG pipeline connections, the Ministry submitted as under:

"Hazaribagh & Ramgarh Districts is part of Bokaro, Hazaribagh & Ramgarh Districts GA authorized to Indian Oil Corporation Limited for development of CGD Network with MWP target of 79,052 DPNG connections, 99 CNG stations and 1300 pipeline inch-km to be completed by 2030.

As on 30.06.2025, the authorized CGD entity has provided 13,512 DPNG Connections, establish 25 CNG station and laid 1,094 pipeline inch-km in the GA.

IOCL has informed that the infrastructure for PNG is available in the District of Ramgarh and is further being expanded. Steel pipeline to Hazaribagh is required to be laid in difficult hilly terrain through patches of forests and as such the progress is extremely slow due to technical challenges."

5.12 When asked to furnish details and status of Urja-Ganga Gas Pipeline Project, the Ministry submitted as under:

(i): GAIL's Jagdishpur-Haldia-Bokaro-Dhamra Pipeline (JHBDPL) is also known as Pradhan Mantri Urja Ganga Project (PMUG) gas pipeline. The present status of JHBDPL is as below:

- Total length of 2563 Km (5 sections)

- Completed length: 2401 Km (4 sections)

- Overall Physical Progress: 98.2 %

- Barauni-Guwahati Pipeline (727 km) which is also an Integral Part of JHBDPL is currently operational.

(ii): Details of the budget estimates & actual expenditure of JHBDPL & BGPL is as below:

JHBDPL

- Budget Estimate: Rs. 13,241 Cr
- Actual Expenditure: Rs. 12,160 Cr

BGPL (Integral Part of JHBDPL)

- Budget Estimate: Rs. 3,992 Cr
- Actual Expenditure: Rs. 3,794 Cr"

5.13 On the above issue representative of the Ministry of Petroleum and Natural Gas submitted the following:

"Since 2018, CGD network licensing has been implemented extensively across the entire country. We have covered the entire country. It has not yet been authorized in Andaman and Nicobar and Lakshadweep. Small households or CNG stations, where vehicles are refueled, fall under the CGD network, whose licensing is regulated by the regulatory board. Today, the entire country is covered by this network. 13.4 million homes across the country have natural gas connections. This is not LPG; we are talking about natural gas. There are 46,215 commercial connections and approximately 20,000 industrial connections. 7,084 CNG stations are operational. Approximately 7.3 million vehicles are registered with the RTO that have CNG cylinders installed."

5.14 Elaborating further on the issue if CNG and PNG licensing and targets, the representative of the Ministry of Petroleum and Natural Gas submitted the following:

> "Companies get a license for an area, for which they promise to provide pipeline connections to a certain number of people and set up a certain number of CNG stations. They invest their own money in this. No money is given from the government budget. That is the first thing. Now, the target they have given is not for 140 crore Indians. They have given their target for twelve and a half crore people, on the basis of which they have received this license authorization. If they fail to meet this target, they are penalized. The PNG Regulatory Board imposes a penalty on them. According to their criteria, if they fail to meet their year-on-year targets, they are penalized. If we ask now whether PNG will reach every home, the answer is no, it will not. Because the initial cost of providing piped gas is very high. That gas is not reaching every home. We don't even have a target to provide gas to every home. We are providing LPG to every home. The city gas companies are setting up CNG stations according to the targets they have given. Regarding the National Gas Pipeline, our target is to complete it by 2026-27. For the remaining 10,000 kilometers, our target is also 2026-27."

5.15 When asked about challenges being faced in laying of CGD in the Country, the Ministry submitted as under: -

"Some of the common issues and bottlenecks being faced vis-à-vis State Governments and other Authorities while developing CGD networks are as follows:

- Delays in requisite permissions for laying gas pipelines from the concerned Central/State Governments and Departments
- Requirements of multiple permissions for laying gas pipelines
- Non – availability of suitable land parcels in urban areas for critical CGD infrastructure such as City Gate Station, District Regulating Station, CNG Station etc.
- Non – uniform and highly exorbitant Road Restoration and Permission Charges in some States.
- Jurisdiction conflict between Authorities

- Road-cutting permission requires additional approval of DM and SP Traffic. This adds to additional delays in pipeline works.
- Many a times, it has been observed that despite having due clearance from the Statutory Authorities for laying of pipeline, the work cannot be executed at the desired pace as numerous utilities are present in the ROW and no clear demarcation is available with the concerned third-party agencies like OFCs, Water Pipeline, Electric Cables"

5.16 On the issue of Challenges in Natural Gas Sector, representative of the Ministry of Petroleum and Natural Gas submitted the following:

> "In addition, the infrastructural bottlenecks are related to land acquisition, permissions, and regulatory delays. Restoration charges are high, which we have already informed the esteemed committee about. Furthermore, there is a skill gap. CGD networks have been authorized across the country. The regulator has authorized 307 geographical areas. Because of this, there is a significant shortage of skilled manpower. There is a shortage of pipeline engineering specialists. We are also working with other ministries, in coordination with the Ministry, to address the shortage of trained personnel required for the operation and maintenance of CNG stations."

5.17 Elaborating further on the Challenges in Natural Gas Sector, representative of the Ministry of Petroleum and Natural Gas submitted the following:

> "Natural gas is not under GST. We have been submitting that to the hon. Committee many times. Bringing natural gas under GST may be one of the solutions. CNG has got 25 million cubic metre per day of gas in the country out of present sale. It is being sold through CNG stations. There 14 per cent excise duty is charged. So, if this is rationalized, it will really help in growing the use of CNG as fuel. In case of LNG import, the custom duty is only 2.5 per cent. But the GST on regasification is about 12 per cent which may be reduced to five per cent. The challenge that we foresee is lack of incentives for promoting natural gas vis-a-vis polluting fuels.

The consumption of gas can be helped only if most Ministries like Finance, Environment, and Petroleum are working in tandem and we are able to reduce the challenges to the consumption of natural gas. Again, the issues would be tax rationalization, permissions for pipeline laying from NHAI, from forest allocation of land and need for inter-Ministerial coordination

The third challenge that we would like to touch upon is growth of gas in CGD sector. Here the issues are numerous: High and non-uniform VAT rates, very big delays and big processing time for permission for pipeline laying, 14 per cent excise duty on CNG, which I mentioned two slides ago, non-uniform permission and road restoration charges. We wish that all the State Governments give directive for public transport buses to be based or at least certain per centage of those buses to be based on CNG fuel and allocation of land to CGD sector at nominal rates. The land is required by CGD sector for CNG station and district regulating station and decompression unit, etc."

5.18 When asked about details of penalties being imposed on Companies/entities for non-deliverance of PNG obligations, the Ministry submitted as under: -

"PNGRB has informed that as on June, 2025, 19 GAs have been imposed penalties on account of default in achievement of MWP Target as per the details below: -

S No	GA Name	Entity Authorized
i	Firozabad	Gail Gas Limited
ii	Kanpur	Central UP Gas Limited
iii	Bareilly	Central UP Gas Limited
iv	Gwalior	Aavantika Gas Limited
v	Indore (including Ujjain)	Aavantika Gas Limited
vi	Agra	Green Gas Limited
vii	Pune	Maharashtra Natural Gas Limited
viii	Moradabad	Siti Energy Limited
ix	Sonipat	GAIL Gas Limited
x	Dewas	GAIL Gas Limited
xi	Meerut	GAIL Gas Limited

xii	Kota	GAIL Gas Limited
Xiii	Mathura	Sanwariya Gas Limited
xiv	Jalandhar	Jay Madhok Energy Pvt. Ltd.
xv	Jhansi	Central UP Gas Limited
xvi	Ludhiana	Jay Madhok Energy Pvt. Ltd.
xvii	Kutch East	Jay Madhok Energy Pvt. Ltd.
xviii	Ratnagiri District	Unison Enviro Private Limited
xix	Chitradurga & Davanagere Districts	Unison Enviro Private Limited

The data available on the PNGRB website (Link : https://pngrb.gov.in/data-bank/20260131-CGD-MIS.pdf) with regard to the status of city gas distribution projects for which the authorisations have been granted for various geographical areas shows that the Jalandhar project and the Kutch (East) and Ludhiana projects, no domestic connection has been issued till January, 2026 against respective pro-rata targets of 1,87,200, 1,42,000, and 2,98,000 connections. Similarly, the Udupi District project has achieved 0 connections against a pro-rata target of 31,195. The Muzaffarpur, Vaishali, Saran, and Samastipur districts in Bihar authorized to Indian Oil Corporation Limited in March 2019, have achieved a meagre 54,021 connections against a pro-rata target of 3,52,441. The Srikakulam, Visakhapatnam & Vizianagaram Districts project shows a massive lag, achieving only 6,282 PNG connections against a pro-rata target of 77,487. In the Chennai & Tiruvallur Districts project, only 4,608 connections were completed against a pro-rata target of 9,35,000. Delayed pipeline deployment is seen in regions like the West Singhbhum District project which reports no pipeline progress against a pro-rata target of 57 inch-km. In terms of fuelling infrastructure, CNG station development is at a complete standstill with no stations built across recently authorized state-wide networks, including Mizoram, Arunachal Pradesh, Manipur, Nagaland, and Sikkim.

5.19 On the issue of Imposing penalties on OMCs for not meeting the targets, representative of the Ministry of Petroleum and Natural Gas submitted the following:

> “Since this is regulated by the Petroleum and Natural Gas Regulatory Board which gave the licenses, we have requested them to impose penalty for people who have

not met the target, because they got the area awarded to them on the basis of promises which they made. Now, if they are going back on that promise, if they are not meeting that promise, penalty should be levied. Some people say that these companies are happy to even pay that penalty because the cost of giving the pipe natural gas connection is more than the penalty, but that is a different problem to solve."

5.20 When enquired about the availability of any single Window mechanism to grant clearances, the Ministry submitted as under: -

"To facilitate expeditious development of City Gas Distribution Network across all States, MoPNG has suggested a draft CGD policy (to be adopted by various States), wherein among other issues, single window clearance for grant of various permissions to CGD entities had also been suggested.

Various states including Madhya Pradesh, Karnataka, Tamil Nadu, Tripura, Punjab, Uttar Pradesh, Rajasthan, Assam, Puducherry, West Bengal and Bihar have adopted the policy (as suggested by MoPNG) in toto or partially (including the provisions regarding single-window clearance)."

Policy for Land Acquisition and Compensation for Oil and Gas Pipelines

5.21 Land acquisition and grant of Right to use of Land have emerged as major factors causing delay in execution of Gas pipeline projects. When asked about details of the projects facing land acquisition issues, the Ministry submitted as under: -

"The details of Natural gas pipeline projects executed by GAIL (India) Limited, facing ROU / permanent land acquisition issues are as below:

Sl.	**Project Details**	**Remarks**
1	Durgapur-Haldia Pipeline Project (Section of Jagdishpur-Haldia & Bokaro-	At Present, the following ROU acquisition issues are being faced in execution of project:

Sl.	Project Details	Remarks
	Dhamra Pipeline Project) Total Length – 294 Km	RoU is being released progressively. 5 Km RoU is yet to be released in Howrah District of West Bengal. Demand of higher rates of compensation, pipeline re-routing & absence of ownership details affecting 10 Km of pipeline section in Hooghly & Howrah districts of West Bengal. Delay in compensation disbursement and ownership issues of fisheries in Purba Medinipur District affecting 15 Km of pipeline section. Issues are being resolved progressively with the help of district & state administration. Out of total length of 294 Km, 132 Km Pipeline sections have already been commissioned. Work is under progress in 162 Km pipeline section.
3	Dhamra-Haldia Pipeline Project (Expansion of Jagdishpur-Haldia & Bokaro-Dhamra Pipeline Project) Total Length – 253 Km	At Present, the following ROU acquisition issues are being faced in execution of project: RoU is being released progressively. 0.25 Km RoU is yet to be released in Purba Medinipur district. Delay in compensation disbursement and ownership issues of fisheries in Purba Medinipur District affecting 15 Km of pipeline section. Issues are being resolved progressively with the help of district & state administration. Out of total length of 253 Km, Odisha section of the pipeline (154 Km) has already completed. Work is under progress in West Bengal section (99 Km).

Sl.	Project Details	Remarks
3	Mumbai-Nagpur-Jharsuguda Pipeline Total length – 1702 Km	Following issues are being faced in various pockets of Durg, Janjgir Champa, Baloda Bazaar (Chhattisgarh) & Nagpur (Maharshtra) districts affecting around 47 Km of pipeline section: Farmers resistance, Demand of exorbitantly higher Compensation coupled with rerouting of pipeline Absence/errors of land records Issues are being resolved progressively with the help of district & state administration.

5.22 Further, North East Gas Grid (NEGG) pipeline project which is being implemented by IGGL (Joint Venture Company of IOCL, ONGC, GAIL, OIL, and NRL) is also facing some challenges on account of slow Right of Use (RoU) acquisition in some states and delay in allotment of land for SV (Sectionalizing Valve) and RT (Receiving Terminal) etc. The details is as under:

a. Delay in Administrative Clearance for laying 62 (Ch 48.926 to 92.303 Km) out of 76 Km of Dimapur-Kohima pipeline in Kohima district of Nagaland.
b. Delay in the handover of land for 05 nos. of SV in Nagaland.
c. Resistance by Local organisation for laying the pipeline from Ch 36 to 48.9 Km in Nagaland.
d. Re-routing of pipeline for 19 Km (Ch. 92.303 Km to 111.039 Km) due to resistance from local inhabitants in Nagaland.
e. Delay in the acquisition of land for 04 nos. of SV (0.20 Ha), 01 no. Intermediate station (0.64 Ha) and 01 no. Receiving Terminal (0.64 Ha) in Manipur.

f. Delay in clearance for laying the pipeline in NH ROW for 62 Km in Nagaland (Total:105 Km), 13 Km in Manipur (Total: 94 Km), 90 Km in West Bengal (Total: 144 Km) & 42 Km in Sikkim (Total: 42 Km).

g. Force Majeure in Sikkim since 04.10.23 & 10.06.24 due to disaster declared by the State Govt.

However, Government is continually pursuing with the concerned State Government and executing agency to expedite the completion of the Project."

5.23 When asked about methodology used for providing compensation to the farmers whose land is acquired for laying gas pipelines and the methodology, the Ministry submitted as under:

"RoU of land is processed under the Petroleum and Minerals Pipelines (Acquisition of Right of User in Land) Act, 1962 for laying of gas pipelines.

Compensation is calculated as per the provisions of Section 10 of the PMP Act, 1962. As per Section 10 (1), compensation at the first instance is payable for any damage, loss or injury sustained by the owner of such land where the pipeline has been laid. The amount of such compensation is determined by the Competent Authority by considering the following factors as provided by Section 10(3) –

(i) the removal of trees of standing crops, if any, on the land

(ii) the temporary severance of the land under which the pipeline has been laid from other lands belonging to, or in the occupation of, such person; or

(iii) any injury to any other property, whether movable or immovable, or the earnings of such persons caused in any other manner

Further, as per Section 10(4) of the PMP Act, 1962, compensation is also liable to be paid to the owner and to any other person whose right of enjoyment in that land has been affected and such compensation is calculated at ten per cent of the market value of that land."

5.24 On the query of the Committee regarding measures being taken to ensure fair and timely land acquisition for gas infrastructure, especially in resistance-prone areas, the Ministry submitted as under:

> "It is submitted that for laying of gas pipelines, Right of User (RoU) in land is acquired under the provisions of the Petroleum and Minerals Pipelines (Acquisition of Right of User in Land) Act, 1962 [P&MP Act]. For this purpose, the Central Government appoints a Competent Authority (CA) who is responsible for acquisition of RoU, determination of compensation, and its disbursement. Under the P&MP Act, 1962, compensation is paid to the person interested in land under which pipeline is laid, for any damage, loss or injury to such person as per the amount determined by competent authority. This determination includes enquiring the yield of crops, trees and fruits etc, requisition of market value of crop, timber, wood, fruit etc and getting other losses assessed from specified agency. Further, the Act also mandates payment of compensation calculated at 10% of market value of the land to the person whose right of enjoyment in any land has been affected in any manner.
>
> To ensure fairness and timely resolution in resistance-prone areas, negotiations with landowners are undertaken in the presence of Competent Authority/ State revenue officials, as per the provisions of P&MP Act. Further, wherever required, the Central Government also takes up such matters with the concerned State Governments to facilitate resolution and expedite project execution.
>
> In addition to RoU for pipelines, acquisition of land is also required for related gas infrastructure such as Intermediate Pigging (IP) stations, Sectionalizing Valve (SV) stations, Receiving Terminals (RT), and mother/daughter CNG stations etc. Such acquisition is carried out by the concerned implementing entity under the RFCTLARR Act, 2013 through the State Governments, to ensure fair compensation and timely availability of land."

Safety and Security of Gas Pipelines

5.25 When asked about the mechanism put in place to detect and tackle gas supply leak or rupture of pipeline, the Ministry submitted as under:

"All necessary safety measures are being in place by the CPSUs to detect and address natural gas leaks or pipeline ruptures. These include continuous monitoring through advanced SCADA (Supervisory Control and Data Acquisition) systems, real-time sensors, gas detectors, and periodic inspections. Additionally, national and international safety standards are strictly followed in the design, construction, operation, and maintenance of pipelines.

Dedicated emergency response protocols, remote-operated valves, automated shutdown mechanisms, and public awareness initiatives further strengthen safety measures. PNGRB has also established stringent technical regulations to ensure the integrity and security of gas distribution networks.

These collective efforts help in swift detection, response, and mitigation of any HVJ risks, ensuring safe and reliable natural gas supply."

5.26 When asked about the measures taken to ensure uninterrupted supply of gas through pipelines for domestic and industrial use throughout the year, minimize cases of cases of intermittent breakdowns and enhance system resilience, the Ministry submitted as under:

"Detailed overview of major PSU's is as follows:

(i) IOCL:

- IOCL Pipelines operates three cross country gas pipelines for supply of natural gas to the customers. Through the pipelines, uninterrupted supply of gas for domestic and industrial customers are ensured throughout the year. During FY 2023-24, an incident of pipeline leakage had occurred in IOCL's Dadri Panipat Natural Gas pipeline on 26.07.2023 wherein pipeline leakage had occurred due to flood condition in Yamuna River near Bagpat, Uttar Pradesh. The gas supply to the customers was restored on priority through an alternate gas supply route. As a permanent measure, the failed pipeline section was replaced by laying a new 3 km pipeline and the same was commissioned on 31.01.2024.

- For ensuring uninterrupted supply of gas to the customers, integrity management systems are in place for maintaining the health and integrity of pipelines. Pigging for cleaning the pipeline, internal and external corrosion

monitoring mechanism, Cathodic Protection System and monitoring, Coating integrity surveys, Alternating Current (AC) interference surveys, are among other measures in place to ensure health and integrity of pipelines to maintain uninterrupted supply.

(ii) GAIL:

- GAIL (India) Limited is ensuring uninterrupted supply of gas through pipelines for domestic and industrial use in its authorized areas. There is no interruption in gas supply other than planned shutdown, for which advance information is forwarded to the customers. Ring connectivity of pipeline network is being developed as much as possible to ensure uninterrupted gas supply to the customers. O&M contracts are also in place to attend any damages to pipelines.

- Following measure are taken to avoid any damage of pipeline:

  - Regular Pipeline Patrolling is conducted over the gas charged pipeline section to alert and avoid any excavation work on the pipeline section without prior permission from CGD Control Room.

  - Few persons from common public/vendors/auto drivers etc. are identified and registered as GAIL SAHAYOGI, wherein they are incentivized on providing timely information on any excavation work being done over the Gas Pipeline.

  - Safety Awareness Programs are conducted with various stakeholders, Earth Mover Operators, Local Administration to sensitize about the safety while handling Natural Gas and Emergency Numbers shared with them to report any incidents of pipeline damage/gas leaks"

5.27 When asked about incidents of thefts in the gas pipeline distribution networks and the security measures in place, the Ministry have informed:

"Based on reports from our major PSUs (IOCL, GAIL, and ONGC) engaged in gas pipeline distribution networks, it has been observed that there are no reported incidents of theft in the gas pipeline distribution networks. Various step taken by the entities are as follows:

(a) Patrolling of Gas pipeline network by security personnel.

(b) Conduct of sensitization program in nearby villages of Gas pipeline networks, on various hazards of Gas leakage due to theft.

(c) Regular Anti-sabotage checks by line walkers at vulnerable areas."

5.28 On the query of the Committee regarding measures taken to mitigate any future risk of gas pipeline leakages, the Ministry submitted as under:

"The Dadri-Panipat pipeline leak highlighted the need for more robust resilience planning. In view of this, following are the measures to mitigate any future risk:

a) Strict adherence to PNGRB Regulations including PNGRB (Technical Standards and Specifications including Safety Standards for Natural Gas Pipelines) Regulations, PNGRB (Integrity Management System for Natural Gas Pipelines) Regulations and PNGRB (Codes of Practices for Emergency Response and Disaster Management Plan) Regulations along with standards/regulations specified by various other statutory organisations.

b) Main flow channel profile on both sides of the river crossings shall be recorded during the peak rainy season. Latest Google imagery or drone surveys may be used to monitor changes in the river profile, and in case of any deviations, appropriate mitigation measures shall be implemented.

c) Emergency response capabilities must be strengthened, robust real-time leak detection systems (LDS)/SCADA monitoring enabling auto-closure provisions should be in place and ensuring training of O&M and security personnel to enhance overall emergency preparedness.

d) Proactive Risk Mitigation & Governance methods should be incorporated such as adoption of MOC for design changes, investigation of debris, and proactive civil protections (bank stabilization, piling supports) to prevent failures etc."

5.29 When asked about monitoring technologies for real-time leak detection and theft prevention in gas pipelines, the Ministry submitted as under:

"Pipeline systems are monitored and controlled using Supervisory control and Data Acquisition (SCADA) or equivalent monitoring and control system to ensure effective

and reliable control, management and supervision of the pipeline as specified in the PNGRB (Technical Standards and Specifications including Safety Standards for Natural Gas Pipelines) Regulations and PNGRB (Technical Standards and Specifications including Safety Standards for Petroleum and Petroleum Products Pipelines) Regulations,

Further, Pipeline Intrusion Detection System (PIDS) is also implemented in some pipeline sections based on risk/threat perception, for early detection and prevention from theft /damage to the pipeline.

In addition, regular periodic inspections are carried out using advance technology such as high-resolution sensors in In-Line Inspection (ILI) tools for integrity assessment, AC/DC interference survey through software-based modelling for effective mitigation measures, Drone Imagery for detecting any construction activity, encroachment, major soil erosion etc. in ROU.

Additionally, any emerging and new technological development are referred to PNGRB's respective Technical Committee for consideration and incorporation through necessary amendments in the respective Regulations."

5.30 When asked about the safety audit mechanism of CGD and CNG infrastructure and provision of penalties for non-compliance, the Ministry submitted as under:

"PNGRB has informed that they have notified Petroleum and Natural Gas Regulatory Board (Third Party Conformity Assessment) Regulations, 2015, which mandates all City Gas Distribution (CGD) entities to undertake Technical/Safety Audits which includes the following:

a) Internal Safety Audit through a company Authorised personnel or Agency on annual basis.

b) Technical Standards and Specifications including Safety Standards (T4S) audit once in every three years, through a PNGRB empanelled Third Party Inspection Agency (TPIA).

c) Integrity Management System (IMS) audit and certification, once in every three years, through a PNGRB empanelled Third Party Inspection Agency (TPIA).

d) Emergency Response and Disaster Management Plan (ERDMP) audit and certification, once in every five years, through a PNGRB empanelled Third Party Inspection Agency (TPIA).

In case of non-compliances, the provisions for penalties are mentioned in “Defaults and Consequences” clause in the respective Regulations as follows:

i. Regulation 7 of the PNGRB (Technical Standards and Specifications including

Safety Standards for City or Local Natural Gas Distribution Networks) Regulations;

ii. Regulation 7 of PNGRB (Integrity Management System for City or Local Natural

Gas Distribution Networks) Regulations; and iii. Regulation 8 of the PNGRB (Codes of Practices for Emergency Response and Disaster Management Plan) Regulations.”

5.31 When asked about the ways Indian Universities and R&D institutes are being integrated into practical field projects for pipeline safety, design innovation, and emissions tracking, the Ministry submitted as under:

“PSUs under MoPNG are actively collaborating with reputed universities and national R&D institutes to strengthen pipeline safety, promote design innovation, and enhance emissions tracking. GAIL has partnered with IITs (Madras, Kanpur, Roorkee, Patna) and CSIR laboratories for field projects such as aerial surveillance systems, satellite-based RoU monitoring, fibre-optic leak detection, and corrosion studies. Similarly, HPCL has deployed advanced Pipeline Intrusion Detection and Leak Detection Systems across its pipelines and is exploring the use of AI/ML for real-time threat assessment. BPCL has undertaken projects on safe operation of natural gas pipelines with hydrogen blending and has earlier collaborated with MS University of Baroda to address microbial-induced corrosion in pipelines.

In addition, GAIL is working with IIT-Madras on the development of Reinforced Thermoplastic Pipes for pipeline applications, while a Centre of Excellence in Oil, Gas and Energy has been established at IIT-Bombay by Oil & Gas PSUs for mission-mode research in pipeline health monitoring and emissions reduction. These initiatives reflect a structured academia-industry integration to promote innovation and field-level deployment of advanced technologies."

Chapter 6

Skill Development Initiatives and Employment Generation in Natural gas Economy

A. Skill Development Initiatives for Natural Gas Economy

Availability of skilled workforce is pre-requisite for growth of any sector in economy and considering the increasing reliance on natural gas for meeting energy requirements in future, availability of a skilled workforce will be crucial for for a natural gas economy to close the technical skills gap, enhance operational efficiency and ensure safety in a high-risk sector. It will help in boosting productivity, facilitating transition to cleaner technologies and driving economic growth by creating a competent workforce capable of managing complex infrastructure and promoting local value addition.

6.2 When asked about steps being taken by the Ministry for creation of institutional infrastructure for skill development in the sector, the Ministry stated as under: -

> "Under Skill India initiative, Hydrocarbon Sector Skill Council (HSSC) was set up under Societies Registration Act, 1860 on 26-04-2016. Several high priority trades were identified in consultation with the Industry members for National Occupational Standard (NOS)/ Qualification Pack (QP) development. Till 31.03.2025, 57 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 March'2025, more than 43,985 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."

6.3 Further elaborating on the Skill Development Initiatives, apprenticeship programs, and collaboration with academic institutes in the natural gas sector, the Ministry stated as under:-

"Skill India initiative was launched by Prime Minister of India on 15th July, 2015. The Mission creates convergence across sectors and states in terms of skill training activities. In line with National Skill Development Mission of the Govt. of India, Hydrocarbon Sector Skill Council (HSSC) was set up on 26-04-2016 to facilitate the skill development requirement in Hydrocarbon Sector.

Six Skill Development Institutes (SDIs) at Bhubaneswar, Vizag, Kochi, Ahmedabad, Raebareli and Guwahati have been started by IOCL, HPCL, BPCL, ONGC, GAIL and OIL respectively. The SDIs are state-of-the-art Institutes, imparting skill training of Hydrocarbons sector, sub-sector to cater the sectoral need in different part of the country.

The PSUs under MoPNG also interact with ITIs and polytechnics for skilled man power in the Hydrocarbons sector, sub-sector to cater the sectoral need in different part of the country".

6.4 On the query of the Committee about steps being taken to ensure that manpower trained at Skill Development Institutes (SDIs) is evenly distributed to meet skilled manpower requirement in the Country, the Ministry stated as under: -

"In order to build a robust and inclusive gas infrastructure network across India, Skill Development Institutes (SDIs) have been set up by PSUs such as IOCL, HPCL, BPCL, ONGC, GAIL and OIL. SDIs are generating skilled manpower, encouraging regional deployment, and supporting the growth of the local gas economy in line with national skill development and energy sector priorities.For instance,

- The Skill Development Institutes, (SDI) Raebareli, GAIL Institute of Skills-Guna, Nagaram and Amravati are proactively engaging with relevant industry stakeholders to ensure that trained manpower is regionally distributed in alignment with local gas infrastructure requirements. These institutes regularly invite concerned organizations to visit and review their state – of-the-art training facilities and infrastructure, with the objective of fostering direct industry linkages.

- In addition, structured orientation programs and industry-interaction sessions are conducted to familiarize trainees with regional project requirements, operational environments, and safety protocols. The curriculum is designed in consultation with industry experts to ensure that the skill sets imparted are relevant to ongoing and upcoming gas infrastructure projects within the respective regions.

- Skill Development Institute (SDI) Visakhapatnam does short term training (STT)/Skilling for unemployed youths in over two dozen job roles belonging to around one dozen Sectors. The pass outs are facilitated employment in various industries (manufacturing, Service, Petroleum, hospitality, Pharma, Hospitals) and at various Cities depending on employment opportunities and SDI pass out profiles and not only limited to local Gas infrastructure etc.

- Skill Development Institute, Bhubaneswar (SDI-B) offers skill development courses in Industrial Welding, Industrial Electrician, Fitter Fabrication, Technician Instrumentation, and Pipe Fitter (CGD) to meet the local gas infrastructure needs.

- In the past, a Project-Specific Skill Initiative Tied to Infrastructure was conducted by Skill SDI-B for the “Urja Ganga Gas Pipeline Project”, based on a quadripartite MoU which was executed among NSDC, GAIL, SDI Bhubaneswar, and LabourNet. This collaboration ensured training is closely aligned with project need covering job roles like pipeline fitters, instrumentation technicians, welding, and pipe fitter (City Gas Distribution). It also had provision of placement opportunities in the local gas infrastructure ecosystem.

- SDI Kochi of BPCL is offering skill training in 4 trades (Fitter Fabrication, Industrial Welder, Industrial Electrician and Process Instrument Operator-Oli & Gas) to almost 350 candidates annually. Most of these candidates predominantly belong to nearby area / local state. While we have been taking all the efforts to get them employed after the training, we will give a special focus to gas industry in the future. Rest of the SDIs run by other PSUs under Hydrocarbon Sector Skill Council (HSSC) are also catering to skill requirements of hydrocarbon sectors based out of Ahmedabad, Guwahati, Raebareli, Visakhapatnam and Bhubaneswar.”

B. Employment Generation in Natural Gas economy

6.5 When about policy to priority to local population in jobs opportunities in gas projects, the Ministry stated as under: -

"A CPSE is obligated to comply with the rules and guidelines issued by the Department of Public Enterprises (DPE) and the Department of Personnel and Training (DoPT) regarding the recruitment of personnel. Additionally, in line with the provisions of Articles 14, 15, and 16 of the Constitution, which emphasize equality of opportunity in matter of employment or appointment and reservation of appointments or posts, CPSE is required to carry out recruitment conducting fair and transparent selection process.

Accordingly, regular vacancies are being notified by CPSE through Open Advertisement on All India basis ensuring the equal opportunity for all the prospective candidates and compliance of Presidential Directives for reserved categories.

Beside direct employment, a significant number of indirect employments is also generated in the local vicinity through the establishment of new businesses as well as the increased demand for labor, transportation, and other services related to the office or project location."

6.6 Further elaborating on the issue, the Ministry stated as under: -

"Public Sector Undertakings (PSUs), under the administrative control of MoPNG, engaged in gas infrastructure projects are committed to fostering local development and ensuring better integration with communities in project areas. For instance, GAIL (India) Limited, Indian Oil Corporation Limited (IOCL), and Oil and Natural Gas Corporation (ONGC) have been undertaking initiatives such as prioritizing local employment, supporting skill development, and promoting community integration through various programs.

(i) Indian Oil Corporation Limited (IOCL):

IOCL's tenders for pipeline laying have suitable clause instructing the Contractor to ensure that local labour, unskilled as well as skilled to the extent possible and available from local resources, are preferentially employed on work.

(ii) Oil and Natural Gas Corporation (ONGC):

Domicile policy of ONGC prescribes that the candidate provides a domicile certificate as proof of his place of residence in the state of recruitment in case of decentralized post of non-executive category.

(iii) GAIL (India) Limited:

Contractors responsible for outsourced work typically hire employees from the local area or vicinity where the plant or office is situated. Besides, most of the apprentices at various locations of GAIL belong to the surrounding localities/areas.

Further, the companies also provide internship & apprenticeship training to eligible people from the local communities."

6.7 On the query of the Committee regarding policy to provide employment to local youth of the place/ region where an organization/entity is located, the Ministry stated as under: -

"There are no formal, specific guidelines across these PSUs regarding the prioritization of local youth, however, as outlined in the reply to Point no. 15, there are operational practices that support regional employment."

Part II

Observations/Recommendations

1. Energy is foundation of human civilization and availability of reliable energy at affordable price often determine level of development of any society. In this regard, the Committee note that India's per capita energy consumption remains about 0.67 toe, significantly below the global average of 1.84 toe. Considering the pace of economic growth in the Country, per capita energy consumption is expected to double its energy demand by 2050. However, India, being the third largest energy consumer in the world after China and the United States, remains heavily dependent on fossil fuels to meet their energy demand. The Committee note that India's energy mix remains largely dominated by coal (56 per cent) and oil (27 per cent), while the share of natural gas stands at a meagre 6 per cent, significantly below the global average of 24 per cent. The Committee further note that Government policy envisages increasing the share of natural gas to 15 per cent by 2030 under the energy transition strategy in alignment with India's commitments under the Paris Agreement and the Low Emission Development Strategy (LEDS 2050).

The Committee are of considered view that such an ambitious target can only be achieved through a calibrated expansion of domestic production, strengthened gas transportation and distribution infrastructure, and rational pricing mechanisms that attract private and foreign investment. The Committee, therefore, recommend that the Ministry of Petroleum and Natural Gas (MoPNG) formulate a comprehensive "Natural Gas Action Plan" setting out year-wise benchmarks for production, consumption, imports, infrastructure expansion and decarbonisation targets with quarterly monitoring by PNGRB and annual review by the Cabinet Committee on Economic Affairs.

Hydrocarbon Resource Assessment in the Country

2. Oil and natural gas are primarily found in porous sedimentary rock formations such as sandstone, limestone and dolomite, occurring both onshore and offshore and trapped beneath impermeable rock layers at considerable depths. The Committee note that India possesses a vast sedimentary basin area of 3.36 million square kilometres spread across 26 sedimentary basins, providing substantial potential for hydrocarbon exploration and production. India's sedimentary basins are classified into three categories based on their degree of geological prospectivity. Category-I basins, where production is currently taking place, include Assam Shelf, Assam-Arakan Fold Belt, Cambay, Cauvery, Krishna-Godavari, Mumbai Offshore and Rajasthan. Category-II basins possess established but contingent resources, while Category-III basins remain largely unexplored with only prospective resources.

The Committee further note that last comprehensive hydrocarbon resource assessment prior to recent efforts was conducted in 1995–96. With the generation of substantial geoscientific data under Pre-NELP and NELP rounds, a fresh reassessment was undertaken in 2017 by a Multi-Organisation Team comprising Oil and Natural Gas Corporation, Oil India Limited, and the Directorate General of Hydrocarbons. This reassessment estimated prognosticated conventional hydrocarbon resources of 41.87 billion tonnes (oil and oil-equivalent gas) across all 26 sedimentary basins, representing a 49 per cent increase over the earlier estimate of 28.08 billion tonnes. The Committee are of view that prolonged gap in hydrocarbon resource assessment delayed the recognition of enhanced resource potential across sedimentary basins. In this regard, the Committee appreciate efforts and success of the current Government in re-assessment of hydrocarbon resource in the Country, which will help Government agencies and Private sector to enhance their efforts to further enhance Natural Gas Production. The Committee, therefore, recommend the Ministry to take steps for periodic assessment of hydrocarbon resource utilizing latest technology and updated geological knowledge.

Reforms in Exploration and Licensing Policy

3. The Committee observe that Ministry have undertaken wide-ranging and sustained reforms in exploration and licensing framework with the objective of intensifying exploration activity, attracting domestic and foreign investment, enhancing domestic production of natural gas and reducing import dependence. The Committee note that a series of long-term policy initiatives such as Hydrocarbon Exploration and Licensing Policy (HELP), Open Acreage Licensing Policy (OALP), Discovered Small Field Policy, early monetization policies for hydrocarbons and Coal Bed Methane, establishment of the National Data Repository, appraisal of un-appraised sedimentary basins and frameworks for unconventional hydrocarbons, enhanced recovery methods, and streamlined Production Sharing Contracts have been introduced since 2014.

The Committee further note the introduction of market-oriented reforms such as natural gas marketing reforms, e-bidding-based price discovery, deregulation of crude oil sales, enhanced marketing and pricing freedom for gas from deepwater, ultra-deepwater and high-pressure high-temperature areas. The Committee also take note of enabling measures such as the opening up of nearly 99 per cent of earlier "No-Go" areas for exploration under special arrangements with the Indian Navy and the enactment of the Oilfield (Regulation and Development) Amendment Act, 2025 to align the regulatory framework with current market conditions. In addition, the Committee observe that short-term initiatives focusing on early monetization, enhanced recovery through IOR/EOR, redevelopment of mature fields, induction of new technologies and monetization of marginal discoveries reflect a balanced approach combining policy reform with operational interventions.

The Committee recommend the Ministry to ensure effective and time-bound implementation of these policy reforms so that the intended outcomes in terms of increased exploration activity, accelerated discoveries and higher domestic production of natural gas are realised on the ground. The Committee further recommend that the Ministry may periodically review the impact of HELP, OALP, pricing and marketing reforms and unconventional hydrocarbon policies and take

corrective measures wherever investor response or production outcomes remain below expectations. The Committee also recommend that greater emphasis may be placed on expediting appraisal of awarded acreages, facilitating faster monetization of discoveries, promoting deployment of advanced technologies for enhanced recovery, and strengthening coordination among regulatory and operational agencies, so that the cumulative effect of these reforms translates into sustained growth in domestic natural gas availability and contributes meaningfully to the national energy mix

4. The Committee observe that the Ministry have undertaken several institutional and digital initiatives to facilitate faster clearances, improve inter-ministerial coordination and enhance Ease of Doing Business in the upstream hydrocarbon sector. The Committee note the constitution of the Empowered Coordination Committee (ECC) under the chairmanship of the Cabinet Secretary to address issues relating to defence, environment and licensing, as well as the formation of a Joint Working Group (JWG) to identify and resolve operational bottlenecks, which has already submitted its interim report in April 2025. The Committee further note about institutionalisation of a dedicated Hydrocarbon Clearance Cell (HCC) within the Directorate General of Hydrocarbons along with the creation of the North-East Coordination Committee (NECC) to facilitate expeditious processing of clearances in hydrocarbon-producing States of the North-East. The Committee also take note of the launch of digital platforms such as Urja Pragati Portal, Upstream India Portal, and Urja Suraksha Samanvay, aimed at monitoring approvals, improving transparency, enabling real-time coordination and supporting E&P operators.

The Committee observe that these measures reflect a structured approach towards streamlining regulatory processes and addressing long-pending clearance-related issues in the upstream sector. The Committee desire the Ministry to continue efforts to strengthen and institutionalise these coordination mechanisms by ensuring regular review of pending clearances through the Empowered Coordination Committee and effective follow-up on the recommendations of the Joint Working Group. The Committee further recommend that the Hydrocarbon

Clearance Cell and Urja Pragati Portal may be empowered with clearly defined timelines, escalation protocols and periodic public reporting of clearance status to enhance predictability and investor confidence.

National Data Repository

5. The Committee note that National Data Repository was set up by the Ministry in 2017 under Open Acreage Licensing (OALP) mechanism to make the entire Exploration and Production (E&P) data available to various stakeholders for commercial exploration, research & development and academic purposes. NDR allows the investors to carve out blocks of their choice by assessing E&P data available in the National Data Repository (NDR). The Committee further note that 4.011 million LKM 2D Seismic Data, 1.258 million SKM 3D Seismic Data, 24,434 No. of Wells and Log Data and 52,941 Nos. of reports were uploaded on NDR till 31.03.2025. The Committee further note that Ministry have initiated project for NDR 2.0 which will be Next Generation cloud based National Data Repository. Next generation National Data Repository (NDR 2.0) aim to substantially improve the data accessibility (downloading), data reporting, submission (uploading), enhance storage (for all E&P data types including seismic field data) and create a cloud-enabled database platform. The upgradation of the present NDR to a cloud-based system will allow global investors and stakeholders, anywhere anytime access to data and a virtual data room.

The Committee appreciate Government's efforts to operationalize NDR and NDR 2.0 which will enhance ease of doing business in exploration and production in Oil & Gas sector. The Committee further recommend the Ministry for expeditious operationalisation of NDR 2.0 with emphasis on improved data accessibility, faster downloads, standardised data formats, and strict timelines for mandatory data submission by operators in order to expedite speedy exploration and production of Natural Gas resources of the Country.

India's Natural gas Reserves

6. The Committee note that estimated reserves of natural gas in India stand at 1094.19 billion cubic metres (BCM). The Western Offshore region holds the

largest share of reserves at about 31 per cent, followed by the Eastern Offshore region with approximately 24 per cent, indicating a strong offshore dominance in India's natural gas resource base. The Committee further note that majority of natural gas production is confined to Category-I basins (Assam Shelf, Assam-Arakan Fold Belt, Cambay, Cauvery, Krishna-Godavari, Mumbai Offshore and Rajasthan), where production is currently taking place, include. Category-II basins possess established but contingent resources, while Category-III basins remain largely unexplored with only prospective resources.

The Committee observe that natural gas production in the country has shown an overall increase over the last decade rising from 33.66 BCM in 2014–15 to about 36.11 BCM in 2024–25 (P). The Committee also observe that current production has significant contribution from the offshore sector which accounts for approximately 71.8 per cent of total output.

The Committee recommend the Government to adopt a holistic and integrated approach for sustained development of the natural gas sector by simultaneously enhancing exploration, accelerating development of discovered reserves and strengthening production infrastructure. In view of the substantial natural gas reserves of 1,094.19 BCM and dominant contribution of offshore regions, particularly Western and Eastern Offshore areas, focused efforts may be made to optimise production from existing offshore fields while expediting development of new discoveries through timely approvals and adequate evacuation facilities. The Committee also desire the Ministry to take steps for expediting exploration and production activities in Category-II and Category-III sedimentary basins through appropriate fiscal incentives, risk-sharing mechanisms and improved access to geological data in order to unlock prospective resources and broaden the domestic resource base.

Success in Exploration of Natural Gas

7. The Committee note that 144 exploration blocks covering an area of 2.42 lakh sq. km. were awarded under Eight rounds of the Open Acreage Licensing Programme (OALP) Policy. In these exploration Blocks, 177 Petroleum Exploration

Licences (PELs) were required to be granted, however, only 158 PEL could be granted till 31 March 2025. The Committee further note that issue of 7 PEL is pending and 12 Blocks/part area were surrendered due to non-issue of PEL by the State Governments of Tamil Nadu, Andhra Pradesh and Puducherry. In this regard, Committee are of view that there is need to further enhance coordination between Ministry and respective State Government to issue of necessary PEL consequent upon award of blocks for exploration. The Committee, therefore, recommend the Ministry to take steps for pre-aligning inter-ministerial and Centre–State clearances prior to award of blocks, so that post-award delays in PEL grant and operationalisation are minimised, thereby sustaining investor confidence and accelerating domestic hydrocarbon exploration.

Discovered Small Field (DSF) Policy

8. The Committee note that Discovered Small Field (DSF) Policy was introduced in 2015 to monetise small and marginal discoveries of National Oil Companies through simplified contractual terms and attractive fiscal incentives. DSF policy framework provides significant flexibility including pricing freedom, absence of cess, exemption from customs duty and allowance for 100 per cent foreign participation to the Companies. The Committee further note that, 85 Contract Areas have been awarded under DSF-I, DSF-II and DSF-III bidding rounds since its inception. The Committee appreciate the Ministry to take necessary steps for introduction of DSF policy as it will not only help in monetizing available resources but also enhance number of companies for exploration and production in Oil and Natural gas sector in the Country. However, there is need for monitoring and support to companies involved in this policy to remove bottleneck and further finetuning of policy, if required. The Committee, therefore, recommend the Ministry of Petroleum and Natural Gas to undertake a comprehensive performance review of all DSF contract areas focusing on timelines for development and production start-up. The Committee further recommend to introduce a time-bound development obligations and facilitative support mechanisms to ensure that DSF blocks contribute meaningfully to domestic oil and gas production.

Deepwater and Ultra-Deepwater Natural Gas Extraction

9. The Committee note that despite the fact that 39 per cent of India's sedimentary area lies in deepwater, only two deepwater blocks located in Krishna–Godavari Basin, are presently in the production stage. The Committee further observe that these 2 deepwater gas blocks contribute about 31 per cent of India's indigenous gas production, underscoring their strategic importance for national energy security. The Committee further observe that the Ministry have taken various initiatives for adoption of advanced technologies such as 4C-3D Ocean Bottom Node (OBN) seismic surveys, pipe-in-pipe flow assurance systems, FPSO-based production and subsea tie-back developments to exploit Oil and Gas reserves. The Committee also note that deepwater and ultra-deepwater exploration and development remain constrained by high capital costs, technological complexity, long gestation periods and limited production infrastructure.

Considering the resource potential of Deep and ultradeep water blocks for natural gas production in the Country, the Committee are of the view that a focused deepwater and ultra-deepwater development strategy focussing on enhanced fiscal incentives, risk-sharing mechanisms and facilitation of technology partnerships with experienced global operators will go a long way for exploration and production of Oil & Gas resources in the Country. The Committee, therefore, recommend the Ministry to take steps for the formulation of the same.

Alternative Sources for Natural Gas

10. Considering limited natural Gas resources in the Country, the Committee note that alternative and unconventional sources of natural gas such as Compressed Bio-Gas (CBG), Coal Bed Methane (CBM) and Shale Gas have potential to supplement domestic availability and support the Government's objective of achieving a 15 per cent share of natural gas in the national energy mix. In this context, the Committee note that the Sustainable Alternative Towards Affordable Transportation (SATAT) initiative, launched by the Ministry of Petroleum and Natural Gas, envisages production of 15 MMTPA of Compressed Bio-Gas (CBG) from a wide range of waste and biomass sources such as agricultural residue, municipal solid waste, animal waste, sewage treatment plant

waste, and energy crops, thereby complementing conventional natural gas supplies while also supporting waste-to-energy objectives. The Committee further note that Coal Bed Methane (CBM) represents a significant domestic resource, with prognosticated reserves of about 92 TCF (2,600 BCM), of which 342 BCM has been established as Gas-in-Place. With regard to Shale Gas, the Committee note that India has an estimated potential of about 96 TCF (2,700 BCM).

The Committee recommend the Government to promote the development of alternative and unconventional sources of natural gas, including Compressed Bio-Gas (CBG), Coal Bed Methane (CBM), and Shale Gas, through appropriate policy support, facilitative measures and coordinated implementation in order to supplement domestic natural gas availability and contribute towards achieving the targeted 15 per cent share of natural gas in the country's energy mix.

Compressed Bio Gas (CBGs)

11. The Committee observe that Compressed Biogas (CBG) has emerged as an important renewable fuel derived from organic waste such as agricultural residues animal dung, food waste and municipal solid waste. The Committee note that CBG supports multiple end uses including transportation, industrial heating, power generation and domestic cooking, while also being suitable for injection into the gas grid. In addition, the production of bio-manure as a by-product contributes to sustainable agricultural practices.

The Committee note that Sustainable Alternative Towards Affordable Transportation (SATAT) initiative, launched in October 2018, aims to establish an ecosystem for CBG production and its use alongside natural gas. Under this initiative, Oil and Gas Marketing Companies (OGMCs) invite Expressions of Interest for procurement of CBG from entrepreneurs. The Committee observe that the Ministry have envisaged target for establishment of 5,000 Compressed Bio-Gas (CBG) plants across the country to promote production of renewable gas from agricultural residue, organic waste and biomass. The Committee observe that about 78 CBG plants have been commissioned so far, while a number of projects are at various stages of construction and planning. The Committee further note that CBG production under SATAT is primarily driven by entrepreneurs based on

techno-commercial feasibility and factors such as availability of feedstock, land, low-cost finance, marketing of by-products and assured offtake have a bearing on the pace of establishment and capacity utilisation of CBG plants. The Committee also take note of the steps taken by the Government, including assured offtake through Oil and Gas Marketing Companies, financial assistance for biomass aggregation machinery, development of pipeline infrastructure for CBG injection into the City Gas Distribution network, and mandatory blending obligations, to support the growth of the CBG ecosystem.

Considering the importance of CBGs as an ecofriendly source for natural Gas, the Committee recommend the Government to intensify efforts to accelerate establishment and operationalisation of Compressed Bio-Gas plants in order to progressively move towards the envisaged target of 5,000 plants. The Committee further recommend to address issues relating to feedstock availability, aggregation logistics, offtake arrangements, pipeline connectivity and market development for by-products in a coordinated manner through closer inter-ministerial coordination and timely implementation of existing schemes. The Committee also recommend the Ministry to periodically review progress against targets, monitor utilisation of financial assistance and take corrective measures wherever required so as to ensure that CBG contributes meaningfully to domestic gas availability, waste-to-energy objectives, rural employment generation and achievement of 15 per cent share of natural gas in the national energy mix.

Coal Bed Methane (CBM)

12. The Committee note that Coal Bed Methane (CBM) constitutes a substantial unconventional natural gas resource in the country with estimated reserves of about 2,600 Billion Cubic Metres (BCM) spread across 11 States/regions. The Committee further note that CBM production during FY 2024–25 stood at 755.578 MMSCM, with an aggregate production rate of about 2.22 MMSCMD from six blocks, including commercial production from Raniganj, Jharia, Bokaro and Sohagpur areas operated by entities such as ONGC, Reliance Industries Limited and Essar. Success in achieving commercial production indicate potential for CBM to meet our energy need. However, the Committee also note that large portion of the

assessed resource base remains to be translated into output. Considering the availability of significant coal reserve in the Country, the Committee recommend the Government to take steps to expedite development of Coal Bed Methane blocks through focused policy support, faster project implementation and improved evacuation and gas marketing arrangements in order to enhance CBM production in a phased manner to enable this unconventional resource to contribute more effectively to domestic natural gas availability and the broader objective of increasing the share of natural gas in the national energy mix.

Shale Gas

13. The Committee note that Shale gas/oil is a form of natural gas/oil that remain unexpelled, unmigrated, and entrapped within the pore space and fractures of a source rock (commonly shale). The Committee further note that shale gas constitutes a significant unconventional hydrocarbon resource in the country, with several sedimentary basins such as Cambay, Assam-Arakan, Damodar and parts of the Gangetic plain identified as prospective source. The Committee take note of Ministry's efforts to assessment of Shale and resources in the Country with the help of United States Geological Survey, Central Mine Planning and Design Institute and National Oil Companies and formulation of Shale Gas and Oil Exploration Policy. The Committee have been informed that despite drilling of 34 shale wells across identified blocks by ONGC and Oil India Limited, commercial-scale shale gas or oil production has not yet commenced, as exploration remains at the pilot and appraisal stage due to geological complexity, limited productivity of test wells, water availability constraints and infrastructure requirements.

Considering the fact that Shale Gas has emerged as significant source in various Countries and has potential to become as alternative for Natural gas, the Committee recommend the Government to take steps for shale gas and oil development by strengthening pilot studies, reservoir appraisal and technological collaboration. The Committee further recommend that clear timelines, periodic assessment of pilot outcomes and focused research support may be put in place so as to objectively evaluate the techno-commercial viability of shale resources

and enable informed decisions on their future role in augmenting domestic energy supplies.

Synthesis Gas (Syngas)

14. The Committee note that synthesis gas (syngas) is a gasification product primarily consisting of hydrogen (H_2), carbon monoxide (CO) and carbon dioxide (CO_2), which can be catalytically converted into Synthetic Natural Gas (SNG), mainly methane (CH_4), through suitable methanation and purification processes. The Committee further note that GAIL and Coal India Limited have entered into a Joint Venture Agreement to produce SNG from syngas via surface coal gasification at Eastern Coalfields Limited, Bardhaman, West Bengal with the objective of injecting the purified SNG into the national natural gas pipeline network. The Committee also note that the quality of SNG proposed to be injected into pipelines is required to conform to the gas quality specifications prescribed by the Petroleum and Natural Gas Regulatory Board, ensuring compatibility with conventional natural gas transported to the grid.

In this regard, the Committee recommend the Government to promote syngas-to-SNG technologies through pilot and demonstration projects with a focus on efficient conversion of syngas constituents (H_2 and CO) into methane (CH_4) and adherence to prescribed gas quality standards. The Committee further recommend the Ministry to take coordinated efforts to strengthen purification, blending and pipeline connectivity infrastructure so that SNG derived from syngas can progressively supplement conventional natural gas supplies and contribute to diversification of domestic gas sources.

Import of Natural Gas

15. The Committee note that India continues to depend significantly on imports of Liquefied Natural Gas (LNG) to meet its domestic natural gas requirement, with import dependence at around 50 per cent. The Committee further note that LNG imports have increased steadily from 13.29 MMT in 2014–15 to 26.96 MMT in 2024–25 (P), reflecting the growing role of natural gas in India's energy mix. The

Committee also take note of projections indicating that India's LNG demand is likely to exceed 40 MMTPA by 2030, which would further increase exposure to global gas markets. The Committee appreciate the Government's diversified LNG procurement strategy such as comprising a mix of long-term and spot contracts, multiple pricing indexation benchmarks such as crude oil and Henry Hub, and supplier and geographic diversification.

The Committee are of the view that sustained growth in LNG imports may have implications for energy security, price stability and foreign exchange outgo. The Committee, therefore, recommend the Government to strengthen long-term LNG sourcing arrangements while maintaining adequate flexibility through spot procurement to respond to changing market conditions. The Committee further recommend that sustained efforts be made to reduce import dependence over the medium to long term by accelerating domestic natural gas production, scaling up alternative gas sources such as Compressed Bio-Gas (CBG) and Coal Bed Methane (CBM) and improving energy efficiency across consuming sectors. The Committee also recommend the Ministry to undertake periodic reviews of LNG contracting strategies to ensure competitiveness vis-à-vis spot markets while simultaneously strengthening energy diplomacy and overseas upstream investments to enhance supply security and price stability.

LNG Terminals

16. The Committee note that LNG terminals constitute critical infrastructure for ensuring the availability of natural gas by enabling the import, storage and regasification of Liquefied Natural Gas (LNG) for downstream distribution through the national gas grid. The Committee further note that, at present, India has eight operational LNG regasification terminals with an aggregate capacity of about 52.7 MMTPA, located at Dahej, Hazira, Kochi, Dabhol, Mundra, Dhamra, Ennore and Chhara. The Committee further note that about 20 MMTPA of additional regasification capacity, including expansion of existing terminals, is under various stages of construction, which is expected to increase the country's total LNG regasification capacity to around 68 MMTPA by the end of the decade. The Committee observe that during FY 2023–24, India imported about 24 MMT of LNG,

resulting in nearly 50 per cent utilisation of the existing regasification capacity. The Committee while appreciating Government's preparedness for development of requisite infrastructure to meet LNG import in future, desire them to facilitate the timely commissioning of under-construction LNG terminals and expansion projects to ensure adequate regasification capacity in line with demand growth.

17. The Committee observe that LNG terminal infrastructure remains concentrated along the western coast, largely due to favourable port conditions, established pipeline connectivity and higher regional gas demand. The Committee have been informed that while terminals on the eastern coast are relatively limited but are expected to gain momentum with the expansion of the national gas grid. In this regard, the Committee are of the view that geographically balanced development of LNG terminal infrastructure will go a long way in securing supply chain in case of any exigency. The Committee, therefore, recommend the Ministry to make focused efforts to promote geographically balanced development of LNG terminal infrastructure, particularly along the eastern coastal regions, in tandem with the expansion of pipeline connectivity under the national gas grid. The Committee also recommend that coordination between LNG terminal developers, pipeline operators and major gas-consuming sectors may be strengthened to improve utilisation levels and enhance overall energy security.

18. The Committee observe that easy availability of LNG through an adequate network of LNG dispensing stations is critical for promoting LNG as an automotive fuel, particularly for long-haul and heavy-duty vehicles. The Committee note that, under Phase-I, Oil & Gas PSUs have undertaken the establishment of 49 LNG retail stations along the Golden Quadrilateral and other National Highways. Out of these, 13 stations are operational and 10 stations are ready for commissioning, while 10 additional LNG stations are operational through private entities. The Committee further note that the Government has articulated an ambitious long-term objective of increasing the number of LNG dispensing stations to about 1,000 across the country. However, the Committee observe that the present pace of operationalisation indicates that LNG retail infrastructure is still at a nascent stage and remains limited in geographic spread, which may constrain faster adoption of

LNG as a transport fuel despite the availability of LNG import and regasification capacity.

The Committee, therefore, recommend the Ministry to accelerate commissioning of the LNG retail stations already identified under Phase-I and ensure timely rollout of Phase-II expansion. The Committee further recommend that a clear, time-bound roadmap may be laid down for achieving the target of 1,000 LNG dispensing stations, with focused development along high-traffic freight corridors, logistics hubs, mining belts and industrial clusters.

Sectoral Uses of Natural Gas

19. The Committee observe that sectoral consumption remains highly concentrated with fertilizer sector accounting for about 20.48 BCM in FY 2024-25 followed by City Gas Distribution (CGD) at about 15.05 BCM reflecting the steady expansion of PNG and CNG networks. The power sector consumption remains modest at 8.89 BCM despite large installed gas-based generation capacity. Refineries and petrochemicals together consumed approximately 9.22 BCM, while industrial and manufacturing sectors accounted for a relatively smaller share. The Committee also note that nearly half of the total gas consumption is met through imported LNG underscoring the importance of efficient and targeted use of natural gas to support energy security and the Government's objective of raising the share of natural gas to 15 per cent of the primary energy mix by 2030.

The Committee recommend the Ministry to adopt a sector-specific approach to promote wider and more balanced use of natural gas by ensuring affordable pricing and reliable supply for power and industrial sectors. The Committee further desire the Ministry to work for expansion of CGD and LNG infrastructure along major freight corridors to enhance gas use in transportation sector as it will help to reduce pollution.

20. The Committee observe that the Government has laid down a clear priority order for allocation of domestic natural gas with CNG (Transport) and PNG

(Domestic) at the highest priority, followed by fertilizer (urea), while the power sector is placed lower in the priority hierarchy. The Committee further note that although gas-based power plants account for about 24 GW of installed capacity out of India's total 475 GW power capacity, their utilisation remains low. Of the 58 gas-based plants, around 39 plants (≈20 GW) are connected to the national gas grid, while ~9.3 GW remains non-operational or under preservation. The Committee observe that high fuel costs of RLNG compared to coal and renewable energy have constrained sustained gas supply to the power sector thereby limiting the role of gas-based generation despite its operational flexibility and suitability for meeting peak demand and balancing renewable energy.

In this regard, the Committee desire the Ministry to coordinate with Ministry of Power and Central Electricity Authority for formulating a calibrated and flexible allocation framework to enable greater utilisation of existing gas-based power plants particularly during peak demand periods and for grid balancing. The Committee further recommend exploring targeted pricing and supply mechanisms including pooled or time-bound RLNG arrangements, to improve cost competitiveness of gas-based power generation.

Pricing of Piped Natural Gas and Taxation Issues

21. The Committee note that Retail Selling Price (RSP) of PNG is determined by respective City Gas Distribution (CGD) entities based on gas cost, transportation tariff, state taxes and distribution charges. The Committee further note that no direct subsidy is provided to PNG consumers, whereas, In domestic LPG prices are government-modulated, with PMUY beneficiaries receiving a subsidy of ₹300 per 14.2 kg cylinder which make LPG around 25–30% cheaper and economically more attractive for low-income households. households are further required to bear a high upfront installation cost, including refundable security deposits for meter and consumption (e.g., ₹7,000 in the case of IGL). The Committee note that this initial financial burden, coupled with the absence of subsidy support, discourages households (especially PMUY beneficiaries) from opting for PNG connections, despite its advantages of continuous supply, safety, and convenience.

The Committee are of view that that pricing is a critical determinant influencing household choice between Piped Natural Gas (PNG) and LPG. The Committee therefore, recommend examining targeted fiscal or policy support mechanisms to improve the affordability of PNG for economically weaker households, particularly in comparison with subsidised LPG under PMUY. The Committee also desire the Ministry to examine measures to address the higher upfront installation cost of PNG particularly for households belonging to economically weaker sections, so as to improve its affordability relative to subsidized LPG.

Taxation on Natural Gas

22. The Committee note that natural gas is presently outside the ambit of GST, resulting in the levy of multiple taxes such as VAT by States, Central Excise Duty on CNG (14%) and Basic Customs Duty (2.5%) with surcharge on imported LNG. This fragmented tax structure leads to cascading taxation and higher delivered prices of natural gas to industrial and CGD consumers. The Committee further note that this taxation anomaly discourages fuel switching from more polluting fuels such as coal and furnace oil to cleaner natural gas, thereby constraining growth in gas consumption despite expansion of gas infrastructure. The Committee, therefore, suggest the Ministry to coordinate with Ministry of Finance and State Governments to expedite the inclusion of natural gas under the GST framework with a suitable and balanced rate. The Committee are of the view that bringing natural gas under GST by eliminating cascading taxes will accelerate adoption of natural gas as a cleaner transition fuel in line with the national objective of increasing the share of natural gas in the energy mix.

National Gas Grid and City Gas Distribution

23. The Committee note that development of interconnected National Gas Grid is critical for ensuring adequate, reliable and equitable availability of natural gas across all regions of the country and for supporting the expansion of City Gas Distribution (CGD). Gas pipeline infrastructure forms the backbone of the gas

market, as it directly links supply sources with consumption centres and determines the pace and pattern of sectoral growth. The Committee further note that Petroleum and Natural Gas Regulatory Board (PNGRB) has authorised approximately 34,238 km (as on September 2025) natural gas pipeline network across the country with the aim to create a National Gas Grid (One Nation, One Gas Grid) and increase the availability of natural gas across the country. The Committee observe 25,923 km Natural Gas pipeline is currently operational in the Country and 9,954 km are under various stages of construction. The Committee note that several critical pipeline sections, spur lines and last-mile city-level linkages under the National Gas Grid particularly in the eastern region, North-Eastern States and parts of the southern region remain incomplete. These delays have constrained the full utilisation of the existing pipeline infrastructure and have slowed the expansion of City Gas Distribution (CGD) networks in the affected areas.

The Committee recommend the Ministry to ensure time-bound completion of all pending pipeline segments and spur lines under the National Gas Grid with particular emphasis on projects critical for CGD connectivity and industrial demand. The Committee further recommend enhanced coordination between pipeline developers, CGD entities and State Governments to synchronise pipeline commissioning with CGD rollout.

24. The Committee note that City Gas Distribution (CGD) network comprises an interconnected system of pipelines for supplying natural gas to domestic, industrial and commercial consumers as well as to Compressed Natural Gas (CNG) stations within a defined Geographical Area (GA). The Committee observe that City Gas Distribution (CGD) networks have expanded significantly since 2014, with PNGRB authorising 307 Geographical Areas covering almost entire mainland. However, despite this wide authorisation, actual rollout on the ground remains uneven. The Committee note that only 1.63 crore connections had been achieved against a pro-rata target of about 3.89 crore PNG domestic connections till 31st January 2026. Further, 8,616 CNG stations were operational against a pro-rata target of 6,360 indicating mixed progress across segments till 31st January 2026. The Committee are further constrained to note the persistent scenario of zero-Connection in several urban and industrial geographical areas (GAs)which were

granted authorization almost a decade ago. For instance, the Ludhiana GA in Punjab, authorized in June 2015, stands at zero connections against a pro-rata target of 2,98,000 households, signifying the absence of regulatory oversight. Similarly, the Jalandhar GA (Punjab) and Kutch (East) GA (Gujarat), authorized in 2013 and 2015 respectively, continue to stand at zero connections despite high pro-rata benchmarks. Even in high-demand corridors where work has commenced, underperformance remains staggering; the Muzaffarpur, Vaishali, Saran, and Samastipur districts in Bihar, authorized to Indian Oil Corporation Limited in March 2019, have achieved a meagre 54,021 connections against a pro-rata target of 3,52,441, indicating a deficit of nearly 3 lakh households PNG connections.

In this regard, the Committee have been informed that issues such as delays in permissions, multiple clearances, non-uniform road restoration charges, land constraints in urban areas and coordination issues with State and local authorities continue to impede timely rollout of CGD infrastructure. The issue of subletting by big contractors is also a cause of concern which the Ministry needs to look into. Considering the importance of City Gas Distribution for making environment friendly, reliable and affordable energy sources, the Committee desire the Ministry to enhance coordination with State Governments and PNGRB and put in place a time-bound, single-window clearance mechanism for CGD projects to address delays in permissions and approvals. To eliminate these chronic delays, the Committee recommend that the Ministry of Petroleum and Natural Gas (MoPNG)/PNGRB to move away from the long-term target reviews to a dynamic annual target monitoring framework. The Ministry/PNGRB should enforce a monitoring mechanism to check year wise completion of targets failing which penalty may be imposed on the responsible CGD entities and accountability may be fixed.

Provision of penalty for delay in completion of CNG Network

25. The Committee note that penalties are imposed by the Petroleum and Natural Gas Regulatory Board on authorised City Gas Distribution (CGD) entities for non-achievement of Minimum Work Programme (MWP) targets, which form the basis for award of Geographical Areas. The Committee observe that penalties have

been imposed in 19 Geographical Areas (as on June 2025) due to failure of entities to meet committed PNG domestic connection targets. The Committee observe that these penalties have been levied across both public and private CGD entities indicating persistent implementation gaps despite wide authorisation of CGD networks. The Committee further note Ministry's submission that entities find it commercially preferable to pay penalties rather than incur the higher cost associated with last-mile piped natural gas connectivity. The Committee also observe that delays in permissions, non-uniform road restoration charges and absence of a universally adopted single-window clearance mechanism continue to constrain timely execution of CGD projects.

In this regard, the Committee recommend that the Ministry to review penalty framework to ensure it acts as an effective deterrent against non-performance rather than a financially convenient option.

26. The Committee observe that land acquisition and Right of User (RoU) issues remain a key cause of delay in natural gas pipeline projects. Several pipelines, including sections of the JHBDPL, Mumbai–Nagpur–Jharsuguda and North-East Gas Grid have been affected by slow RoU release, demands for higher compensation, land record disputes, local resistance and delays in compensation disbursement particularly in parts of West Bengal, Maharashtra, Chhattisgarh and North Eastern States. In this regard, the Committee desire the Ministry to coordinate with State Governments to streamline and time-bound RoU acquisition and compensation processes, ensure early resolution of land record issues and strengthen local-level coordination to address resistance and administrative delays.

Safety and Security of Gas Pipelines

27. The Committee note that comprehensive safety and security mechanisms such as continuous monitoring through SCADA systems, real-time leak detection sensors, in-line inspection tools, drone surveillance, cathodic protection and Pipeline Intrusion Detection Systems in vulnerable sections have been instituted

for natural gas pipelines and CGD infrastructure. The Committee note that PSUs such as IOCL and GAIL have also demonstrated system resilience by ensuring uninterrupted gas supply even during exigencies as evidenced by the prompt restoration of supply following the Dadri–Panipat pipeline incident in July 2023. The Committee also take note of increasing adoption of advanced technologies and collaboration with academic and R&D institutions to strengthen pipeline integrity, emergency preparedness, and emissions monitoring.

In this regard, the Committee recommend the Ministry to further strengthen pipeline safety by ensuring uniform deployment of advanced leak detection, intrusion monitoring and real-time surveillance technologies across all high-risk and climate-vulnerable pipeline sections particularly river crossings and flood-prone areas. The Committee also desire the Ministry to enhance coordination with State and local authorities to minimize third-party damage risks and ensure faster emergency response.

28. The Committee are also of view that enhanced financial provision for research for development of indigenous technologies for safety and security mechanisms will go a long way in minimizing cost on maintenance of Gas Pipelines directly affecting pricing of gas to end use consumers. The Committee, therefore, desire the Ministry to make a dedicated fund for sponsoring Government and reputed private research institution for R&D on this important aspect of CGD infrastructure. The Committee further advise Ministry to consider institutionalising outcomes of ongoing academia-industry collaborations into standard operating procedures while ensuring strict enforcement of safety audit findings and penalties to sustain high safety standards across the expanding gas pipeline and CGD network. The Committee would like to be apprised about steps taken in this regard.

Skill Development Initiatives for Natural Gas Economy

29. The Committee note that Hydrocarbon Sector Skill Council (HSSC) was established under the Skill India initiative in 2016 to facilitate the skill development requirement in Hydrocarbon Sector. HSSC has developed 57 Qualification Pack in consultation with the industry. The Committee further note that six Skill Development Institutes (SDIs) have been set up by PSUs at Bhubaneswar, Visakhapatnam, Kochi, Ahmedabad, Raebareli and Guwahati, which have trained 43,985 candidates up to March 2025. The Committee also note about adoption of project-specific and region-aligned training models, including initiatives linked to the Urja Ganga Gas Pipeline Project, aimed at meeting local gas infrastructure requirements.

The Committee observe that expansion of the entire gas value chain from upstream exploration to CGD marketing has enormous potential for generating high-quality technical and semi-skilled employment, yet these opportunities remain unevenly distributed and under-planned. The Committee are of view that availability of a skilled workforce is essential for the expansion of the natural gas economy, particularly given the safety-critical nature of gas infrastructure. The Committee, therefore, recommend the Ministry to further institutionalise project-linked and region-specific skill development models to ensure effective deployment of trained manpower in natural gas and CGD projects. The Committee also desire the Ministry to put in place a structured mechanism to track placement outcomes and align skill training more closely with regional gas infrastructure needs.

NEW DELHI
03 August, 2026
12 Sravana, 1948 (Saka)

DR. SANJAY JAISWAL
CHAIRPERSON
COMMITTEE ON ESTIMATES

Annexure-I

List of CBG projects commissioned under SATAT

LOI Issuer Company Name	Name of the project	District	State	Feed Stock	Installed CBG Production Capacity (TPD)	Month & Year of Commissioning
IOCL	Akshar Biotech Private Limited	Surat	Gujarat	Vegetable waste	2.2	Apr-22
IOCL	Bleach Energy	Anand	Gujarat	Cattle dung	2	Oct-14
IOCL	Clarus Bioenergy Pvt. Ltd.	Sangli	Maharashtra	Pressmud	4	Dec-16
IOCL	Energim Sustainable Solutions Cuddalore Pvt. Ltd.	Cuddalore	Tamil Nadu	Press mud	10.6	Mar-22
IOCL	Glow Green Biotech	Surat	Gujarat	Vegetable waste	2.1	Nov-20
IOCL	Green Earth Biogas Pvt. Ltd.	Surendranagar	Gujarat	Press mud	5	Jan-16
IOCL	Hycons Renewable Private Limited	Bangalore Urban	Karnataka	Napier Grass	10	Apr-21
IOCL	Indian Potash Limited	Muzaffarnagar	Uttar Pradesh	Press mud	9	May-21

IOCL	IAV Biogas Pvt. Ltd.	Namakkal	Tamil Nadu	Press Mud & Chicken Litter	15	Jun-20
IOCL	Leafiniti Bioenergy Private Limited	Bagalkot	Karnataka	Press mud	10.2	Mar-22
IOCL	Noble Exchange Environment Solutions Pune LLP	Pune	Maharashtra	Municipal Solid Waste (MSW)	14	Nov-MM
IOCL	Shreenath Mhaskoba Sakhar Karkhana Ltd	Pune	Maharashtra	Spent wash	10	Jan-24
IOCL	Sobti Engineering Works Pvt. Ltd.	Ghaziabad	Uttar Pradesh	Cow Dung & Press Mud	2.4	May-22
IOCL	Solika Energy Pvt. Ltd.	Hyderabad	Telangana	Animal Waste	2	Apr-21
IOCL	Spectrum Renewable Energy Pvt. Ltd.	Kolhapur	Maharashtra	Pressmud	6	Dec-12
IOCL	Spectrum Renewable Energy Pvt. Ltd.	Rohtak	Haryana	Press Mud & Cattle Dung	6	Dec-20
IOCL	Sri Lakshmi Venkateshwara Green Crops Power	Y.S.R Kadapa	Andhra Pradesh	Press mud	3	Mar-21

	Projects Pvt. Ltd.					
IOCL	T R Mega Foods and Beverages LLP	Ludhiana	Punjab	Animal Waste	5	May-16
IOCL	The Bombay Burmah Trading Corporation Limited	Kodagu	Karnataka	Multiple feedstock	2.5	Nov-22
IOCL	United Bioenergy Pvt. Ltd.	Pune	Maharashtra	Pressmud and other feedstock	4.8	Mar-23
IOCL	Verbio India Pvt. Ltd.	Sangrur	Punjab	Agri Residue	30	Apr-22
IOCL	Vyzag Bio-Energy Fuel Pvt. Ltd.	Visakhapatnam	Andhra Pradesh	Municipal Solid Waste (MSW)	2	Oct-21
IOCL	LR Energy Karnal Private Limited	Karnal	Haryana	Cow Dung Press Mud Poultry Waste	5	Nov-23
IOCL	Banaskantha District Co-operative Milk Producers Union Limited	Banas Kantha	Gujarat	Cow dung and potato waste	3.2	Dec-23
IOCL	A.A. Bio Energies	Kanpur Dehat	Uttar Pradesh	Multiple feedstock	2.4	Dec-23

IOCL	IndianOil Gorakhpur CBG Plant	Gorakhpur	Uttar Pradesh	Paddy straw, Press Mud and Cow dung	20	Mar-24
IOCL	IndianOil Hingonia CBG plant	Jaipur	Rajasthan	Cow Dung	2	Mar-24
IOCL	Lakhimpur Kheri RNG Private Limited	Balrampur	Uttar Pradesh	Press mud	8.8	Mar-24
IOCL	Dhruva Bio fuels Pvt. Ltd.	Bareilly	Uttar Pradesh	Press Mud, Agri Residue	5	Mar-24
IOCL	Akshar Biotech Private Limited	Ahmedabad	Gujarat	Vegetable waste	3	Mar-24
IOCL	Metro Fuels	Hisar	Haryana	Animal Waste & Napier Grass	10	Jun-24
IOCL	Bhadauria Natural Gas And Products Private Limited	Kannauj	Uttar Pradesh	Agri waste.Cow Dung & Poultry waste.	2	Aug-24
IOCL	Utkarsh Bio-Pulse	Rohtas	Bihar	Multiple feedstock	3.2	Sep-24
BPCL	M/s. Aryan Associate and Company	Vadodara	Gujarat	Cow Dung	0.8	Jul-05
BPCL	R2S Bio Products Private Limited	Rohtak	Haryana	Rice Straw	1	Jul-05

BPCL	Farm Gas Private Limited	Ludhiana	Punjab	Paddy Straw, Press Mud, Cow dung	8	Jul-05
BPCL	Sangrur RNG Private Limited	Sangrur	Punjab	Rice Straw	15	Dec-23
BPCL	Patiala RNG Private Limited	Patiala	Punjab	Rice Straw	15	Dec-23
BPCL	Jakraya Sugar Ltd.	Solapur	Maharashtra	Spent wash	7	Jan-24
BPCL	Victory Green Energy	SURAT	Gujarat	Napier Grass, Spend wash	2.4	Mar-24
BPCL	Chem Process System Pvt Ltd	SURENDRANAGAR	GUJARAT	Cowdung, Napier Grass	8	Mar-24
HPCL	Phoenix India Research and Development Group	Birbhum	West Bengal	Animal Waste	6	23-03-2021
HPCL	SLR Energy	Cuddalore	Tamil Nadu	Press mud, Spentwash, Dairy Waste, Agri Residue	2.8	20-10-2021
HPCL	Natural Sugar & Allied Industries Ltd	Dharashiv (Osmanabad)	Maharashtra	Spentwash, Press mud	5.5	Jul-22
HPCL	HPCL	Budaun	Uttar Pradesh	Rice Straw	14.25	Mar-23
HPCL	Sainsons Paper	Kurukshetra	Haryana	Waste water from Rice, Agri Residue	2.5	May-23

	Industries Private Limited					
HPCL	Spark Bio Gas Private Limited	Chennai	Tamil Nadu	Municipal Solid Waste (MSW), Animal Waste	5.6	Nov-23
HPCL	SPSBIO Chem Private Limited	Yamunanagar	Haryana	Press mud, Animal Waste, Agri Residue (max. 33%)	6.4	Feb-24
HPCL	Lakhimpur Kheri RNG Private Limited	Lakhimpur Kheri	Uttar Pradesh	Press Mud, Agri Residue	10	Mar-24
HPCL	HPCL	Sanchore	Rajasthan	Animal waste	1.6	Mar-24
HPCL	Carbon Circle Private Limited	Bareilly	Uttar Pradesh	Press mud	10	Aug-24
HPCL	Circle CBG India Private Limited	Meerut	Uttar Pradesh	Press mud, Animal Waste	14.6	Aug-24
HPCL	Energon Logistics Private Limited	Hyderabad (Amberpet)	Telangana	Municipal Sewerage Treated Raw Gas	2	Sep-24
GAIL	Govardhannathji Energies LLP	Nadiad	Gujarat	Agricultural Waste	8	Feb-18
AGL	Indore Clean Energy Pvt. Ltd. (earlier M/s IL&FS	Indore	Madhya Pradesh	Bio degradable waste	17	Feb-22

	Environmental Infrastructure & Services Ltd.)					
AGL	BLUE PLANET INTEGRATED WASTE SOLUTIONS LIMITED (Formerly Mahindra Waste to Energy Solutions Limited)	Indore	Madhya Pradesh	MSW	0.7	Apr-18
BGL	Hyderabad Integrated MSW Limited	Hyderabad	Telangana	MSW and other	2	Sep-21
HNGPL	Anarobic Energy Private Limited	Haridwar	Uttarakhand	Sewage Sludge, Press mud and Cow Dung etc.	2.1	Jul-22
GAIL	Gobardhan Varanasi Foundation - SPV	Varanasi	Uttar Pradesh	Press Mud, Agriculture Waste, Cow Dung Organic MSW and STP waste	2	June 2022
VGL	Sayaji Bio Energies LLP	Vadodara	Gujarat	Mixed Waste Wet	3	June-2022
GAIL Gas Limited	Shri Dayoday Urja Evam Jaivik	Raisen	Madhya Pradesh	Cow Dung, Vegetable waste	1.2	Aug-22

	Khaad Pvt. Ltd.					
BGL	Solika Energy Private Limited	Hyderabad	Ranga Reddy, Telangana	Poultry Waste, Vegetable Waste	3	Feb-23
RSGL	Urban Improvement Trust, Kota	Kota	Rajasthan	Cattle Dung	3	Jan-23
GAIL	Srinivasa Waste Management Services Private Limited	Chennai	TamilNadu	Municipal Solid Waste	4.8	Nov-21
GAIL	MAHA SHANK ENERGY LLP	Ranipet	Tamil Nadu	Pressmud	3	Feb-21
GAIL	TRANSTECH GREEN POWER PRIVATE LIMIT	Sanchore	Rajasthan	Mixed Waste Wet	2	Jan-23
GAIL	Turquoise Bio Natural Energy Pvt. Ltd.	Bharuch	Gujarat	Mixed Waste Wet	5.5	Feb-20
GAIL - Synchro	EnviroCare CBG Pvt. Ltd.	Jabalpur	Madhya Pradesh	Cow Dung	4.8	Jan-24
GAIL	GAIL (India) Limited	Ranchi	Jharkhand	MSW and Cow dung	5	Nov-24

GAIL - Synchro	Adani Total Energies Biomass Limited	Mathura	Uttar Pradesh	Cow Dung Rice Straw Press Mud Other Food Waste etc.	10	Mar-24
GAIL - Synchro	RELIANCE INDUSTRIES LIMITED, Barabanki	Barabanki	UP	Paddy Straw	20	May-24
GAIL - Synchro	Reliance Bio Energy Limited,	Jhajjar	Haryana	Agri Residue (Paddy straw)	20	May-24
IGL	PS GREENGAS	Muzaffarnagar	Uttar Pradesh	PRESSMUD+COWDUNG	5.6	22.03.2022
IGL	GIRVAR & SONS	MUZAFFARNAGAR	Uttar Pradesh	PRESSMUD+COWDUNG	5	13.12.2022
IGL	MITTAL ENTERPRISES	hapur	Uttar Pradesh	PRESSMUD+COWDUNG+SPENTWASH	6.4	24.01.2023
IGL	BIOSPARK ENERGY PVT LTD.	Muzaffarnagar	Uttar Pradesh	PRESSMUD	4	Oct-23
IGL	Anand Mangal Infradevelopers Pvt Ltd.,	meerut	Uttar Pradesh	PRESSMUD	5	Oct-23
IGL	Rama Green Energies Narinder Kumar (Goodrich Group)	Karnal	HARYANA	PRESSMUD	5	Feb-24

IOCL	IndianOil Gwalior CBG Plant	Gwalior	Madhya Pradesh	Animal Waste	2	Oct-24
IOCL	Arc Bio Fuel Private Limited	Barnala	Punjab	Animal Waste	2	Oct-24
GAIL - Synchro	Reliance Chemicals and Materials Limited, Hoshiarpur	Hoshiarpur	Punjab	Multiple feedstock like Crop residue (paddy straw /wheat straw /corn sweet sorghum/Napier grass etc.)	20	Jun-24
GAIL - Synchro	Reliance Bio Energy Limited, Panipat	Panipat	Haryana	Crop residue (paddy straw /wheat straw /corn sweet sorghum/Napier grass etc.)	15	Mar-24
BPCL	DCM Shriram Limited	Lakhimpur Kheri	Uttar Pradesh	Press Mud	12	Dec-24
BPCL	Vinp Distilleries and Sugars Limited	Haveri	Karnataka	Press mud and Spent wash	11	Jan-25
HPCL	Green Elephant Satara Private Limited	Satara	Maharashtra	Press mud, Spentwash	7	Jan-25
GAIL Gas Limited	LR Energy Vrindavan Pvt. Ltd.	Sonipat	Haryana	Cow dung and press mud	5	Aug-24
MNGL	M/s. AVNIDM GREEN ENERGY	Pune	Maharshtra	MSW	2	Dec-24

	PRIVATE LIMITED					
IOCL	Jagruti Sugar & Allied Ind. Ltd.	Latur	Maharashtra	Spent wash	8	Jan-25
GAIL - Synchro	Reliance Bio Energy Limited, Nagpur	Nagpur	Maharashtra	Crop residue (Soya, paddy straw, Napier grass etc.)	20	May-24
HPCL	Energon Logistics Private Limited	Hyderabad (Nagole)	Telangana	Municipal Sewerage Treated Raw Gas	2	Dec-24
IOCL	Paliwal Bio Energy Pvt Ltd	Bhopal	Madhya Pradesh	Agri Residue	6	Jan-25
ONGC	ONGC EverEnviro	Prayagraj	Uttar Pradesh	MSW	21.5	Dec-24
IOCL	Oddoor Energy	Dakshin Kannada	Karnataka	Pressmud	2	Dec-24
IOCL	Khilari Infrastructure Private Limited	Ludhiana	Punjab	Sewage Waste	3	Dec-24
	Total				**647.45**	

MINUTES OF THE SIXTH SITTING OF THE COMMITTEE ON ESTIMATES (2024-25)

The Sixth Sitting of the Committee was held on **Monday, 04th November, 2024 at 1100 hrs. in Committee Room No. 1, Parliament House Annexe Extension Building, New Delhi-110001**

PRESENT

Dr. Sanjay Jaiswal – Chairperson

Members

2. Shri Kalyan Banerjee
3. Shri P. P. Chaudhary
4. Shri Devusinh Chauhan
5. Smt. Sangeeta Kumari Singh Deo
6. Shri Sudheer Gupta
7. Shri Deepender Singh Hooda
8. Shri Naveen Jindal
9. Shri Awadhesh Prasad
10. Shri Rajiv Pratap Rudy
11. Dr. Rajkumar Sangwan
12. Kumari Selja

SECRETARIAT

1. Shri. Y. M. Kandpal - Joint Secretary
2. Shri Lalkithang - Director

Representatives of the Ministry of Petroleum and Natural Gas

1	Shri Pankaj Jain	Secretary, MoPNG
2	Shri Praveen Mal Khanooja	Additional Secretary
3	Shri Asheesh Joshi	Joint Secretary
4	Shri Anand Kumar Jha	Director
5	Shri Sandeep Gupta	CMD, GAIL
6	Shri Sanjay Kumar	Director (Marketing), GAIL
7	Shri Praveer Kumar Agarwal	ED, Marketing (Gas), GAIL

2. At the outset, Hon'ble Chairperson, Committee on Estimates welcomed the Members and other officials of the Ministry of Petroleum and Natural Gas to the Sitting of the Committee convened to have briefing on the subject 'Supply and Distribution of Natural Gas- Challenges and Prospects'. Their attention was also drawn to Direction 55(1) of the 'Directions by the Speaker, Lok Sabha' about the confidentiality of the proceedings of the Committee.

3. After a brief introduction on the subject by the Secretary, Ministry of Petroleum and Natural Gas, the Director (Marketing), GAIL, made a presentation on the subject. The presentation *inter-alia* highlighted the share of natural gas in primary energy mix, gas scenario in the country, projected gas consumption, natural gas infrastructure, gas grid, City Gas Distribution network (CGD), Liquefied Natural Gas (LNG) terminals and dispensing stations in the country, Compressed Bio Gas sector (CBG), demand and consumption scenario, gas pricing, initiatives and recent reforms, future prospects and challenges, etc.

4. The Chairperson and other Members of the Committee, then raised several queries relating to the subject. The queries were *inter-alia* related to optimal use of natural gas in the country, cost comparison between Piped Gas and cylinders, profitability of CBG plants, shortage of skilled manpower, distribution of gas in rural areas, Gas pipeline in Ayodhya, Compensation for laying pipelines on agricultural land, need for involvement of MPs in CSR initiatives, issues related to distribution network, generation of energy from stubble, multiple taxation policies in gas plants and CGD sectors, gas exploration in Ganga basin, National Gas Grid expansion, Free Gas

Market Regime, subsidies, logistical expenditure, coverage of City Gas Distribution network, CGD connections in Bihar, budgetary proposals, coal gasification, performance of BPCL in Paschim Champaran Parliamentary Constituency, taxation issues, land acquisition for laying pipelines, Urja-Ganga gas pipeline project, CGD coverage by the year 2032, investments in natural gas infrastructure, effects of reforms under Hydrocarbon Exploration and Licensing Policy (HELP), etc.

5. The representatives of the Ministry responded to the queries raised by the Members. The Chairperson thanked the representatives of the Ministry and asked them to furnish written replies, on the points, for which information was not readily available, within fifteen days.

6. The witnesses, then, withdrew.

7. A verbatim record of the proceedings has been kept.

The Committee then adjourned.

MINUTES OF THE THIRD SITTING OF THE COMMITTEE ON ESTIMATES (2025-26)

The third sitting of the Committee was held on Monday**, 09th June, 2025 from 1500 hrs to 1725 hrs in Committee Room No.2, Parliament House Annexe Extension, New Delhi-110001**

PRESENT

Dr. Sanjay Jaiswal – Chairperson

Members

13. Shri Manish Jaiswal
14. Shri Brijmohan Agarwal
15. Shri Sudheer Gupta
16. Shri Bishnu Pada Ray
17. Shri Arvind Ganpat Sawant
18. Shri Devusinh Chauhan
19. Smt. Sangeeta Kumari Singh Deo
20. Shri Surendra Prasad Yadav
21. Shri Y.S. Avinash Reddy
22. Shri Rajiv Pratap Rudy
23. Dr Bhola Singh
24. Ms Iqra Choudhary
25. Shri Jugal Kishore
26. Shri Manoj Tiwari
27. Shri Awadhesh Prasad
28. Shri P.P Chaudhary
29. Thiru Dayanidhi Maran
30. Shri B.K Parthasarathi

SECRETARIAT

1. Shri Y.M. Kandpal - Additional Secretary
2. Shri Lalkithang - Director

REPRESENTATIVES OF THE MINISTRY OF PETROLEUM & NATURAL GAS

1. Sh. Pankaj Jain, Secretary

2.	Sh. Praveen Mal khanooja	Additional Secretary
3.	Sh. Asheesh Joshi	Joint Secretary
4.	Sh. Vikas Singh	Director
5.	Sh. Sanjay Kumar	Director Marketing, GAIL
6.	Sh. Sumit Kishore	ED Marketing (Gas), GAIL
7.	Sh. Subrata Das	CEO, IGGL

2. At the outset, Hon'ble Chairperson, Committee on Estimates welcomed the Members and other officials of the Ministry of Petroleum and Natural Gas to the Sitting of the Committee convened to have briefing on the subject “Supply and Distribution of Natural Gas - Challenges and Prospects”. Their attention was also drawn to the Direction 55(1) of ‘Directions by the Speaker, Lok Sabha’ about the confidentiality of the proceedings of the Committee.

3. Sh. Sanjay Kumar, Director Marketing, GAIL made a power point presentation on the subject. Thereafter, Secretary, Ministry of Petroleum and Natural Gas made a brief introduction on the scenario of Supply and Distribution of Natural Gas in the Country and the recent initiatives taken by the Ministry. The Presentation highlighted Indian Gas Scenario- Production & Imports, production and supply of LNG in India, Status of National Gas Grid and Pipeline Infrastructure, Gas Grid Infrastructure in the North East, CGD Infrastructure Network, Natural Gas Consumption Scenario in India, LNG Dispensing Stations Infrastructure, CBG- Compressed Biogas scenario in India and schemes such as SATAT Scheme, CBG-CGD Synchronization Scheme etc, small scale liquefaction skids, Future Prospects of Natural Gas in sectors such as Power Sector, Steel Sector, Transport fuel etc, Challenges associated by Natural Gas such as Unfavourable Indirect Tax Structure, Lack of incentives for promoting Natural Gas vis-à-vis polluting fuels etc.

4. The Chairperson and other Members of the Committee, then, raised several queries relating to the subject. The queries *inter alia* were related to issues over the slow and uneven rollout of Piped Natural Gas (PNG) infrastructure, especially in tier-2, tier-3 cities, and rural areas ,lack of a phased implementation plan for completion of

Pipeline projects, cost disadvantage of PNG vis-à-vis LPG cylinders, especially with Ujjwala subsidies leading to a major hurdle in PNG adoption, delays by CGD companies, especially private ones, in fulfilling Minimum Work Programme targets, imposing penalties on defaulting companies, lack of transparent review mechanisms, concerns about skilled manpower, safety perceptions among consumers, lack of awareness campaigns, land acquisition issues, poor local employment outcomes, and non-transparent CSR activities, need for mandatory biogas blending, infrastructure support for CBG evacuation, schemes to incentivize biomass-based CBG in rural areas, disparity in tax structures, high excise duty on CNG, need for inclusion of natural gas under GST, power sector's limited uptake of gas, cost disadvantages vis-à-vis coal and solar, need for bundling gas with renewable power, need for carbon pricing on polluting fuels, need for inter-ministerial coordination, particularly among the Ministries of Petroleum, Finance, and Environment, to realize the government's vision for a gas-based economy etc

5. The representatives of the Ministry responded to the queries raised by the Members. The Chairperson thanked the representatives of the Ministry and asked them to furnish written replies, on the points, for which information was not readily available, within fifteen days.

6. The witnesses, then, withdrew.

7. A verbatim record of the proceedings has been kept.

The Committee, then, adjourned.