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NATURAL GAS DOWNSTREAM MARKET IN INDIA: AN OVERVIEW

Alok Aditya* and Krishna Raj**

Abstract

India's natural gas downstream market has undergone a significant transformation over the past two decades, marked by progressive institutional reforms and evolving regulatory frameworks. The shift from a highly regulated regime to a more liberalised market structure has been driven by policy initiatives aimed at enhancing infrastructure, improving market access, and establishing transparent pricing and tariff mechanisms. This paper examines the evolution of India's downstream natural gas sector, focusing on the changing institutional landscape, the expansion of transmission and distribution networks, sectoral demand dynamics, and the identification of key trends, drivers, challenges, and opportunities that shape its development. It also highlights the pricing reforms, taxation structures, regulatory oversight, and current challenges and opportunities for the Indian natural gas market. It concludes that sustained institutional reform, regulatory stability, and strategic investment are critical to strengthening India's natural gas market and ensuring its contribution to long-term energy security and economic resilience.

Keywords: Natural Gas Market; Pipeline; Downstream Market; Liquified Natural Gas (LNG); City Gas Distribution (CGD)

Introduction

India's natural gas sector has undergone a remarkable transformation since the mid-20th century, when the first commercial natural gas discovery was made in India. During the early decades, the natural gas market in India was largely restricted to government-owned companies, while the government prioritised gas-consuming sectors at a price fixed by the government (Jain & Sen, 2011). Rapid economic growth, driven by urbanisation and India's commitment to diversifying its energy mix with cleaner energy sources, led to a significant increase in natural gas demand, ultimately paving the way for the liberalisation of the sector. However, it is still in transition due to three factors, namely the natural sequencing of domestic supply development, the general movement of the economy towards reform and reliance on market forces, and global developments (Jain & Sen, 2011). The natural gas business comprises several phases in its supply chain, beginning with upstream production activities, followed by midstream transmission activities, and natural gas distribution to end consumers. The downstream market phase begins when natural gas exits the main transmission pipeline, enters the distribution network, and meets demand at a specific price. It provides a crucial link between gas producers and consumers, shaping the initial phases of the supply chain, as well as accessibility and affordability of natural gas across the nation.

Existing global studies have focused on the structural transformation of natural gas markets from regulated to liberalised regimes, particularly in developed economies (Babatunde *et al*, 2024; Cardinale,

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2023). These studies highlight the impact of regulatory frameworks, infrastructure investment, and pricing mechanisms on shaping competitive market structures and consumer outcomes. Within the Asian context, researchers have analysed the growing role of liquefied natural gas (LNG) in meeting regional energy demands and its implications for energy security (Vivoda, 2014; D. Zhang *et al*, 2018).

Indian literature has also examined different aspects of the natural gas market. Sen (2017) presents an analytical framework for understanding India's transition from a regulated to a liberalised market, emphasising the role of institutional factors and policy reforms. Jain and Sen (2011) analyse the historical evolution of India's natural gas sector, tracing the shift from government monopoly to diversified market participation. Additionally, studies have explored the sectoral demand dynamics for natural gas in India, examining consumption patterns across industrial, fertiliser, power, and city gas distribution sectors (Aditya & Raj, 2024; Jackson, 2007; Kumar *et al*, 2020). Prior research has also addressed pricing reforms and regulatory mechanisms, including the implementation of gas pricing formulas and their impact on market competitiveness (Ghosh, 2024; Mahapatra & Dholakia, 2014). The issue of pricing is crucial for the development of both upstream and downstream markets (Corbeau, 2010). Corbeau (2010) further notes that most Indian natural gas consumers are highly sensitive to the price of natural gas, making it a crucial tool for the government to influence sectoral consumption patterns. Kar *et al* (2017) point out that natural gas pricing should be harmonised with the government's environmental and social objectives. However, since natural gas price is linked with crude oil price, it also depends on global factors beyond the control of the government and CGD companies. According to Sen (2015), the improved price competitiveness of city gas against diesel and LPG and the ability of city gas distribution entities to pass through upstream price increases imply that investment in gas infrastructure should be forthcoming.

However, there are limited studies on comprehensive analyses that simultaneously examine the institutional evolution, infrastructure development, sectoral demand patterns, and market challenges facing India's downstream natural gas sector. Understanding the downstream market dynamics is essential for policymakers, industry stakeholders, investors, and researchers alike, as it influences investment decisions, infrastructure planning, regulatory frameworks, and energy policy formulation. Hence, this study aims to explore and analyse the development of India's natural gas downstream market, focusing on identifying key trends, drivers, challenges, and opportunities that shape its evolution. It contributes to growing literature on India's natural gas sector in several ways. Firstly, it aims to provide a comprehensive overview of the natural gas sector in India, tracing its historical development, regulatory evolution, and current market landscape. Secondly, it seeks to analyse the various components of the downstream market, including distribution networks, transmission infrastructure, marketing mechanisms, and end-user sectors. Finally, it aims to offer insights into the current challenges and opportunities for India's natural gas downstream market.

The remainder of the paper is structured as follows: Section 2 presents a global overview of the natural gas downstream market. Section 3 outlines the institutional, policy, and regulatory framework governing the natural gas sector in India. Section 4 examines the development of natural gas infrastructure in the country. Section 5 provides a sector-wise analysis of natural gas demand. Section 6 reviews the pricing, tariff, and taxation structure of natural gas in India. Section 7 discusses key challenges and emerging opportunities in the Indian natural gas market. Finally, Section 8 concludes the paper.

Global Perspective on Natural Gas Downstream Markets

The developed natural gas downstream markets in North America, Europe, and East Asia have evolved distinctive gas market models, illustrating how governance structures, trading hubs, contractual norms, and infrastructure investments can unlock competition, ensure security of supply, and stimulate market-based pricing. These international perspectives on natural gas downstream markets offer valuable lessons for India as it seeks to expand its own mid- and downstream infrastructure, regulatory frameworks, and commercial practices.

For example, the natural gas market in the United States, which was historically heavily regulated by federal statutes, has undergone substantial transformation over the past few decades. This was characterised by significant deregulation and the emergence of competitive, hub-based pricing mechanisms. The transition to a more fluid market structure, particularly following the shale gas boom that began in the early 2000s (Feijoo *et al*, 2016; Holladay & LaRiviere, 2018), reflects a significant shift in regulatory oversight from stringent federal oversight to a competitive marketplace (Ren *et al*, 2019). The Natural Gas Policy Act of 1978 marked a pivotal change; it initiated the process of deregulation by introducing a phased approach to price decontrol. This was further solidified in 1985 and 1992 under the Federal Energy Regulatory Commission (FERC) orders, which encouraged competition by loosening regulatory constraints on interstate natural gas sales (Kurbet, 2022). As a result, producers transitioned towards a more fragmented market and the monopoly model based on long-term, fixed-price contracts was replaced by short-term and spot trading mechanisms. The 'shale gas revolution' further enhanced the competitiveness of the gas market by lifting supply while pushing down the domestic gas price (Aruga, 2016; Holladay & LaRiviere, 2018). The establishment of Henry Hub as a central natural gas trading point further catalysed the development of a hub-based pricing system. It has been instrumental in fostering liquidity and transparency in natural gas markets (Revtiuk & Bielawski, 2019) with real-time and accurate price signals reflecting supply and demand dynamics. This also led to other regional hubs encompassing various markets in the US and Canada, which have become increasingly interconnected through pipelines and transportation infrastructure (Che *et al*, 2022).

Similarly, the European natural gas markets have also undergone significant developments aimed at regulatory liberalisation, particularly since the late 1990s.The EU has implemented several legislative packages, including the Gas Directives of 1998 and 2003, as well as the Third Energy Package in 2009, designed to dismantle monopolistic structures and promote a more dynamic trading environment for natural gas (Chyong, 2019; Herweg *et al*, 2018).The process aimed to achieve greater competition in natural gas supply amid growing interdependence of EU states for energy resources and the desire to reduce reliance on single suppliers, particularly exporters like Russia (Bianco, 2018; Stefanova, 2012).The regulatory reforms have mandated the unbundling of production and distribution activities to reduce the chances of monopolistic pricing practices and create a competitive market environment (Lindemann, 2015). As the UK pursued its natural gas market reform starting in 1990, significant milestones were achieved with the establishment of the National Balancing Point (NBP) as a key hub for gas trading. It played a fundamental role in creating a competitive atmosphere that enabled the UK to become a major exporter of natural gas (Menezes *et al*, 2019; Nick, 2016). As a result, liquidity in this market increased

significantly, facilitating connections to continental European gas markets and enhancing price discovery and competitive trading practices (Misund & Øglend, 2016; D. Zhang *et al*, 2018).

Furthermore, the East Asian market emerged as a major LNG importer, driven by significant technological innovations and contractual reforms, which boosted the global natural gas market. Major East Asian economies, such as China, Japan, and South Korea, accounted for approximately 61% of global LNG imports in 2017 (Shi *et al*, 2019), underscoring the importance of long-term contracts in securing stable supplies. Regulatory liberalisation is underway in East Asia, but progress varies across countries. For instance, Japan has made significant efforts to reform its gas markets post-Fukushima, introducing new regulatory frameworks aimed at enhancing competition within the energy sector (L. Zhang & Bai, 2020).With rapid industrialisation and urbanisation, China has also adopted a more flexible natural gas market, diversifying its suppliers by constructing a massive natural gas infrastructure. China is also adopting a market-based pricing mechanism, delinking its natural gas price from oil indexation, which reflects China's broader objective of energy security (Park, 2012).

Institutional, Policy and Regulatory Framework

Key Institutions

The apex institution for the natural gas sector management is the Ministry of Petroleum & Natural Gas (MoPNG). The MoPNG is the nodal ministry responsible for formulating policies and overall sectoral oversight for India's petroleum and natural gas industry. Its remit spans exploration and production, refining, import/export, storage, transportation, distribution, and marketing of petroleum products and natural gas. Within MoPNG, specialised divisions such as the Project Development Cell[1] enhance infrastructure investments (pipelines, LNG terminals), coordinate with state governments on CGD rollout, and negotiate international gas purchasing agreements. The Petroleum and Natural Gas Regulatory Board (PNGRB) have also been constituted under the PNGRB Act, 2006,[2] to regulate the natural gas infrastructure and downstream market. PNGRB is the statutory regulator for refining, processing, storage, transportation, distribution, marketing, and sale of natural gas (excluding upstream production). Its key functions include authorising entities to develop pipelines, LNG terminals, and CGD networks; determining transportation and CGD tariffs; enforcing non-discriminatory third-party access via Access Codes; and prescribing technical, safety, and environmental standards alongside the OISD (PNGRB, 2023). It also monitors market conduct and resolves disputes. These functions are codified in over a dozen regulations, including the CGD Authorisation (2008), Tariff (2020), Access Code (2020), Pipeline Tariff (2008, amended), and evolving technical standards (2008–2024). The major natural gas sector management institution is the Directorate General of Hydrocarbons (DGH). Established in 1993 under MoPNG, the DGH functions as the upstream advisory and technical regulatory body, primarily overseeing exploration and production under NELP and Coalbed Methane policies[3]. While its core mandate is upstream, DGH's

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1 https://mopng.gov.in/en/pdc

2 https://pngrb.gov.in/pdf/Act/ACT_PNGRB.pdf

3 https://dghindia.gov.in/#:~:text=The%20Directorate%20General%20of%20Hydrocarbons, through%20Government %20of %20India%20Resolution.

resource assessments and reservoir management guidelines indirectly influence downstream availability and investment decisions. Additionally, several other technical advisory and safety bodies, such as the Oil Industry Safety Directorate (OISD)[4] and Petroleum and Explosives Safety Organisation (PESO)[5] issues safety standards, conduct audits for oil and gas installations and regulate hazardous-area classifications. Similarly, state governments enact complementary policies, facilitate land acquisition for pipeline corridors, and integrate gas distribution into urban planning. Municipal authorities grant clearances for CNG stations and residential PNG connections.

Fiscal Policy Framework

Key fiscal initiatives such as the New Exploration Licensing Policy (NELP), the Open Acreage Licensing Policy (OALP), and the Hydrocarbon Exploration and Licensing Policy (HELP) have progressively liberalised India's upstream regime (Ministry of Petroleum and Natural Gas (MoPNG), 2024). NELP, introduced in 1999, permitted domestic and foreign companies to engage in exploration and production (E&P) under production-sharing contracts (PSC), allocated through competitive bidding. This marked a significant departure from state-led control toward a more market-oriented model. The 2016 reforms introduced a revenue-sharing model to incentivise early production, especially from discovered small fields. HELP, launched in 2017, further rationalised the licensing regime by unifying contracts for conventional and unconventional hydrocarbons and incorporating the OALP mechanism, enabling investors to bid for blocks of their choice, thereby reducing regulatory friction.

On the downstream side, fiscal instruments such as pricing reforms, tax incentives, and subsidy schemes have promoted gas usage across power, transport, and industrial sectors. Projects like Pradhan Mantri Urja Ganga[6] have extended pipeline connectivity to underserved regions, particularly eastern India. Moreover, the Natural Gas Marketing Reforms 2020 aimed to introduce e-bidding-based price discovery while granting partial marketing freedom to producers, though restrictions remain on end-use and consumer segmentation (MoPNG, 2020).

Legislative and Regulatory Structure

The cornerstone of India's downstream regulatory apparatus is the Petroleum and Natural Gas Regulatory Board (PNGRB) Act, 2006, which institutionalised an independent regulatory body for the midstream and downstream sectors. It delineates upstream policy (overseen by the Ministry of Petroleum and Natural Gas and the Directorate General of Hydrocarbons) from downstream regulation, entrusting the PNGRB with licensing, tariff-setting, consumer protection, and enforcement[7]. The PNGRB operationalises its mandate through a suite of regulations. The Access Code Regulations (2011, revised in 2020) provide capacity allocation, scheduling, and balancing procedures for common and contract carrier pipelines under

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4 https://www.oisd.gov.in/en-in/About_Us

5 https://peso.gov.in/web/en/about-peso

6 https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1579087

7 https://www.pngrb.gov.in/eng-web/function.html

Section 18 of the PNGRB Act, ensuring non-discriminatory third-party access[8]. In the city gas distribution (CGD) segment, the CGD Authorisation Regulations (2008) and CGD Tariff Guidelines (2008, revised 2020) offer exclusive marketing rights in designated areas and introduce performance-linked tariff structures[9]. Additionally, technical, quality-of-service, and integrity management standards (2008–2024) define infrastructure safety, metering accuracy, customer service protocols, and asset integrity benchmarks. PNGRB also oversees tariff methodologies, including cost-plus, negotiated, and incentive-based models to balance investor returns with consumer welfare. Monitoring mechanisms include mandatory periodic reporting, joint audits and inspections, and a calibrated penalty regime for non-compliance. Dispute resolution is handled through PNGRB's internal adjudicatory processes, with recourse to higher judicial forums.

Infrastructure

The success of the natural gas downstream market largely depends on the natural gas infrastructure, which is highly capital-intensive. The natural gas infrastructure comprises natural gas transmission pipelines, LNG terminals, natural gas storage units, and city gas distribution networks.

Natural gas Pipelines

The natural gas pipeline infrastructure in India is expanding rapidly, covering a growing number of geographical areas and populations. In 1984, the government established the Gas Authority of India Limited (GAIL), a single company responsible for developing pipeline infrastructure. It set up its first large cross-country pipeline network in 1991, which led to the commencement of City Gas Distribution. In December 2006, GAIL's monopoly on gas transmission through pipelines was abolished, and the private sector was allowed to build and operate the transmission pipelines. In 2008, Reliance Gas and Infrastructure Limited (RGIIL) entered the pipeline business by constructing the 1,400 km East-West pipeline. The government also formulated a pipeline policy in 2006, allowing pipeline developers to choose their own geographical area. As of March 2025, India has 34,233 km of authorised natural gas pipelines, with 25,429 km operational and 9,804 km under construction. Within the operational natural gas pipelines, 24,009 km of pipelines are common carriers, 653 km of pipelines are dedicated pipelines, 565 km of pipelines are Sub-Transmission Pipelines (STPL), while 202 km of pipelines are tie-in connectivity pipelines.

India has 20 operational pipelines with a throughput of 211 MMSCM in 2023-24 (MoPNG, 2024). Additionally, seven pipelines are partially commissioned with a total throughput of 23 MMSCM in 2023-24, while nine pipelines are under construction. The pipeline infrastructure is concentrated in the western, northern, and southern regions, while the lowest coverage is found in the eastern and northeastern regions (PNGRB, 2013). Hence, the government has initiated the "Pradhan Mantri Urja Ganga" scheme to

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[8] https://www.pngrb.gov.in/OurRegulation/PNGRB%20Regulations/A.%20CGD%20Network/A.9.%20CGD%20Common%20Principles%20Regulations/CGD%20Common%20Carrier-Original%20Reg-30.09.2020.docx

[9] https://pngrb.gov.in/eng-web/trans-tariff.html

develop the national gas grid, providing a capital grant of 40% of the total capital cost for pipeline construction. The pipeline will cover 50 districts of the eastern region.

Figure 1: Map of the Gas Infrastructure in India

Source: PNGRB Annual Report 2022-23

LNG Terminals

India has no operational cross-border natural gas pipeline to import natural gas. It imports natural gas through LNG vessels from different natural gas exporter countries. LNG terminals serve as crucial gateways for importing liquefied natural gas into India, diversifying the country's gas supply sources and enhancing energy security.

- **Operational Terminals:** India has seven operational LNG terminals with 47.70 million metric tonnes per annum (MMTPA) capacity (Table 1). Dahej terminal, operated by Petronet LNG Ltd. (PLL), remains the most significant with a capacity of 17.5 MMTPA and consistently high utilisation rates, ranging from 78% to 107% between 2018 and 2024. The Hazira terminal, operated by HLPL, has maintained a stable capacity of 5.2 MMTPA since 2021, although its utilisation has dropped significantly from 95% in 2019-20 to just 30% in 2023-24. Ennore, a newer facility, shows marginal improvements with a utilisation increase from 9% in 2019-20 to 18% in 2023-24. The Dhamra terminal in Odisha became operational only in 2023-24 with a utilisation of 25%.
- **Expansion and New Projects:** Six regasification terminal projects are planned or under construction with a total capacity of 25.10 MMTPA. These include Jaigarh (4.0 MMTPA, H-Energy), Jafrabad (5.0 MMTPA, Swan Energy), Chhara (5.0 MMTPA, HPCL LNG Ltd.), Dahej expansion (5.0 MMTPA), and Gopalpur in Odisha (4.0 MMTPA, PLL). Maharashtra also plans a second Dabhol terminal (2.1 MMTPA by GAIL).
- **Infrastructure Utilisation:** Despite growing capacity, from 26.7 MMTPA in 2019 to 47.7 MMTPA in 2024, utilisation rates of Indian LNG terminals remain uneven. Terminals like Dahej operate efficiently, while Kochi, Hazira, and Ennore remain underutilised due to pipeline constraints, regional demand mismatches, and limited truck-loading infrastructure. The truck loading facility is limited to 40 loadings per day at Dahej and 20 loadings per day at the Kochi terminal[10]. Hence, enhancing pipeline connectivity and demand-side linkages is critical to improving utilisation and ensuring supply efficiency.

[10] https://www.petronetlng.in/india-lng-scenario

Table 1: Performance of LNG Terminals in India

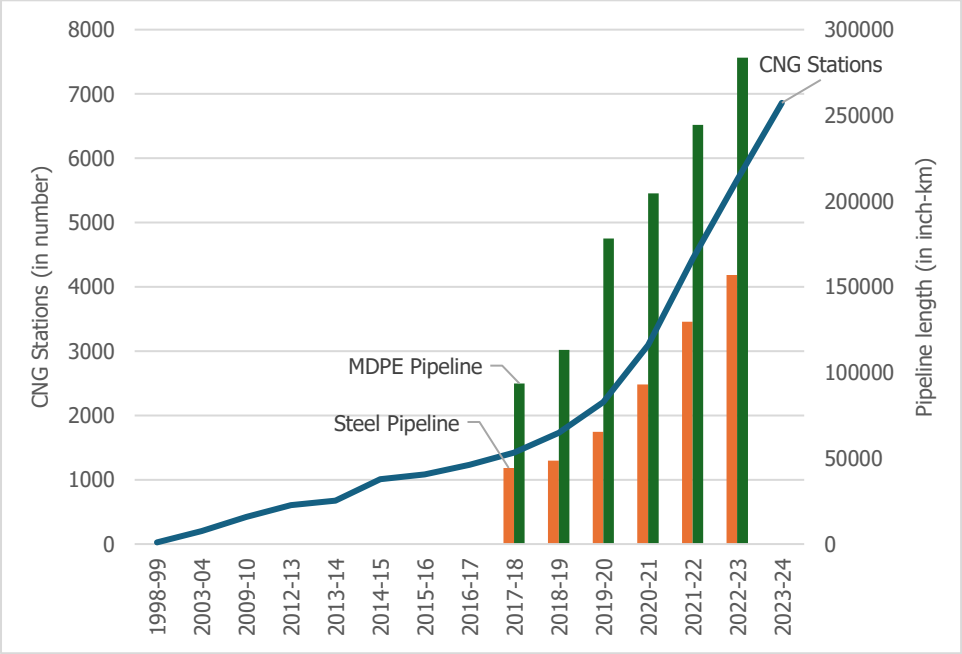
States/UTs	Location	Promoters	Installed Capacity (In MMTPA) (As on)						Capacity Utilisation (In %age)					
			01.04.2019	01.03.2020	01.04.2021	01.04.2022	01.04.2023	31.03.2024	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Operational														
	Dahej	Petronet LNG Ltd. (PLL)	15.00	17.50	17.50	17.50	17.50	17.5	107%	103%	94%	88%	78%	95%
Gujarat	Hazira	Hazira LNG Pvt. Ltd. (HLPL)	5.00	5.00	5.00	5.20	5.20	5.20	80%	95%	77%	47%	37%	30%
	Mundra	GSPC LNG Limited	-	-	5.00	5.00	5.00	5.00	-	30%	35%	19%	16%	15%
Odisha	Dhamra	Adani LNG Pvt Ltd	-	-	-	-	-	5.0	-	-	-	-	-	25%
Maharashtra	Dabhol	RGPPL (GAIL-NTPC JV)	1.69	5.00	-	-	-	5.00	72%	97%	75%	85%	39%	43%
Kerala	Kochi	Petronet LNG Ltd. (PLL)	5.00	5.00	5.00	5.00	5.00	5.00	9%	17%	18%	21%	19%	21%
Tamil Nadu	Ennore	Indian Oil LNG Pvt. Ltd.	-	5.00	5.00	5.00	5.00	5.00	-	9%	13%	14%	13%	18%
India			**26.70**	**42.50**	**42.50**	**42.70**	**42.70**	**47.70**	**-**	**-**	**-**	**-**	**-**	**-**
Planned/Under-Construction														
Maharashtra	Dhabol	GAIL (KLPL)						2.10						
	Jaigarh	H-Energy						4.00						
	Jafrabad	Swan Energy						5.00						
Gujarat	Chhara	HPCL LNG Ltd						5.00						
	Dahej	Petronet LNG Ltd. (PLL)						5.00						
Odisha	Gopalpur	Petronet LNG Ltd. (PLL)						4.00						

Source: Author's compilation of data from the Ministry of Petroleum and Natural Gas (MoPNG)

City Gas Distribution (CGD) Networks

CGD networks, comprising pipelines, distribution stations, metering systems, and customer connection points, provide last-mile connectivity for efficient delivery of natural gas to residential, commercial, and industrial consumers in urban and semi-urban areas. CGD networks have witnessed significant expansion in recent years, driven by government initiatives such as the Pradhan Mantri Urja Ganga (PMUG) project. The PMUG project aims to expand CGD networks to 400 districts across the country, covering approximately 70% of India's population. PNGRB so far has authorised 11 rounds of CGD bidding, cumulatively covering 87.81% of geographical areas and 98.28% of the population (PNGRB, 2023). At the same time, the construction of CNG stations in operational CGD networks has also increased significantly. The expansion of CNG stations demonstrates a remarkable upward trajectory, with the number increasing from 26 in 1998-1999 to an impressive 6,861 by 2023-24. (Figure 2). Similarly, significant growth has also been made on coverage of Steel pipelines used for high-pressure transmission, and MDPE (Medium-Density Polyethylene) pipelines used in city gas distribution (CGD) networks for low-pressure applications.

Figure 2: Number of CNG Stations in India

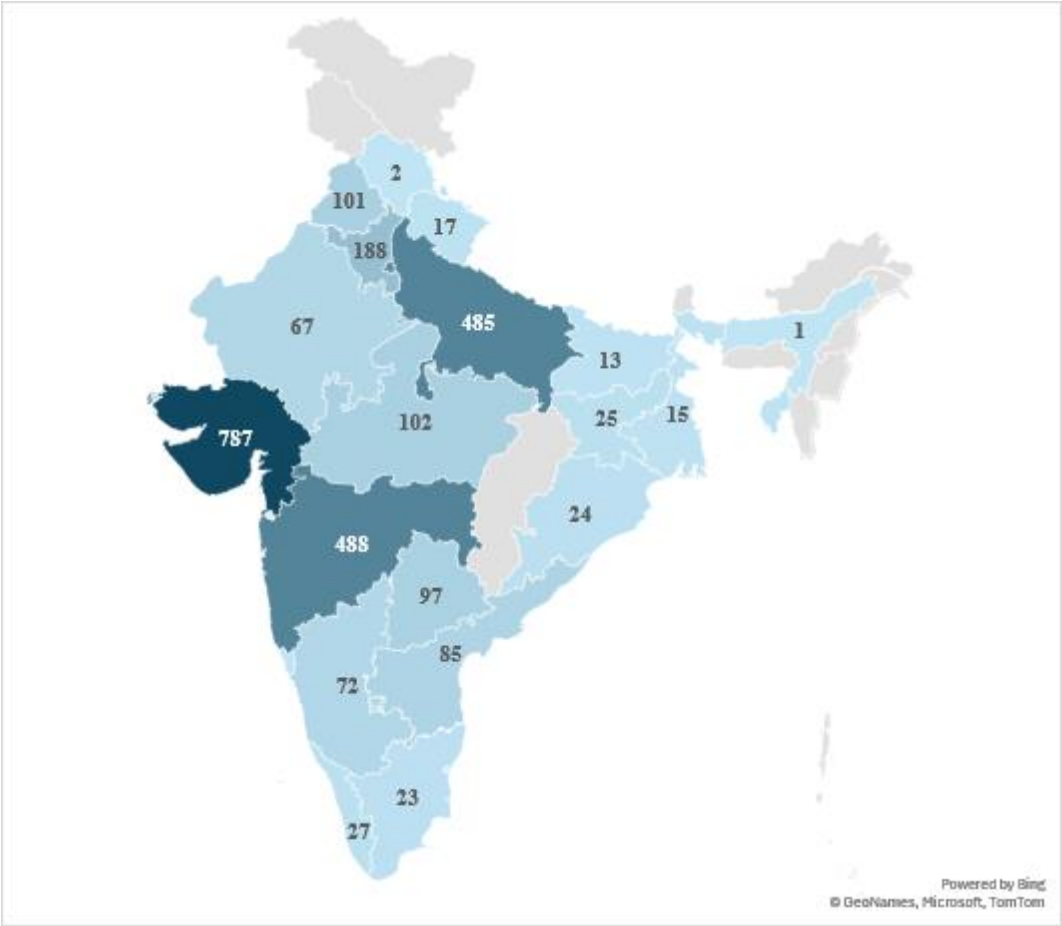


Source: Author's visualisation of data from Petroleum and Natural Gas Statistics (various rounds) and PNGRB Annual Report 2022-23

The distribution of CNG stations across Indian states highlights significant regional disparities in CNG infrastructure (Figure 3). With 1,396 CNG stations, Western India leads the expansion, largely due to Gujarat (787) and Maharashtra (488). This dominance is attributed to early pipeline connectivity, proactive state policies, and strong industrial demand in these states. Similarly, Northern India hosts 1,304 stations, with high concentrations in Uttar Pradesh (485) and Delhi (436), is mainly due to stringent environmental mandates and dense urban populations. In contrast, Southern India has just 304 stations,

despite major urban economies. States like Telangana (97) and Andhra Pradesh (85) exhibit moderate uptake, whereas Tamil Nadu (23) and Kerala (27) lag, reflecting delays in infrastructure rollout and limited CGD network penetration. Eastern India remains the least developed region in terms of CNG infrastructure, with only 90 stations across populous states like West Bengal (15), Bihar (13), and Odisha (24).

Figure 3: State-wise Number of CNG Stations as on 31.03.2021



Source: Authors' visualisation of data from PNGRB

Storage and Market Hub

India currently lacks any operational underground natural gas storage facility, a critical component for ensuring supply reliability, price stability, and strategic energy security(PNGRB, 2013). Recently, the Government of India has issued notifications seeking collaboration with private players for the development of gas storage infrastructure, potentially through public-private partnership (PPP) models.

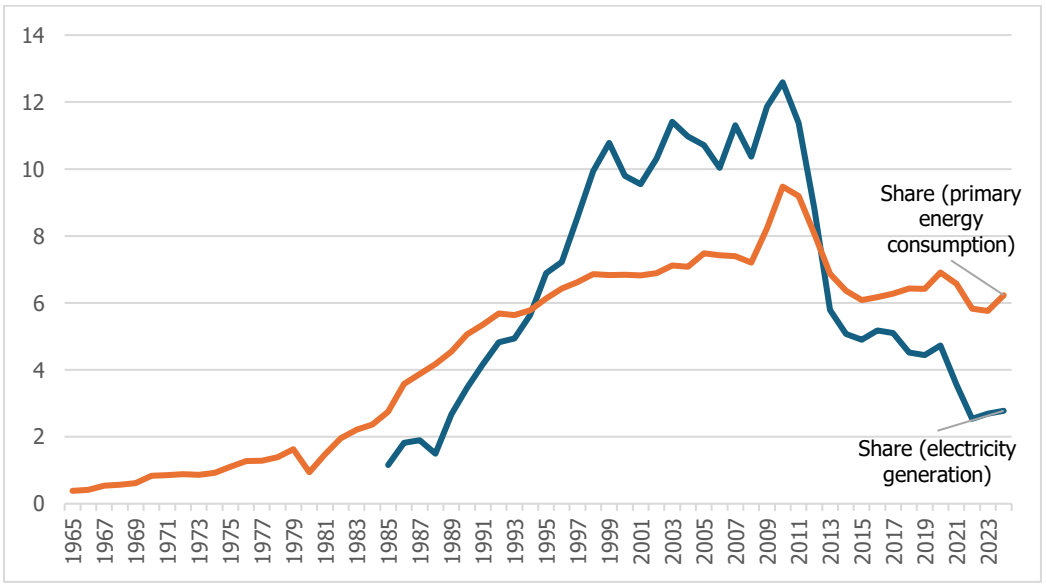
India is also building a transparent and competitive gas trading ecosystem. In December 2020, the Indian Energy Exchange (IEX) launched the Indian Gas Exchange Limited (IGX), India's first digital trading platform dedicated to natural gas. The IGX aims to facilitate market-based gas pricing and enhance liquidity in the natural gas market by offering an efficient interface for multiple buyers and sellers to transact at designated trading hubs across the country. IGX currently operates across six regional gas

hubs: Western, Southern, Eastern, Central, Northern, and Northeastern, with delivery points including Dahej, Hazira, Ankot, Mhaskal, Bhadhbhut, Dabhol, KG Basin, Gadimoga, and Suvali. The platform offers a range of contract options — day-ahead, daily, weekday, weekly, fortnightly, and monthly, providing flexibility to market participants. By the end of 2023, IGX reported trading 48.5 million MMBTU (1222 MMSCM) of natural gas, reflecting a 16% increase from the previous year (IGX, 2024).

Demand Analysis

Natural gas demand in India has steadily increased, driven by economic growth, industrialisation, and urbanisation. Before 1975, its share in primary energy consumption was less than 1%, rising to a peak of 9.5% in 2010 before gradually declining to around 6% (Figure 4). Natural gas utilisation for power generation also peaked at 12.59% in 2010, falling to 2.78% in 2024. The reasons for this decline include reduced domestic production (see Appendix Table A1), particularly the drop in output from the KG-D6 field and the reduced competitiveness of natural gas in power generation. However, the adoption of natural gas in the energy mix across economic sectors has expanded significantly.

Figure 4: Natural Gas Share in Total Primary Energy Consumption and Electricity Generation (1965-2024)



Source: Authors' visualisation of data from Our World in Data (OWD)

Sectoral Analysis of Natural Gas Demand

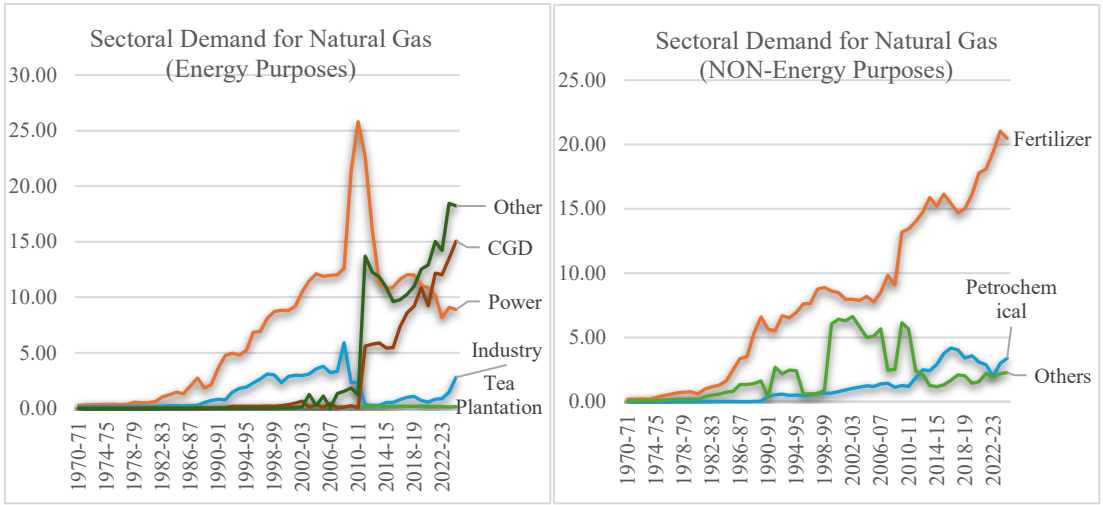
Figure 5 comprehensively depicts sectoral demand for natural gas in India from 1970-71 to 2024-25 (detailed data in Appendix Table A2).

Power Sector: The power sector has been a significant consumer of natural gas, particularly since the late 1980s. Gas-based power generation saw a notable rise from 0.26 BCM in 1970–71 to a peak of over 25.79 BCM in 2010–11. This increase corresponded with growing electricity demand and environmental pressure to shift away from coal. However, since 2011, the sector has experienced a gradual decline in

gas consumption due to limited domestic gas availability. Between 2012–13 and 2022–23, gas use in power generation fell from 16.08 BCM to 8.15 BCM, reflecting a reduced share in power. India's installed gas-based power generation capacity stands at approximately 23.8 GW, but it operated at a low plant load factor (PLF) of 14.8% in FY 2023–24 (PNGRB, 2025). Despite government policies aimed at reviving stranded gas plants and integrating gas-based peaking power into renewable-heavy grids, the sector's gas demand remains subdued. Under the merit order dispatch system, lower-cost units are prioritised, meaning gas plants are typically used during peak periods. To meet growing power demand, the Ministry of Power has directed all gas-based plants to operate at full capacity, aiming to raise PLF to 30% in 2024. However, this demand is largely seasonal. Declining electricity costs, driven by cheaper renewable energy, will likely improve affordability and support demand for gas-based power.

Industrial and Manufacturing Sector: The natural gas supply to industrial consumers and manufacturing sectors is very limited. The natural gas consumption in the early 2000s increased but was not sustained, primarily due to a domestic shortage of natural gas. The consumption peaked in 2008-09 at 5.91 BCM and fell sharply thereafter. However, the natural gas demand projection by PNGRB shows that by 2030, it is expected to grow at a Compound Annual Growth Rate (CAGR) of 10% under the Gas to Grid (GtG) scenario and 15% under the Gas to Business (GtB) scenario (PNGRB, 2025). This growth trajectory is anticipated to continue into 2040, with respective CAGRs of 10% (GtG) and 12% (GtB). As of FY 2023–24, the industrial base comprises approximately 18,700 units, while commercial consumers number around 41,000, collectively consuming approximately 12.7 million metric standard cubic meters per day (MMSCMD) of natural gas. Industry assessments indicate that over 12,000 industrial clusters are located within the geographical areas (GAs) of CGD, encompassing an estimated 200,000 small and medium-sized enterprises (SMEs) and nearly 100,000 commercial users. This segment holds significant potential for growth as natural gas increasingly replaces polluting and costlier fuels like naphtha, furnace oil, LPG, and propane.

Figure 5: Sectoral Demand for Natural Gas in India



Source: Author's visualisation of data from Petroleum and Natural Gas Statistics (various rounds)

City Gas Distribution (CGD): The growth of the City Gas Distribution (CGD) sector was spurred by the 1997 NELP policy, which aimed to attract investments, and further accelerated by the 2006 PNGRB Act, which enhanced infrastructure development through competition, market efficiency, and consumer safeguards. From modest levels of around 0.03 BCM in 2010–11, gas consumption in the CGD sector rose steadily, reaching 9.23 BCM by 2020-21. This was followed by the subsequent increase in gas consumption reaching 15.05 BCM in 2024-25. This reflects the growing consumer adoption and network expansion in Tier 2 and Tier 3 cities, accompanied by an increase in CNG adoption in India's metropolitan areas. The CGD sector has emerged as the fastest-growing segment in India's natural gas market, primarily driven by infrastructure expansion across 307 authorised Geographical Areas (GAs), which were allotted through multiple bidding rounds conducted by the Petroleum and Natural Gas Regulatory Board (PNGRB). The CNG sale grew sharply from 1,818 TMT in 2012–13 to 5,661 TMT in 2023–24 (Table 2). The sector also showed a sharp rebound from the COVID-19 effect in 2020-21, which led to a 20% decline in CNG sales in India. Domestic PNG connections more than quadrupled from 2.87 million in 2014–15 to 15.04 million in 2024–25, registering consistent annual growth. Similarly, commercial and industrial PNG connections have expanded significantly in India.

Table 2: Trends in CNG Sales and PNG Connections in India

Year	CNG Sales (in TMT)	Change (in %)	PNG Connections					
			Domestic	Change (in %)	Commercial	Change (in %)	Industrial	Change (in %)
1998-99								
2003-04								
2009-10								
2012-13	1818							
2013-14	1928	6%						
2014-15	2037	6%	2869348		22356		5918	
2015-16	2155	6%	3163588	10%	23304	4%	6225	5%
2016-17	2366	10%	3585646	13%	21996	-6%	6670	7%
2017-18	2638	11%	4265284	19%	26131	19%	7601	14%
2018-19	3075	17%	5043188	18%	28046	7%	8823	16%
2019-20	3247	6%	6060826	20%	30617	9%	10256	16%
2020-21	2589	-20%	7820387	29%	32339	6%	11803	15%
2021-22	3968	53%	9302667	19%	34854	8%	13215	12%
2022-23	5103	29%	11029228	19%	37772	8%	16563	25%
2023-24	5661	11%	12922516	17%	41360	9%	18756	13%
2024-25			15041471	16%	45373	10%	20461	9%

Source: Author's compilation of data from Petroleum and Natural Gas Statistics in India

Fertiliser Sector: The fertiliser sector is India's largest natural gas consumer, using approximately 20.48 BCM in 2024-25 as feedstock for ammonia-based urea production. Currently, 36 operational gas-based urea plants have a total capacity of 28.4 MMT. Given that 15–20% of the urea demand is met through imports, ensuring self-reliance in domestic production is critical for India's agriculture and food security.

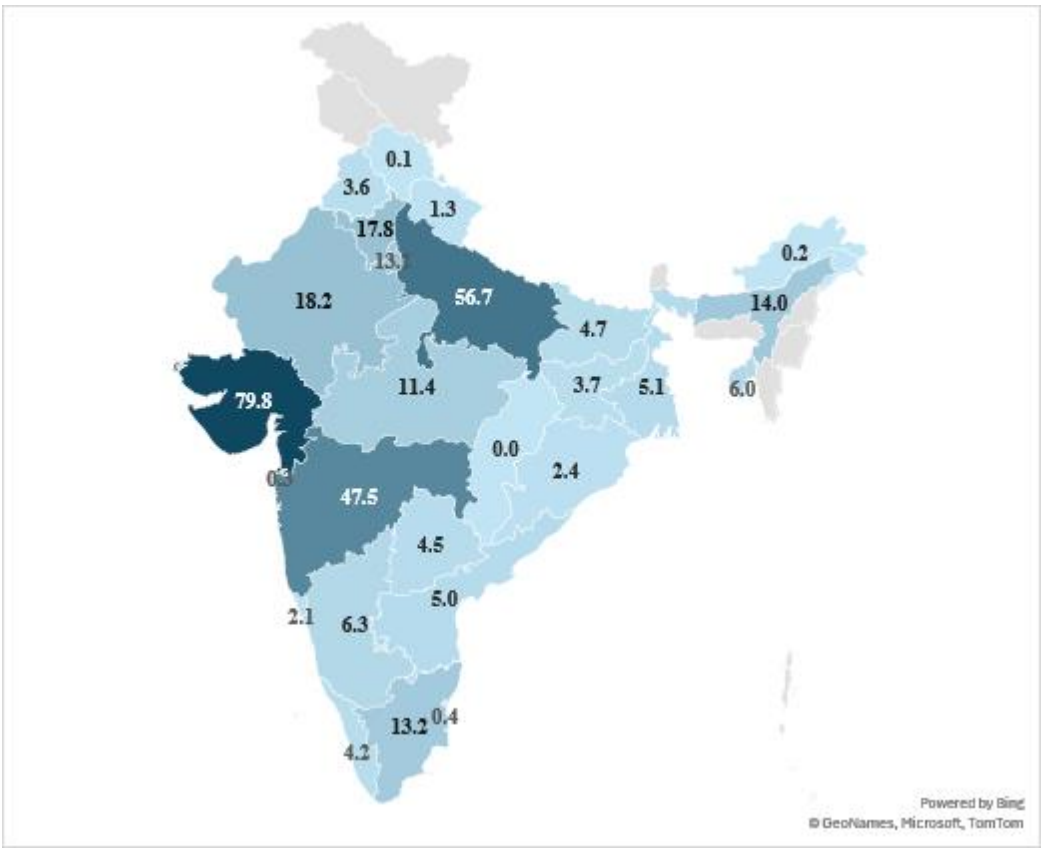
To reduce import dependency and ensure a steady domestic supply, the government has prioritised reviving closed fertiliser plants, particularly through natural gas-based production. A major infrastructural enabler of this revival has been the Urja-Ganga pipeline, which now connects key plants like Sindri (Jharkhand), Barauni (Bihar), Gorakhpur (UP), and Matrix Fertiliser Plant (West Bengal). Additionally, the Ramagundam plant in Telangana has been linked via the Mallavaram–Bhopal–Bhilwara–Vijaipur pipeline. Despite facing challenges such as declining domestic gas allocation and increasing LNG dependency, the fertiliser sector has remained relatively insulated from price volatility due to government subsidies.

Interstate Disparity in Natural Gas Consumption

The pattern of natural gas consumption across Indian states reveals considerable inter-state disparities, underscoring the uneven development of gas infrastructure, industrial base, and policy implementation (Figure 6). The latest data indicate that Gujarat has the highest natural gas consumption, with a consumption level of 79.8 MMSCMD, significantly ahead of all other states (From January to June 2025). This is primarily attributable to Gujarat's early and extensive development of pipeline networks, the presence of LNG import terminals, and a well-established industrial sector that extensively utilises natural gas as a feedstock and fuel. Uttar Pradesh (56.7 MMSCMD) and Maharashtra (47.5 MMSCMD) are followed by strong demand from transportation (CNG), fertiliser plants, power generation, and urban domestic consumption. States such as Rajasthan (18.2 MMSCMD) and Haryana (17.8 MMSCMD) have also experienced a substantial rise in consumption, driven by the expansion of City Gas Distribution (CGD) networks and industrial growth.

Eastern and northeastern states, despite being closer to domestic gas production areas, have lower natural gas consumption. This is mainly due to the lack of transmission infrastructure in this region. These regions are not well connected to India's natural gas hub. Except for Assam, one of India's oldest natural gas producers and host to fertiliser industries, other states in these regions have registered a lower share in natural gas consumption. However, in Bihar and West Bengal, natural gas consumption is expected to increase, primarily due to the expansion of natural gas infrastructure, rapid urbanisation, and high population density in these states.

Figure 6: State-wise NG Consumption (From January to June 2025)



Source: Author's visualisation of data from Petroleum Planning and Analysis Cell (PPAC)

Pricing, Taxation, Tariff and Subsidy

Pricing

India introduced the Administered Pricing Mechanism (APM) in 1975 to protect consumers from international price volatility, applying cost-plus pricing to domestically produced natural gas for priority sectors. However, India has adopted various pricing policies on a time-to-time basis, considering the influence of the international market, sectoral demand dynamics, and the sensitiveness of natural gas consumers (Mahapatra & Dholakia, 2014). The government dismantled APM in 2002 and allowed market-based pricing for non-priority sectors, while retaining subsidies for priority sectors. This resulted in three pricing structures: APM, non-APM (with producer- and basin-specific prices), and imported LNG sourced through long-term contracts and spot or short-term purchases. In 2012, the Rangarajan Committee proposed several reforms on the profit-sharing mechanism, including hub-based pricing of domestic natural gas in India. The government approved the committee's proposal in 2013 to adopt a pooled natural gas pricing system, based on both domestic and imported natural gas. The price for non-APM gas is linked to oil and calculated using the weighted average of oil prices at various natural gas hubs. Since 2014, the Ministry of Petroleum and Natural Gas (MoPNG) has adopted pricing guidelines for domestic natural gas in India, which are revised every six months and follow the formula outlined below.

$$Price = \frac{V_{HH}P_{HH} + V_{AC}P_{AC} + V_{NBP}P_{NBP} + V_R P_R}{V_{HH} + V_{AC} + V_{NBP} + V_R}$$

Where,

V_{HH}, $V_{AC}, V_{NBP}, and\ V_R$ are the total annual volume of natural gas consumed in the USA & Mexico, Canada, the European Union & Former Soviet Union, and Russia, respectively.

$P_{HH}\ and\ P_{NBP}$ are the annual average of daily natural gas prices at Henry Hub (HH) and National Balancing Point (NBP), respectively.

P_R and P_{AC} are the annual average of monthly natural gas prices at Alberta Hub and Russia, respectively.

The prices are adjusted by subtracting US$0.50/MMBTU towards transportation and treatment charges. The sources for the volume and prices at different hubs include the Energy Information Administration (EIA), the International Energy Agency (IEA), and the respective agencies that provide data for the various gas hubs. To stabilise this volatility and promote affordability, the Kirit Parikh Committee[11] proposed a reform implemented in April 2023, whereby APM gas prices were linked to 10% of the Indian crude basket, subject to a floor price of USD 4/MMBTU and a ceiling of USD 6.5/MMBTU. Furthermore, natural gas from new wells in nomination fields now enjoys a 20% premium over APM prices.

To incentivise exploration and production from technically challenging areas, such as High-Pressure High-Temperature (HPHT) reservoirs, deep water and ultra-deep water blocks, and coalbed methane (CBM) projects, the government permits both marketing and pricing freedom. For such fields, a biannual price ceiling is imposed, which is benchmarked against the landed cost of alternative fuels. The price ceiling for HPHT gas has increased substantially over the past decade, from USD 6.61/MMBTU in April–September 2016 to USD 10.16/MMBTU in October 2024–March 2025 (Table 3).Domestic gas prices dropped to a historic low of USD 1.79/MMBTU from April 2020 to September 2021, before climbing to USD 8.57/MMBTU from April to September 2023, and eventually moderating to USD 6.90/MMBTU in the current period (April–August 2025). Furthermore, fields under the Discovered Small Fields (DSF) policy, Hydrocarbon Exploration and Licensing Policy (HELP), and certain NELP/pre-NELP contracts are also granted full pricing autonomy.

Despite reforms, natural gas demand in India remains highly price-sensitive, particularly in downstream sectors. The Ministry of Petroleum and Natural Gas (MoPNG) allocates domestic gas, with top priority given to residential PNG and CNG for transport, followed by power, fertilisers, and LPG extraction. However, a limited domestic supply has led to a greater reliance on expensive LNG imports, affecting affordability and demand.

[11] https://www.icra.in/Rating/DownloadResearchSpecialCommentReport/4760

Table 3: Domestic Natural Gas Price and Gas Price Ceiling (GCV Basis) in India (In US$/MMBTU)

Period	Domestic Natural Gas Price in (GCV Basis)	Gas Price Ceiling (HPHT) in (GCV Basis)
November 2014 - March 2015	5.05	-
April 2015 - September 2015	4.66	-
October 2015 - March 2016	3.82	-
April 2016 - September 2016	3.06	6.61
October 2016 - March 2017	2.5	5.3
April 2017 - September 2017	2.48	5.56
October 2017 - March 2018	2.89	6.3
April 2018 - September 2018	3.06	6.78
October 2018 - March 2019	3.36	7.67
April 2019 - September 2019	3.69	9.32
October 2019 - March 2020	3.23	8.43
April 2020 - September 2020	2.39	5.61
October 2020 - March 2021	1.79	4.06
April 2021 - September 2021	1.79	3.62
October 2021 - March 2022	2.9	6.13
April 2022 - September 2022	6.1	9.92
October 2022 - March 2023	8.57	12.46
April 2023 - September 2023	8.57	12.12
October 2023 - March 2024*	8.44	9.96
April 2024 – September 2024*	8.39	9.87
October 2024 – March 2025*	7.56	10.16
April 2025 – August 2025*	6.90	10.04

Source: Author's compilation of data from Ministry of Petroleum and Natural Gas (MoPNG)

Note: * The price is the average of the calculated monthly price for domestic natural gas for the period

Taxation, Tariff, and Subsidy

Taxation: The taxation of the oil and gas sector remains under the purview of the old tax regime due to the government's heavy reliance on revenue from these sectors. The taxation on natural gas products can be characterised as multiple taxation, with cascading taxes levied by both the central and state governments. The tax rates vary across Indian states, and both producers/suppliers and buyers/end-users face restrictions on input tax credit. Table 4 illustrates the customs and central excise duties levied on various natural gas products. If natural gas can be included under the purview of the GST regime, it can reduce the cost of procurement for producers by ₹10.5 and will also reduce the cost for end-users, such as fertiliser companies, transportation sectors, and companies using natural gas as feedstock (Vinayek *et al*, 2021).

Table 4: Indirect Taxes Levied on the Different Types of Natural Gas in India

Natural Gas Type	Customs Duties		
	Basic Custom Duty	Additional Custom Duty (CVD)	Basic Excise Duty (Central Excise)
Liquefied Natural Gas	2.50%	Nil	Nil
Natural Gas [Gaseous state]	5.00%	Nil	Nil
Natural Gas [Compressed]	5.00%	14.00%	14.00%

Source: Author's compilation of data from PPAC

Note: 1. In addition to the above, 10% Social Welfare charge is also applicable on the total duties of Customs.

2. CVD refers to Countervailing Duty.

Tariff: Natural gas transmission through pipelines requires payment of a tariff, determined under Section 11(e)(ii) of the PNGRB Act, ensuring that transportation tariffs on common or contract carrier pipelines remain transparent and non-discriminatory (PNGRB, 2023). For pipelines authorised through competitive bidding, transportation rates are determined during the bidding process and are included in the authorisation letter, which is available on the PNGRB's website. However, for pipelines authorised outside the bidding route, such as pre-existing pipelines or those authorised under Section 42 of the Act, tariffs are governed by the PNGRB (Determination of Natural Gas Pipeline Tariff) Regulations, 2008. These tariffs are calculated using a discounted cash flow (DCF) methodology, ensuring a 12% post-tax return on capital employed, among other parameters. A major reform was the implementation of the Unified Tariff system from April 1, 2023, which applies to the interconnected pipelines of the National Gas Grid. This system aims to eliminate the cascading effect of tariffs and provide equitable access to gas, especially for consumers located far from gas sources. The unified tariff now comprises three zones with a graduated pricing structure, and a settlement mechanism has been integrated to ensure operational efficiency. Additional amendments include rationalising allowable operational costs, integrating pipelines for tariff calculation, and simplifying tax and capacity considerations.

Subsidy: Along with taxation and tariffs, subsidies are also significant drivers of natural gas dynamics in India. Since the abolition of APM, the government has significantly reduced its subsidy burden. However, the Ministry of Petroleum and Natural Gas provides the budgetary grant for the subsidy in the sale of natural gas in the Northeast region of India. The scheme is known as the "Natural Gas Subsidy Scheme" and currently sees participation by Oil India Limited and Oil and Natural Gas Corporation Limited (ONGC). Table 5 explains the budgetary allocation and utilisation of subsidies for the Northeast region.

Table 5: Subsidy Payments for Natural Gas in the North-Eastern Region of India

Year	Budgetary Allocation (Rs. in crores)	Budget Utilisation (Rs. in crores)
2010-11	444.73	444.73
2011-12	458.00	458.00
2012-13	626.87	626.87
2013-14	625.00	625.00
2014-15	661.00	661.00
2015-16	660.00	660.00
2016-17	744.55	744.55
2017-18	282.39	282.39
2018-19	513.38	498.57
2019-20	643.00	643.00
2020-21	498.00	494.62
2021-22	391.00	391.00
2022-23	811.00	811.00
2023-24	1633.00	1633.00
2024-25	1200.00	1103.73

Source: Author's compilation of data from PPAC

Challenges, Constraints and Opportunities

Challenges and Constraints

India's natural gas market is undergoing a transition from a regulated to a liberalised system, where regulatory frameworks, pricing mechanisms, infrastructure availability, and international market dynamics shape the market. First, the regulatory framework governing the market poses one of the challenges, where national oil and gas companies still dominate the sector. Existing policies often grant exclusivity to state-owned enterprises, thereby limiting competition and restricting the entry of private players into the market (Aditya, 2022). This results in a lack of innovation and improvement in distribution mechanisms, making decision-making processes sluggish and under the influence of bureaucratic hurdles. This can be observed through the delayed commencement of upstream and midstream natural gas activities in India (Kar & Gupta, 2017).

Second, India lacks sufficient gas pipeline networks, storage facilities, LNG terminals, and CGD facilities, which impede the effective transportation and delivery of natural gas (Shojaeinia *et al*, 2022). As a capital-intensive industry, companies require efficient production, full pipeline utilisation, and competitive downstream pricing to maximise their profits (Kar *et al*, 2017). However, persistent demand-supply imbalances, government control over pricing, and regulatory hurdles have discouraged private sector participation, leading to natural monopolies in production, transmission, and distribution. Moreover, policy incoherence, particularly between the Natural Gas Pipeline Policy (2006) and the Gas Utilisation Policy (2008), as well as rigid regulations, limit competition and discourage new entrants, especially in areas with existing infrastructure controlled by other operators (Corbeau, 2010; Kar *et al*, 2017).

Third, the issue of pricing also complicates the natural gas landscape in India. According to the government of India's policy, natural gas pricing should be harmonised with the government's

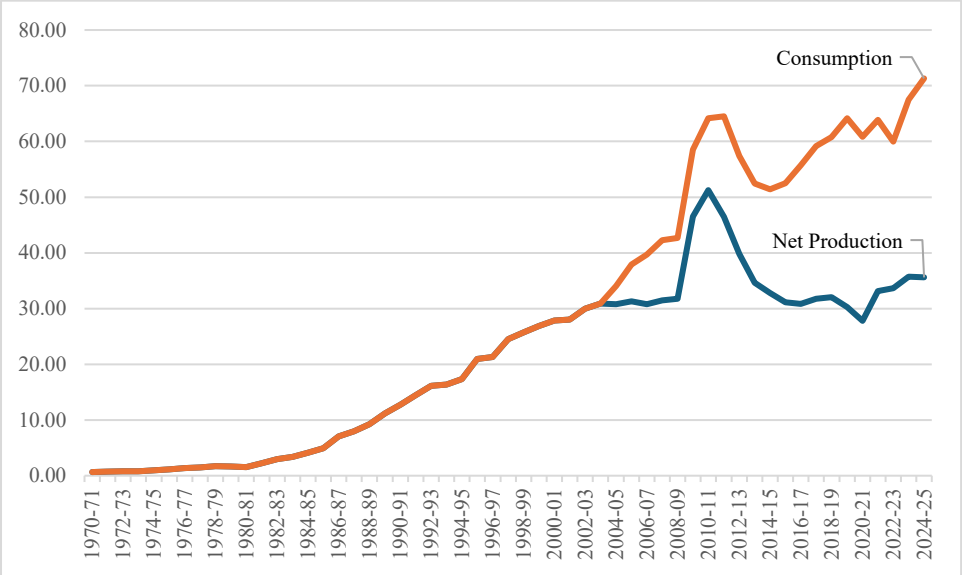
environmental and social objectives (Kar *et al*, 2017). Administered prices, set below market rates for certain sectors, boost affordability but create market inefficiencies and distortions. Conversely, market-based pricing ensures efficient resource allocation and fair returns, promoting sector investment. India adopts a dual pricing system for natural gas, creating an uneven playing field that deters private sector participation and expansion due to profitability uncertainties. Furthermore, as natural gas prices are linked to crude oil, they are influenced by global factors beyond the control of the government and CGD companies.

Fourth, external geopolitical factors and environmental concerns also influence India's natural gas market. The country's dependence on imported LNG exposes it to global price volatilities and supply disruptions, potentially compromising its energy security (Ghosh, 2024). As the international market for natural gas fluctuates, Indian importers may face heightened risks, which could deter investments in long-term contracts crucial for stabilising supply. Over the years, the gap between domestic production and natural gas consumption has widened (Figure 7). Lastly, while natural gas is recognised as a cleaner alternative to coal and oil, on the flip side, extraction and transport processes can result in methane leaks, significantly undermining its environmental credentials (Shojaeinia *et al*, 2022).

Opportunities

India's natural gas market presents significant opportunities for growth and modernisation, particularly in the downstream segment. A key area of potential lies in strengthening open-access regimes by streamlining the Petroleum and Natural Gas Regulatory Board (PNGRB)'s codes, which would enable transparent and equitable access to pipeline infrastructure for non-incumbent players, thereby enhancing competition. Indian pipeline operators offer a take-or-pay clause to natural gas shippers, requiring them to pay the tariff even if they do not have the pre-contract capacity. Hence, capacity trading among natural gas shippers is required to further boost the country's pipeline infrastructure development. The development of new domestic gas trading hubs could further support market-based price discovery by enabling spot and futures trading. Introducing incentive-based tariff structures for new pipeline projects, with performance metrics tied to reliability and throughput, can stimulate faster infrastructure development and improve service efficiency. Infrastructure expansion also holds promises, particularly through strategic underground storage in depleted fields, small-scale LNG terminals, and interstate pipeline spur lines, enhancing supply security and regional access. Modernising gas contracts to include shorter off-take cycles, benchmark indexation, and destination flexibility can reduce volume risk and align India's gas trade with global practices.

Figure 7: Demand-Supply Gap in the Domestic Natural Gas Market in India



Source: Author's visualisation of data from Petroleum and Natural Gas Statistics (various rounds)

Conclusion

The Indian natural gas industry is more than 50 years old, having started with the first discovery in the 1970s and gained significance after several reforms in the 1990s and 2000s. However, the downstream market remained nascent due to several domestic and international constraints on supply and demand. In recent decades, the government has implemented a series of policies and regulatory reforms to develop India's natural gas industry. These reforms include promoting participation, funding for infrastructure development, and expanding the natural gas network in many metropolitan cities. The policy reforms for the upstream natural gas segment also created a path to the liberalised downstream market, where the government established regulatory bodies to resolve issues and gave producers the freedom to set prices under a price ceiling. Consequently, the Indian natural gas downstream market gradually shifted from a highly regulated to a liberalised market. India's downstream natural gas market is highly sensitive to price volatility and natural availability, as international events and domestic production basins also influence prices, making them unreliable. Most of the natural gas reserves are less productive, which further puts pressure on the government to import natural gas. India has only one option for importing natural gas, LNG imports, as there are no operational cross-country pipelines. This implies the role of infrastructure in boosting domestic production and energy security through LNG imports. In the recent decade, the city gas distribution networks have performed very well in establishing the CNG station and adding PNG connections in the downstream market. This substantial increase signifies a concerted effort to enhance the accessibility of compressed natural gas, aligning with the broader objectives of promoting cleaner and more sustainable fuel options for transportation. As India aims to build a gas-based economy, the downstream market must become more robust, transparent, and responsive. Future growth hinges on effectively balancing domestic exploration with global integration while strengthening market mechanisms and institutional frameworks.

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Appendices

Table A1: Production, Consumption, and Imports of Natural Gas in India

Year	Gross Production (BCM)	Changes (in %)	Net Production (BCM)	Flared	Imports (BCM)	Changes (in %)	Consumption (BCM)	Changes (in %)
1970-71	1.45		0.65	0.80			0.65	
1971-72	1.54	6.23%	0.72	0.82			0.72	10.97%
1972-73	1.57	1.95%	0.77	0.79			0.77	7.38%
1973-74	1.71	9.46%	0.76	0.95			0.76	-1.17%
1974-75	2.04	19.15%	0.95	1.09			0.95	24.80%
1975-76	2.37	16.02%	1.12	1.24			1.12	18.19%
1976-77	2.43	2.53%	1.38	1.05			1.38	22.86%
1977-78	2.84	16.93%	1.46	1.38			1.46	6.01%
1978-79	2.81	-0.95%	1.71	1.10			1.71	16.87%
1979-80	2.77	-1.60%	1.68	1.09			1.68	-2.05%
1980-81	2.36	-14.78%	1.52	0.84			1.52	-9.19%
1981-82	3.85	63.32%	2.22	1.63			2.22	45.99%
1982-83	4.94	28.17%	2.96	1.98			2.96	33.08%
1983-84	5.96	20.77%	3.40	2.56			3.40	14.95%
1984-85	7.24	21.47%	4.14	3.10			4.14	21.83%
1985-86	8.13	12.33%	4.95	3.18			4.95	19.54%
1986-87	9.85	21.13%	7.07	2.78			7.07	42.87%
1987-88	11.47	16.38%	7.97	3.50			7.97	12.67%
1988-89	13.22	15.26%	9.25	3.97			9.25	16.09%
1989-90	16.98	28.47%	11.17	5.81			11.17	20.72%
1990-91	18.00	6.00%	12.77	5.23			12.77	14.32%
1991-92	18.65	3.59%	14.44	4.20			14.44	13.12%
1992-93	18.06	-3.14%	16.12	1.94			16.12	11.60%
1993-94	18.34	1.52%	16.34	2.00			16.34	1.39%
1994-95	19.47	6.18%	17.34	2.13			17.34	6.11%
1995-96	22.64	16.30%	20.93	1.71			20.93	20.72%
1996-97	23.25	2.70%	21.33	1.92			21.33	1.90%
1997-98	26.40	13.54%	24.55	1.86			24.55	15.08%
1998-99	27.43	3.89%	25.71	1.71			25.71	4.76%
1999-00	28.45	3.72%	26.89	1.56			26.89	4.56%
2000-01	29.48	3.62%	27.86	1.62			27.86	3.63%
2001-02	29.71	0.80%	28.04	1.68			28.04	0.63%
2002-03	31.39	5.65%	29.96	1.43			29.96	6.87%
2003-04	31.96	1.81%	30.91	1.06			30.91	3.14%
2004-05	31.76	-0.62%	30.78	0.99	3.30		30.78	-0.42%
2005-06	32.20	1.38%	31.33	0.88	6.60	100.00%	31.33	1.79%
2006-07	31.75	-1.41%	30.79	0.96	8.90	34.85%	30.79	-1.70%
2007-08	32.42	2.11%	31.48	0.94	10.80	21.35%	31.48	2.23%
2008-09	32.85	1.32%	31.75	1.10	10.90	0.93%	31.75	0.85%
2009-10	47.50	44.61%	46.51	0.99	12.00	10.09%	46.51	46.49%
2010-11	52.22	9.94%	51.25	0.97	12.90	7.50%	51.25	10.21%
2011-12	47.56	-8.92%	46.48	1.08	18.00	39.53%	46.48	-9.31%
2012-13	40.68	-14.47%	39.78	0.90	17.61	-2.17%	57.39	23.46%
2013-14	35.41	-12.95%	34.64	0.77	17.80	1.08%	52.44	-8.62%
2014-15	33.66	-4.94%	32.79	0.87	18.61	4.55%	51.40	-1.98%
2015-16	32.25	-4.19%	31.11	1.14	21.39	14.94%	52.50	2.14%
2016-17	31.90	-1.09%	30.85	1.05	24.85	16.18%	55.70	6.09%
2017-18	32.65	2.35%	31.73	0.92	27.44	10.42%	59.17	6.24%
2018-19	32.87	0.67%	32.05	0.82	28.74	4.74%	60.79	2.74%
2019-20	31.18	-5.14%	30.26	0.92	33.89	17.92%	64.15	5.52%
2020-21	28.67	-8.05%	27.78	0.89	33.03	-2.54%	60.81	-5.20%
2021-22	34.02	18.66%	33.12	0.90	30.78	-6.81%	63.90	5.07%
2022-23	34.45	1.26%	33.65	0.80	26.30	-14.55%	59.95	-6.18%
2023-24	36.44	5.78%	35.72	0.72	31.80	20.91%	67.52	12.63%
2024-25	36.11	-0.91%	35.59	0.52	35.72	12.33%	71.31	5.61%

Source: Author's compilation of data from Petroleum and Natural Gas Statistics (various rounds) & Enerdata Yearbook 2023

Table A2: Sectoral Demand for Natural Gas in India

	Energy Purpose							Non-Energy Purpose				
Year	Power	Industry	Tea Plantation	Domestic	LPG Shrinkage	Other	Total	Fertiliser	Petro chemical	Others	Total	Grand Total
1970-71	0.26	0.12	0.02	-	0.07	-	0.46	0.19	-	-	0.19	0.65
1971-72	0.31	0.13	0.02	-	0.06	-	0.52	0.20	-	-	0.20	0.72
1972-73	0.34	0.15	0.02	-	0.06	-	0.57	0.20	-	-	0.20	0.77
1973-74	0.32	0.16	0.02	-	0.08	-	0.58	0.18	-	-	0.18	0.76
1974-75	0.35	0.18	0.03	0.01	0.08	-	0.65	0.32	-	-	0.32	0.97
1975-76	0.37	0.14	0.03	0.01	0.10	-	0.66	0.46	-	0.00	0.47	1.13
1976-77	0.34	0.16	0.04	0.02	0.14	-	0.69	0.56	-	0.02	0.59	1.28
1977-78	0.37	0.17	0.04	0.01	0.17	-	0.76	0.67	0.01	0.02	0.70	1.46
1978-79	0.56	0.18	0.04	0.01	0.18	-	0.97	0.72	0.01	0.02	0.74	1.71
1979-80	0.51	0.16	0.04	0.02	0.17	-	0.90	0.76	0.01	0.02	0.78	1.68
1980-81	0.49	0.16	0.05	0.01	0.18	-	0.89	0.61	0.01	0.02	0.63	1.52
1981-82	0.61	0.17	0.05	0.02	0.36	-	1.20	0.99	0.01	0.02	1.02	2.22
1982-83	1.03	0.19	0.05	0.01	0.50	-	1.77	1.16	0.01	0.02	1.18	2.96
1983-84	1.21	0.23	0.06	0.02	0.57	-	2.08	1.28	0.01	0.02	1.32	3.40
1984-85	1.45	0.25	0.06	0.02	0.72	-	2.51	1.60	0.01	0.02	1.64	4.14
1985-86	1.30	0.22	0.08	0.02	0.80	-	2.42	2.50	0.01	0.02	2.53	4.95
1986-87	2.04	0.26	0.10	0.03	1.30	-	3.71	3.34	-	0.03	3.36	7.08
1987-88	2.72	0.28	0.10	0.03	1.31	-	4.45	3.49	-	0.03	3.52	7.97
1988-89	1.82	0.53	0.09	0.04	1.33	-	3.81	5.33	0.02	0.09	5.44	9.25
1989-90	2.14	0.70	0.08	0.04	1.53	-	4.48	6.58	0.03	0.09	6.69	11.17
1990-91	3.63	0.83	0.09	0.05	-	-	4.60	5.61	0.41	0.37	6.39	10.99
1991-92	4.77	0.77	0.11	0.07	2.17	-	7.89	5.51	0.53	0.52	6.56	14.44
1992-93	4.97	1.45	0.11	0.19	1.92	-	8.63	6.67	0.58	0.24	7.49	16.12
1993-94	4.79	1.79	0.12	0.19	2.28	-	9.17	6.50	0.49	0.18	7.17	16.34
1994-95	5.23	1.93	0.13	0.19	2.23	-	9.71	6.94	0.52	0.17	7.63	17.34
1995-96	6.84	2.30	0.11	0.18	0.59	-	10.02	7.60	0.47	-	8.08	18.09
1996-97	6.94	2.63	0.13	0.18	0.62	-	10.50	7.63	0.51	-	8.13	18.63
1997-98	8.11	3.11	0.12	0.21	0.57	-	12.11	8.75	0.65	-	9.40	21.51
1998-99	8.71	3.01	0.15	0.19	0.91	-	12.97	8.87	0.65	-	9.52	22.49
1999-00	8.83	2.33	0.14	0.25	4.84	0.04	16.42	8.59	0.67	1.20	10.46	26.89
2000-01	8.80	2.87	0.15	0.34	5.00	0.04	17.20	8.48	0.78	1.40	10.66	27.86
2001-02	9.21	2.98	0.15	0.49	5.34	0.07	18.23	7.96	0.91	0.94	9.80	28.04
2002-03	10.51	2.94	0.12	0.65	5.41	0.14	19.77	7.96	1.03	1.22	10.20	29.96
2003-04	11.48	3.10	0.14	0.09	4.87	1.26	20.94	7.89	1.13	0.95	9.97	30.91
2004-05	12.10	3.57	0.14	0.34	4.94	0.23	21.33	8.17	1.24	0.04	9.45	30.78
2005-06	11.88	3.78	0.15	0.08	5.05	1.12	22.05	7.76	1.18	0.04	8.97	31.03
2006-07	11.96	3.21	0.17	0.44	5.03	0.04	20.86	8.50	1.38	0.64	10.51	31.37
2007-08	12.04	3.32	0.16	0.04	1.80	1.32	18.69	9.82	1.43	0.64	11.89	30.58
2008-09	12.60	5.91	0.15	0.10	1.89	1.54	22.19	9.08	1.11	0.61	10.80	32.99
2009-10	21.37	2.32	0.17	0.25	5.43	1.84	31.37	13.17	1.26	0.70	15.14	46.51
2010-11	25.79	2.32	0.19	0.03	4.54	1.22	34.09	13.43	1.18	1.10	15.71	49.80
2011-12	22.63	0.31	0.18	5.60	1.07	13.70	43.49	14.00	1.86	1.33	17.19	60.68
2012-13	16.08	0.27	0.18	5.78	1.03	12.25	35.59	14.73	2.49	1.11	18.33	53.92
2013-14	11.28	0.26	0.20	5.90	0.98	11.82	30.45	15.87	2.41	0.27	18.55	48.99
2014-15	10.72	0.53	0.18	5.42	1.01	10.87	28.72	15.19	2.89	0.15	18.23	46.96
2015-16	10.89	0.55	0.19	5.46	0.75	9.60	27.44	16.14	3.73	0.54	20.41	47.85
2016-17	11.62	0.79	0.18	7.35	0.76	9.77	30.48	15.43	4.17	0.89	20.48	50.96
2017-18	12.03	1.00	0.19	8.59	0.80	10.26	32.85	14.68	4.02	1.28	19.98	52.83
2018-19	12.01	1.09	0.19	9.21	0.87	10.98	34.34	14.99	3.39	1.12	19.50	53.84
2019-20	11.08	0.70	0.20	10.88	0.86	12.52	36.24	16.12	3.57	0.57	20.25	56.49
2020-21	10.84	0.56	0.18	9.23	0.90	12.92	34.62	17.78	3.07	0.65	21.50	56.12
2021-22	10.16	0.83	0.16	12.18	1.07	15.03	39.41	18.08	2.86	1.13	22.08	61.49
2022-23	8.15	0.87	0.15	12.03	0.98	14.21	36.38	19.40	1.96	0.96	22.32	58.70
2023-24	9.08	1.46	0.14	13.49	1	18.45	43.62	21.04	2.98	1.18	25.2	68.82
2024-25	8.89	2.8	0.15	15.05	0.92	18.21	46.02	20.48	3.36	1.33	25.17	71.19

Source: Author's compilation of data from Energy Statistics (various rounds)

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