Crisil Intelligence

Global and India Natural Gas Industry

Indian Gas Exchange Ltd

July 2026

IGX
INDIAN GAS EXCHANGE
an IEX venture

Consulting

Crisil Limited MUMBAI

by S&P Global

Contents

Crisil Limited MUMBAI

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Abbreviation list

Abbreviation	Full Form
CBG	Compressed Biogas
CBO	CBG Blending Obligation
CGD	City Gas Distribution
CNG	Compressed Natural Gas
PNG	Piped Natural Gas
LNG	Liquefied Natural Gas
FOM	Fermented Organic Manure
LFOM	Liquid Fermented Organic Manure
MSW	Municipal Solid Waste
IGX	Indian Gas Exchange
PNGRB	Petroleum and Natural Gas Regulatory Board
SATAT	Sustainable Alternative Towards Affordable Transportation
IOCL	Indian Oil Corporation Limited
BPCL	Bharat Petroleum Corporation Limited
VGF	Viability Gap Funding
CFA	Central Financial Assistance
SOx	Sulphur Oxides
NOx	Nitrogen Oxides
LBV	LNG Bunkering Vessel
HSFO	High Sulphur Fuel Oil
VLSFO	Very Low Sulphur Fuel Oil
MGO	Marine Gas Oil
SPR	Strategic Petroleum Reserve
APM	Administered Pricing Mechanism
NWG	New Well Gas
DPI	Domestic Production Incentive
SVO	Strategic Volume Obligation
FSRU	Floating Storage Regasification Unit
RLNG	Regasified Liquefied Natural Gas
CFA	Central Financial Assistance
PPP	Public-Private Partnership
EMDE	Emerging Market & Developing Economies
IMF	International Monetary Fund
GDP	Gross Domestic Product
MJ	Megajoules
RBI	Reserve Bank of India
FWA	Fixed Wireless Action
CCUS	Carbon Capture, Utilization, and Storage
IGU	International Gas Union
MTPA	Million tinnes per annum
JKM	Japan Korea Marker
TTF	Title Transfer Facility
WIM	West India Marker
OIES	Oxford Institute for Energy Studies
CCGT	Combined-Cycle Gas Turbine
AI	Artificial Intelligence
MtOE	Million Tonnes of Oil Equivalent
GW	Giga Watt
CAGR	Compound annual growth rate
E&P	Exploration & Production
ONGC	Oil & Natural Gas Corporation
MoU	Memorandum of Understading
OSV	Offshore supply vessels
KG	Krishna Godavari
TSP	Technical Services Provider
CBM	Coal Bed Methane
MMTPA	Million metric tonnes per annum

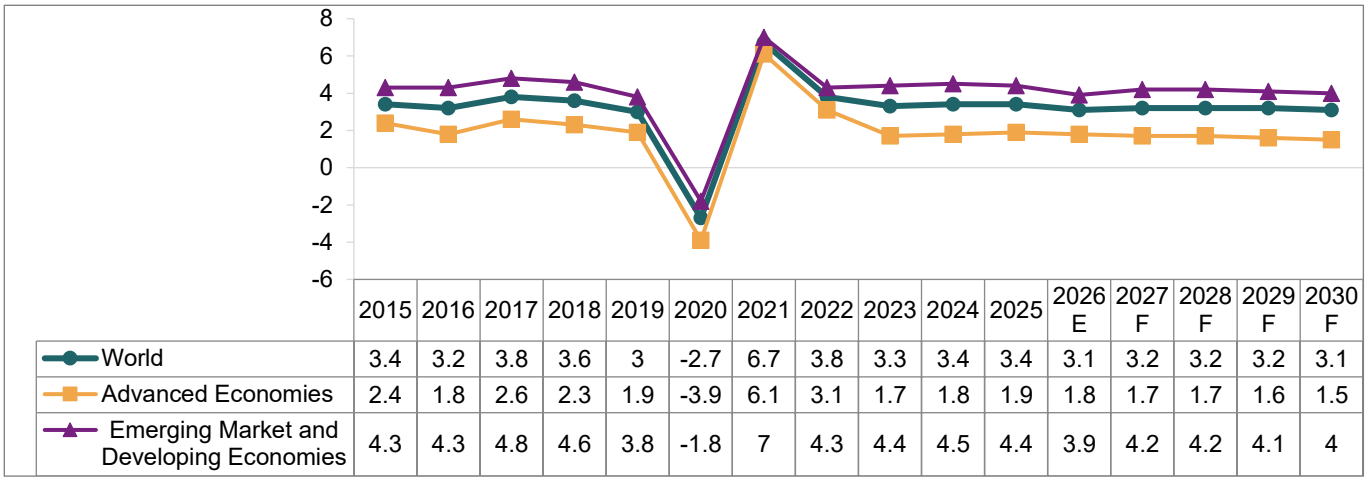
Abbreviation	Full Form
SEZ	Special Economic Zone
MMSCMD	Million Metric Standard Cubic Meters per Day
JHBDPL	Jagdishpur-Haldia-Bokaro-Dhamra
(NEGG	North-East Natural Gas Pipeline Grid
BCM	Billion Cubic Metre
GtG	Good to Go
BAU	Business as Usual
AGU	Accelerated Gas Usage
GtB	Good to Best
APM	Administered Pricing Mechanism
HPHT	High Pressure High Temperature
PSC	Production Sharing Contracts
GCV	Gross Calorific Value
MMBtu	Metric Million British Thermal Unit
MPF	Marketing and Pricing Freedom
FGD	Flue Gas Desulfurization
DGH	Directorate General of Hydrocarbons
CBOT	Chicago Board of Trade
LME	London Metals Exchange
NYMEX	New York Mercantile Exchange
SHFE	Shanghai Futures Exchange
EEE	European Energy Exchange
NBP	National Balancing Point
CEGH	Central European Gas Hub
ICE	Intercontinental Exchange
HEnEx	Hellenic Energy Exchange
TOCOM	Tokyo Commodity Exchange
SHPGX	Shanghai Petroleum and Natural Gas Exchange
ShFE	Shanghai Futures Exchange
SPIMEX	Saint Petersburg International Mercantile Exchange
GER	Gas Exchange Regulations
MGL	Mahanagar Gas Limited
IGL	Indraprastha Gas Limited
DSF	Discovered Small Field
GSA	Gas Sales Agreement
GIXI	Gas Index of India
LDC	Long Duration Contracts
RLNG	Regasified LNG
HPCL	Hindustan Petroleum Corporation Limited
TAM	Total Addressable Market
ISO	Independent System Operator
SEBI	Securities and Exchange Board of India
RGC	Renewable Gas Certificate
REC	Renewable Energy Certificates
ATF	Aviation Turbine Fuel
EBB	Electronic Bullet Boards
HLEC	High-Level Expert Committee
HH	Henry Hub
IMS	Uniform Imbalance Management
CBAM	Carbon Border Adjustment Mechanism
UFT	Unified Tariff
MCX	Multi Commodity Exchange
NSE	National Stock Exchange
BSE	Bombay Stock Exchange
AEMO	Australian Energy Market Operator
NCL	NSE Clearing Ltd

Module 1: Global Macroeconomic Overview

Review and outlook of Global GDPGlobal real GDP growth stabilized at around 3.4% in 2025, indicating a shift to a low-growth regime rather than a new expansion. This slowdown follows a deceleration from the post-pandemic recovery and is driven by tight financial conditions, high debt, and structural inefficiencies, with India benefiting relatively. The reintroduction of tariffs in 2025 led the U.S. to pivot toward targeted bilateral trade agreements, fostering a resilient "friend-shored" supply chain network focused on security and efficiency. Geopolitical tensions, especially involving the U.S., Iran, and Israel, add uncertainty, risking disruptions and inflationary pressures that could further dampen growth.

Emerging markets (EMDEs) continue to outperform advanced economies, growing at about 4.4% in 2025 compared to 1.9%, supported by demographics, domestic consumption, and investments. Their growth is expected to remain resilient through 2030, driven by urbanization, middle-class expansion, and supply chain diversification. Conversely, advanced economies face subdued growth of around 1.6–1.7%, hindered by aging populations, high debt, and productivity challenges, making EMDEs better positioned for sustained growth amid ongoing global uncertainties.

Figure 1: Real GDP Growth (%) 2015-2030F

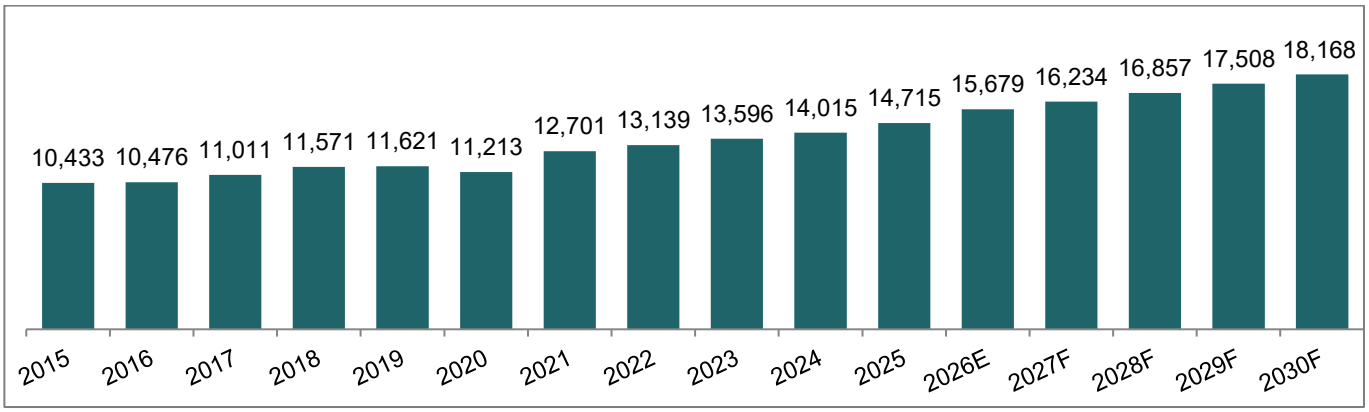


	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026 E	2027 F	2028 F	2029 F	2030 F
World	3.4	3.2	3.8	3.6	3	-2.7	6.7	3.8	3.3	3.4	3.4	3.1	3.2	3.2	3.2	3.1
Advanced Economies	2.4	1.8	2.6	2.3	1.9	-3.9	6.1	3.1	1.7	1.8	1.9	1.8	1.7	1.7	1.6	1.5
Emerging Market and Developing Economies	4.3	4.3	4.8	4.6	3.8	-1.8	7	4.3	4.4	4.5	4.4	3.9	4.2	4.2	4.1	4

Note: E-Estimated, F-Forecast
Source: International Monetary Fund (IMF) World Economic Outlook April 2026

Global GDP per capita and growth

Figure 2: Global GDP per capita, at current prices (US Dollars) and growth, 2015-2030F



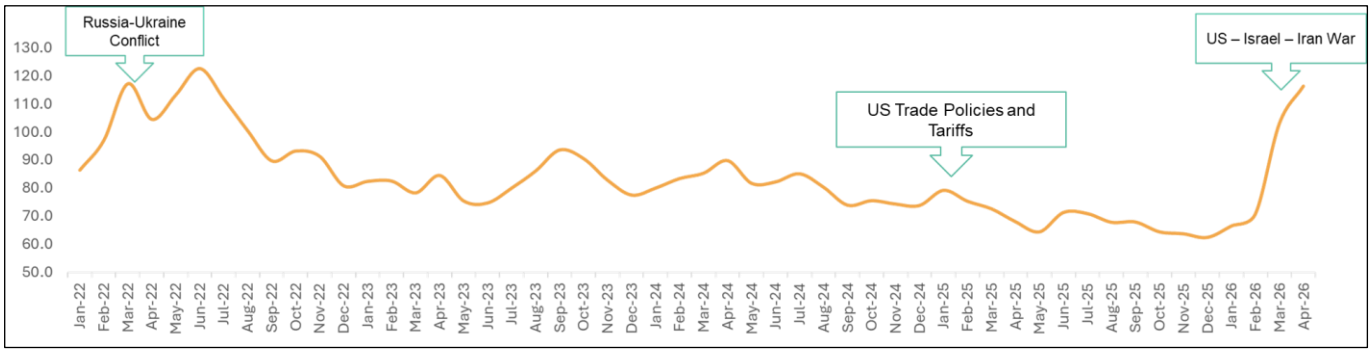
Note: E-Estimates, F-Forecast
Source: International Monetary Fund (IMF) World Economic Outlook April 2026

The growth in global GDP per capita from 2025 to 2030 is driven by the expansion of global trade and investment, which fosters industrial growth, job creation, and technological advancement, alongside rapid urbanization in developing nations as they shift toward higher-value sectors like manufacturing and services. These structural transitions raise average incomes, improve employment opportunities, and increase consumer spending, leading to a substantial rise in energy demand. As households become more affluent, they consume more energy for larger homes, additional appliances, and enhanced heating and cooling—much of which is supplied by natural gas, particularly in colder regions and urban areas. Similarly, expanding businesses increase their energy usage for operations and power generation, relying heavily on natural gas for commercial heating and small-scale industrial applications.

Higher income levels also drive increased vehicle ownership, prompting many countries to adopt cleaner fuels such as compressed natural gas (CNG) for personal and public transport to reduce emissions and improve air quality, thereby boosting natural gas consumption in the transportation sector. Concurrently, the manufacturing sector's growth—fueled by rising GDP per capita—further accelerates natural gas demand, as industries such as chemicals, fertilizers, glass, and steel depend on it as both a primary energy source and a critical feedstock for production processes.

Geopolitical Scenarios and its Impact on Oil & Gas Sector

Figure 3: Europe Brent Spot Prices FOB, $/barrell, Jan 2022-Apr 2026



Data is till April 27, 2026
Source: EIA, Crisil Intelligence

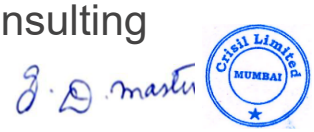
Geopolitical disruptions have become a central driver of oil and gas market volatility, as reflected in recent price movements. The Russia–Ukraine conflict initially triggered a sharp spike in Brent crude prices in 2022, with Russia curtailing pipeline gas deliveries to Europe by approximately 80bcm, creating a major supply deficit and pushing global gas prices to record highs. The crisis significantly tightened global LNG markets as Europe increased LNG imports to replace Russian pipeline gas, intensifying competition for cargoes in Asia and leading to sustained volatility in oil and gas prices. Crude oil prices also surged following the invasion amid sanctions on Russian energy exports and fears of supply disruption, with benchmark prices reaching multi-year highs and triggering what the International Energy Agency described as a global energy crisis with far-reaching implications for energy security and trade flows.

During the Russia–Ukraine war induced gas shock, spot RLNG prices into Asia repeatedly traded above $30/MMBtu, materially lifting CGD input costs and curbing discretionary spot purchases. PPAC, in May 2022, reported India's April LNG imports falling year-on-year amid "very high spot prices", with Asian spot (JKM) above $30/MMBtu for weeks before cooling down.

More recently, escalating tensions involving the United States, Israel, and Iran have introduced heightened uncertainty, particularly given the strategic importance of the Middle East in global energy supply. Disruptions in the Strait of Hormuz—through which ~20% of global oil and a significant share of LNG flows—have tightened supply and triggered sharp price spikes, with Brent briefly approaching $100–120/bbl in April 2026 amid fears of prolonged

blockage. These risks have amplified short-term price volatility and tightened supply conditions, with oil markets increasingly influenced by geopolitical triggers rather than purely demand–supply fundamentals.

For India, the recent Middle East tensions have already led to supply disruptions leading to higher crude prices, contributing to rising wholesale inflation. It poses risks to India's energy security, given its heavy reliance on Middle Eastern imports.



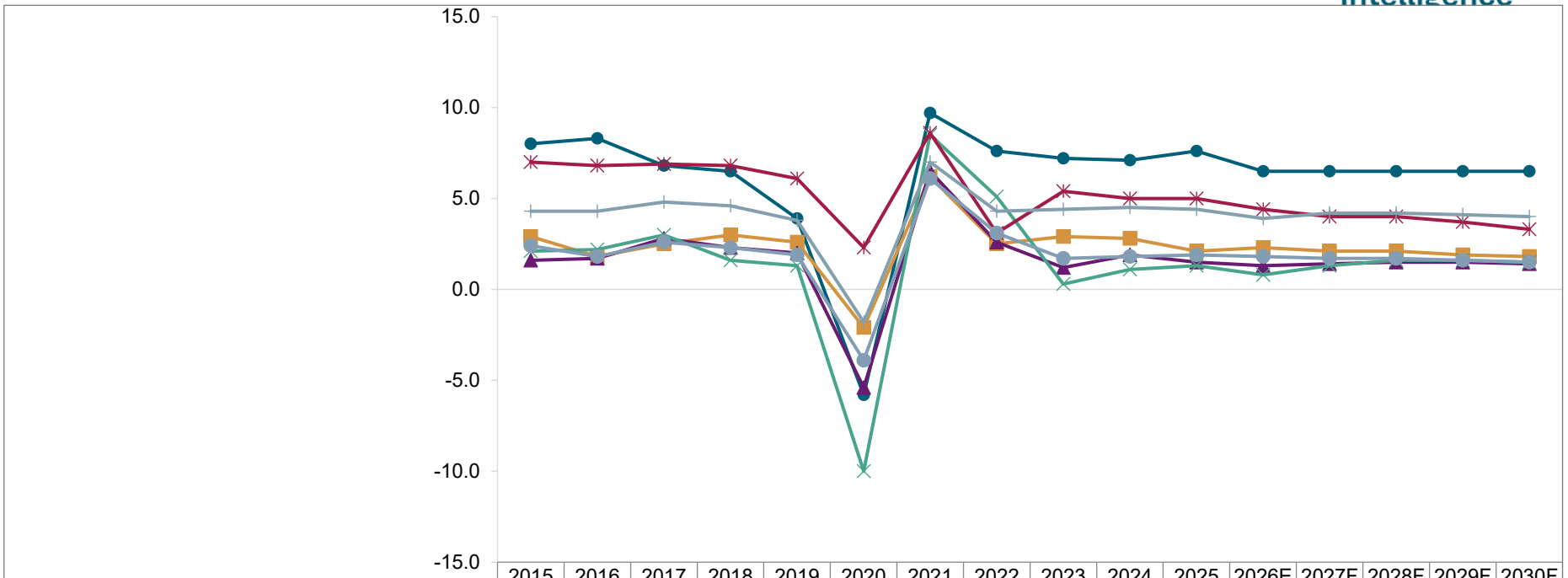
India Macroeconomic Overview

India GDP growth and outlook

As of 2025, India's real GDP growth is estimated at around 7.6%, reflecting a stable, medium-term trajectory driven by resilient domestic consumption, public investment, and a strong services sector, despite subdued external demand. The growth has moderated from 7.6% in 2022 to about 7.1% in 2024 due to normalization of base effects, tighter global financial conditions, and softer exports, but remains relatively contained. Growth is expected to stay robust at 7.6% in 2025 and stabilize around 6.5% from 2026–2030, supported by favorable demographics, urbanization, policy reforms, and infrastructure development. These factors, along with government initiatives like disinvestment and FDI liberalization, bolster productivity and attract investment, positioning India to sustain high growth despite global risks.

IMF World Economic Outlook April 2026 projections position India as the fastest-growing major economy over the medium term, with growth rates consistently above 6.5–7.6%, outperforming both advanced economies and other EMDEs. While developed economies face structural constraints and slower growth of 1–2%, India's younger workforce, consumption-driven demand, and ongoing reforms give it a competitive edge. Compared to China, India maintains a higher growth outlook due to demographic advantages and structural resilience, supported by domestic demand, infrastructure spending, and digitalization. These factors underpin India's sustained momentum, making its growth more durable than mere cyclical recovery.

Figure 4: Real GDP Growth Comparison (%) 2010-2030F

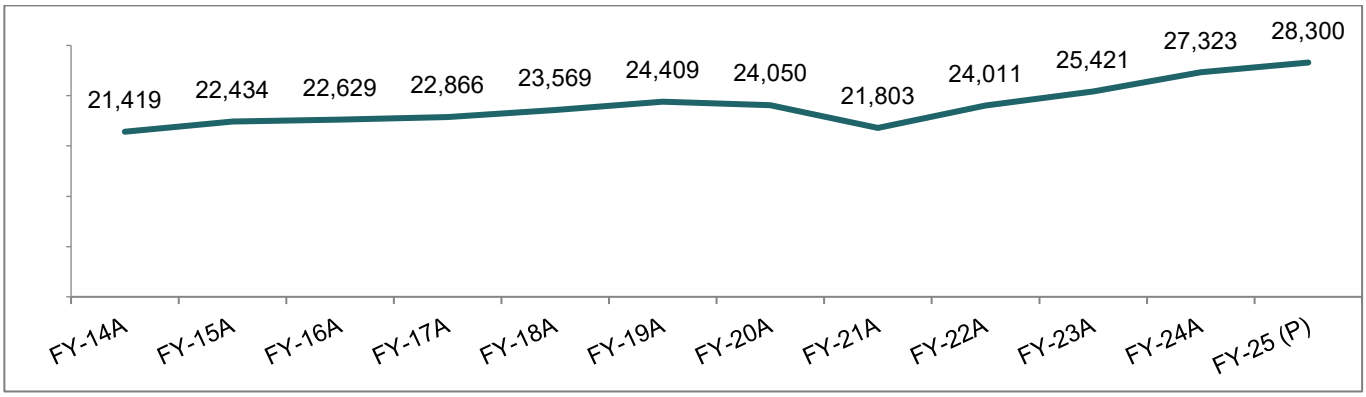


	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026E	2027F	2028F	2029F	2030F
India	8.0	8.3	6.8	6.5	3.9	-5.8	9.7	7.6	7.2	7.1	7.6	6.5	6.5	6.5	6.5	6.5
United States	2.9	1.8	2.5	3	2.6	-2.1	6.2	2.5	2.9	2.8	2.1	2.3	2.1	2.1	1.9	1.8
Europe	1.6	1.7	2.8	2.3	2	-5.4	6.5	2.6	1.2	1.9	1.5	1.3	1.4	1.5	1.5	1.4
United Kingdom	2.1	2.2	3.0	1.6	1.3	-10.0	8.5	5.1	0.3	1.1	1.3	0.8	1.3	1.6	1.6	1.5
China	7.0	6.8	6.9	6.8	6.1	2.3	8.6	3.1	5.4	5.0	5.0	4.4	4.0	4.0	3.7	3.3
Advanced Economies	2.4	1.8	2.6	2.3	1.9	-3.9	6.1	3.1	1.7	1.8	1.9	1.8	1.7	1.7	1.6	1.5
Emerging Market and Developing Economies	4.3	4.3	4.8	4.6	3.8	-1.8	7.0	4.3	4.4	4.5	4.4	3.9	4.2	4.2	4.1	4.0

Note: E-Estimated, F: Forecast
Source: International Monetary Fund (IMF) World Economic Outlook April 2026

Per Capita Energy Consumption

Figure 5: Per Capita Energy Consumption, Megajoules (MJ/Person), FY-14 to FY25



Note: A-Actual, P-Provisional
Source: MOSPI, Crisil Intelligence

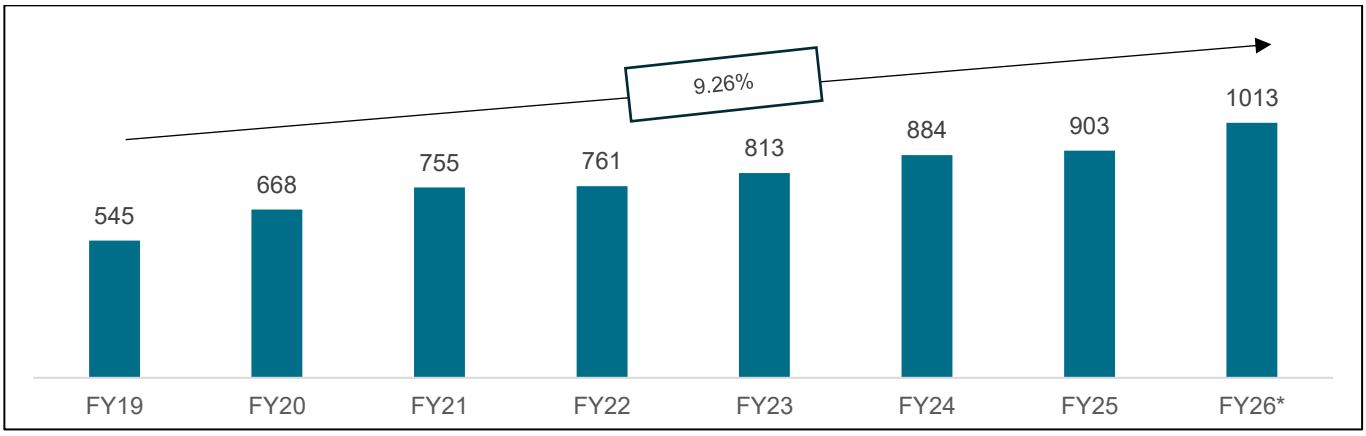
India's per capita energy consumption has steadily increased over the past decade, from 21,419 MJ in FY14 to 28,300 MJ in FY25, driven by economic growth, urbanization, industrial expansion, and better electricity access. The pandemic caused a temporary dip in FY20 and FY21, but consumption rebounded strongly, reaching 27,323 MJ in FY24. This upward trend reflects ongoing industrial activity, rising household energy demand, and a shift toward cleaner fuels like LPG, PNG, and electricity, which improve energy efficiency while increasing overall consumption.

India's per capita energy consumption is expected to increase substantially, driven by expanded rural electrification through schemes like Saubhagya, which has connected millions to the grid, and rapid industrial growth under 'Make in India' and PLI initiatives. This shift includes a move from biomass and kerosene to cleaner fuels such as LPG, PNG, and electricity, boosting energy efficiency while raising overall demand.

Compared to other countries (120 GJ in China, 51 GJ in Brazil and 270 GJ in US) and world average of 77 GJ, India's per person energy consumption of 28.3 GJ is still low, indicating significant headroom for future demand expansion as the economy continues to develop.

Digitization trend

Figure 6: Wireless Broadband subscribers' growth, millions, FY19-FY26*



**FY 26 data is till Feb 2026*
Source: TRAI, Crisil Analysis

India's wireless broadband subscriber base has grown significantly from approximately 545 million in FY2019 to an estimated 1,013 million by FY2026, reflecting a CAGR of around 9–10%. Early growth (FY2019–FY2021) was driven by rapid 4G adoption, falling data tariffs, and affordable smartphones, enabling mass-market internet access. However, growth has since moderated as the market matures, particularly in urban areas where penetration is already high. Supply-side factors like low-cost data and the ongoing 5G rollout, along with demand-side drivers such as video streaming, digital payments, e-commerce, and online education, have transformed mobile connectivity into a necessity. This expansion is deeply intertwined with India's digital transformation, supported by robust digital public infrastructure like Aadhaar and UPI, creating a mutually reinforcing ecosystem where increased broadband access drives digital service adoption, which in turn fuels demand for reliable, high-speed connectivity.

Table 1: Some Countries Mobile Data Cost (USD/GB)

Country	Mobile Data Cost
India	0.16
United States	6.00
Germany	0.91
United Kingdom	0.62
France	0.20
Spain	0.53
Thailand	0.30
Malaysia	0.28
Indonesia	0.56
Japan	3.21

Source: Crisil Intelligence

Table 2: Sectors Using Digital Services

Sector	Earlier Scenario	Current Digital Scenario
Banking & Financial Services	Branch visits, cash transactions, cheque payments	UPI, mobile banking, digital wallets, online lending, digital KYC
Retail & Commerce	Physical stores, cash payments	E-commerce, quick commerce, digital payments, omnichannel retail
Healthcare	Physical consultations, paper records	Telemedicine, e-pharmacies, electronic health records
Education	Classroom-based learning	Online learning platforms, hybrid education, digital assessments
Government Services	Manual paperwork, in-person visits	Digital service delivery, online certificates, DBT transfers
Agriculture	Traditional advisory systems	Digital marketplaces, precision farming, weather and price apps
Logistics & Transportation	Manual tracking and paperwork	GPS tracking, digital freight platforms, route optimization
Manufacturing	Manual monitoring and maintenance	Industry 4.0, IoT, predictive maintenance, digital twins
MSMEs	Cash-based operations and bookkeeping	UPI payments, cloud accounting, ERP and CRM adoption

Source: Crisil Intelligence

The rapid expansion of digital connectivity and data infrastructure is also accelerating the digitization of India's energy sector and commodity trading ecosystem. Increasing internet penetration and digital payment infrastructure are enabling the transition from traditional bilateral and manual processes towards transparent, technology-driven trading. Further, Government-led initiatives such as the proposed India Energy Stack aim to create a unified digital public infrastructure for the energy sector by enabling seamless data exchange, interoperability, consumer empowerment, and integration across electricity, gas, renewable energy, and mobility ecosystems.

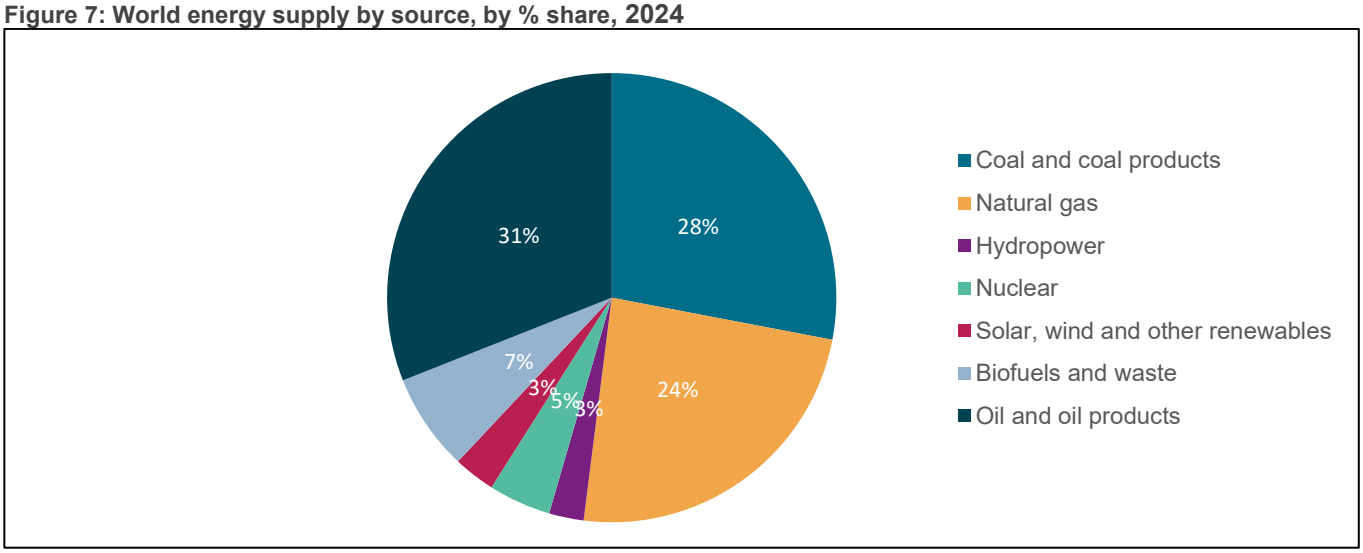
Module 2: Global Natural Gas Industry

Natural Gas and its role in the global energy landscape and mix

The global energy landscape has undergone significant changes, but fossil fuels such as coal, crude oil, and natural gas remain the primary energy sources, having driven industrial production, transportation, and economic growth since the industrial revolution. However, their dominance has come at a substantial environmental cost, including air pollution, environmental degradation, and climate change. In recent years, renewable energy sources such as hydropower, solar, and wind energy have emerged, particularly in regions with abundant natural resources. The 21st century has seen a shift towards renewable energy, driven by growing concerns about climate change and the finite nature of fossil fuel reserves, marking a new era in the global energy scenario.

In 2025, fossil fuels such as coal has contributed an average of ~28% to the global energy supply whereas natural gas has a share of ~24% indicating that natural gas has been acting as a bridge fuel during the recent energy transition happening worldwide.

Figure 7: World energy supply by source, by % share, 2024



Source: IEA World Energy balances

Over the past decade and a half, natural gas and LNG have progressively solidified their position as critical pillars and have become the fundamental elements of the global energy landscape, functioning both as a versatile fossil fuel and as a strategic bridge in the transition toward lower-carbon energy systems.

Over roughly the past 10–15 years, the gas economy has been reshaped by groundbreaking developments — from the shale revolution in North America, which transformed the United States from an import-dependent market to the world's largest LNG exporter, to the dramatic expansion of LNG capacity in Qatar, Australia, and the United States that has more than doubled global liquefaction potential since the early 2010s.

Natural gas's share in the global primary energy mix has steadily hovered around 23–25% of global energy supply in recent years, reflecting persistent demand for flexible, dispatchable fuels capable of complementing intermittent renewable generation and meeting industrial and residential energy needs.

The future of energy is likely to be characterised by a diverse mix of sources, with a significant emphasis on renewable energy. Energy transition will involve a gradual shift away from fossil fuels towards cleaner alternatives, supported by advancements in energy efficiency, digitalization, and the adoption of a circular economy approach to minimise waste and maximise resource efficiency.

Many countries, regions and companies have set ambitious net-zero emissions targets, driving the global shift towards a sustainable energy system. Continued research and development in clean energy technologies, international cooperation, and a focus on equity will be critical in achieving these goals.

In summary, while fossil fuels continue to dominate the global energy mix, the world is moving steadily towards a more sustainable energy future. The ongoing energy transition, driven by the rise of renewables, improvements in energy efficiency, and technological innovation, presents an opportunity to reshape the global energy landscape in a way that addresses the pressing challenges of climate change and energy security.

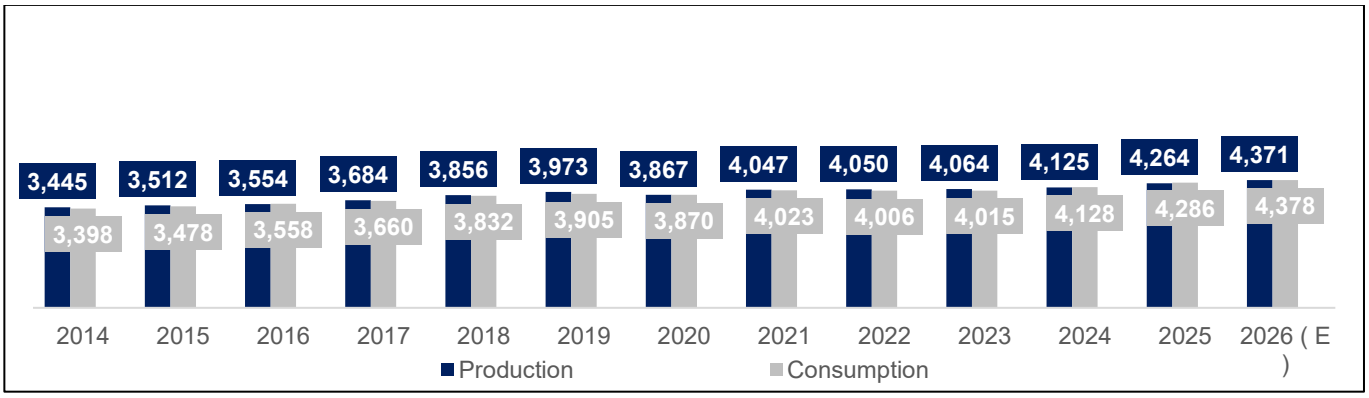
Table 3:Key roles of natural gas in global energy landscape

Key roles of natural gas in the global energy landscape	
Grid Flexibility & Reliability	Gas-fired power plants are generally more efficient than the conventional thermal plants due to: • **Faster ramp up time:** Gas based power plants have a faster ramp up or startup time of ~5-60 minutes (depends on simple or combined cycle and other technicalities) as compared to ~2 hours to even a day for a thermal based plant *Gas turbines are designed for fast response and load balancing. Best for peak load + grid balancing* • **Higher base load efficiency:** Have a higher base load efficiency of more than in the range of 50-60% compared to coal plants at 25-40%. *Gas plants use both gas turbines + steam cycle (waste heat recovery). More electricity per unit fuel leads to lower fuel cost and emissions per kWh* • **Lower CO_2 emissions:** Generates much lower CO_2 emissions, ~400-670 gCO_2/ kWh (~ 9% of the total CO_2 emissions, meanwhile coal-based power plants generate ~800-1100 gCO_2/kWh (~29% of the total CO_2 emissions) *Gas emits ~50% less CO_2 than coal. Although gas has lower emissions compared to coal, it is still 10-40x higher than renewables.* • **Low land footprint:** Gas has ~50 – 100x lower direct footprint than solar as they are high energy density systems and require only ~ 0.05 – 0.3 acres/ MW compared to 5-10 acres/MW for solar and 0.3 to 0.5 acres/MW + mining land for coal plant. *Gas based power plants have lower land acquisition costs + fewer resettlement/ environmental issues.* **Higher energy security:** Higher energy security due to efficient pipeline network and presence of anchor customers, storage infrastructure for gas. Due to extensive global trade via LNG (Liquefied Natural Gas) and established pipelines, it provides energy security and reduces reliance on more carbon-intensive, localized fuels Gas plants are compact, flexible and cleaner than coal, making them ideal for grid balancing and peak demand. However, they remain carbon emitting and import dependent, limiting their role in a future likely dominated by renewables.
Transition Fuel	Natural gas is considered as a bridge between high carbon fossil fuels (like coal) and low carbon renewables such as solar and wind. As a cleaner-burning fossil fuel (lower sulphur, particulates, and then coal/oil), it aids in reducing emissions during the shift to cleaner, renewable sources.
Future roles	**CCUS**: Its future role is often tied to Carbon Capture, Utilization, and Storage (CCUS) technologies to further minimize greenhouse gas emissions.

Key roles of natural gas in the global energy landscape	
	Feedstock for hydrogen economy: Natural gas is key for blue hydrogen (gas + carbon capture) and supports early-stage hydrogen scale up. **Cleaner transport fuel:** LNG is used in shipping, heavy trucking and is seen as a key alternative to diesel in transport sector.

Global natural gas demand and supply

Figure 8: Global gas consumption and production (2014 - 2026), in BCM.



Source: Data from 2014 to 2024 - BP statistical review of world energy 2025, 2025 and 2026 data are taken from IEA Q1 2026 report (summary table): E- Estimated

The demand/consumption of natural gas over the years has consistently risen with the global consumption CAGR from 2014 – 2026 standing at 2.1%.

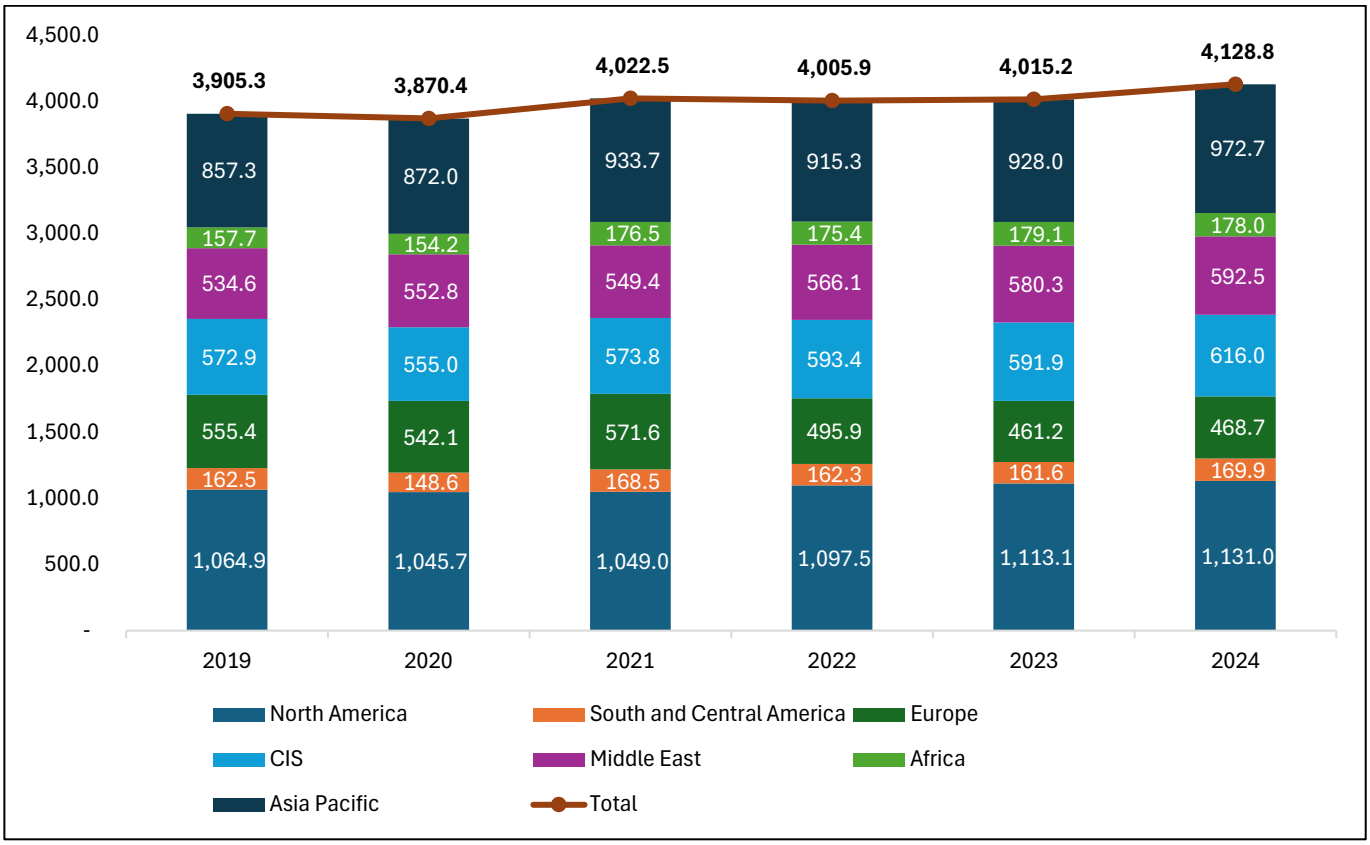
Between 2020 and 2025–2026, the global energy system experienced significant fluctuations and structural changes in energy demand, consumption, production, and supply, largely influenced by the COVID-19 pandemic, economic recovery, geopolitical disruptions, and the accelerating deployment of low-carbon technologies.

In 2020, global energy demand declined sharply due to pandemic-related lockdowns and reduced industrial activity, marking one of the largest contractions in modern energy history. However, the global economy rebounded quickly in 2021–2022, leading to a strong recovery in energy consumption and production across most fuel types. By 2024, global energy demand had reached record levels, increasing by about 2.2% year-on-year, surpassing the average growth rate of the previous decade

The global gas consumption and production peaked in 2019. In 2020, the global production and the consumption fell by -3% and -1% respectively. Post the pandemic era from 2020-2023, global gas demand resumed structural growth from 2024 onwards, where the gas consumption jumped by ~2.8%.

Global natural gas consumption

Figure 9:Global gas consumption, region wise, in BCM, 2024



Source: BP Statistical energy review 2025, Statistical Review of World Energy.pdf

The North America contributed 27.4% of the total consumption of gas worldwide in 2024 which was ~4,129 bcm, with the Asia pacific standing second at 23.6%. In North America, the US alone accounted for 80% of the total consumption in the continent. In Asia pacific, China contributed almost 45% to the total consumption in the region.

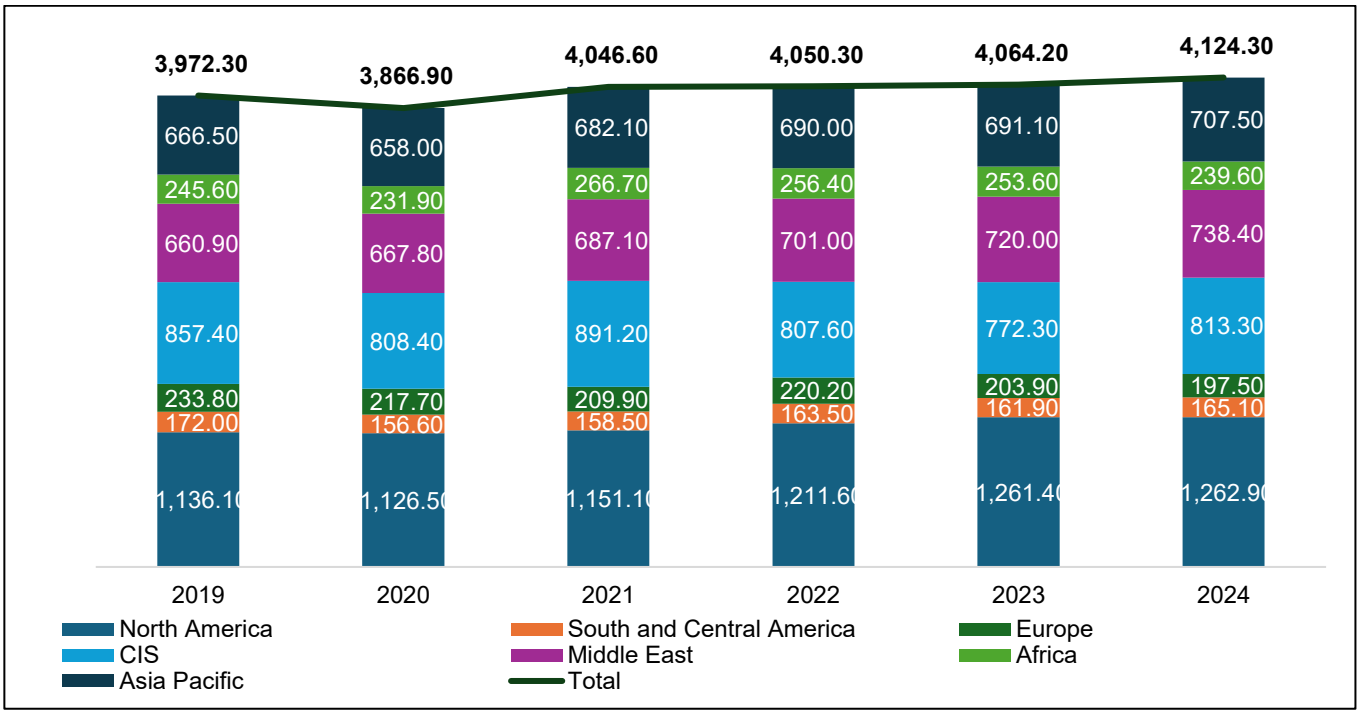
In total, the Asia pacific region and North America contributed almost 51% of the total consumption globally.

Following a relatively strong increase in 2024, natural gas demand growth slowed significantly in 2025. In contrast with previous years, this growth was largely driven by Europe and North America while natural gas demand remained subdued in Asia and declined in Eurasia. In OECD Europe, natural gas demand grew by 3%, partly supported by stronger gas burn in the power sector amid lower wind and hydro power output.

In North America, natural gas consumption increased by an estimated 1%, primarily driven by colder winter temperatures. Asia's natural gas demand in 2025 slowed to its weakest pace since 2022 and remained close to its 2024 levels. In China, subdued gas demand combined with a continued increase in domestic gas production and higher piped gas deliveries from Russia, led to a steep decline in LNG imports, which dropped by 14% compared with 2024. In Eurasia, natural gas demand declined by around 2% amid mild winter weather conditions in Russia. Combined demand in Africa and the Middle East grew by an estimated 2.5%, partly driven by oil-to-gas switching dynamics in the power sector.

Global natural gas production

Figure 10:Global gas production by key regions, in BCM, 2024



Source: BP Statistical energy overview 2025 report

Based on the data presented above, global gas production has shown a resilient recovery and steady growth following the 2020 downturn. Total production reached 4124 BCM in 2024, representing an approximate 3.8% increase over the 2019 pre pandemic baseline.

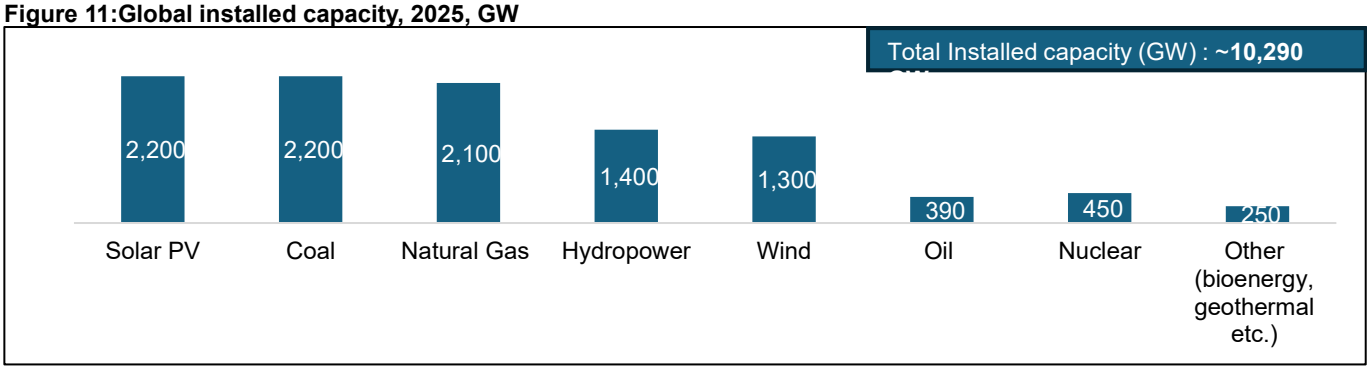
North America remains the world's primary engine for gas production, accounting for roughly 30.6% of the total global output in 2024. While North America and the Middle East have significantly scaled production since 2019, Europe has seen a steady contraction, dropping nearly 15.5% in the same timeframe. The Middle East has shown the most consistent year on year growth since 2020, solidifying its position as the third largest producing region.

The CIS region experienced a sharp dip in 2023 due to a major reduction in gas production by the Russian Federation due to the Russia Ukraine war, the CIS region showed a notable rebound in 2024, though it has yet to reclaim its 2021 peak of 891.2 BCM. The North American region, CIS and the Asia Pacific region contribute to almost 67% of the total global output of gas.

Sectoral drivers of natural gas demand

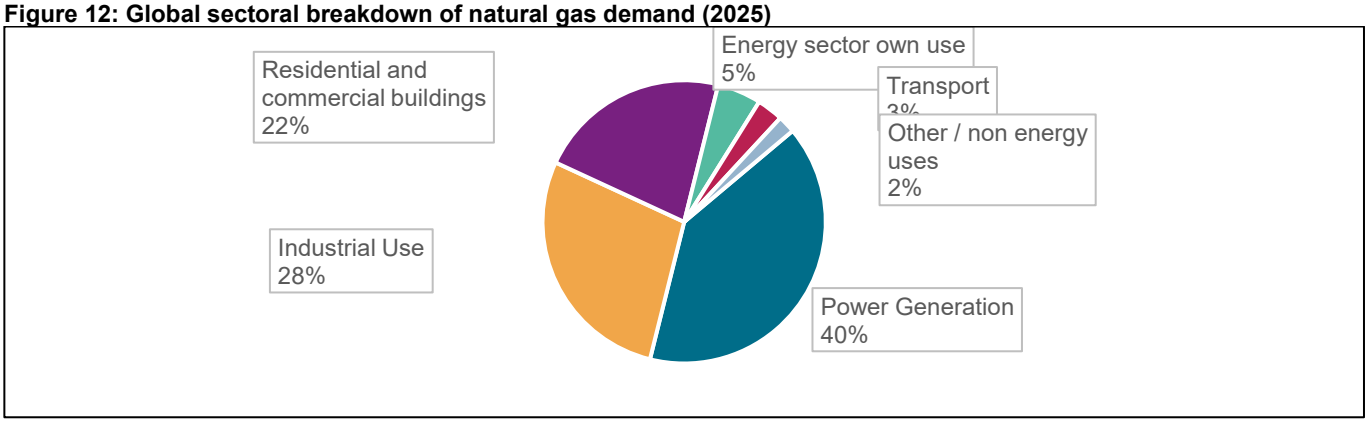
From a sectoral perspective, global gas demand growth was largely supported by industry and electricity generation, which accounted for majority of the incremental gas demand in 2025. This was bolstered by continued economic expansion in fast-growing markets in Asia, as well as some recovery in Europe's industrial gas demand, though it remained well below its pre-crisis level.

Figure 11:Global installed capacity, 2025, GW



Source: IEA, Reuters

Figure 12: Global sectoral breakdown of natural gas demand (2025)



Source: IEA – Figures are approximated from all reports and rough share is calculated

Table 4:Key Insights on global sectoral drivers for gas consumption

Sector	Key notes
Power Generation	Largest consuming sector globally; driven by peak balancing, coal-to-gas switching, and cooling demand during heatwaves
Industrial Use	Fertilizers, petrochemicals, refining, ceramics, glass, textile, auto, steel manufacturing One of the strongest contributors to incremental global demand, especially Asia-led industrial recovery
Residential and commercial buildings	Mainly heating and cooking demand; weather-sensitive and highly seasonal
Energy sector own use	LNG liquefaction, pipeline compression, gas processing Rising due to expansion of LNG export infrastructure globally
Transport	Road LNG, CNG, Marine LNG bunkering Strong growth in China trucking and marine bunkering, but still a small global share
Other / non energy uses	Chemical feedstock, ammonia, fertilizer production, petrochemical production, hydrogen production, gas to liquids etc.

The global natural gas market in 2024 remained overwhelmingly anchored in three core sectors — power generation, industrial consumption, and buildings — which together account for nearly 90% of total gas use globally.

While transport and LNG bunkering are expanding rapidly, they remain niche segments relative to the dominance of electricity generation and industrial feedstock demand. In 2025, the buildings sector gained temporary prominence

due to colder weather, but structurally, power and industry remain the principal long-term drivers of global gas/LNG demand.

Gas as a strategic enabler for power generation

Phase 1: Countries in process of building the gas foundation

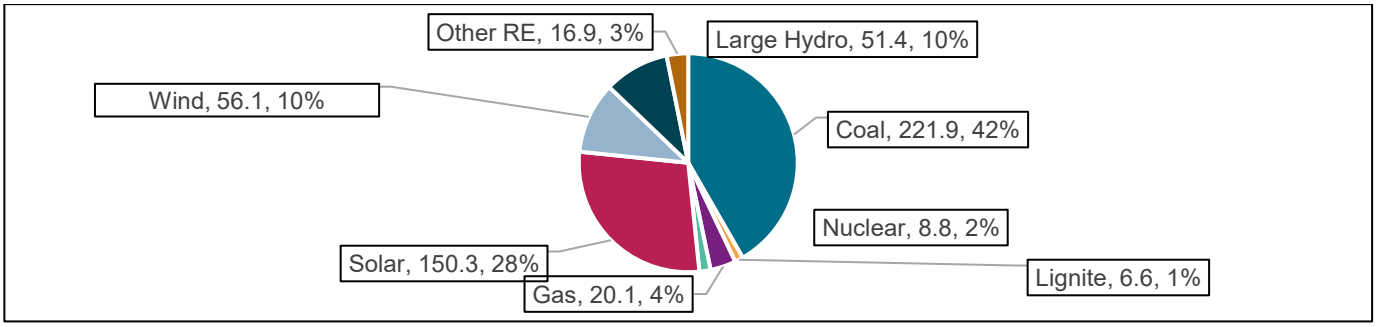
In Phase 1 markets, natural gas represents an emerging and rapidly evolving component of the power mix, with electricity generation currently supported by a diversified base of coal, hydro, and renewables. While gas utilization remains relatively modest today, significant investments in LNG import capacity, pipeline infrastructure, and city gas distribution networks are laying a strong foundation for future growth.

India exemplifies this transition, with substantial expansion in national gas grid connectivity and policy support aimed at increasing the share of gas in the energy mix. Although gas currently contributes ~5% of electricity generation, this reflects early-stage penetration with gas typically used in a supplementary role rather than core baseload.

With rising electricity demand driven by urbanization, industrialization, and electrification, alongside an increasing share of renewables, natural gas is well-positioned to play a larger role as a flexible and cleaner energy source. This creates a structural demand opportunity for gas across power, industrial, and city gas segments, supporting its evolution toward a more central role in the energy system.

Similar dynamics are observed across Southeast Asia and other developing regions, where expanding infrastructure and policy momentum are expected to drive a sustained increase in gas adoption over the medium to long term

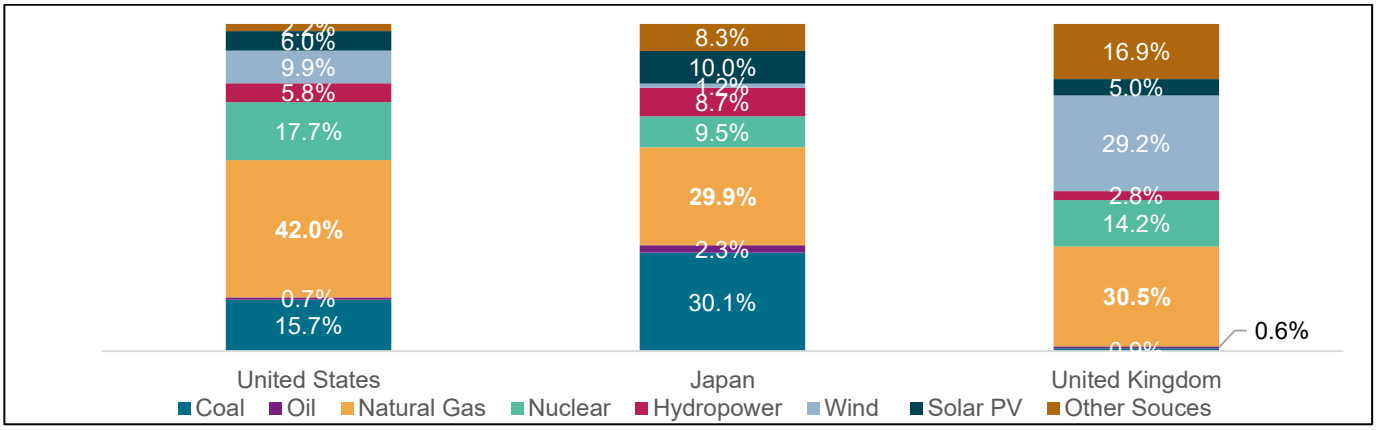
Figure 13: India Installed Capacity, 532.7 GW, as of March 31st, 2026



Source: CEA, Crisil Analysis

Phase 2: Gas-Integrated Markets

Figure 14: Electricity Generation by sources, 2024



Note: Other sources include Biofuels, Waste
Source: IEA, Crisil Analysis

Phase 2 markets are characterized by natural gas emerging as a central pillar of the power system, supported by well-developed pipeline networks, LNG infrastructure, and market-linked pricing mechanisms. In these systems, gas-fired generation plays a critical role in balancing renewable energy, given its ability to ramp up and down rapidly in response to intermittency from solar and wind sources.

Countries such as the United States, the United Kingdom, and Japan demonstrate this transition, with gas contributing a substantial share (~30 - 40%+) of electricity generation. The presence of liquid gas markets, storage infrastructure, and diversified supply sources further reinforces gas as a reliable and flexible backbone. These markets highlight the evolution of gas from a marginal fuel to a system stabilizer enabling large-scale renewable integration.

Phase 3: Gas Dominant Markets

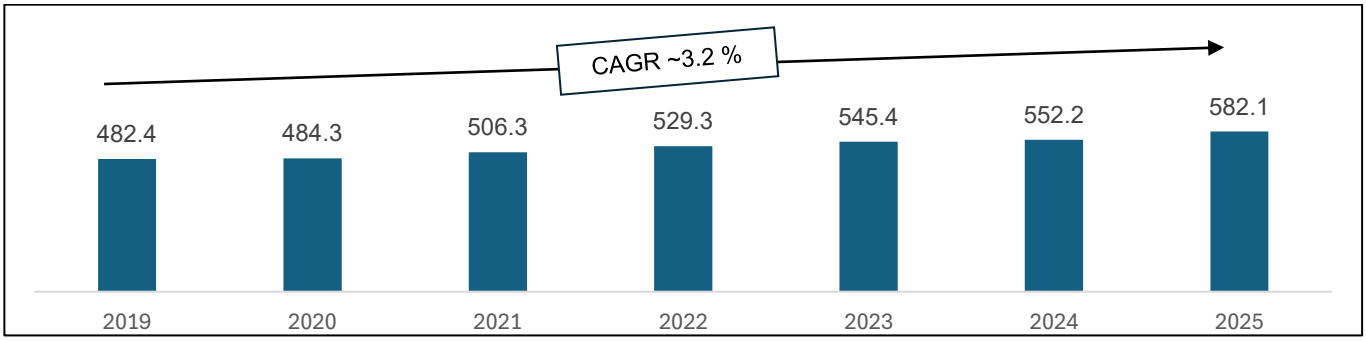
Phase 3 markets are characterized by natural gas serving as the dominant fuel in electricity generation, typically accounting for 60–95%+ of the power mix. These systems are supported by abundant domestic gas availability or highly secured long-term supply arrangements, alongside well-developed infrastructure including pipelines, processing facilities, and high-efficiency gas-fired power plants. In these markets, gas is not just a transition or balancing fuel—it forms the core baseload of the power system, ensuring reliability, scalability, and cost efficiency. The dominance of gas also enables operational flexibility, allowing integration of renewables without compromising grid stability.

Countries such as Qatar, UAE, Saudi Arabia, Kuwait, and Oman exemplify this model, where gas underpins both power generation and broader economic activity. These systems are increasingly evolving to integrate carbon management solutions, hydrogen development, and renewable capacity, positioning gas as a strategic anchor within a diversifying energy mix.

Global LNG Trade flow

LNG imports

Figure 15:Global LNG import growth, in BCM, 2019-25



Source: GIIGNL Annual Reports

As per the GIIGNL Annual Report 2026, the global LNG imports grew by 3.2% in 2025 to ~ 582.1 BCM, connecting 24 exporting markets with 48 importing markets. Despite muted spot demand in late 2024, LNG trade expanded due to increased liquefaction capacity and rising exports from several key producers, including the United States, Russia, Indonesia, and Australia.

The top 10 importers accounted for ~ 72.7% of the total imports globally.

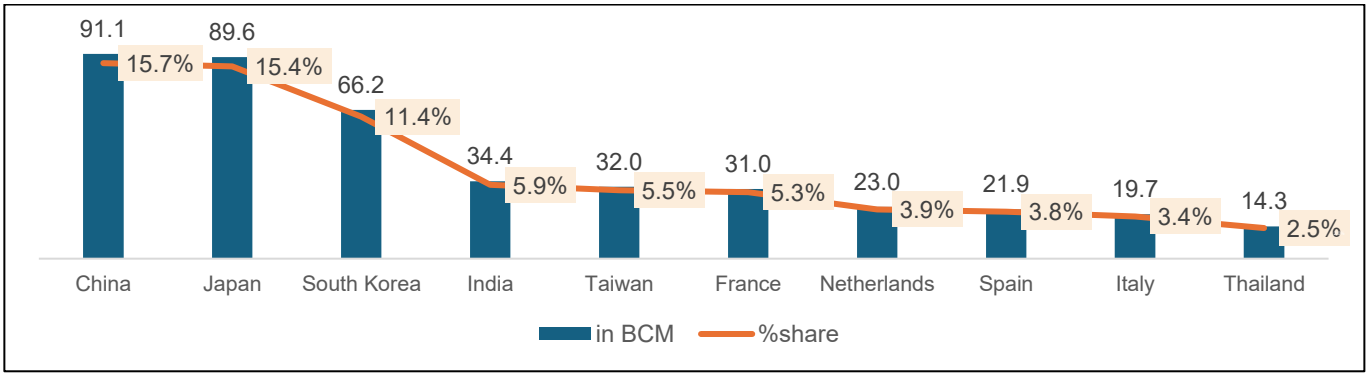
Jointly, China, Japan, and South Korea accounted for nearly half of global LNG imports in 2024 (42.4%). In fact, the five largest importers of 2024 are in either Asia or Asia Pacific.

China widened its lead as the largest market for LNG cargoes as imported volumes climbed by 10.28 BCM to 91.1BCM. Japan was the second-largest importer with volumes adding 2.22 BCM to 89.6 BCM, while South Korea

had a similar import gain of 2.5 BCM to 66.2 BCM. Both markets experienced higher temperatures during the summer, leading to an increase in spot buying

India, plagued by heatwaves during the summer, had the second-largest nominal increase in LNG imports in 2024 (~6.7%) to an annual total of 34.4 BCM.

Figure 16: Top 10 Importers of LNG, 2025, in BCM

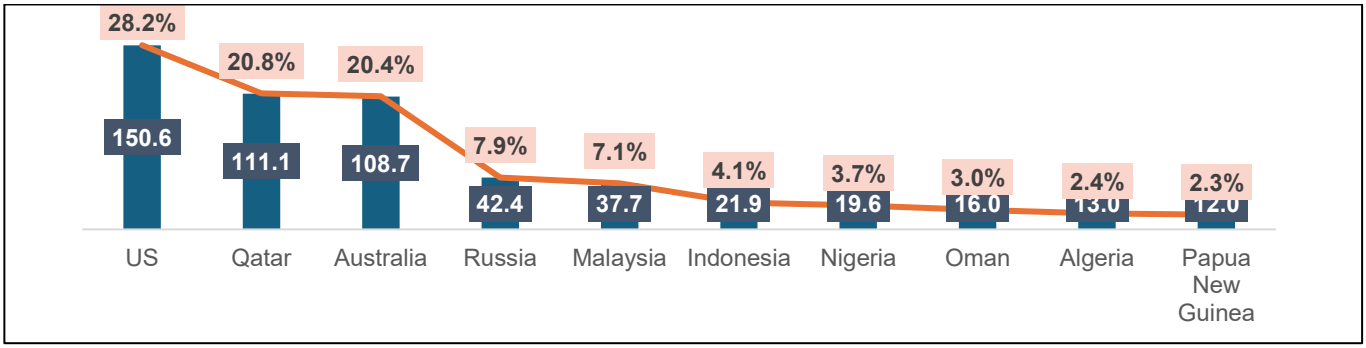


Source: GIIGNL Annual Report 2026

Europe saw pipeline gas flows climb ~29.3% in 2025, to ~126.3 bcm with a substantial increase of 85% in Belgium and 37% increase in Italy LNG imports.

LNG Exports

Figure 17: Top 10 exporters of LNG, 2025, in BCM



Source: GIIGNL Annual Report 2026

The United States led global LNG exports in 2024 with 122 BCM, rising from 116.6 BCM in 2023, followed by Australia, whose exports inched up to 111.8 BCM from 109.8 BCM. Qatar continues to be the world's third-largest LNG exporter, though the volume slipped to 106.6 BCM from 108 BCM. Russian exports added 2.98 BCM to 46.2 BCM in 2024 and was followed by Malaysia with exports of 38.26 BCM.

Despite delays in new projects, the US defended its position as the world's largest LNG exporter in 2024, exporting a total of 122 BCM, equal to 21.5% of global LNG output and up 5.46 BCM from 2023. The increase was mainly driven by reduced June maintenance at Sabine Pass in 2024 compared with 2023, and partially by the startup of the Plaquemines export facility in late 2024. With the addition of Plaquemines, total annual US liquefaction capacity climbed to 134.5 BCM in 2024 from 128.3 BCM in 2023.

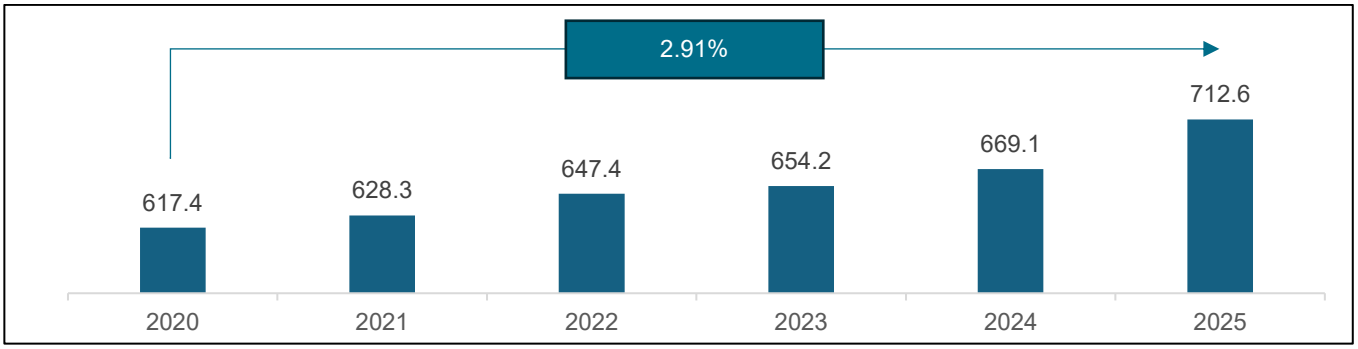
Australia maintained its position as the second-largest exporter with export volumes of 111.8 BCM in 2024, up 2.04 BCM from the previous year, comprising 19.7% of global exports. Qatar's 19% share of global LNG exports brings the joint LNG exports of the three largest exporters in 2024 to 60.0%. Meanwhile, Russia had the second-largest export growth over 2023, seeing volumes grow 2.98 BCM to 46.3 BCM in 2024 which is 8.2% of global exports.

Existing LNG terminals - including expansions and new announced projects

Liquefaction capacities

Global LNG liquefaction capacity reached 713 BCM/yr (524 MTPA) in 2025. Four new projects, representing a combined liquefaction capacity of 45 BCM/yr, came online in 2025: LNG Canada Trains 1 and 2, Corpus Christi Phase 3 Trains 1 to 4, Plaquemines Phase 1 and GTA Tortue. Global LNG liquefaction capacity is expected to witness significant growth over the next few years, driven primarily by capacity additions in North America and the Middle East.

Figure 18: Global liquefaction capacity growth, BCM/y

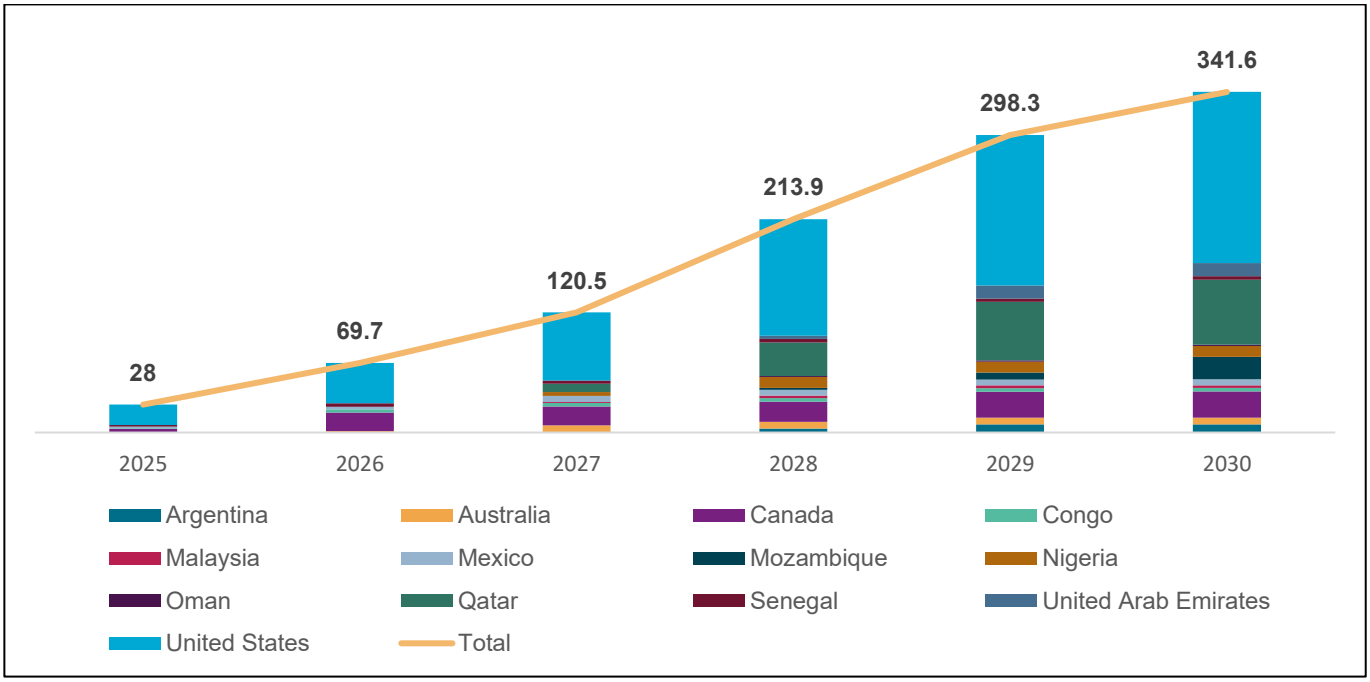


Source: GIIGNL (International Group of Liquefied Natural Gas Importers) Annual Reports

At the end of 2024, about 285.6 BCM/y (210 MTPA) of liquefaction capacity was either under construction or approved for development globally and another 1,121.9 MTPA (1525.8 BCM/y) of aspirational capacity was in the pre-FID stage. A significant capacity growth is expected during 2026 to 2029 from the North America (over 30 MMTPA, 40.8 BCM/y) and the Middle Eastern region (~ 16 MMTPA, 21.8 BCM/y). This significant growth which could cause a price reduction and spark a surge in LNG demand and increased spot trading, particularly from price-sensitive companies in China, India, and other parts of Asia and Asia Pacific. Majority of this new capacity is expected from North America and the Middle East. The increase in LNG supply is expected to ease market tightness, improve cargo availability and support greater destination-flexible LNG volumes in the global market.

Qatar's expansion push comes as its gas output and exports face disruptions linked to escalating tensions in the Strait of Hormuz. Recovery is likely to take time due to the complexity of repairs and long lead times for specialized equipment.

Figure 19:Cumulative LNG liquefaction capacity additions from post-FID projects, BCM/yr, as of June 2026



Source: IEA

The global LNG trade is witnessing a strong structural growth. With new liquefaction capacity expected by 2030, led by the US and Qatar, it will play an important role in increasing market liquidity, expanding spot trade, and making LNG pricing more competitive and transparent.

For India, this growing global supply is expected to improve LNG affordability, enhance supply security, and support higher gas consumption across power, fertilizer, CGD, and industrial sectors. It also aligns with India's goal of increasing natural gas share in its energy mix.

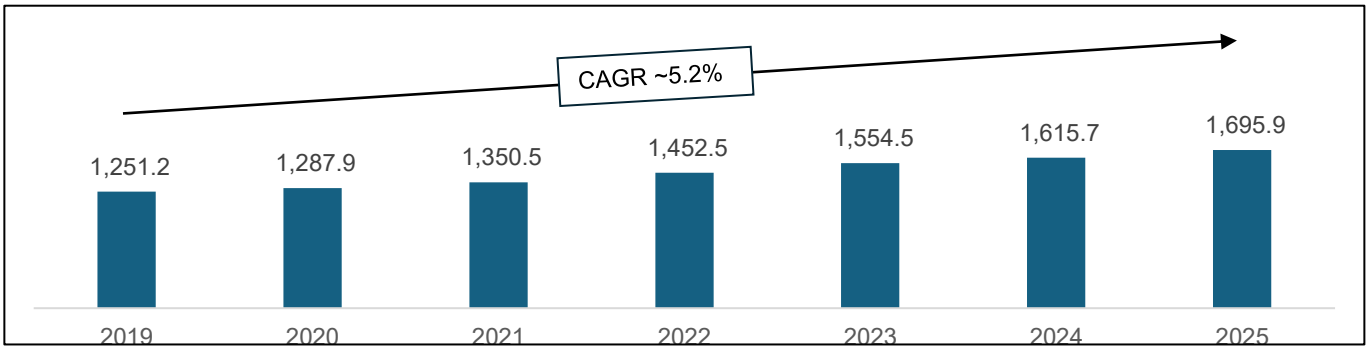
For IGX, deeper global LNG trade creates significant opportunities by enabling greater spot cargo participation, improving domestic price discovery, and increasing short-term gas trading volumes.

As India becomes more integrated with global LNG markets, IGX is well-positioned to emerge as a stronger market-based gas trading platform and support India's transition toward a more liquid and competitive gas market.

Regasification capacities/ terminals

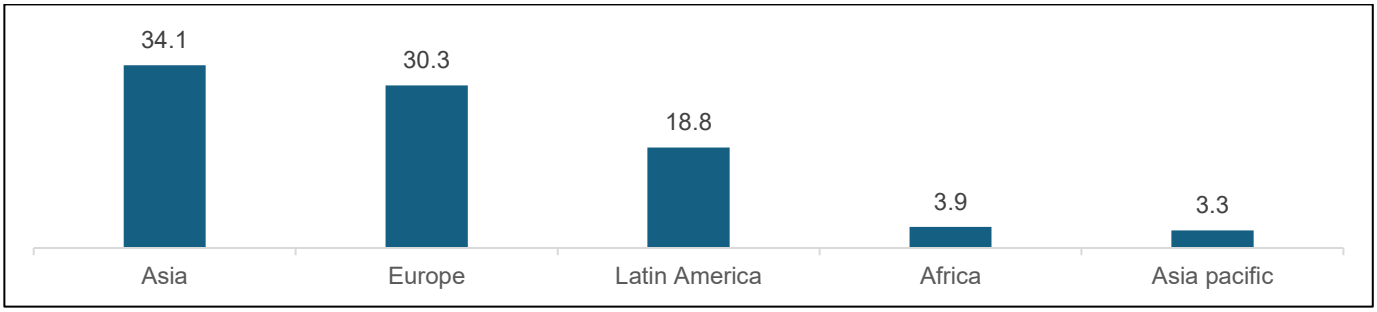
Global LNG regasification capacity stood at 1,247 MTPA (1,696 BCM/y) at the end of 2025, underpinned by a busy year of new terminal commissioning, capacity expansions, facility reactivations, and new FSRU deployments across all major importing regions.

Figure 20: Global regasification capacities growth, in BCM/y



Source: GIIGNL (International Group of Liquefied Natural Gas Importers) Annual Reports

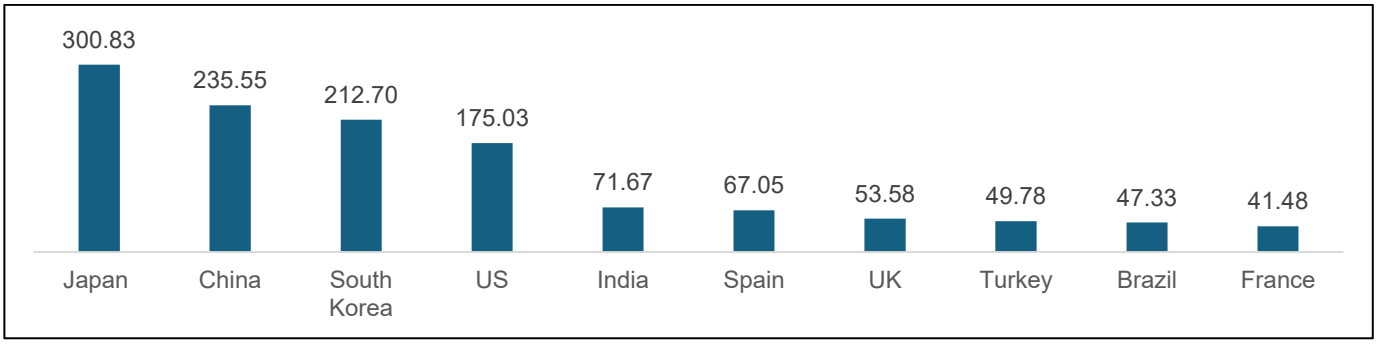
Figure 21: Global regasification capacities additions in BCM/y, 2024.



Source: International Gas Union (IGU) report

Asia led the capacity additions in 2024 followed by Europe, Latin America, Africa and Asia Pacific. Of the total 66.6 MTPA added globally in 2024, 44.5 MTPA came from ten new terminals, while 19.1 MTPA resulted from six expansion projects at existing facilities, with another 2.9 MTPA from the restart of one idled terminal.

Figure 22: Top 10 regasification capacities globally, in BCM/y, as of end 2025



Source: GIIGNL Annual Report 2026

The global market is heavily concentrated in East Asia. Japan, China and South Korea represent a massive share with a combined capacity of ~749 MTPA. Japan remains the world leader by a significant margin.

As one of the first markets to build LNG import terminals, Japan has remained the largest owner of regasification capacity, with ~300.8 MTPA as of the end of 2025, making up nearly ~17.7% of global capacity.

China continued to dominate new capacity additions, commissioning 2 new terminals and expanding 2 existing terminals, while India added its eighth import terminal with the launch of the Chhara terminal and further expanded the Dabhol terminal. Taiwan commissioned its third regasification terminal, Guantang, adding another 3 MTPA to its regasification capacity, while also expanding its Taichung terminal to a total nominal capacity of 8 MTPA.

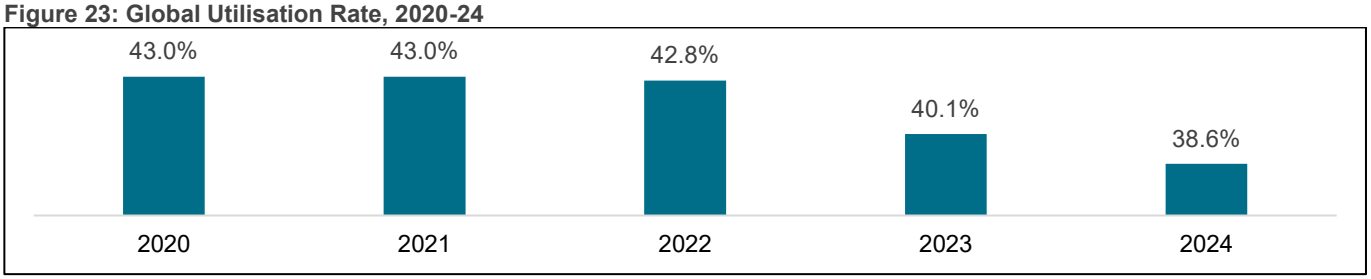
South Korea ranked the world's third-largest market by regasification capacity, with a total of ~212.7 MTPA across 8 terminals.

India is the fifth-largest regasification market globally, with ~71.7 MTPA across 8 terminals as of April 2026.

While the global regasification capacity has soared to over ~1696 MTPA, the actual utilization rate remains low at ~39% globally. The regas capacity utilization rate from 2020 to 2024 averaged at 41.5%.

It is important to note that these large capacities like in Japan or South Korea, are not just for daily use; they also serve as a massive insurance policy against seasonal demand spikes and geopolitical supply shocks.

Figure 23: Global Utilisation Rate, 2020-24



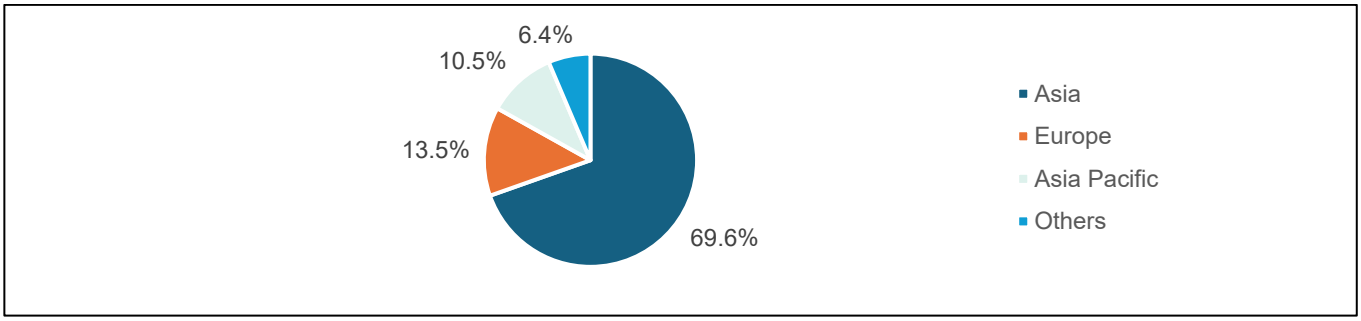
Source: International Gas Union (IGU) report

Table 5: Major regasification terminals upcoming/ under construction, BCM/y, as of 2024 end

SN	Country/ region	Project type	Number of projects	Capacity under construction (MTPA)
1	China	Onshore + Expansion	~38 (20 new + 18 expansion)	~196 BCM/y
2	India	New + expansion + FSRU	5	~41 BCM/y
3	Germany	Onshore + FSRU expansion	3	~26 BCM/y
4	Pakistan	New terminals	2	~19 BCM/y
5	South Korea	New + expansion	2	~11 BCM/y

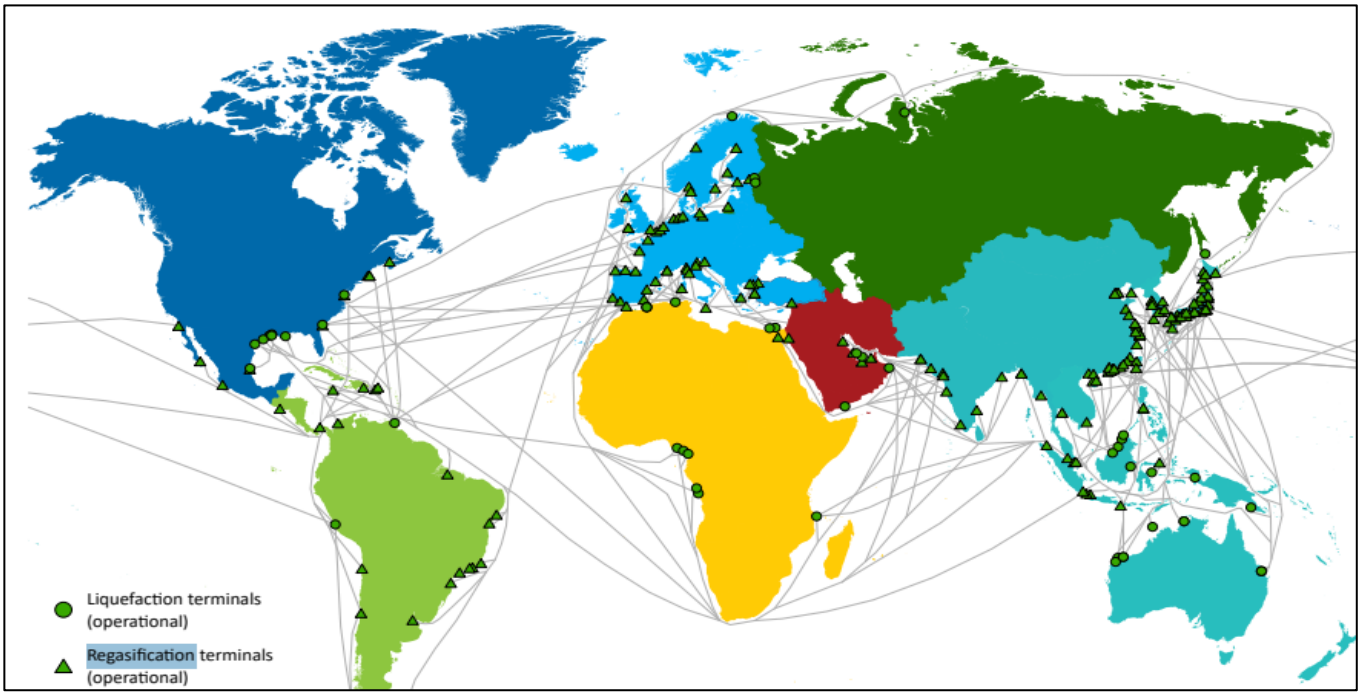
Source: International Gas Union 2025 report

Figure 21: Regional distribution of under construction capacity, by %, as of 2024 end



Source: IGU 2025 report

Figure 22: Global liquefaction and regasification capacities locations



Source: IGU LNG report 2025

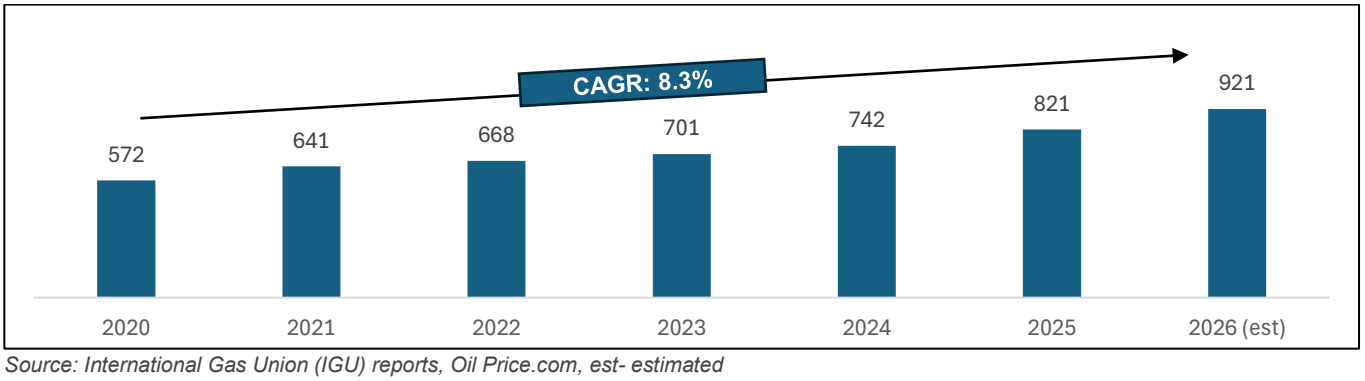
LNG fleet growth

The global LNG fleet is a key enabler of international LNG trade, transforming natural gas from a regionally constrained pipeline fuel into a flexible globally traded energy commodity. LNG carriers connect major exporting regions with demand centers worldwide, supporting efficient transportation and enabling cargo rerouting based on market price signals.

In 2026, it is expected that ~100 new fleet are to be delivered, which is 27% higher than the previous year. In the next four years, Qatar is anticipated to introduce up to 80 new constructions, and ADNOC is expected to significantly grow its LNG vessel fleet, doubling it to 18 vessels within three years.

This flexibility improves market liquidity, strengthens energy security during supply disruptions, and allows faster response to changing demand patterns. LNG fleets also support emerging markets through flexible import solutions and contribute to transparent price discoveries across global gas trading hubs. As global energy demand grows, particularly with rising digital and industrial power requirements, LNG fleet expansion will remain essential for ensuring reliable and interconnected global gas markets.

Figure 23: Global LNG fleet growth (count)



Source: International Gas Union (IGU) reports, Oil Price.com, est- estimated

The expansion of the global LNG fleet is expected to significantly strengthen spot gas trading by improving cargo mobility, destination flexibility, and faster response to regional price signals. A larger fleet enables suppliers to reroute cargoes quickly to high-demand markets, enhancing arbitrage opportunities and improving short-term market liquidity. This flexibility supports efficient price discovery across global gas hubs and exchanges, while also increasing supply responsiveness during demand spikes or disruptions. Going forward, fleet expansion will play a crucial role in making LNG trade more dynamic, transparent, and responsive to evolving global energy demand patterns.

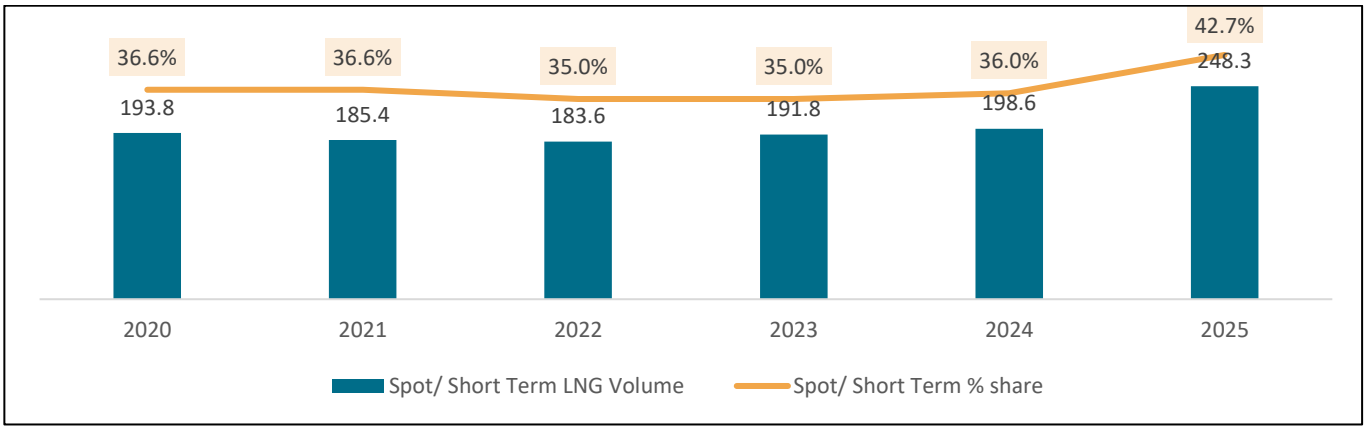
The expansion of the global LNG carrier fleet is expected to support increasing liquidity and flexibility in global LNG markets. The fleet is projected to reach 921 vessels by late 2026, a 24% increase from 2024. A massive influx of newly built vessels aligns with the predicted global surge in the liquefaction capacity (notably from the US and Qatar).

Impact on spot trading

- **Increased Liquidity**: More available hulls allow portfolio players to quickly divert cargoes to high-priced regions (Europe vs. Asia), seizing arbitrage opportunities.
- **Price Convergence**: Lower shipping costs - driven by vessel availability - bridge regional hubs (JKM, TTF, Henry Hub), narrowing global price spreads.
- **Operational Flexibility:** The expanded fleet supports cargo swaps and floating storage, allowing traders to respond faster to supply disruptions.
- **New Markets:** Growth in FSRUs and bunkering vessels enables emerging markets to participate in the spot market without permanent infrastructure.

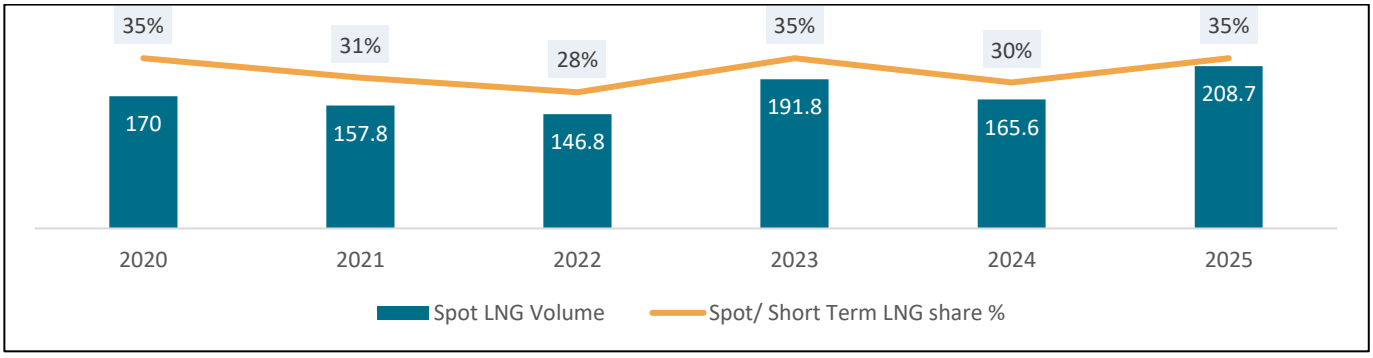
Share of Spot and short-term LNG in the global LNG Trade

Figure 24:Spot + short term LNG Trade, BCM, 2020-2025



Source: GIIGNL Annual Reports
Note: Short- term contracts include quantities delivered under contracts for a duration of 4 years or less

Figure 25: Spot LNG trade & % share, BCM



Source: GIIGNL Annual Reports

Over the last five years, Spot LNG has contributed an average of 32% to the total Spot LNG volume.

The global LNG market is entering a new phase of expansion, driven by rising supply capacity, growing market flexibility, and increasing spot trade participation.

The trend shows **three clear phases**:

2020-21	High spot LNG participation due to oversupply, lower prices, and growing destination-flexible trade
2022-23	A temporary decline as the global energy crisis pushed buyers (especially Europe and Asia) toward long-term contracts for supply security.
2024-25	Stabilization and early recovery, supported by rising global LNG supply and improving market liquidity.

From 2020 to 2025, spot and short-term LNG trade has broadly remained above one-third of total global LNG trade, reflecting the market's structural shift toward greater flexibility, despite temporary moderation during the energy security-driven contracting cycle of 2022–23. In 2025, 35% of LNG of total trade was imported on a spot basis.

Going forward, the global LNG market is expected to become increasingly liquid and flexible. With over 300 BCM (~220 MMTPA) of new liquefaction capacity expected primarily from the US, Qatar, Canada, and Africa, global supply availability is set to expand significantly. This additional capacity will gradually ease supply tightness, improve cargo availability, and increase destination-flexible LNG volumes entering the market. This additional supply is expected to increase the share of spot and short-term LNG trade, reversing the temporary moderation witnessed during the energy security-driven contracting cycle of 2022 and 2023. As a result, the share of spot and short-term LNG trade is expected to rise again, reversing the temporary moderation seen during the 2022–23 energy security crisis. A more liquid global LNG market will enhance cross-border arbitrage opportunities, sharper price discovery, and higher trading velocity, making LNG increasingly similar to mature traded commodities such as crude oil. This will deepen global LNG trade flows and strengthen the role of market-based pricing benchmarks.

For India, this is a strong positive. Greater spot LNG availability and improved pricing transparency will help importers optimize sourcing, lower procurement costs, and increase participation in short-term and exchange-based gas transactions.

For IGX, this creates a highly favorable environment. Higher global LNG liquidity will directly support:

- ✓ Increased spot RLNG gas volumes
- ✓ Greater participation from market players Entry of new suppliers

As India becomes more integrated with global LNG markets, IGX stands to benefit from deeper market activity and can progressively evolve into a more robust gas trading platform, potentially positioning itself as a regional gas price discovery hub for South Asia.

LNG contracting and flexibility trends

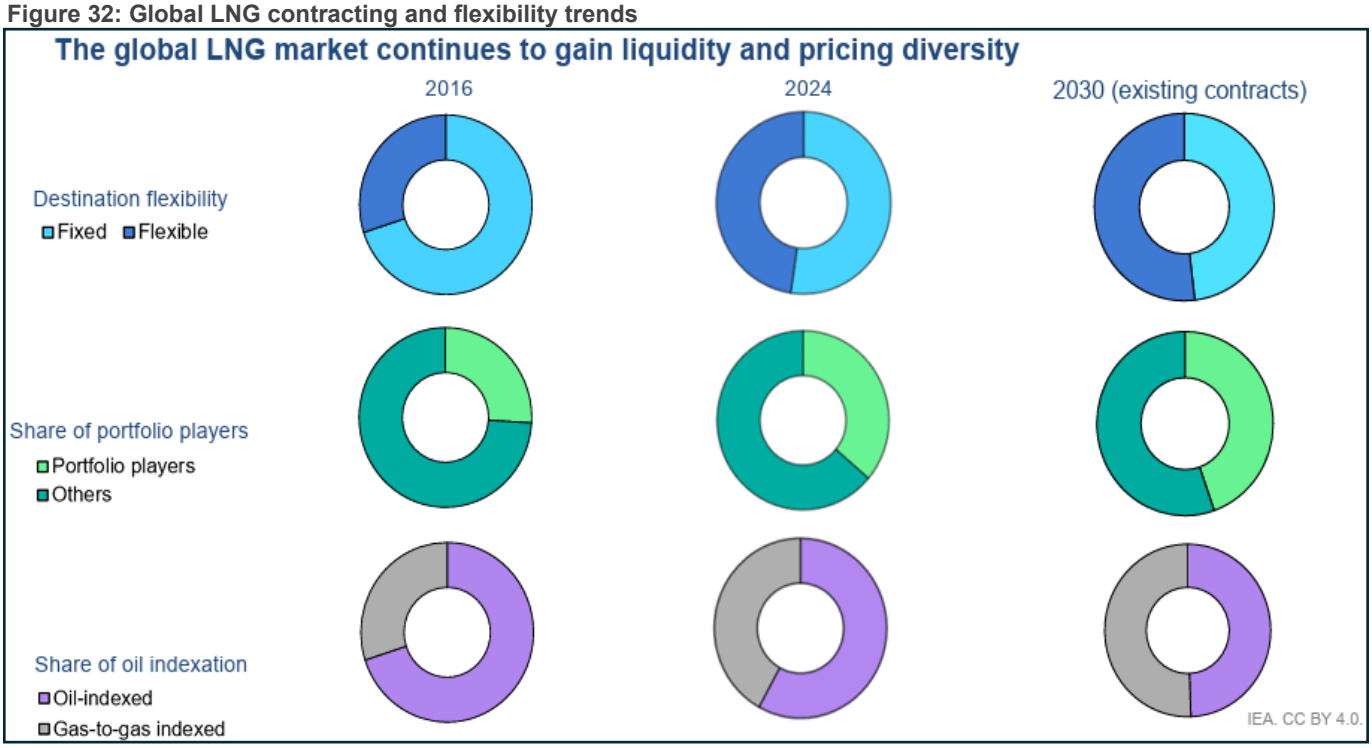
As per IEA report Gas 2025, the LNG market has gained in depth and liquidity if looked from 2016 to 2024. Total traded volumes expanded by 60% between 2016 and 2024, while both buyers and sellers are displaying a greater diversity in their commercial preferences and flexibility requirements.

LNG contracting structures are becoming increasingly flexible. As per the report, the share of destination-free LNG contracts rose from 29% in 2016 to 45% in 2024, largely driven by the expansion of US LNG supplies. By 2030 many existing destination-fixed contracts will expire, causing the share of destination-flexible contracts to rise to 52%.

Pricing terms are becoming more diverse, with the share of oil indexed LNG export contracts declining from over 70% in 2016 to 61% in 2024, replaced by hub indexation and hybrid pricing formulae. Based on existing active contracts, the share of oil-indexed LNG contracts is expected to decline further, falling to 50% by 2030 as new US LNG projects linked to Henry Hub come online.

In addition to traditional buyers, the role of portfolio players in LNG trade has increased significantly in recent years: their procurement contracts' share of all LNG contracts in force rose from 26% in 2016 to over 38% in 2024. Based on existing contracts, this share is expected to increase to nearly 44% by 2030. The growing flexibility and liquidity of the global LNG market is becoming increasingly important in responding to gas supply and demand shocks to ensure energy supply security. The growing flexibility and liquidity of the global LNG markets is expected to facilitate greater short-term or spot LNG procurement by market participants.

Figure 32: Global LNG contracting and flexibility trends

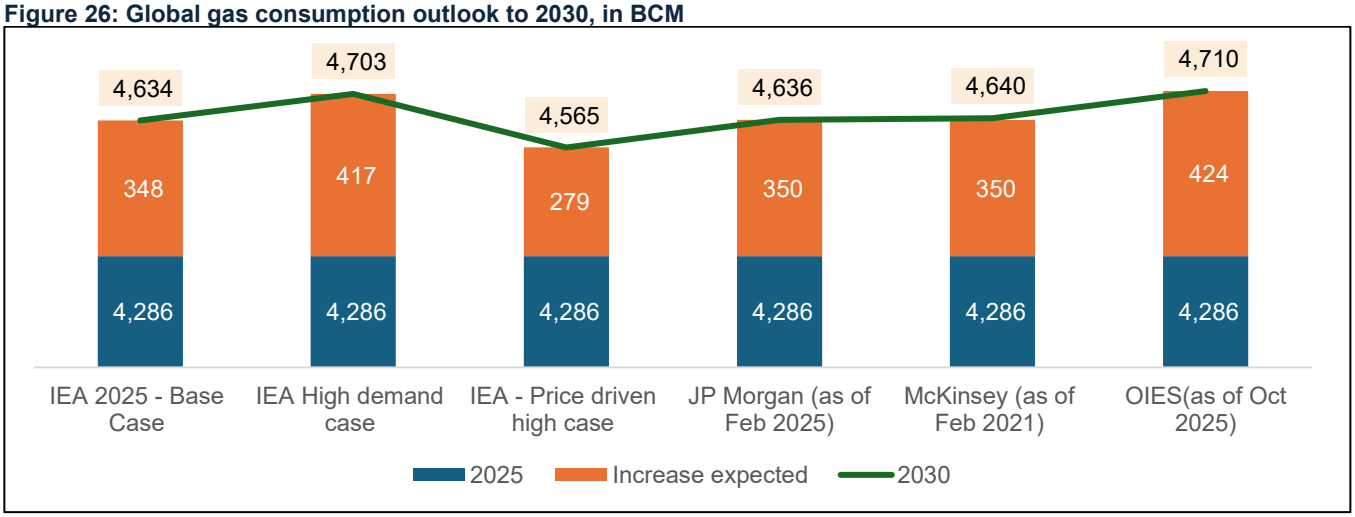


Source: IEA Gas 2025 report

Demand Outlook to 2030

Average consumption by 2030 (from all reports and studies under consideration)	4,649.6 BCM
Average growth forecasted (%)	7.6%

Figure 26: Global gas consumption outlook to 2030, in BCM



Source: IEA 2025 outlook report, Individual company reports.

Table 6: Key insights on global forecast of gas demand

Report	Remarks
IEA 2025 - Base Case	• **Forecasted Demand**: 4,634 BCM by 2030. • **Key Insight**: Projects a steady but moderate growth trajectory, adding approximately 348 BCM to the 2025 baseline. • **Consideration**: Assumes a balanced transition where natural gas continues to play a role in the global energy mix while competing with increasing renewable penetration.
IEA High Demand Case	• **Forecasted Demand**: 4,703 BCM by 2030. • **Key Insight**: Represents the most optimistic outlook for gas, projecting the highest incremental growth of 417 BCM. • **Consideration**: Accounts for slower-than-expected decarbonization in emerging markets and a higher reliance on gas for industrial feedstock and power backup.
IEA Price Driven Case	• **Forecasted Demand**: 4,565 BCM by 2030. • **Key Insight**: This is the most conservative forecast in the set, with the smallest expected increase of only 279 BCM. • **Consideration**: Forecasts are dampened by high price sensitivity; sustained high gas prices are assumed to trigger demand destruction or accelerated switching to alternative fuels.
JP Morgan (as of Feb 2025)	• **Forecasted Demand**: 4,636 BCM by 2030. • **Key Insight**: Closely aligns with the IEA Base Case, suggesting a consensus on an incremental growth of roughly 350 BCM. • **Consideration:** Reflects a market-centric view that anticipates stable investment in LNG infrastructure and steady demand from Asian markets.
OIES (as of Oct 2025)	• **Forecasted Demand:** 4,710 BCM by 2030. • **Key Insight:** Projects the highest absolute total consumption by 2030, with a substantial 424 BCM increase over the baseline.

Report	Remarks
	• **Consideration:** Oxford Institute for Energy Studies (OIES) emphasizes the bridge fuel role of gas more heavily, particularly in replacing coal and supporting the hard-to-abate industrial sectors.

Growth drivers and opportunities for natural gas / LNG

Table 7: Major growth drivers and opportunities for natural gas globally

SN	Driver	Remark
1	**Power Generation demand**	Natural gas plays a central role in global electricity generation, particularly through Combined-Cycle Gas Turbine (CCGT) technology, which offers high efficiency (up to 60%) compared to conventional coal plants. The rapid growth in global electricity demand—driven by electrification, population growth, and digital infrastructure—has significantly increased gas consumption. Gas-fired plants are especially valuable because they can ramp up and down quickly, making them ideal for balancing intermittent renewable sources such as solar and wind. Additionally, many countries have adopted coal-to-gas switching policies, particularly in North America and Europe, due to environmental regulations. Since natural gas emits significantly less carbon dioxide and pollutants than coal, it is often used as a transition fuel in decarbonizing power systems.
2	**Energy Transition and Decarbonization Policies**	Natural gas is widely regarded as a transition fuel in the shift toward low-carbon energy systems. Governments are using gas to replace coal in power generation and industrial processes as part of their climate commitments. Although not carbon-free, gas produces significantly lower emissions than coal, making it a preferred option in the medium term. Many national energy strategies include natural gas as a key component in achieving emission reduction targets, particularly in developing economies where renewable deployment alone may not meet growing energy demand.
3	**Energy Security and Supply Diversification**	Countries are increasingly using natural gas to enhance energy security by diversifying their energy sources. LNG, in particular, allows countries to import gas from multiple suppliers, reducing dependence on a single source. This has become especially important in regions affected by geopolitical tensions. As a result, many countries are increasing their reliance on natural gas as part of a broader strategy to ensure stable and secure energy supplies.
4	**Air Quality and Environmental Considerations**	Natural gas produces significantly lower levels of air pollutants such as sulfur dioxide, nitrogen oxides, and particulate matter compared to coal and oil. Governments, particularly in densely populated urban areas, are promoting gas to improve air quality. This has led to policies encouraging fuel switching in transport, industry, and residential sectors.
5	**Industrial Sector Demand**	Natural gas is widely used in industrial processes both as a fuel and as a feedstock. Industries such as steel, cement, and chemicals rely on high-temperature heat, which gas can provide efficiently and cleanly compared to coal or oil. In petrochemical industries, gas is used as a raw material for producing products such as plastics, methanol, and hydrogen. The ongoing industrial expansion in developing economies has led to a steady increase in gas consumption. Additionally, stricter environmental regulations are encouraging industries to switch from coal and oil to natural gas, further boosting demand.

SN	Driver	Remark
6	**Residential and Commercial Consumption**	Natural gas is widely used in residential and commercial sectors for cooking, heating, and water heating. In developed regions such as North America and Europe, gas is a primary heating fuel, particularly during winter months. In developing countries, the expansion of city gas distribution networks has increased access to piped natural gas (PNG), replacing traditional biomass and LPG in urban households. Rising urbanization and improvements in living standards have led to increased adoption of gas appliances, further contributing to demand growth.
7	**Transport sector (CNG and LNG use)**	Natural gas is increasingly being used as a transportation fuel in the form of compressed natural gas (CNG) and liquefied natural gas (LNG). CNG is commonly used in passenger vehicles, buses, and taxis, while LNG is used in heavy-duty trucks and maritime shipping. The main drivers include: • Lower emissions compared to diesel and petrol • Lower fuel costs in some regions • Government policies promoting cleaner fuels Countries such as India and China have aggressively expanded CNG infrastructure, making transport a growing segment of gas demand.
8	**Rapid Growth in Emerging Economies**	Emerging economies are the primary contributors to incremental global gas demand. Countries such as China, India, and Southeast Asian nations are experiencing rapid industrialization and urbanization, leading to increased energy consumption across all sectors. As incomes rise, there is greater demand for electricity, transportation, and cleaner cooking fuels, all of which contribute to higher natural gas usage. Governments in these regions are also investing heavily in gas infrastructure, including pipelines and LNG import terminals, to reduce reliance on coal and improve air quality. The shift toward cleaner fuels in urban areas is a particularly strong driver of gas demand growth.
9	**Integration with Renewable Energy Systems**	As renewable energy capacity expands globally, the need for grid stability and backup power becomes more critical. Solar and wind energy are intermittent, meaning their output depends on weather conditions. Gas-fired power plants provide a reliable backup because they can be quickly dispatched to meet fluctuations in demand and supply. This complementary role ensures that natural gas remains essential even as renewable energy penetration increases, thereby sustaining demand growth.
10	**Infrastructure Development**	The expansion of gas infrastructure has been critical in enabling demand growth. **a) Pipelines** New cross-border and domestic pipelines have improved connectivity between supply and demand centers, reducing transportation costs. **b) LNG terminals** The construction of regasification terminals has allowed countries without pipeline access to import natural gas. This has opened up new markets and increased global demand

Role of gas in powering AI driven Energy demand

Artificial Intelligence (AI) represents one of the greatest opportunities of the 21st century, and its transformative potential hinges on scaling digital infrastructure at speed. Electricity demand growth is surging as data centres are becoming the new "industrial load" of the AI economy. Renewables are expected to provide about half of the data centres' electricity consumption by 2030. However, their inherent variability creates a mismatch with the flat, 24/7 load profile of data centres which requires not only more generation but, also, significantly more dispatchable capacity.

Gas is well positioned to provide the bulk of additional, flexible, dispatchable supply, while contributing to decarbonisation goals. Studies indicate that Gas-fired generation for data centres could nearly double by 2035, equal to ~60 bcm of incremental supply.AI and data centers are creating high, continuous (24/7) electricity demand. Renewables alone cannot meet this due to intermittency. Natural gas emerges as a flexible, dispatchable, and scalable solution. Gas enables renewable integration and grid stability.

Table 8:Role of gas in AI driven energy demand

Theme	Insight	Implication
AI Demand growth	Data centre demand doubles by 2030 (~800–1,000 TWh)	Structural, long-term demand driver
Load profile	24/7, uninterrupted power requirement	Requires firm, reliable supply
Renewable Gap	Intermittency of solar/wind	Cannot meet AI load alone
Role of Gas	Fast, flexible, dispatchable	Backbone for reliability
Co-location Trend	On-site gas-based power for data centres	Rise of energy + data clusters
Transition Role	Gas enables renewables, not replaces them	Hybrid energy system

Table 9: Key learnings for India in AI driven energy world

Area	Learning	Actionable Insight
AI Demand	Rapid growth in data centers	Plan dedicated power infrastructure
Grid Stability	High renewable targets (500 GW)	Use gas for balancing & peak load
Infrastructure	Pipeline & LNG gaps are to be completely filled to enable seamless transportation	Expand gas grid & storage
Energy Clusters	Co-location trend	Develop LNG + gas + data center hubs
Policy Approach	Renewables alone insufficient	Adopt “Gas + Renewables” strategy

AI-driven data centers are expected to significantly increase global electricity demand, creating the need for reliable, round-the-clock power solutions. It argues that natural gas will play a critical role alongside renewables by providing flexible and dispatchable power to support this digital infrastructure expansion.

For India, this presents an opportunity as the country is emerging as a major data center hub due to strong digital demand, data localization policies, and cost advantages.

This could drive incremental natural gas and LNG demand, particularly for balancing renewable energy and ensuring reliable power for hyperscale facilities. The development could also support India’s broader ambition of increasing natural gas share in its energy mix.

For Indian Gas Exchange, this trend could improve market liquidity by creating a new class of high-value industrial consumers requiring flexible gas procurement. Increased participation from data center operators may strengthen short-term and spot gas trading activity on the exchange. Overall, it signals a strategic long-term demand opportunity for India’s gas market, though its scale will depend on LNG affordability, infrastructure readiness, and competition from storage and alternative energy solutions.

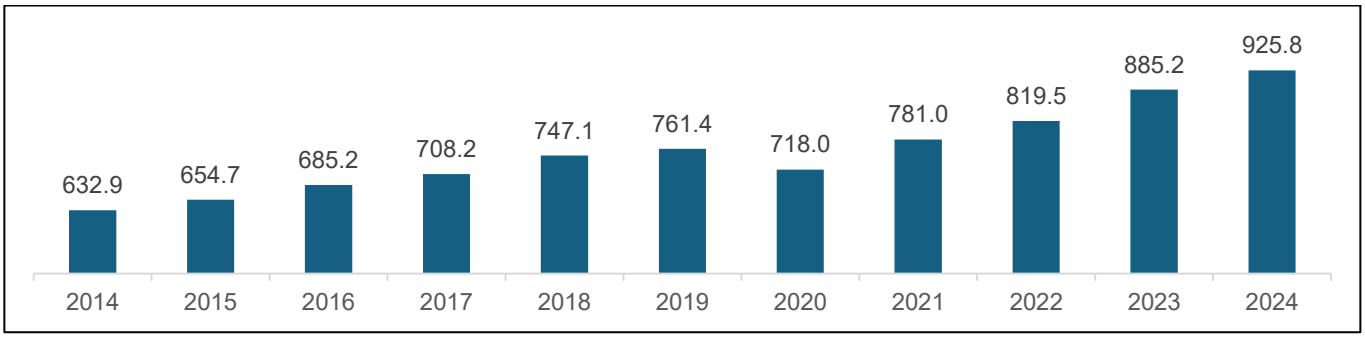
Module 3: Indian Natural Gas Industry

Indian Natural Gas Industry

The history of natural gas in India began in the 1960s with discoveries in Assam and Gujarat, but it gained significant momentum in the 1970s following the discovery of large offshore reserves in the field located off the coast, South Bassein field and Mumbai High by ONGC. Initially a byproduct of oil exploration, natural gas has evolved into a strategic "bridge fuel" in India's energy transition, with a current national goal to increase its share in the primary energy basket to 15% by 2030 which currently stands at ~7.12% according to MoSPI.

India's rapid economic growth will drive a significant increase in energy demand. As per the UN World Population prospects, while the global population is projected to rise to 9.8 billion by 2050, India's population growth, coupled with rising disposable incomes, is expected to outpace other major economies. This demographic expansion will contribute to a sharp rise in energy consumption, with India's energy demand set to double between 2020 and 2050.

Figure 27: India primary energy supply, in MtoE

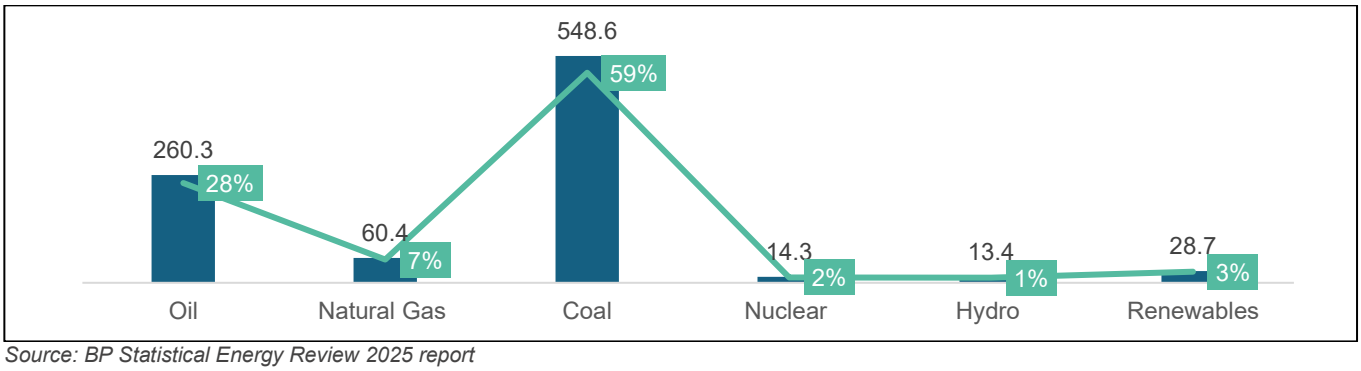


Source: BP Statistical Energy Review 2025

As per Statistical review of World Energy released by Energy Institute in June 2025, India's total energy consumption is 6.59% of world's total consumption.

With industrial expansion and urbanization, coupled with a growing population and rising incomes/living standards, the country's energy needs are expected to double by 2050. This surge will reshape not only India's energy landscape, but also global energy dynamics. Meeting this demand will require a diverse energy mix that balances affordability, security, and sustainability, presenting a complex challenge. While renewable energy sources are expanding, fossil fuels—particularly coal—continue to dominate the energy mix due to their cost competitiveness and entrenched infrastructure.

Figure 35: Primary energy consumption mix (in MtoE) and share of each in total energy supply, 2024.



Source: BP Statistical Energy Review 2025 report

Air quality remains a significant concern, with many regions experiencing levels of pollution that exceed national and international standards. The government has implemented various measures to combat air pollution, such as

enforcing stricter emissions standards in industry and the transport sector, promoting sustainable agricultural practices, transitioning to cleaner energy sources, regulating construction and demolition activities, and enhancing waste management practices.

However, the effectiveness of these measures is often hampered by enforcement challenges and the sheer scale of the pollution problem. Improving air quality is crucial for public health and aligns with India's broader environmental and climate goals.

Natural gas has a very important role to play in India’s decarbonization journey, as it can simultaneously contribute to meeting rapidly rising energy demand, reducing local air pollution and contribute significantly mitigating GHG emissions in India’s coal-dominated energy system.

The Government of India has set a highly ambitious target to increase the share of natural gas in the country's energy mix to 15% by 2030. The target provides a clear growth signal for India’s natural gas sector and has set the direction for a range of supportive government policies aimed at increasing gas use in India’s energy economy.

The Indian natural gas market is currently at an inflection point, marked by a major push for infrastructure expansion and a projected surge in demand, even as the country remains largely reliant on imports. The market is aiming to evolve itself from a highly regulated structure towards a more liberal, market driven environment.

The prospects for LNG imports are even brighter, India’s domestic gas production is insufficient to help achieve its gas-based economy ambitions, thus, LNG imports would play an important role to achieve the goal of 15% target set by the Government. This will also increase the potential market for spot trading.

India is set for long-term economic growth, projected to become the world's third-largest economy by 2030. Despite a temporary contraction due to COVID-19, the country maintained a compound annual growth rate (CAGR) of 3% from 2019 to 2021 in energy consumption. Looking forward, as per the OECD, India’s economy is expected to grow at a CAGR of 6.1% until 2050, underscoring its resilience and expansion potential.

India’s rapid economic growth will drive a significant increase in energy demand. While the global population is projected to rise to 9.8 billion by 2050 as per the UN, India's population growth, coupled with rising disposable incomes, is expected to outpace other major economies. This demographic expansion will contribute to a sharp rise in energy consumption, with India's energy demand set to double between 2020 and 2050.

The surge in energy needs will reshape not only India’s energy landscape, but also global energy dynamics. Meeting this demand will require a diverse energy mix that balances affordability, security, and sustainability, presenting a complex challenge.

As a cleaner-burning fossil fuel, natural gas offers one of the fastest pathways for transitioning away from coal and crude oil. Its adoption can deliver substantial CO_2 reductions.

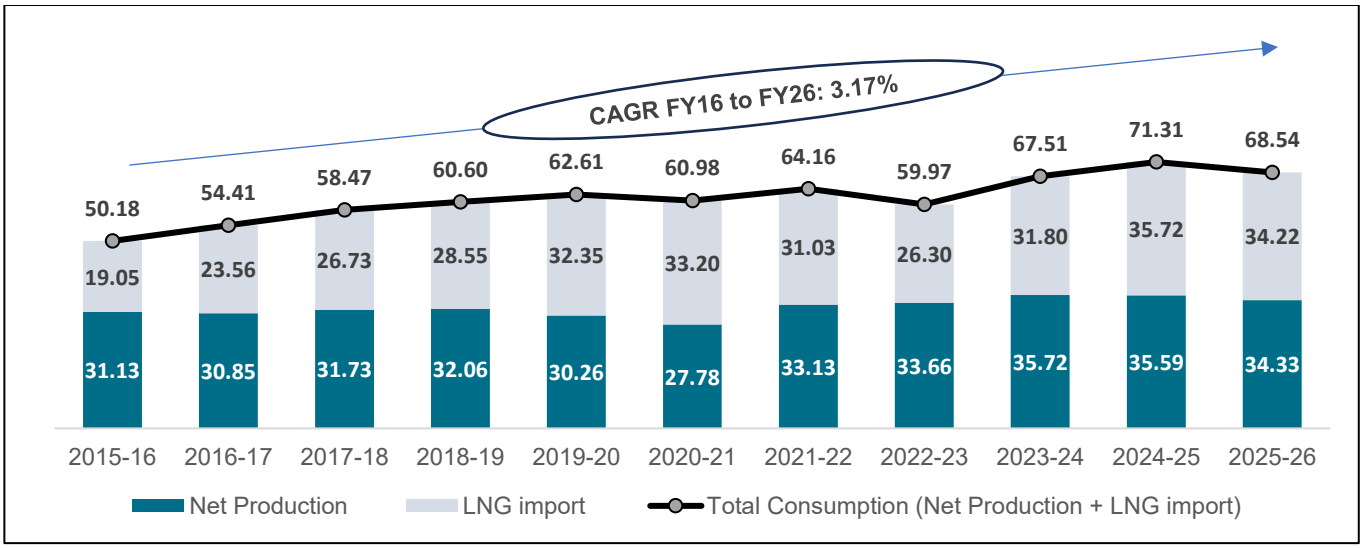
Indian Gas Consumption

India's natural gas consumption grew at a compound annual growth rate of approximately 3.17% between Fiscal 2016 and Fiscal 2026, increasing from 50.18 billion cubic meters in Fiscal 2016 to 68.54 BCM in Fiscal 2026. It is projected to increase from 68.54 BCM in Fiscal 2026 to 108.39 BCM in Fiscal 2030, reflecting a CAGR of approximately [11.7x]%.Natural gas demand reached a peak of 71.31 BCM in Fiscal 2025, supported by relatively lower LNG prices and increased LNG imports. During Fiscal 2024 and Fiscal 2025, softer global LNG prices improved affordability for price-sensitive consumers, resulting in higher gas offtake across demand segments and supporting overall growth in natural gas consumption.

Expected Softening of LNG Prices

The expected increase in global LNG supply is anticipated to exert downward pressure on LNG prices over the medium term. Increased LNG availability, coupled with relatively subdued spot LNG prices, is expected to improve affordability for price-sensitive consumers and support higher LNG imports into India.

Figure 36: Indian natural gas consumption, in BCM



Source: PPAC

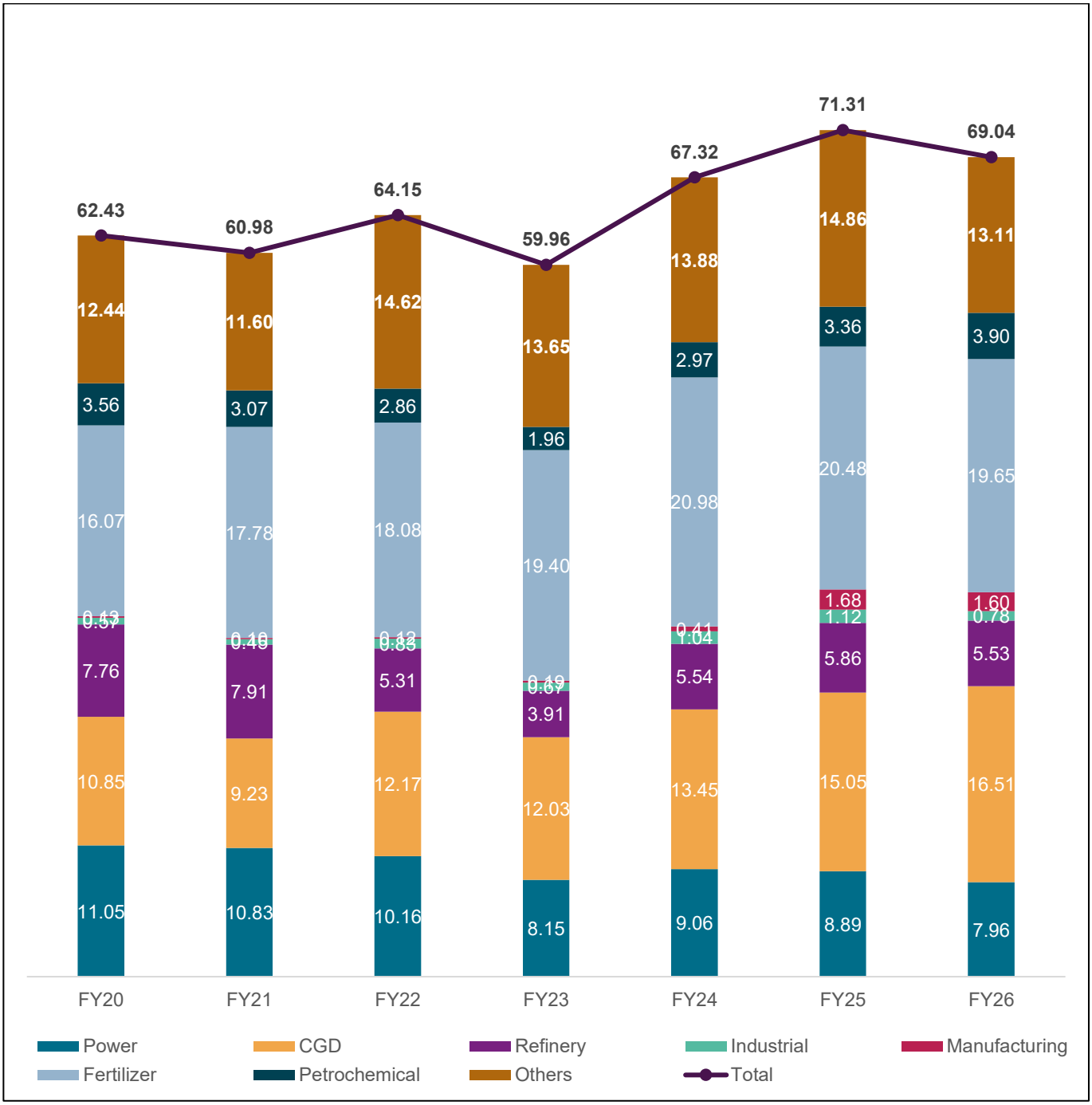
India has been ~ 50% dependent on LNG imports for its gas requirements. Post the pandemic, the LNG imports decreased by ~5%. In FY 16, the LNG imports only accounted for about 38% of the total consumption. By FY26, that share surged to ~50%, indicating India is now structurally an import dependent gas economy.

Despite efforts to boost local production, India's appetite for gas is outstripping its domestic supply, leaving the energy sector highly sensitive to global LNG price movements and geopolitical shifts.

Sectoral gas consumption in India

The sectoral consumption of natural gas in India is influenced by various factors, including infrastructure development, domestic production, and government policies. The CGD sector is expected to lead the growth, supported by the expansion of compressed natural gas (CNG) infrastructure and the cost advantage of gas over liquid fuels for small industrial users. Heavy industrial and manufacturing sectors, such as iron and steel production, are also driving demand, collectively adding around 15 bcm/yr during this period. Gas use in oil refining is expected to increase significantly as more refineries get connected to the grid.

Figure 28: Natural Gas Consumption by Sectors, BCM, FY20 to FY26



Source: PPAC, Others include tea plantation, LPG shrinkage, steel/ sponge iron, I&C for PL system.

Table 10: Key insights on sectoral consumption of natural gas in India

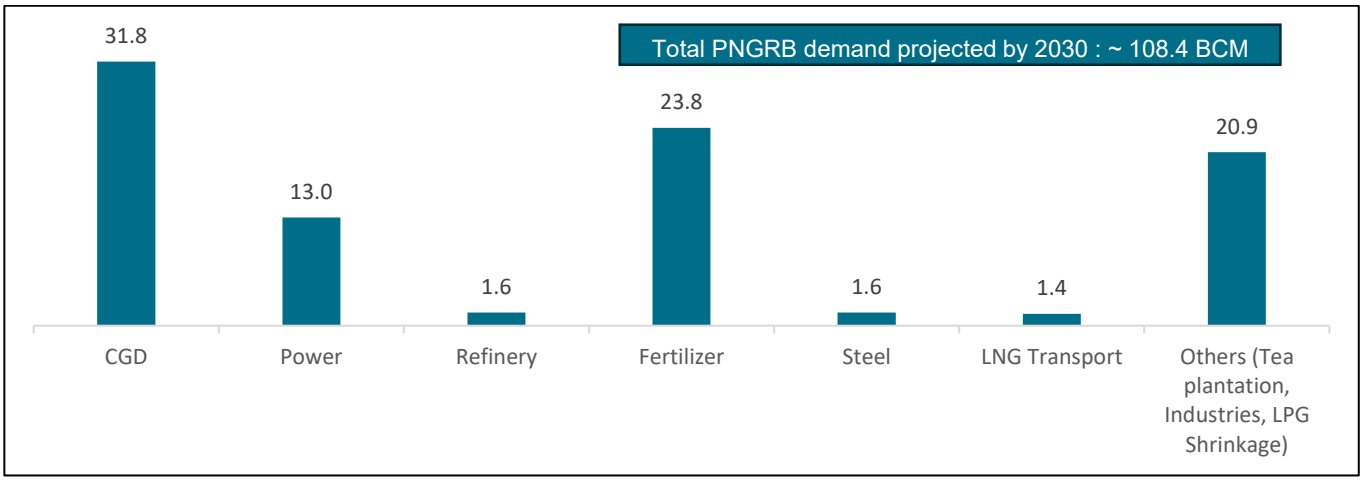
SN	Sector	Avg % share (2020 - 2026)	FY26 gas consumption (BCM)	CAGR (FY20-26)	Use of gas in the sector	Remark
1	**Fertilizer**	30%	19.65	3.4%	Natural gas is used as both a feedstock and fuel in urea and non-urea fertilizer production.	• The fertiliser sector in India (that produces urea and non-urea fertilisers) consumes the highest share of natural gas in India. • Gradually over the years, the proportion of domestically produced natural gas allocated to this sector has been reducing after implementation of the new gas allocation policy in FY 2015. The sector today sources a significant amount of RLNG for its needs, such as fuel and feedstock. • India produces ~80% (28 MTPA) of its Urea requirements while importing the rest (~7 MTPA). • Consumption grew steadily from 16 BCM in FY20 to a peak of ~21 BCM in FY24.
2	**City Gas Distribution**	20%	16.51	7.2%	The CGD sector plays a pivotal role in India's clean energy transition by supplying natural gas to domestic, commercial, industrial, and transport sectors.	• As a key component of India's energy strategy, CGD supports the shift toward natural gas—a cleaner alternative to conventional fossil fuels—helping to reduce carbon emissions and environmental pollution.

SN	Sector	Avg % share (2020 - 2026)	FY26 gas consumption (BCM)	CAGR (FY20-26)	Use of gas in the sector	Remark
3	**Power**	16%	7.96	-5.3%	Natural gas in power industry is in gas-fired power plants, primarily combined cycle gas turbines to generate electricity	• The Power sector shows a notable long-term decline in gas usage. • Consumption dropped from 11 BCM in FY20 to ~8.9 BCM in FY25 • CAGR of -4% from FY 20 to FY25. • This decline is likely due to the high cost of imported LNG compared to cheaper coal and the rapid increase in renewable energy capacity. • Gas-based power is increasingly being relegated to a "peak-load" or emergency role rather than a base-load source
4	**Refinery and petrochemical**	10%	9.42	-3.01%	Natural gas in this sector serves a dual purpose—as a cleaner fuel for process heating and power generation, and as a feedstock for hydrogen production and petrochemical synthesis	• Refineries show high sensitivity to global market conditions. • This sector often switches between natural gas and liquid fuels (like naphtha or fuel oil) based on which is more cost-effective at the time.
5	**Industrial and manufacturing**	2%	2.38	22.68%	Natural gas is used extensively in high-temperature furnaces, kilns, and boilers to produce heat for industries such as glass, steel, ceramics, textiles, and cement.	• These sectors remain relatively small consumers compared to dominant sectors like Fertilizer and CGD. • This indicates significant untapped potential for natural gas penetration in industrial applications
6	**Others**	22%	13.11	0.9%	Includes industries such as Sponge Iron, Steel, LPG Shrinkage and tea plantations where natural gas is used in gas-based shaft furnaces, reheating	• Usage of natural gas as a cleaner fuel in steel industry has been prioritized for high energy intensive processes. • High demand of natural gas in tea estates is witnessed majorly in the

SN	Sector	Avg % share (2020 - 2026)	FY26 gas consumption (BCM)	CAGR (FY20-26)	Use of gas in the sector	Remark
					furnaces, Process Heat, etc.	northeastern region of India.

Apart from the manufacturing sector, the CGD sector is being seen as the fastest-growing gas-consuming segment and positions it as a key structural demand driver for natural gas in India going forward, supported by network expansion, urbanization, and policy push for cleaner fuels.

Figure 29: PNGRB - Sector-wise natural gas consumption forecast by 2030, BCM



Note: The Natural Gas consumption projections for 2030 is taken for GtG scenario: Good to Go (GtG) scenario: Represents the GtG scenario, assuming moderate growth and expected developments based on current trends and commitments.

CGD Infrastructure in India

The natural gas consumption in the CGD sector of India was ~16.51 bcm in FY26 which has grown at a CAGR of ~7.2% from ~10.85 bcm in FY20. To meet this rising demand, India is prioritizing the development of targeted infrastructure for efficient gas distribution. As of April 2026, there are ~1.71 crores D-PNG connections, 8,948 CNG stations and ~3.23 lakh Inch-km of pipelines laid by the CGD entities. The existing CGD infrastructure is serving 307 geographical areas covering 99% population.

The Indian CGD sector is dominated by 20+ entities out which, Indraprastha Gas Limited (IGL), Maharashtra Natural Gas Limited (MGL), Adani Total Gas Limited (ATGL) are serving the GAs with the highest number of D-PNG connections. Other CGD entities include Gujarat Gas, GAIL Gas, BPCL, Torrent Gas, etc. In India, there are 13 states/ UTs where the CGD policy is executed which is ~36% of the total states/UTs. These states/ UTs are: Punjab, Rajasthan, Delhi, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Odisha, West Bengal, Bihar, Assam, Tripura, Karnataka, Puducherry and Tamil Nadu.

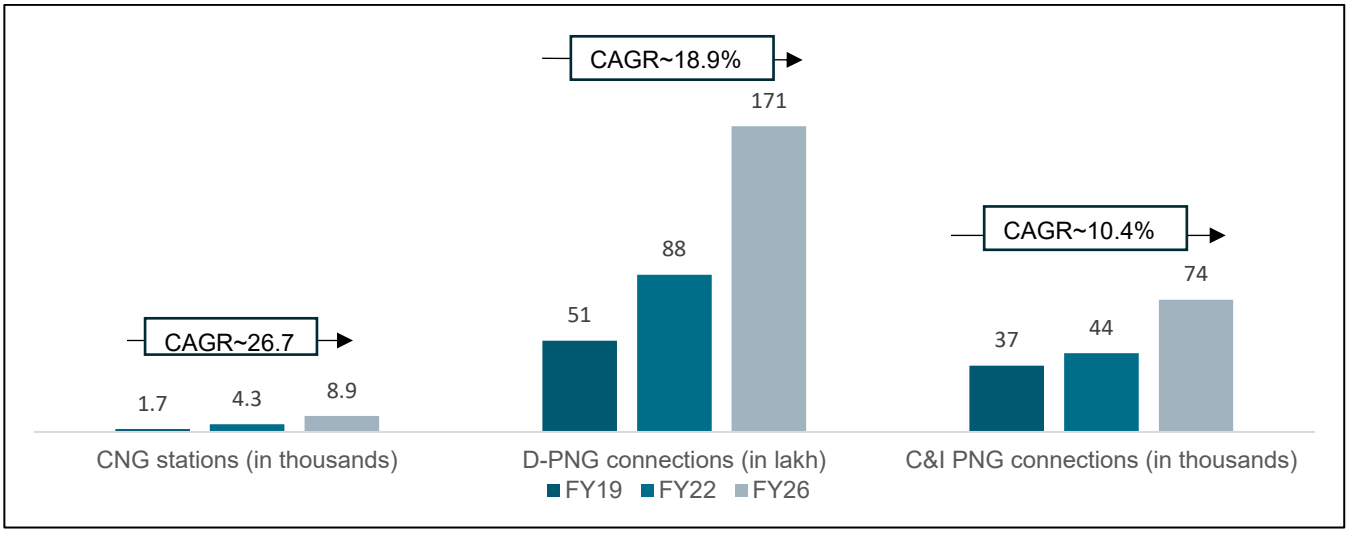
Table 11: CGD Infrastructure in India, as of Apr 2026

Parameter	Details
Natural gas consumption (CGD sector, FY26)	~16.51 bcm
Natural gas consumption (CGD sector, FY20)	~10.85 bcm

Parameter	Details
Growth rate (CAGR, FY20–FY26)	~7.2%
D-PNG connections (as of Apr 2026)	~1.71 crore
CNG stations (as of Apr 2026)	8,948
Pipelines laid (as of Apr 2026)	~3.23 lakh inch-km
Coverage	307 geographical areas
Population coverage	99%
Number of CGD entities	20+
CGD entities with highest D-PNG connections	Indraprastha Gas Limited (IGL), Maharashtra Natural Gas Limited (MGL), Adani Total Gas Limited (ATGL)
States/UTs where CGD policy is executed	13 states/UTs (~36% of total states/UTs)
CGD-policy states/UTs	Punjab, Rajasthan, Delhi, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Odisha, West Bengal, Bihar, Assam, Tripura, Karnataka, Puducherry, Tamil Nadu

Source: PNGRB CGD MIS Report Apr 2026

Figure 30: CGD Infrastructure growth in India, FY19-26



Source: PNGRB CGD MIS Report Apr 2026

India's CGD infrastructure has historically been concentrated in North and West India, supported by early access to gas pipelines, proximity to major supply corridors, and strong industrial and urban demand centers. These regions therefore saw faster rollout of D-PNG connections, CNG stations, and commercial gas networks. To reduce this regional imbalance, the PNGRB CGD bidding rounds have authorized 307 Geographical Areas across the country, backed by national pipeline projects such as the Pradhan Mantri Urja Ganga to expand clean gas access for households, vehicles, and industries.

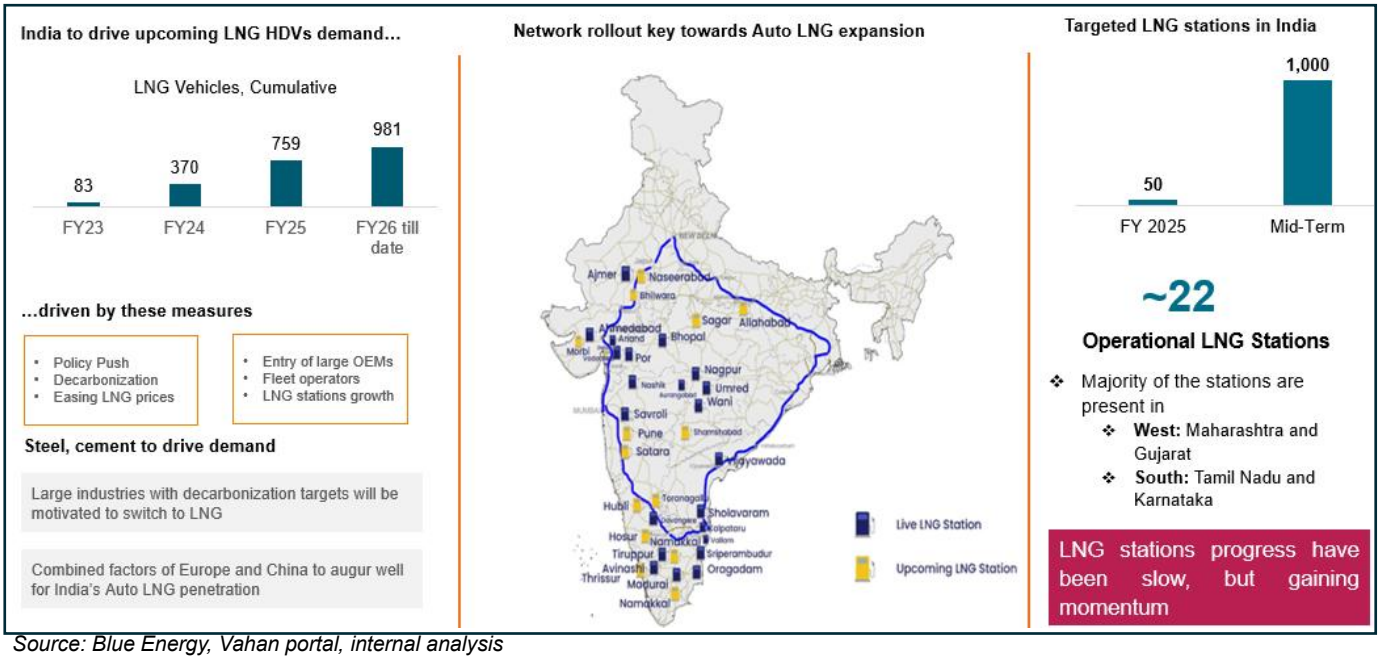
East and South India are now witnessing accelerated gas grid development to overcome earlier supply constraints. In the East, projects such as the Jagadishpur-Haldia-Bokaro-Dhamra Pipeline, North East Gas Grid, Barauni-Guwahati pipeline, and Indradhanush Gas Grid are strengthening connectivity across Bihar, Jharkhand, Odisha, West Bengal, and the Northeast, with entities like GAIL, IOCL, and IGL developing CGD networks. In the South, trunk pipelines such as the Kochi–Kanyakumari–Thoothukudi pipeline, Southern Peninsula Pipeline, and Ennore-

Thiruvallur-Bengaluru-Puducherry-Nagapattinam pipeline are improving gas availability across Kerala, Tamil Nadu, Karnataka, Puducherry, and key urban-industrial centers.

LNG as automotive fuel

The automotive LNG market has emerged as a cornerstone of the global energy transition, particularly within the heavy-duty transport and long-haul logistics sectors. Unlike CNG, which is better suited for short-range urban transit, LNG's high energy density allows for a significantly longer operational range, making it a viable alternative to diesel. India's Auto LNG market is in a nascent but high-growth phase, aimed at transitioning long-haul heavy-duty commercial trucking away from diesel.

Figure 31: Auto LNG market in India



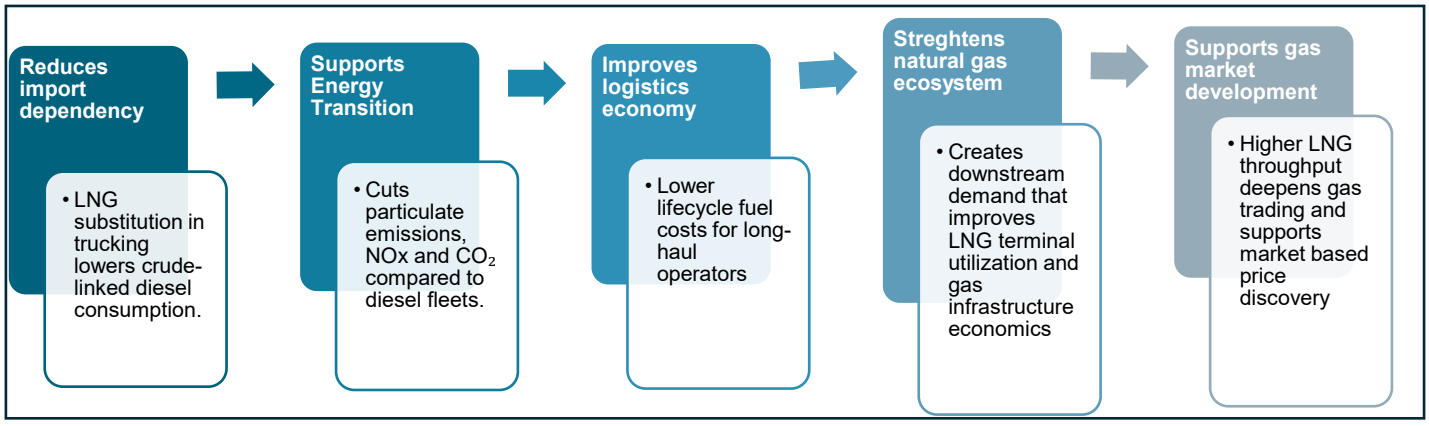
Source: Blue Energy, Vahan portal, internal analysis

Auto LNG is positioned as the next logical logistical step beyond CNG, offering a solution for bulk, long-haul transport. This is particularly relevant given India's rapidly expanding trucking market, which is expected to quadruple to about 17 million trucks by 2050. LNG provides a cleaner, lower-carbon alternative to diesel for commercial trucking. India is actively working to establish this infrastructure, with plans to build 1,000 LNG-dispensing stations along key transport corridors.

India's LNG dispensing ecosystem is still in its early growth phase but is scaling rapidly as part of the country's push toward cleaner long-haul freight mobility. Supported by the government's gas-based economy roadmap, LNG is emerging as a viable alternative for heavy-duty trucking due to lower emissions, lower operating costs versus diesel (depending on LNG pricing), and alignment with India's energy diversification goals.

As of March 2026, India has ~100 operational LNG dispensing stations, with aggressive expansion planned across major freight corridors under PNGRB-authorized CGD entities and OMC-led infrastructure rollout.

Figure 32: Benefits of developing LNG as automotive fuel



India's LNG dispensing network is transitioning from pilot deployment to corridor-scale commercialization. As station density improves and LNG truck adoption accelerates, LNG mobility can become a key pillar of India's gas-based economy by lowering diesel dependence, strengthening gas infrastructure utilization, and creating incremental market depth that indirectly supports gas trading platforms like IGX.

Table 12: Regulatory-driven development of Auto LNG

Regulatory Body	Policy	Description	Strategic / practical impact
PNGRB	**LNG retailing in liquid form can be set up anywhere, regardless of CGD authorization.**	PNGRB enables LNG retail infrastructure (liquid dispensing) to be established in locations beyond the normal CGD authorization footprint. This allows LNG to be marketed through dedicated retail outlets where there may be limited pipeline/gravity supply options.	Faster roll-out of LNG stations across highways, industrial corridors, ports, and logistics hubs; supports demand growth even in areas not covered by CGD networks.
PNGRB	**Guidelines to manage boil-offs**	**Boil-off gas** is the natural vapor that forms when LNG warms up in storage due to heat ingress; the liquid partially "boils," creating gas that must be safely handled. PNGRB guidelines set rules on collection, routing, and safe utilization/disposal of this gas.	Improves safety and compliance, reduces losses, and enables predictable operations for LNG storage/retail assets (especially during longer storage or transport intervals).
PESO	**Allowing mobile dispensing**	PESO regulations can permit mobile LNG dispensing systems (e.g., tanker-mounted or skid-mounted dispensing) to supply LNG to end users without requiring a fixed retail location.	Supports supply to remote/temporary demand sites, increases service flexibility for industrial users, and helps bridge demand until fixed retail infrastructure is feasible.
PESO	**Use of LNG-fuelled vehicles in hazardous areas**	PESO addresses whether LNG-fuelled vehicles can operate in hazardous zones (such as around refineries, petrochemical plants, ports, mines, and storage areas) while meeting safety standards for ignition risk, ventilation, and emergency protocols.	Enables wider adoption of cleaner LNG mobility in sectors that currently rely heavily on diesel; supports operational continuity under strict safety frameworks.

LNG Bunkering

Increasing global focus on reducing greenhouse gas emissions has led to a surge in the adoption of LNG as a cleaner alternative to traditional marine fuels. LNG offers significant advantages in terms of reduced sulphur oxides, nitrogen oxides, and particulate matter emissions.

India, being strategically situated along the East-West global shipping corridor can emerge as an LNG refueling hub. The corridor is used by nearly 1,00,000 ships, accounting for 30% of the global ship movement.

Many initiatives on LNG bunkering are now emerging: Petronet LNG plans to launch bunkering services from its Kochi terminal, Kolkata Port Trust has allocated land at Haldia Dock Complex for LNG-fueled barges, and oil majors like IOCL and BPCL are in discussions with Maharashtra Maritime Board to develop bunkering infrastructure.

Table 13: Key LNG bunkering developments in India

Port / Region	Current Status	Strategic Importance
Vizhinjam International Seaport	India's first major ship-to-ship LNG bunkering initiative under development	Gateway for east-west international shipping corridor
Kochi Port	LNG-linked marine fuel ecosystem emerging	Supported by proximity to regasification infrastructure
Mumbai Port	Exploring cleaner marine fuel infrastructure	Key west coast maritime trade hub
Haldia Dock Complex	LNG infrastructure expansion underway	Enables eastern maritime LNG ecosystem
Kandla Port	Potential future LNG bunkering corridor	Strong cargo movement potential

Future Landscape (2026–2030)

- Commercial LNG bunkering rollout across major ports
- Growth in LNG-fueled coastal vessels
- Stronger private-public port collaborations
- Integration with LNG import terminal expansions

Potential emergence of India as a regional clean marine fuel hub

Impact on IGX

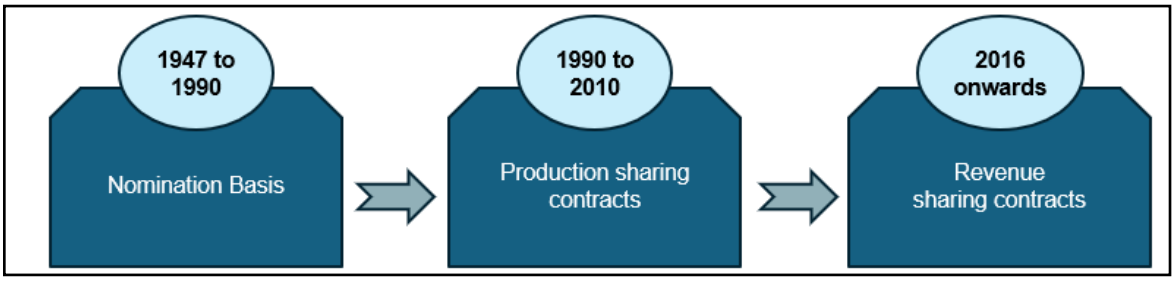
As LNG bunkering scales, it creates additional spot LNG demand and short-term trading opportunities, driven by market-based price discovery.

Indian Gas Production regimes

India's upstream oil and gas sector has long faced challenges in harnessing its full domestic hydrocarbon potential due to complex licensing frameworks, limited data access, delayed approvals, and high regulatory oversight. Historically, acreage awards were restricted to government-declared bid rounds, often resulting in underutilization of discovered fields and slow exploration progress.

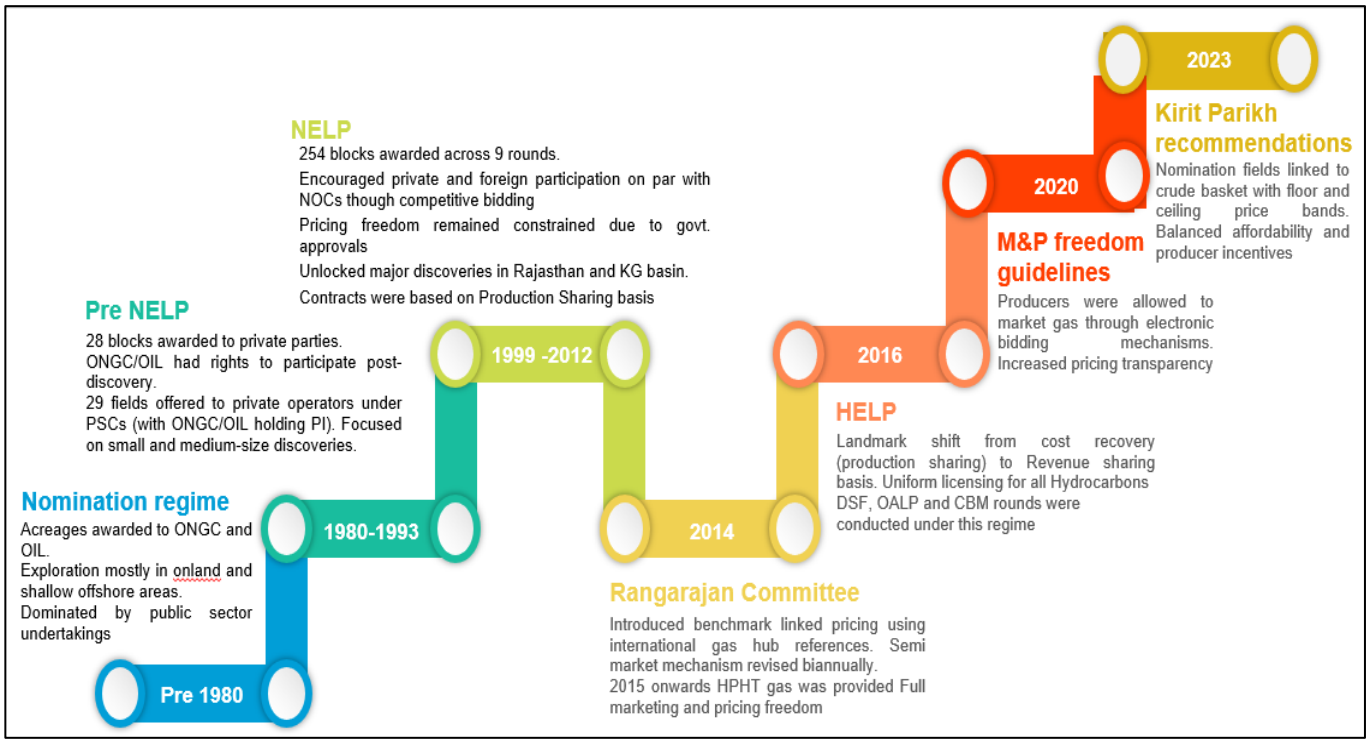
Recognising the need to accelerate domestic production and improve ease of doing business, the Indian government has introduced a series of forward-looking reforms over the last decade. These reforms are anchored in simplified contractual models, enhanced market freedom, and digital infrastructure for data access. These policy interventions aim to unlock India's exploration potential, attract investments, and create a robust and self-reliant upstream ecosystem capable of contributing significantly to the country's long-term energy vision

Figure 33: Evolution of gas production contracts in India



Source: DGH

Figure 34: Summarized Chronology of India's E&P Regimes

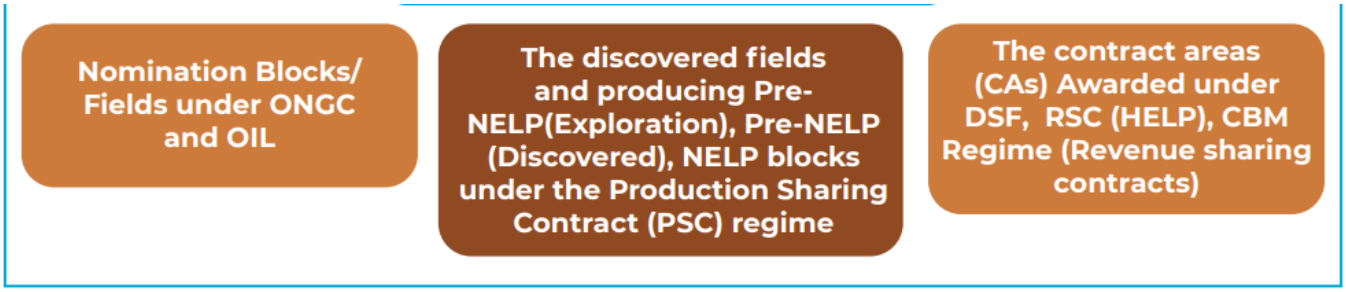


Source: DGH, Crisil analysis

Table 14: Comparison of Production sharing contracts vs Revenue sharing contracts

Parameter	PSC Regime	RSC Regime
Fiscal model and cost recovery	Profit sharing; Cost recovery allowed (subject to audit)	Gross revenue from production; Cost recovery not applicable
Government revenue	Depends on profit petroleum	Fixed percentage of total revenue
Administrative burden	High (frequent audits, approvals)	Low (self-reporting mechanism)
Risk allocation	Government bears part of cost risk	Contractor bears full cost risk
E&P activity for all hydrocarbon	Not allowed	Allowed
Pricing and marketing freedom for gas	Freedom subject to government approval	Freedom (Arm's length)
Transparency	Complex due to cost validation	High transparency and simplicity

Figure 35: India's oil and gas production sources



Source: DGH

Recognising the need to accelerate domestic production and improve ease of doing business, the Government of India has introduced a series of forward-looking reforms over the last decade. These reforms are anchored in simplified contractual models, enhanced market freedom, and digital infrastructure for data access. These policy interventions aim to unlock India's exploration potential, attract investments, and create a robust and self-reliant upstream ecosystem capable of contributing significantly to the country's long-term energy vision.

Oilfields (Regulation and Development) Amendment Act, 2025

The Oilfields (Regulation and Development) Amendment Act, 2025 (notified on March 28, 2025, and came into force on April 15, 2025) modernises the framework governing upstream oil and gas operations in India.
The rules, issued under the recently approved Oilfields (Regulation and Development)

It redefines "mineral oils" to include all forms of hydrocarbons—crude oil, natural gas, CBM, shale oil/gas, oil/gas, gas hydrates, etc.—while excluding coal, lignite, and helium associated with petroleum or coal. It replaces "mining lease" with "petroleum lease" for awards granted post-amendment, covering all activities from exploration to disposal.

Source: ORDA Act 2025

The amendment significantly improves India's attractiveness for private and foreign upstream investment by reducing regulatory uncertainty and aligning with global exploration norms. Stable lease conditions, simplified licensing, and lower compliance risk improve long-term project viability, particularly for capital-intensive offshore and unconventional gas projects.

Impact on Domestic Gas Production

The inclusion of unconventional hydrocarbons creates a legal pathway for unlocking India's untapped gas potential in basins such as Krishna-Godavari, Cambay, and Cauvery.

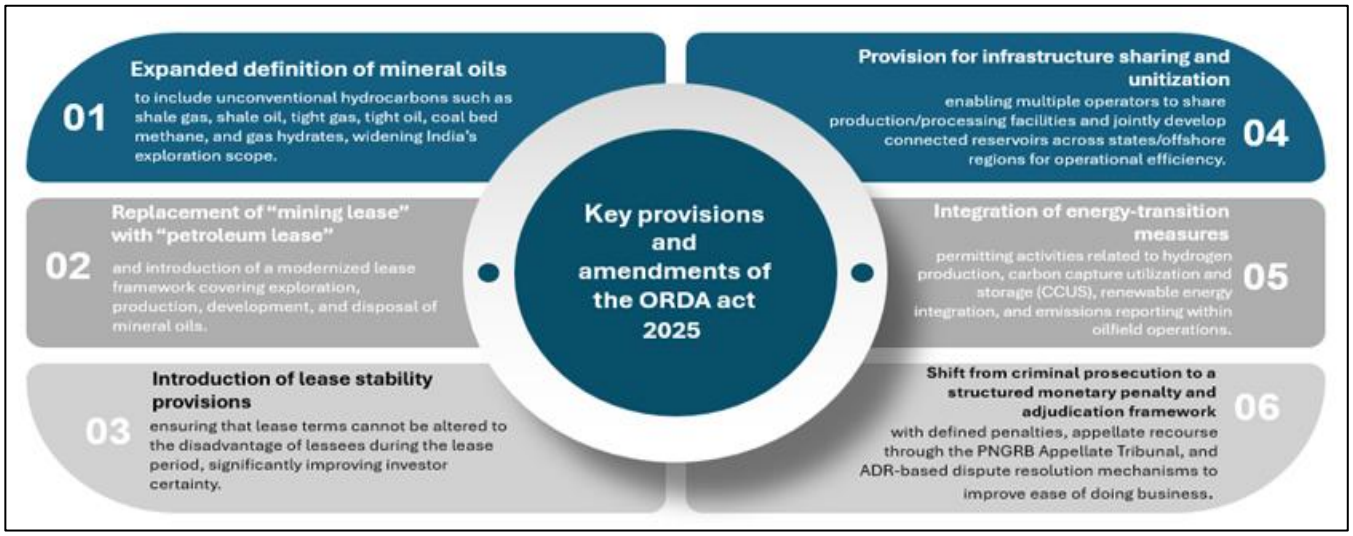
This will aid in: Boosting domestic gas output, accelerating exploration activity, improving supply security and supporting India's transition toward a gas-based economy

Overall Impact on Gas trading in India

Greater domestic production can expand the volume of gas available for market-based trading, enabling:

- Higher gas transactions – spot, medium- and long-term contracts through the exchange
- Improved liquidity across trading hubs
- Better price discovery through competitive exchange-based mechanisms
- Reduced dependence on imported LNG

As more domestic producers gain flexibility to market gas competitively, a larger share of gas could shift toward transparent gas exchange platforms such as IGX, strengthening India's transition toward a market-driven gas pricing framework. In the long term, this supports the government's vision of increasing natural gas' share in India's energy mix and establishing a more mature, efficient gas trading market.



Royalty reduction to boost domestic gas output

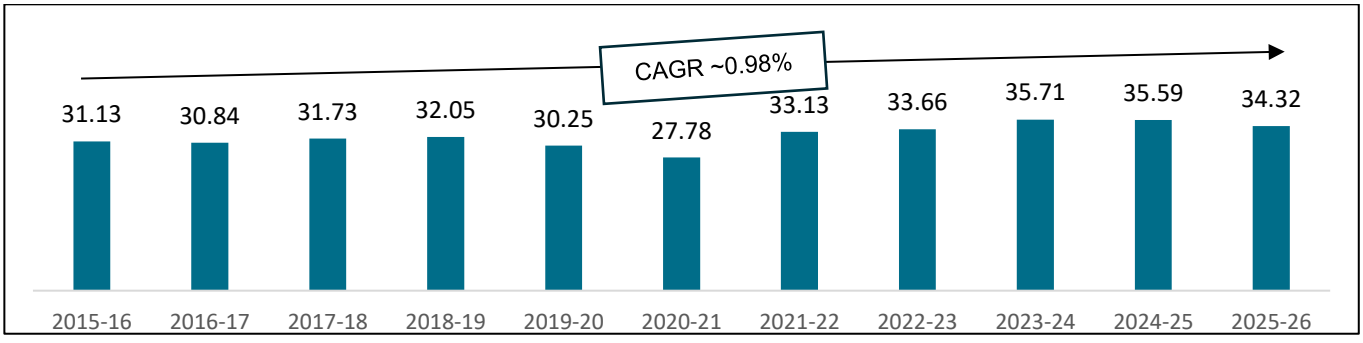
India recently lowered royalty rates for domestically produced oil and natural gas, effective from 8 May 2026, to reduce the government take on production and improve project economics. For natural gas, the royalty is now 8% under a new flat-deduction structure tied to well-head pricing, which reduces uncertainty and aligns the cost burden more directly to realized prices rather than post-production cost linkages. The intent is to stimulate domestic supply, support investment appetite, and thereby reduce India's reliance on imports.

Incentives for exploration in DW/UDW fields

The government also introduced deeper-water incentives under DSF/HELP-style concessions by waiving royalty for the first seven years for deep-water and ultra-deep-water blocks—then stepping up to lower post-concession rates (5% for deep-water and 2% for ultra-deep-water). This matters because DW/UDW projects are capital-intensive and technically challenging, so front-loaded fiscal relief can be pivotal for financing and risk-sharing during early development. Overall, these measures are designed to encourage exploration in harder basins and accelerate the build-out of domestic reserves over time.

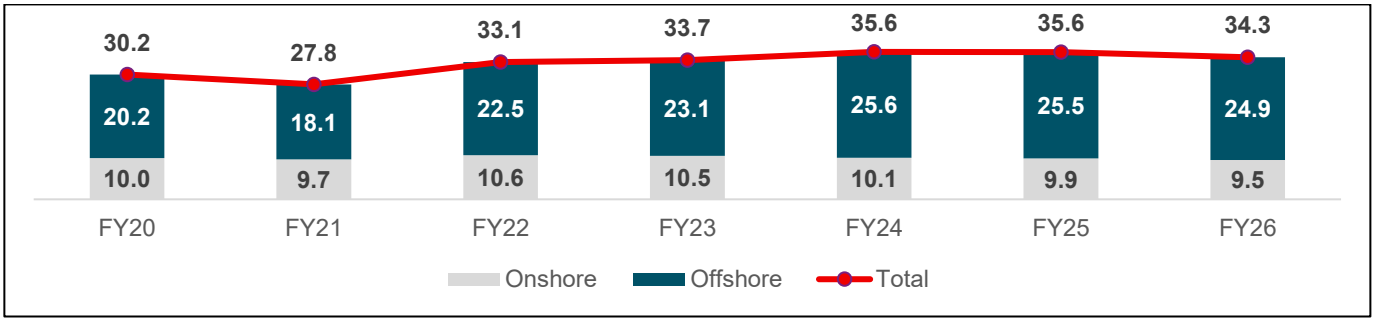
Indian Gas Production

Figure 36: Indian gas production, in bcm



Source: PPAC

Figure 37: Natural gas production in India, onshore and offshore split, BCM



Source: PPAC

In FY20, the total natural gas production stood at 30.17 BCM, with offshore fields contributing 20.17 BCM and onshore fields 10 BCM. The gas production in FY21 decreased by ~8% at 27.78 BCM. This decline was primarily driven by a sharp fall in offshore output due to the adverse impact of the COVID-19 pandemic, global demand contraction, and delays in upstream investments and project execution. However, this drop was followed by a strong recovery in FY22 and beyond, with offshore production rising to 35.62 BCM in FY24. Onshore production, by contrast, exhibited only minor fluctuations, peaking at 9.67 BCM in FY22 and tapering off slightly to 9.47 BCM in FY26.

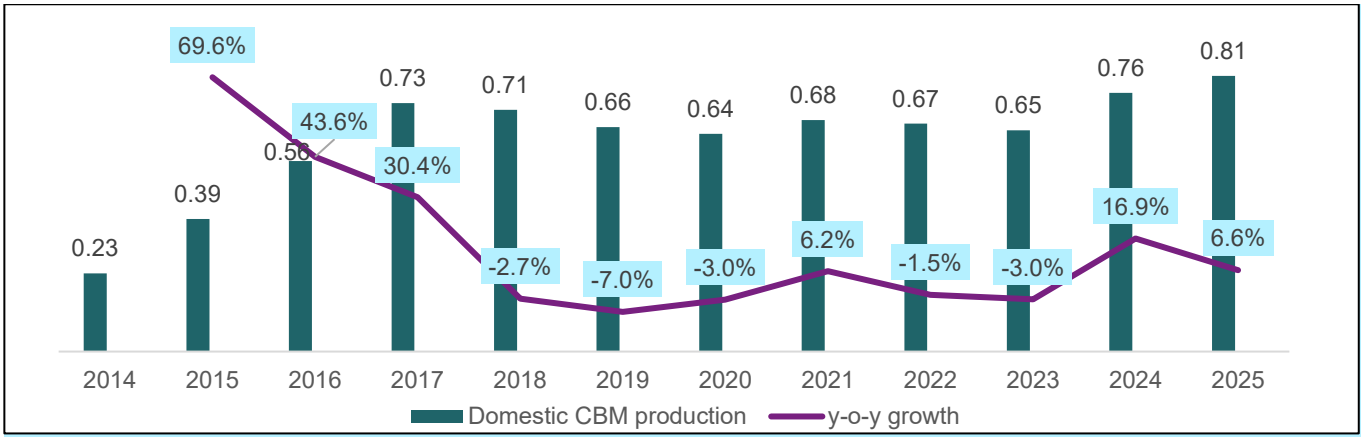
In FY 24. the gas production saw an increase of 6% due to lower prices in the market, introduction of higher price ceiling and increased demand in the country. The total production in 2026 stood at 34.32 BCM which is a slight decrease of -1% due to higher prices of LNG and lower demand in the country.

Coal Bed Methane (CBM)

The total production of CBM in India is ~0.8 BCM in 2025 at a y-o-y growth rate of ~6.6%, this growth is attributed to increased exploration opportunities available and increased participation in auctions of gas over DGH empanelled agencies. Additionally, the government is focusing on increasing CBM production through policies and reforms to strengthen domestic energy security and reduce dependence on imported natural gas.

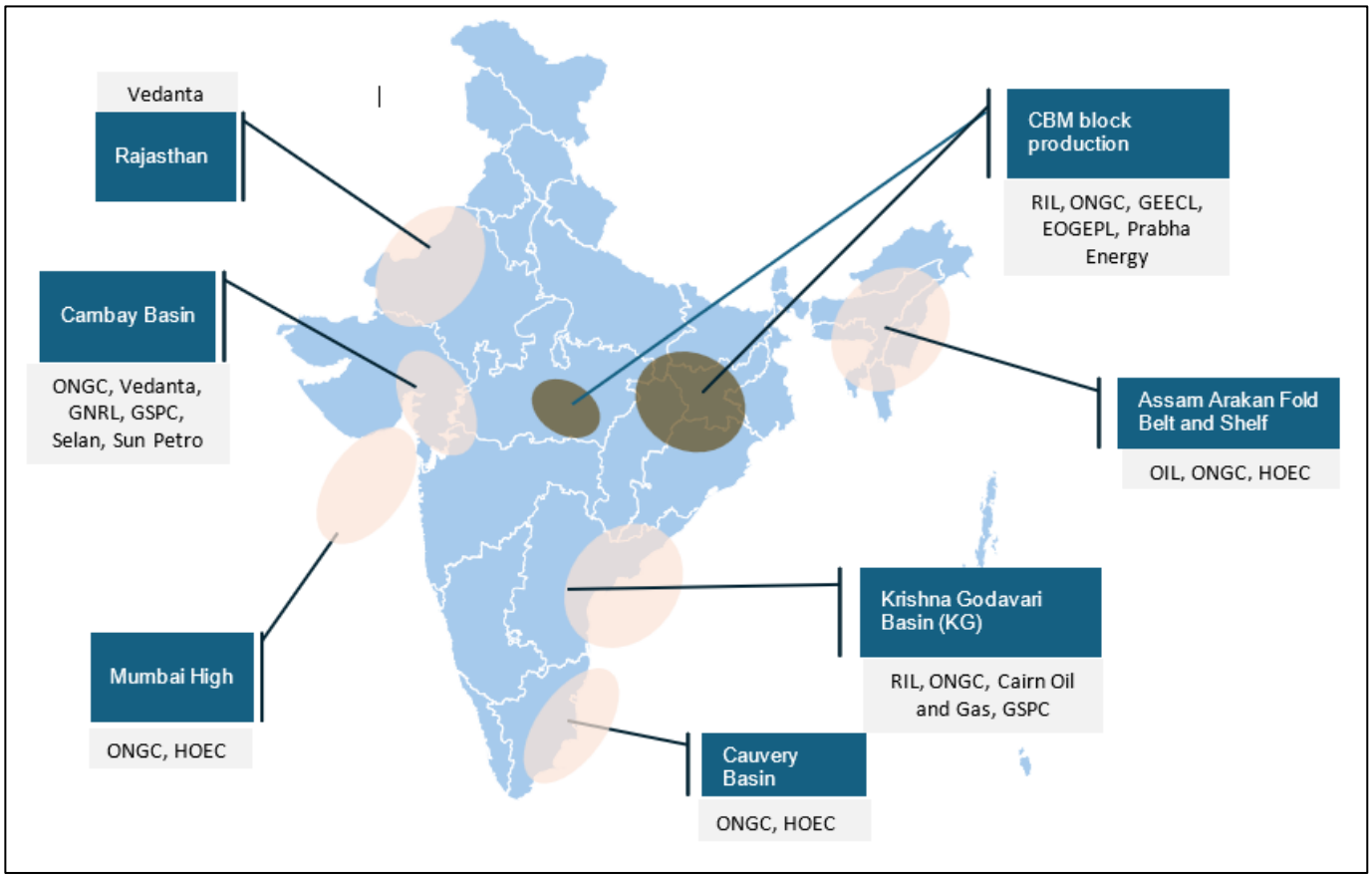
Major CBM blocks in India include the RG(East)-CBM-2001/1, allocated to Essar Oil Ltd. The block contributed to ~44% of the total CBM production in 2025. This is followed by the SP(West)-CBM-2001/1, awarded to M/s Reliance Industries Ltd and contributed to ~39% to the total production.

Figure 38: CBM – Domestic Production (bcm)



Source: DGH, PPAC, Crisil Intelligence

Figure 39: Gas producing block and producing companies in India



Source: DGH annual report 2025, Crisil Intelligence

Domestic natural gas production has been increasing since FY-22 due to production commencement from KG D6 in eastern offshore, namely the R Cluster (production commenced in December 2020), satellite cluster (production commenced in March 2021) and MJ fields which are together producing ~11 BCM of natural gas since FY-24.

Going forward, domestic production is expected to increase moderately, driven by rise in production from ONGC's KG-98/2 in eastern offshore. ONGC is currently operating 3 gas wells, and 4 more gas wells are expected to start production.

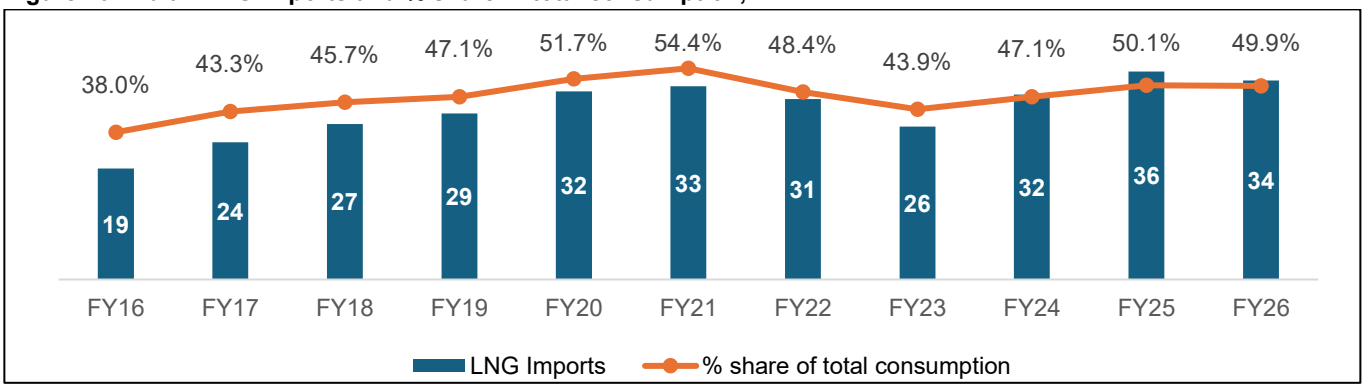
The government's steps to attract investments and improve production through the new gas-pricing mechanism, by giving pricing freedom for gas produced from high-pressure, high-temperature, deep-water and ultra-deep-water areas is expected to expedite the development of fields.

Indian LNG imports

India's LNG imports have increased steadily over FY16–FY25, rising from ~22 BCM in FY16 to ~35 BCM in FY26, reflecting a CAGR of ~5.6%. The growth underscores India's increasing reliance on LNG to bridge the structural gap between domestic gas production and rising demand, particularly from CGD, fertilizer, refinery and industrial consumers.

While imports moderated temporarily during periods of elevated global LNG prices, volumes rebounded strongly from FY24 onwards, supported by demand recovery, improved price visibility and expanding regasification capacity. Overall, LNG continues to account for ~50% of India's gas availability, reinforcing its critical role in ensuring supply security and supporting the medium-term growth of the natural gas ecosystem in India.

Figure 40: Indian LNG imports and % share in total consumption, BCM



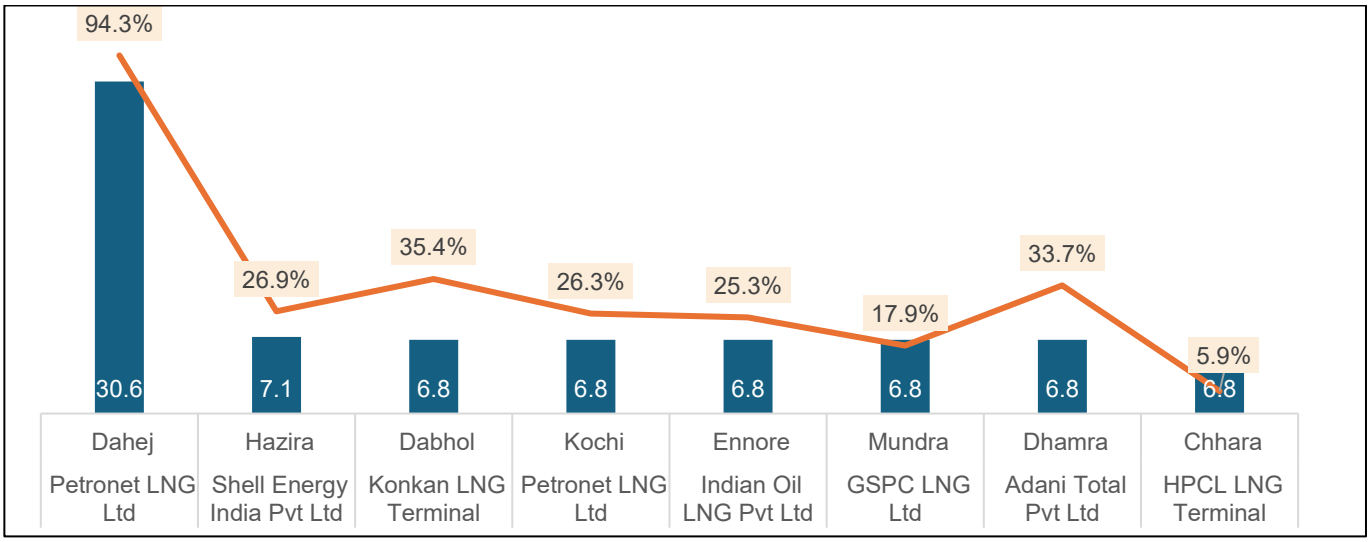
Source: PPAC

India imports a significant portion of its natural gas as LNG, with major suppliers including Qatar, the UAE, and the US, and is actively diversifying routes to mitigate geopolitical risks. Currently, India's natural gas production meets roughly ~50% of its demand. As demand is expected to grow significantly going forward, dependence on LNG will increase to bridge the demand-supply gap. Given India's structural domestic gas deficit and growing natural gas demand, a significant portion of incremental gas consumption during Fiscal 2027 to Fiscal 2030 is expected to be met through LNG imports. The availability of competitively priced LNG and increasing access to spot cargoes is expected to support higher gas consumption across key sectors, including city gas distribution, power generation, fertilizers and industrial consumers, while also increasing the share of gas procured through short-term and market-based mechanisms.

India's LNG terminals play a crucial role in the country's energy infrastructure, facilitating the import and regasificati on of liquefied natural gas. As a result, the construction of LNG terminals in India is rapidly expanding to accommodate the future demand.

LNG terminals in India

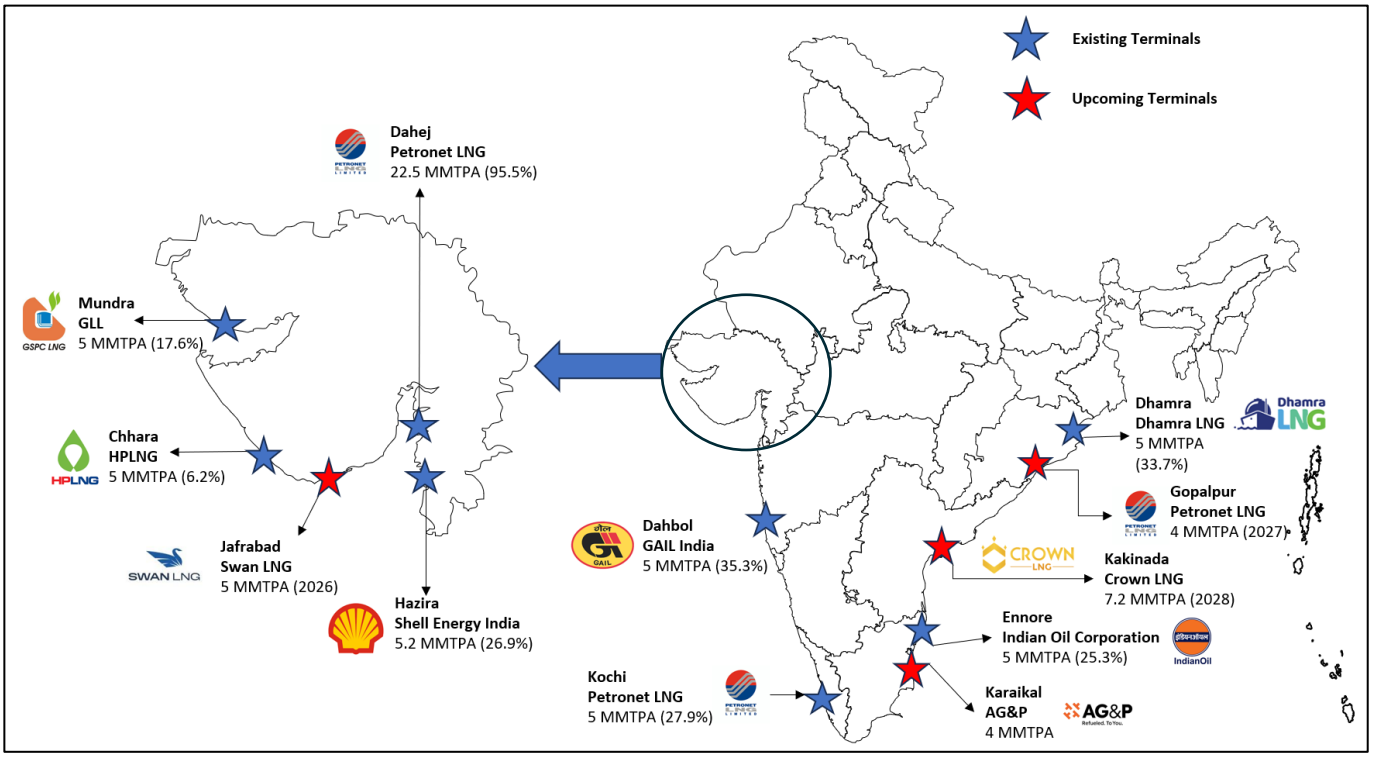
Figure 41: Existing LNG regasification terminals in India (BCM) and capacity utilization (%) (Apr'25 to Feb'26)



Source: PPAC, April 2025 to February 2026 and ETEnergy World Article dated Apr 1 2026 , Source link

As of April 2026, India has 8 LNG import facilities with a combined regasification capacity of 78.4 BCM/y (57.7 MMTPA) with 6 of them on the western coast and the rest on the eastern coast. This includes the recent expansion of the Dahej terminal by 6.8 BCM/y (5 MMTPA) which was commissioned in April 2026.

Figure 42: India's LNG Regasification terminals, capacity and utilisation (as of Apr'26)



Source: PPAC, Dahej capacity mentioned as of Apr' 26 post recent expansion of 5 MMTPA

Utilisation rates vary by terminal, with the Dahej terminal operating at >90% capacity, while newer terminals like Dhamra, Chhara are still ramping up operations. This difference in utilisation rates stems not only from the varying stages of operational maturity, but also from the development of connecting infrastructure. Established terminals like Dahej benefit from well-developed pipeline networks and stable demand, whereas newer facilities are still integrating into the national grid and building their customer base.

Table 15: Indian LNG regasification terminals

SN	Terminal Name	Comm. Year	Current Capacity (BCM)	Key Features
1	**Dahej LNG Terminal**	2004	30.6 (22.5)	India's largest regasification terminal Connected to major demand centers through Hazira-Vijaipur-Jagdishpur and Dahej-Uran-Panvel pipelines. Long-term tolling agreements with IOCL, BPCL, and GAIL.
2	**Hazira LNG Terminal**	2005	7.1 (5.2)	Located near industrially vibrant Vadodara-Ankleswar-Hazira-Vapi belt. 12 SEZs in the vicinity. Connected to the GSPL Grid, GAIL and the East West Pipeline of PIL from Kakinada to Bharuch.
3	**Dabhol LNG Terminal**	2013	6.8 (5)	Was limited in utilization due to breakwater issues; the breakwater construction completed in FY25, ensuring all-weather access to the terminal now. Connected via the DUPL Pipeline (Dahej-Uran-Panvel-Dabhol Pipeline) to the national grid

SN	Terminal Name	Comm. Year	Current Capacity (BCM)	Key Features
4	**Kochi LNG Terminal**	2013	6.8 (5)	Located in Special Economic Zone (SEZ) at Puthuvypeen. LNG jetty can accommodate Q-Flex vessels. Connectivity is through the Kochi Mangalore pipeline. The Kochi-Koottanad-Bangalore-Mangalore Pipeline is crucial for connecting Kochi to the national network.
5	**Ennore LNG Terminal**	2019	6.8 (5)	Operates under tolling agreement with parent company. Connected to the Ennore Tuticorin pipeline. The upcoming Ennore-Tuticorin-Bengaluru R-LNG Pipeline is crucial for the terminal to get national grid connectivity.
6	**Mundra LNG Terminal**	2020	6.8 (5)	Connected to the Mundra Anjar Pipeline which furthers connects to the GSPL gas grid. The terminal has provisions for expanding capacity up to 10 MMTPA in total. However, the terminal's utilization has been very limited due to the presence of limited pipeline connectivity, markets. To address this, GSPC has planned to lay an additional pipeline from Anjar to Palanpur which will have onward connectivity to the Mehsana Bathinda pipeline to serve the Western and the Northern gas markets of India.
7	**Dhamra LNG Terminal**	2023	6.8 (5)	It is strategically located to cater to energy requirements of Eastern India states like Assam, Bihar, Odisha, Uttar Pradesh, and West Bengal. Connected to Urja Ganga Gas Pipeline network. Long-term tolling agreements with IOCL and GAIL. Has provision to expand to 10 MMTPA
8	**Chhara LNG Terminal**	2025	6.8 (5)	Greenfield terminal with tie-in connectivity by GSPL at Lothpur connecting to national grid via the GSPL gas grid Expandable up to 10 MMTPA.

Upcoming/ under construction LNG terminals

Several land-based terminals and FSRUs are in various stages of planning and implementation at Jaigarh, Kakinada, Karaikal and Gopalpur that will add 24.2 MMTPA capacity. Additionally, Dabhol terminal is planning capacity expansion by 5.0 MMTPA and Petronet LNG has commissioned an additional 5 MTPA at its Dahej terminal. With these developments a total regassification capacity of ~77 MMTPA will be available as and when the terminals gets operational. A global LNG oversupply expected between 2028 and 2030 will likely lower prices, creating a strategic opportunity for India.

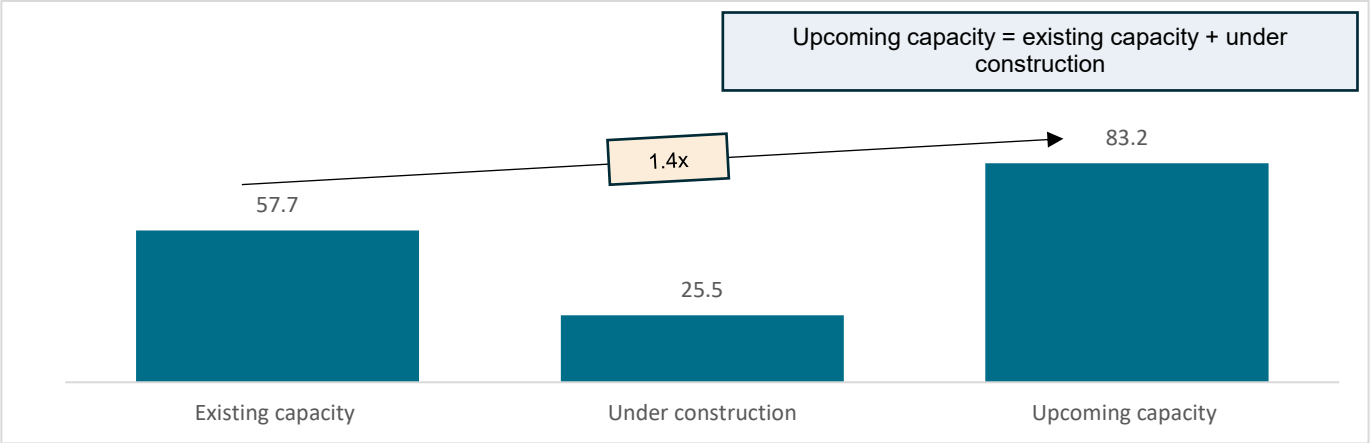
Figure 43: Upcoming/ Proposed/ under construction regas Terminal in India

S.No.	Terminal Name	Capacity BCM/y(MMTPA)
1	Swan LNG, Jaffrabad (FSRU)	6.8 (5)
2	Petronet LNG, Gangavaram.	6.8 (5)
3	AG&P Karaikal	5.4 (4)

S.No.	Terminal Name	Capacity BCM/y(MMTPA)
4	Petronet LNG, Gopalpur	5.4 (4)
5	Crown LNG Kakinada (FSRU)	9.8 (7.2)
	Total	**34.2 (25.5)**

Source: PNGRB

Figure 44:Existing regas capacity vs Upcoming capacity (MMTPA)

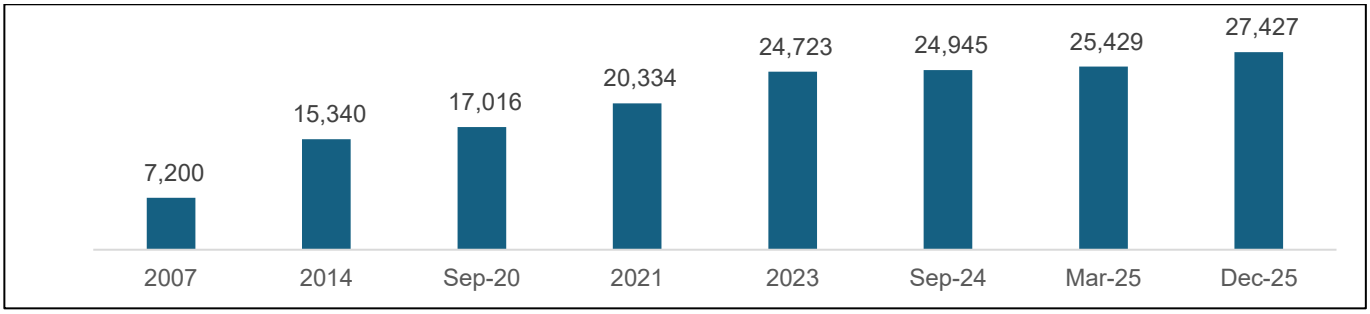


Source: PNGRB 2040 Report, PNGRB HLEC Report

Natural gas pipeline infrastructure in India

The expansion of the pipeline network holds significant implications for India's energy landscape. It aligns with the national objective to increase the share of natural gas in the energy mix, supporting efforts to reduce dependence on coal and oil. Furthermore, it facilitates cleaner energy for industries, transportation, and households, while also contributing to improved air quality and lower carbon emissions. The development of this infrastructure is a critical step in strengthening energy security, promoting regional connectivity, and supporting India's long-term transition to a sustainable and resilient energy system.

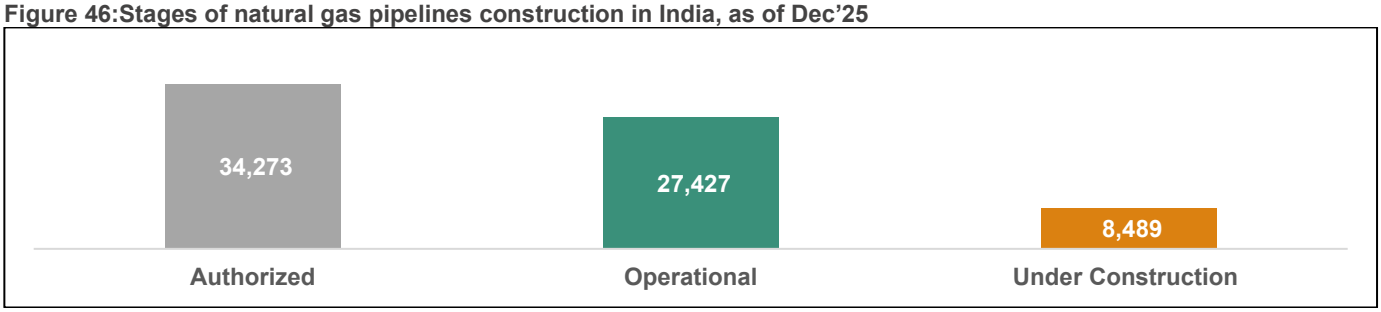
Figure 45: Growth of natural gas pipeline infrastructure in India, km



Source: PNGRB

The natural gas transmission pipeline network in India has experienced significant growth over the past two decades, reflecting the country's increasing focus on expanding clean energy infrastructure. In 2007, the total length of the natural gas transmission pipeline stood at approximately 7,200 km. This length more than doubled by 2014 to 15,340 km, as India began ramping up investments in gas infrastructure to reduce its dependence on coal and liquid fuels. The expansion continued at a steady pace, reaching 17,016 km by September 2020, 20,334 km in 2021, and further to 22,306 km by September 2022. By 2023, the network extended to 24,723 km, followed by a slight increase to 24,881 km as of March 2024 and 24,945 km as of September 2024. As of September 2025, the total length of operational natural gas pipeline stood at 25,923 km with 9,954 km under various stages of construction.

Figure 46:Stages of natural gas pipelines construction in India, as of Dec'25



Source: PNGRB

Figure 47: Natural gas pipelines in India (as of Feb 2026)

Details	Type	Length (KM)	Total (KM)
Authorized Natural Gas pipelines	Common Carrier	32,702	34,273
	Tie In Connectivity	792	
	Dedicated	779	
Operational Natural Gas pipelines	Common Carrier	25,925	27,427
	Tie In Connectivity	291	
	Dedicated	653	
	Sub Transmission Pipeline	558	
Under Construction natural gas pipelines	Common Carrier	7,301	8,489
	Tie In Connectivity	508	
	Dedicated	122	
	Sub Transmission Pipeline	558	

Source: PNGRB

Figure 48: Key Fully Operational Major Natural Gas pipelines in India (as of Feb 2026)

S. No.	Pipeline network	Entity	Operating Length (KM)	Authorized Capacity (MMSCMD)	Capacity utilization (%) (As of Feb 2026)	States passing through
1	Hazira-Vijaipur-Jagdishpur (HVJ)	GAIL (India) Ltd	6,732	111.3	76%	UP, MP, RJ, GJ, HR, DL & UK
2	East west Pipeline	PIL Infrastructure	1,485	85	41%	AP, GJ, MH, TS & KA
3	KG Basin Network	GAIL (India) Ltd	867	16	15%	AP

S. No.	Pipeline network	Entity	Operating Length (KM)	Authorized Capacity (MMSCMD)	Capacity utilization (%) (As of Feb 2026)	States passing through
4	High (HP) and Low Pressure (LP) - Gujarat Gas Grid	GSPL	2,738+57	44.8 (HP)+12 (LP)	78% (HP) 48%(LP)	GJ
5	Gujarat Regional network	GAIL (India) Ltd	585	8.3	34%	GJ
6	Dadri Bawana Nangal	GAIL (India) Ltd	998	31	25%	PB, HR, UP, UK, DL & HP
7	Shahdol Phulpur	RGPL	304	3.5	25%	MP & UP
8	Assam Regional Network	GAIL	8	2.5	0	AS
9	Cauvery Basin Network	GAIL	242	4.3	31	PY & TN
10	Dahej- Uran-Panvel- Dabhol	GAIL	943	22.5	113	GJ, MH, DD
11	Assam Natural Gas Pipeline	AGCL	107	2.4	65	AS
12	Chainsa- Jhajjar-Hissar	GAIL	440	35	15	HR, RJ & DL

Source: PNGRB

Figure 49:Partially Commissioned Common Carrier Pipelines

S. No.	Pipeline network	Entity	Operating Length+ U/C length (KM)	Authorized Capacity (MMSCMD)	Capacity utilization (%) (As of Feb 2026)	States passing through
1	Jagdishpur-Haldia-Bokaro-Dhamra (JHBDPL)	GAIL (India) Ltd	3,279 + 267	23	54%	UP, BR, JH, WB, OD & AS
2	Mehsana Bhatinda	GIGL	1,318 + 624	83.1	6%	GJ, RJ, HR & PB
3	Mallavaram - Bhopal - Bhilwara – Vijaipur	GITL	365 + 1,517	78.3	3%	AP, TG, MH, MP, RJ& GJ
4	Kochi-Koottanad Bangalore-Mangalore	GAIL (India) Ltd	675 + 429	16	37%	KL, TN, KA & PY
5	Ennore-Tuticorin	IOCL	1,094 + 337	84.7	7%	TN, KA, AP & PY
6	North-East Natural Gas Pipeline Grid (NEGG)	IGGL	392 + 1,296	5.8	0%	AS, MZ, MN, AR, TR, NL, ML, SK & WB

Source: PNGRB

India's rapidly expanding trunk pipeline network forms the foundational backbone of the country's natural gas ecosystem, enabling the seamless flow of gas from LNG regasification terminals located at key coastal ports and from domestic production sources to inland consumption centers. Over the past decade, the government has aggressively accelerated national pipeline development to improve regional connectivity and support gas-based economic growth. As a result, the network is increasingly penetrating previously underserved and landlocked geographies, thereby widening the footprint for natural gas adoption.

Figure 50:Major under construction Natural Gas Pipeline Networks in India, KM

SN	Pipeline network	Entity	U/C length (KM)	Authorized Capacity (MMSCMD)	States passing through	Target date of completion
1	Mumbai - Nagpur - Jharsuguda	GAIL	1,702	16.5	MH, MP, CG & OD	Oct – 24
2	Kakinada-Vijayawada - Nellore	IMC	667	18	AP	-
3	Ennore – Nellore	GTIL	220	36	AP & TN	-
4	Kanai - Chhata - Panitar	HPPL	317	19.2	WB	-
5	Hazaribagh-Ranchi	IOCL	71	1.03	JH	Feb-26
6	Gurdaspur-Jammu	GAIL	152	3.1	JK & PB	Jul-26
7	Srikakulam-Angul	GAIL	670	6.65	AP	-
8	Kochi-Kanyakumari-Thoothukudi Natural Gas Pipeline (KTPL).	IOCL	425	6.84	Kerala & TN	Mar-29

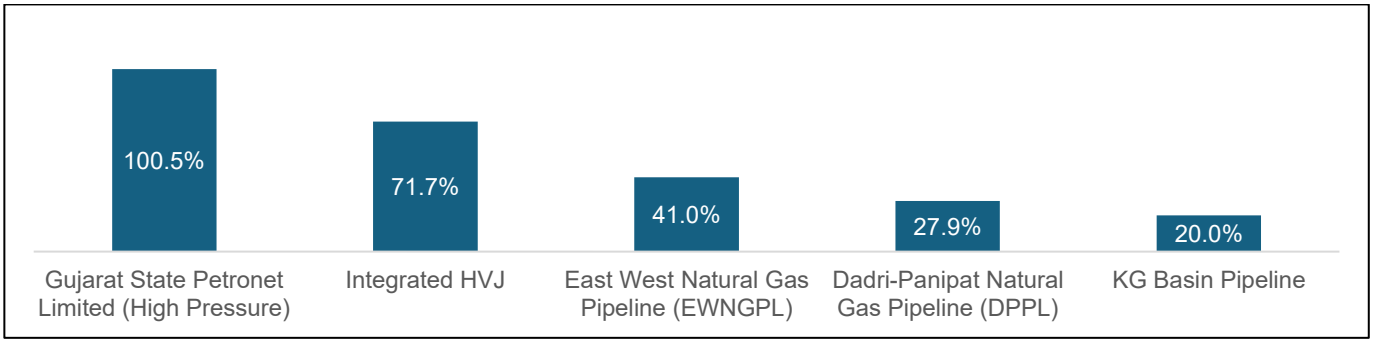
Source: PNGRB

Utilization of natural gas pipelines in India

Pipeline capacity utilisation is closely tied to the overall consumption of natural gas within the economy. The consumption, in turn, depends upon various factors such as availability and affordability of natural gas, commercial viability against competing fuels, non-discriminatory access to the pipeline network, tax structure, and confidence of the potential customers on continuous availability of natural gas at affordable prices and on fair terms.

Several trunk pipelines face challenges such as lower utilisation, absence of anchor customers, limited demand growth, or slow customer conversion since their commissioning.

Figure 51: Utilization of major natural gas pipelines in India, by %



Source: PNGRB Vision 2040, Crisil Analysis

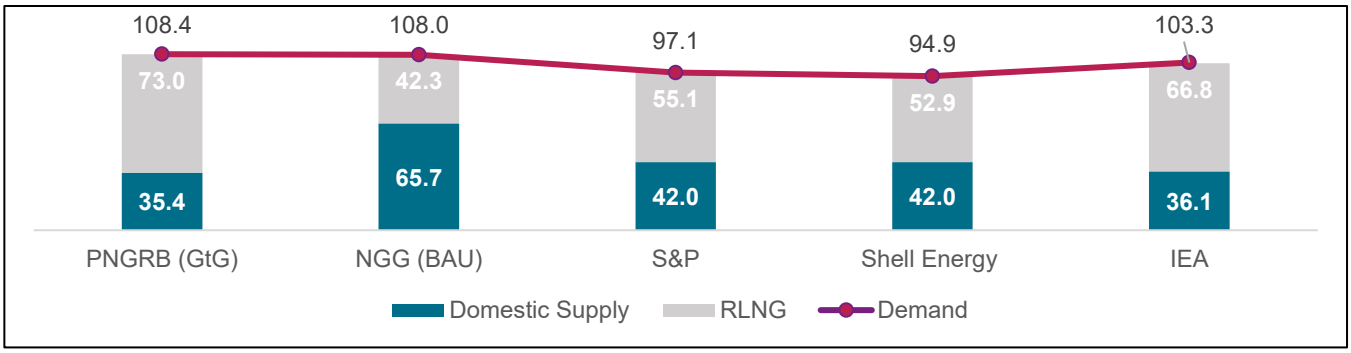
The utilization of major cost-plus pipelines in FY 2025 (till Dec'24) has ranged between 20% and ~100%. Four out of the five major pipelines are operating below the required 75% capacity threshold. Due to lower-than-expected volume throughput, cost-plus pipeline operators are struggling to achieve projected revenue targets. This shortfall adversely impacts their financial health, and their ability to achieve the expected 12% post-tax RoCE.

PNGRB vision 2040 HLEC report highlights the importance of effective pipeline utilization and recommends the following:

Online real time bulletin board	• As a first step to ensure efficiency, PNGRB should mandate a real-time online bulletin board for gas pipeline entities, integrated with SCADA systems, to provide continuous and transparent information on pipeline capacity, flows and infrastructure utilization. • The initiative is aimed at improving market transparency, enabling non-discriminatory access to information, facilitating dynamic scheduling and optimising pipeline utilisation, while supporting informed decision-making by shippers and consumers.
CGD network sharing mechanisms for infrastructure optimization	• PNGRB should enable network sharing among CGD entities and large consumers to optimize utilization of existing pipeline infrastructure and avoid duplication of capital expenditure. • The framework is intended to promote flexible, market-driven utilization of pipeline assets while ensuring fair and transparent compensation for infrastructure owners. • In addition, permitting the sharing of MWP credits for common infrastructure is expected to incentivize asset optimization, reduce redundancy and support the faster development of an integrated and efficient CGD network.

Indian natural gas demand supply outlook scenario – till 2030

Figure 52:Natural gas demand-supply balance for 2030 as per different estimates (in BCM)



Source: 1. Paper titled 'India's natural gas demand projection for 2030-2040' by PNGRB –Good to Go (GtG) scenario, 2.National Gas Grid Technical Assessment report prepared by ICF and accepted by PNGRB in 2021- split into Business as Usual (BAU) and Accelerated Gas

Usage (AGU), 3.India gas market report by IEA (Outlook to 2030), 4. SP Global commodity insights, 5.Shell Energy, 6. IEA Gas market report – India 2025

Table 16: Projected gas demand in India till FY30 as per other studies

Demand	in MMSCMD	in BCM
PNGRB (GtG)	297	108.3
NGG (BAU)	296	108.0
S&P	266	97.0
Shell Energy	260	94.8
IEA	283	103.2

According to PNGRB's Natural Gas Projections – 2030 and 2040, India's overall natural gas demand is projected to expand steadily under both the Good-to-Go (GtG) and Good-to-Best (GtB) scenarios, reflecting the nation's transition toward cleaner energy. The GtG case assumes moderate infrastructure and policy acceleration, while GtB represents a more aggressive energy-transition pathway with deeper gas penetration across sectors.

As per PNGRBs, Good to Go (GtG) and Good to Best (GtB) scenarios, CGD segment will emerge as the primary growth driver of demand. CGD consumption is projected to increase from about ~14.9 BCM in FY 25 to ~31.75 BCM under GtG (CAGR ~16%) and ~45.98 BCM under GtB (CAGR ~25%) by 2030, supported by large-scale CNG and PNG network expansion, fuel-switching mandates in urban and industrial clusters, and growing adoption in the transport and residential sectors. By 2040, PNGRB expects CGD demand to rise further to ~78.832 BCM (GtG) (CAGR ~12%) and ~98.9 BCM (GtB) (CAGR ~13%), accounting for a rising share of total national gas consumption.

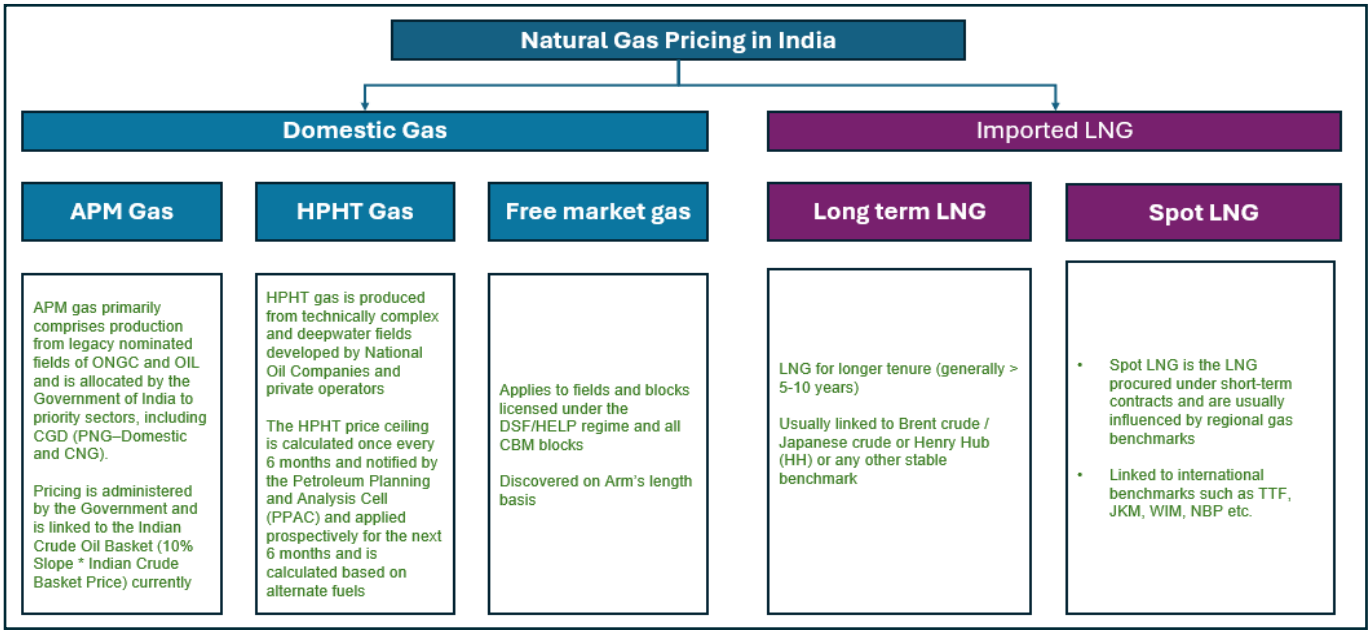
Overall, PNGRB's analysis underscores that CGD will continue to anchor India's gas-market expansion, driven by infrastructure build-out, regulatory support, and rising consumer adoption—positioning natural gas as a key bridge fuel under both GtG and GtB pathways.

Gas Pricing Policy mechanism of important domestic gas sources and imported LNG

Gas pricing in India is a multifaceted system influenced by various factors, including international benchmarks, domestic production and government policies. Natural gas pricing in India is characterized by a dual pricing structure, consisting of regulated domestic gas pricing (APM / HPHT) for locally produced gas and market linked pricing for imported natural gas (LNG).

Domestic gas pricing in India is a critical aspect of the country's energy policy, as it influences the cost of natural gas for various sectors, including CGD, fertilisers, and power generation. The pricing mechanism for domestic natural gas has evolved over the years, with the government playing a significant role in regulating prices to balance the interests of producers, consumers, and the broader economy.

Figure 53: Natural gas pricing in India



The major pricing policies dictating the pricing of gas in India is mentioned below:

Domestic Natural gas pricing – regulated

Domestic gas prices (APM and HPHT) in India are regulated by the government under policies administered by the Ministry of Petroleum and Natural Gas, with price calculations and data monitoring conducted by the Petroleum Planning and Analysis Cell (PPAC).

Administered Pricing Mechanism (APM) – Domestic legacy onshore gas fields

APM gas primarily comprises production from legacy nominated fields of ONGC and OIL and is allocated by the Government of India to priority sectors, including CGD (PNG–Domestic and CNG).

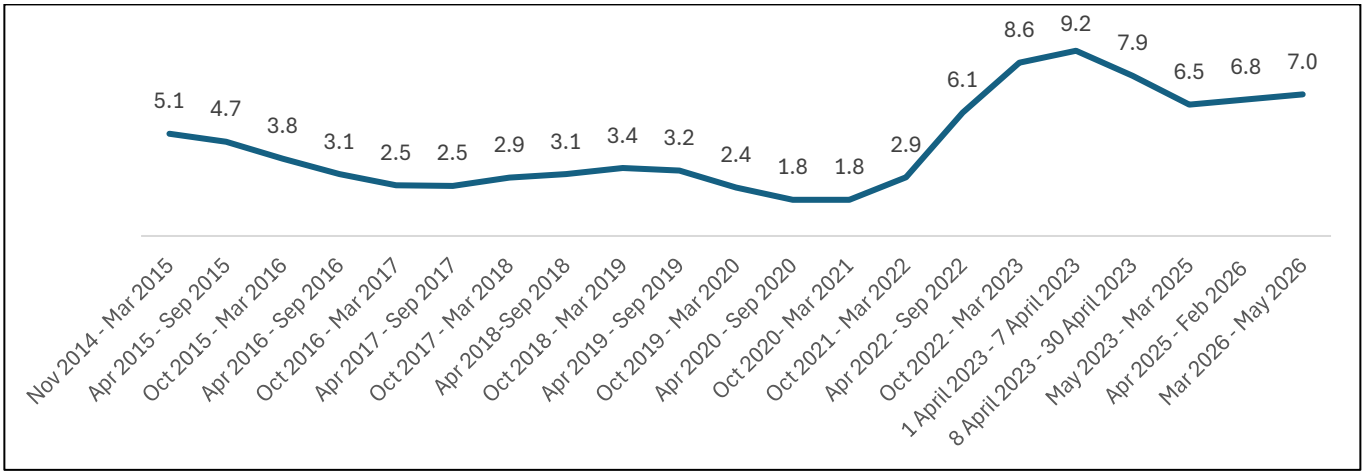
Pricing Formula: Pricing is administered by the Government and is linked to the Indian Crude Oil Basket (10% Slope * Indian Crude Basket Price) currently.

For the gas produced by ONGC & OIL from their nomination fields, the APM price is subject to a floor and a ceiling. The initial floor and ceiling prices shall be $4/MMBTU and $6.5/MMBTU respectively. The ceiling remained unchanged for the first two years (FY 2023-24 and 2024-25) and thereafter an escalation of $0.25/MMBTU has been applicable for each year. The current ceiling price for APM is $7/ MMBtu.

Subject to the provisions of respective Production Sharing Contracts (PSCs), this APM price, so declared by PPAC, would also apply where PSCs of NELP Blocks or Pre NELP blocks provide for Government's approval of prices. Floor and ceiling shall not apply to such APM price for gas produced from fields under these regimes

Gas produced from new well or well intervention, known as the New Well Gas (NWG) in the nomination fields of ONGC & OIL, would be allowed a premium of 20% on these APM prices. This gas would also be subject to Government's policy related to commercial utilization of natural gas. This gas shall be allocated separately from the APM gas by MoPNG. The allocation shall be done for a period of 5 years with suitable take or pay obligation, as notified by MoPNG or as contractually agreed to. The modalities for recognition of new wells or well intervention shall be finalized by Directorate General of Hydrocarbon and approved by MoPNG within a period of three months

Figure 54: APM gas pricing in India, $/MMBtu



Source: PPAC

However, there are constraints around APM gas supply as the production from the nominated fields continues to decline. For instance, in October 2024, GAIL (nodal agency for gas supply) reduced the APM gas allocation for the CNG segment by 20% of the CNG requirement with further cuts of 20% coming in April 2025. In effect, the supply from APM sources to CGD companies has reduced by almost 50% in last one year. CGD entities must adopt strategic pricing, supply diversification, and operational efficiencies to navigate this transition while continuing to drive city gas penetration and clean energy adoption.

New Well Gas (NWG)

New Well Gas refers to the incremental gas produced by state owned companies like ONGC and OIL from existing nomination fields by drilling new wells. NWG is priced at 12% of the Indian crude oil basket price. From Q1, FY26 domestic natural gas allocation from NWG for CNG and D-PNG segments will be done on a two-quarter advance basis. These measures will ensure a stable, affordable, and transparent domestic gas supply system for the critical transport and domestic segments under the CGD network**.**

High Pressure, High Temperature (HPHT) Gas

HPHT gas is produced from technically complex and deepwater fields developed by National Oil Companies and private operators. These fields were incentivized through a premium pricing regime to improve investment viability.

The HPHT price ceiling is calculated once every 6 months and notified by the Petroleum Planning and Analysis Cell (PPAC) and applied prospectively for the next 6 months. Price is calculated in US $/MMBtu on Gross Calorific Value (GCV) basis and shall be trailing four quarters data with one quarter lag.

Pricing Formula: The HPHT price ceiling is calculated as the lowest of:

(i) Landed price of imported fuel oil
(ii) Weighted average import landed price of substitute fuels
(iii) Landed price of imported LNG

Figure 55: HPHT price ceiling calculation

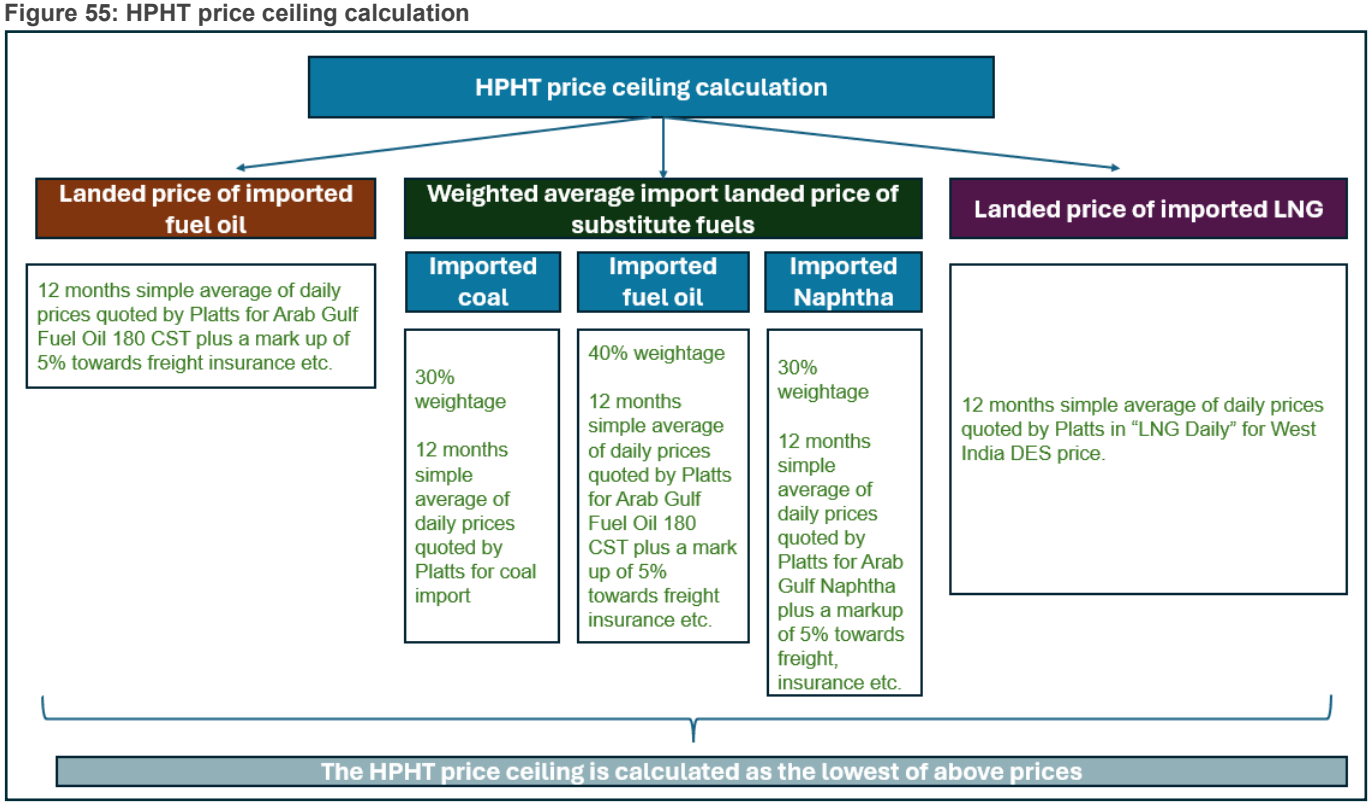
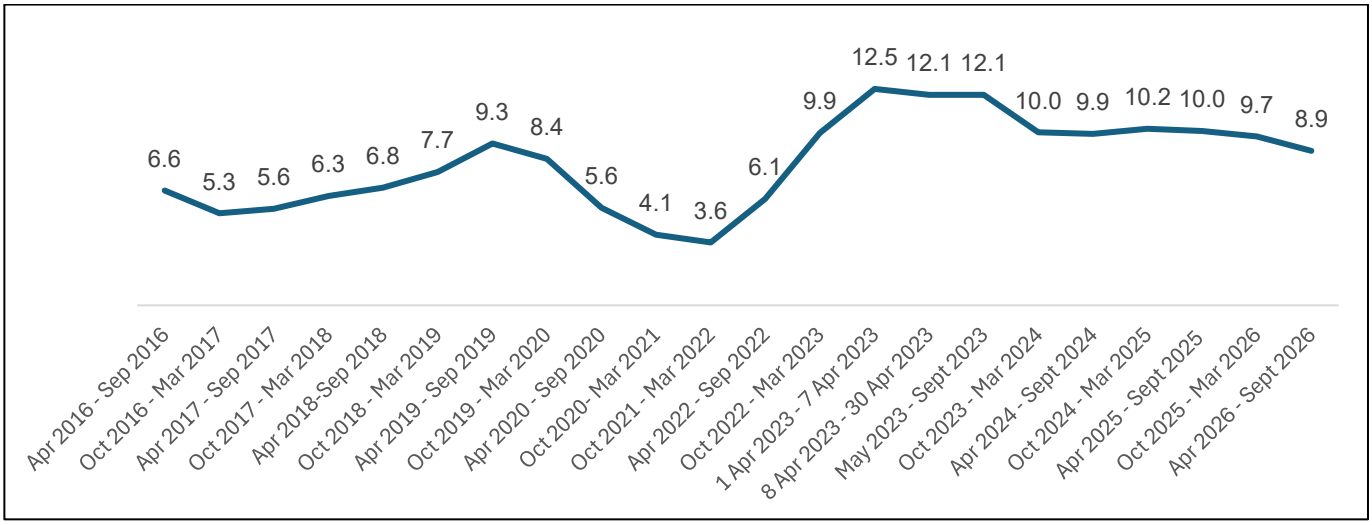


Figure 56: HPHT gas price ceiling pricing in India, $/MMBtu



Source: PPAC

Kirit Parikh committee

As India moves towards its goal of a gas-based economy with goal of increasing the share of natural gas in primary energy mix to 15% by 2030, one of the most important aspects to be monitored is the pricing of natural gas. Gas in India, as in the rest of the world, is very price sensitive, and has been subject to significant recent price volatility. The domestic pricing of gas is a complex endeavour that requires balancing the twin goals of pricing for the long-term viability of a gas-based economy, and reasonable and affordable pricing for consumers.

With close to half of gas consumption coming through imports, the balance of international pricing of gas and the domestic pricing is critical to promote investment in domestic production leading to many more discoveries and increased production.

Vide Office Memorandum dated 30.08.2022, Government of India constituted an Expert Committee under the Chairmanship of Shri Kirit Parikh and comprising of experts from different fields to critically examine the New Domestic Natural Gas Pricing Guidelines, 2014 and Government notification dated 21.03.2016 on marketing including pricing freedom for the gas to be produced from discoveries in Deepwater, Ultra-deep-water, High Pressure High-Temperature areas.

The main objective of the committee was to:

- ✓ Review of the current domestic natural gas pricing regime
- ✓ Examine issues related to ensuring fair price to the end-consumer
- ✓ Suggest market-oriented, transparent and reliable pricing

Background

India's earlier gas pricing system was based on international benchmarks, which led to

- High volatility in domestic gas prices
- Increased burden on consumers (especially CNG and PNG prices)
- Inflationary pressure on economy

Figure 57: Key recommendations of the Kirit Parikh Committee

Pricing – short term	• For APM gas, a floor price ($4/MMBtu) and a ceiling price (initially US$6.5/ MMBtu) for current gas production from the APM fields of ONGC and OIL. Further, it has recommended annual $0.5/ MMBtu increase in ceiling price. • In addition to the floor and ceiling and pricing mentioned above, a 20% premium for production from a new well or well intervention in nominated fields. It has also suggested marketing freedom for this incremental gas.
Pricing – long term	• Liberalisation of APM price from Jan 2027, by removing floor/ceiling, and linking the price to 10% of the crude oil price slope. • For HPHT gas, removal of current ceiling price but from Jan 2026 (so that most of current HPHT contracts are not impacted)
Allocation	• The committee has retained priority for CNG and domestic PNG. However, it has also recommended that the Government develop a staggered plan for exiting priority allocation on the lines of exit from the crude oil allocation, which has been done from October 1, 2022, onwards.
Others	• The benefit of the decrease in APM gas price is to be passed on to consumers. The Government may advise PPAC to maintain a portal for monitoring consumer prices with detailed break-up. • The committee has also recommended bringing gas under the GST regime. Further, till the time the GST regime is implemented, the Government may consider moderating the Central Excise duty rate on CNG to reduce the burden of higher natural gas costs on the consumers.

The above are recommendations of the committee; however, it remains to be seen if complete marketing and pricing freedom for APM and HPHT and GST are going to be implemented as per the recommendations of the committee.

Figure 58: Implications of the recommendations of the Kirit Parikh Committee

Consumers	Producers
• The lowering of the APM gas prices would offer benefit to city gas companies in the near to medium term. Over the longer term, deregulation and free market pricing of APM could raise their gas costs. • From the consumer's perspective lower gas prices are a positive. The reduction in gas prices should result in a cut in CNG and PNG (domestic) prices by the CGD players and would improve the conversion economics for the end consumers, thereby stimulating demand. • Lower domestic gas prices would also reduce the GoI's subsidy burden for the fertilizer sector. Also, lower domestic gas prices would lead to a more competitive cost of generation for the domestic gas-based power generation projects.	• The floor and ceiling prices provide healthy gas realization to Upstream producers with graded increases over the next 5 years moving to full decontrol of from January 1, 2027. • Additionally, removal of the cap on prices for difficult fields from January 1, 2026, provides impetus for development of challenging fields
Inclusion of natural gas under GST would reduce the incidence of stranded taxes. Overall, the recommendations of the Kirit Parikh Committee on gas pricing are pragmatic and balanced, taking in view the interests of both consumers and producers of gas.	

Marketing and Pricing Freedom Gas

The natural gas sector in India has historically been characterized by significant government regulation in pricing and allocation, particularly under the Administered Price Mechanism (APM). However, with the need to enhance domestic production and attract investment in complex gas fields, the Government of India introduced reforms aimed at liberalizing the sector. One of the most significant reforms in this direction is the Marketing and Pricing Freedom (MPF) regime, introduced in 2016. This policy represents a critical step toward transitioning India's gas market from a regulated framework to a more market-oriented system.

- Applies to fields and blocks licensed under the DSF/HELP regime and all CBM blocks
- Also applies to NELP/pre-NELP, nomination blocks where field development plans were approved after 28 Feb 2019, and discoveries in northeastern basins which started producing after July 2018

Concept of Marketing and Pricing Freedom

The Marketing and Pricing Freedom regime allows eligible gas producers to:

(i) Freely market natural gas to any consumer and (ii) Determine prices based on market conditions

Enables sellers to sell gas through:

- Competitive bidding processes
- Trading platforms such as the Indian Gas Exchange

The regime aims to promote price discovery, transparency, and competition, thereby improving efficiency in the natural gas market.

Policy background and introduction

The marketing and pricing freedom regime was introduced in 2016 by the Ministry of Petroleum and Natural Gas (MoPNG) under the policy titled:

"Marketing and Pricing Freedom for New Gas Production from Deepwater, Ultra-Deepwater and High Pressure-High Temperature (HPHT) Areas."

This reform was necessitated by:

- Declining domestic gas production
- High dependence on LNG imports
- Limited investment in technically challenging fields

The policy sought to address these issues by offering market-linked incentives to producers.

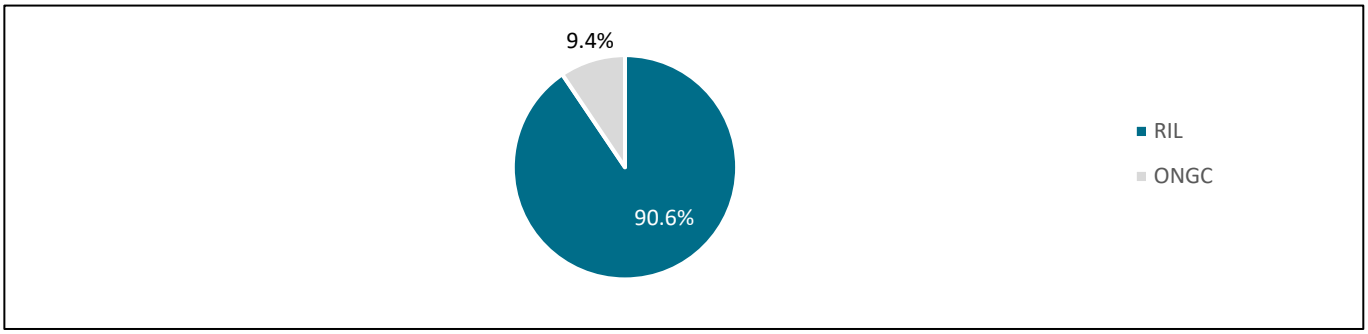
Coal Bed Methane (CBM)

CBM, an unconventional hydrocarbon, is viewed as a vital resource for augmenting India's energy supply and reducing reliance on conventional fossil fuels. The current production of CBM in India is ~2.22 MMSCMD in FY25. There are eight major CBM blocks which are situated in the states of Jharkhand, West Bengal and Madhya Pradesh. India being the fifth-largest holder of proven coal reserves, the prognosticated CBM reserves are ~7,123 MMSCMD with the largest reserves in the eastern region of India. The major producers of CBM in India include EOGEPL, GEECL, RIL and ONGC.

There have been several frameworks and policies such as HELP, OALP, marketing and pricing freedom and special CBM bidding rounds that have been introduced to promote the exploration and production of CBM in India. However, the CBM sector in India is still in a very nascent stage and faces several technical, geological and socio-economic challenges which hinder the growth in the production of CBM. The government has set a target to boost CBM production to 5.0 MMSCMD by 2027-28.

As of Dec 2025, 10 CBM auctions have been conducted of which RIL held 4 auctions whose volume total was ~1.1 BCM (~3.02 mmscmd) and ONCG held the rest with total volume of ~ 0.11 BCM (~0.315 mmscmd).

Figure 59: CBM auctions and their volume, BCM, as of Dec 2025



Source: DGH

The CBM gas is auctioned through DGH empaneled agencies and through exchange and is given complete marketing and pricing freedom as per the government and pricing policy to encourage higher production of the fuel.

Historical pricing evolution

Figure 60: Historical gas pricing evolution

Pre-2014 administered pricing	Before 2014, India followed an Administered Price Mechanism (APM) in which the government fixed natural gas prices supplied by national producers such as the Oil and Natural Gas Corporation and Oil India Limited. **Characteristics:** • Fixed government-determined prices

	• Prioritized allocation to fertilizer and power sectors • Limited linkage with international gas markets Typical price range: $4.2 per MMBtu
2014 Domestic Gas Pricing Reform	In 2014, the government introduced a market-linked pricing formula based on international gas price benchmarks. The formula linked domestic gas prices to a weighted average of gas hub prices from major global markets, including: • Henry Hub (United States) • National Balancing Point (United Kingdom) • Alberta Gas Hub (Canada) • Russia Gas Prices Key features: • Price revision every six months • Benchmark-linked pricing • Intended to encourage domestic exploration and production Typical domestic price range (2014–2022): $2 – $6 per MMBtu
2023 Domestic Gas Pricing Reform	A significant reform in 2023 modified the pricing framework as per the Kirit Parikh recommendations. New system features: • Domestic gas prices linked to 10% of the Indian crude oil basket price • Price ceiling introduced to protect consumers • Price floor introduced to support upstream producers Current structure: **Parameter** **Value** Price formula 10% of Indian crude basket Price floor $4/MMBtu Price ceiling $6.5/MMBtu incremented every year by $0.25/MMBtu **Impact**: Stabilized domestic gas prices Reduced volatility caused by global gas market shocks

Figure 61:Snapshot of consolidated upstream gas pricing in India

Domestic gas price with ceiling (APM)	• Since April 2023, linked to 10% of the Indian crude oil basket • A floor of USD 4/MMBtu and ceiling of USD 6.5/MMBtu applies (ceiling to be adjusted upwards by USD 0.25/MMBtu annually) • Applies to nomination fields of ONGC and Oil India, NELP and pre-N ELP contracts which required government intervention
HPHT – Deepwater/ Ultra deepwater price ceiling with marketing freedom	• Introduced in January 2016 • Pegged to the price of alternative imported fuels • Applies to deepwater and HP/HT fields which were not producing as of 1 Jan 2016

	• Examples include Reliance-BP's KG-D6 fields (R Cluster, Satellites Cluster, MJ) and ONGC's KG-D5 • MoPNG allows upstream producers to sell higher of 500 million standard cubic meters or 10% of annual production per contract area per year through authorized gas exchanges.
Marketing and pricing freedom	• Applies to fields and blocks licensed under the DSF/HELP regime and all CBM blocks • Also applies to NELP/pre-NELP, nomination blocks where field development plans were approved after 28 Feb 2019, and discoveries in northeastern basins which started producing after July 2018

Imported LNG pricing

India imports around ~50% of its natural gas requirements as LNG, making international LNG pricing critical for the country's gas market.

Major LNG importers include:

- Petronet LNG Limited
- GAIL (India) Limited
- OMCs - Indian Oil Corporation, BPCL, HPCL.
- Shell India Limited
- AMNS, Torrent Power etc.

LNG is generally priced under **long term** and **short term (spot)**. In India, the pricing is generally as follows:	
Long term LNG pricing	**Spot LNG**
Usually linked to Brent crude / Japanese crude or Henry Hub (HH) or any other stable benchmark	The spot LNG is usually linked to global price benchmarks like Brent, JKM, WIM, TTF etc.

The pricing dynamics of each of the types of contracts are as follows:

Long Term contracts

1.Oil-Indexed LNG Contracts

Most of India's long-term LNG contracts follow **oil-indexed/ Brent crude linked pricing**, where LNG prices are linked to crude oil prices.

Typical formula: LNG price = slope × crude oil/ Brent crude price + constant

2.Henry Hub linked contracts

LNG in India is also linked to the Henry Hub prices as large volumes of Indian LNG is linked to the physical Henry Hub in the United States of America (USA). The move from Oil indexed pricing to gas hub based pricing is a major transformation.

*Typical formula: LNG price = slope * Henry Hub price + fixed fee*

In addition to the above formula, freight charges, insurance and marine charges too are added

Table 17: India's Long Term LNG Contracts

Supplier	Buyer	Signing Year	Quantity BCM (MMTPA)	Tenure (Years)	Supplies Start	Price Benchmark
BP/ JERA	Torrent Power	Jun-25	0.56 (0.41)	10	Jan-27	Brent
Trafigura	IOCL	Aug-25	0.54 (0.4)	4	Aug-25	Henry Hub
ADNOC	HPCL	Aug-25	0.68 (0.5)	10	-	-
ADNOC	IOCL	Feb-25	1.63 (1.2)	14	Jan-26	Brent
Total Gas	GSPC	Feb-25	0.54 (0.4)	10	Jan-26	Henry Hub
Shell	AMNS	May-24	0.68 (0.5)	10	Jan-27	Brent
ADNOC	IOCL	Aug-24	1.36 (1)	15	Jan-29	Brent
Equinor	DFPCL	Feb-24	0.88 (0.65)	15	Jan-26	Henry Hub
Qatar Energy	Petronet LNG	Feb-24	10,20 (7.5)	20	May-28	Brent
ADNOC	GAIL	Jan-24	0.72 (0.53)	10	Jan-26	Brent
Vitol	GAIL	Jan-24	1.36 (1)	10	Jan-26	Brent
Total Gas	IOCL	Jul-23	1.09 (0.8)	10	Jan-26	Brent

Note: AMNS stands for Arcelor Mittal Nippon Steel, DFPCL Stands for Deepak Fertilizer and Petrochemicals Corporation Limited
Source: Crisil Intelligence

Spot LNG Pricing

In addition to long-term contracts, India purchases LNG in the spot market.

Spot LNG is the LNG procured under short-term contracts and are usually influenced by regional gas benchmarks such as:

Japan Korea Marker (JKM)	The spot LNG price for the South Asian market is determined by the Platts JKM, a key benchmark for Asian spot LNG prices. JKM reflects the spot market value (in US$/MMBtu) of LNG cargoes delivered ex-ship (DES) to major Asian markets, including Japan, South Korea, China, and Taiwan—regions that account for a significant share of global LNG demand.
West India Marker (WIM)	Pricing benchmark designed to reflect the spot LNG prices delivered to India's west coast regasification terminals
Title Transfer Facility (TTF)	Europe's main natural gas trading benchmark; widely used for European gas and LNG pricing

Conclusion

In summary, Natural gas pricing in India operates through a hybrid system consisting of **regulated domestic gas prices and market-linked LNG import prices**. Domestic gas prices are determined by government-approved formulas linked to crude oil benchmarks and other alternative fuels, while imported LNG is priced through long-term oil-indexed contracts and volatile spot market transactions. As India expands its gas infrastructure and LNG imports, pricing mechanisms are gradually evolving toward a more market-oriented structure.

Underground Gas Storage

Strategic cum commercial gas storage refers to the maintenance of natural gas reserves designed to act as a buffer against supply disruptions and price volatility. It is important to understand that these reserves are not intended to achieve full energy self-sufficiency or eliminate import dependence. Rather, they serve as a critical risk management tool to mitigate the vulnerabilities associated with relying on external energy sources.

India's current gas storage capacity covers only ~12 days of consumption in LNG tanks—rendering it vulnerable to supply disruptions and price volatility. Internationally, storage infrastructure serves as a strategic reserve and a market stabiliser. It is of utmost importance that India must explore a mix of underground, LNG tank-based, and pipeline-based storage solutions to enhance its resilience, especially as import dependence grows

Strategic cum commercial gas storage plays a crucial role in ensuring energy security and economic stability by providing a continuous supply of natural gas during disruptions caused by technical failures, geopolitical tensions, or extreme weather, thereby supporting smooth economic operations. It also helps stabilize prices by storing surplus gas during low-demand periods and releasing it during demand spikes or price surges, preventing sharp cost increases for consumers and industries.

Table 18: Key benefits of gas storage

SN	Category	Remarks
1	**Energy Security & Supply Reliability**	• Ensures uninterrupted gas supply during demand surges • Provides buffer against LNG import disruptions and geopolitical shocks • Strengthens emergency preparedness through reserve availability • Reduces dependence on real-time imports
2	**Market Efficiency & Price Stability**	• Reduces gas price volatility • Enables storage during low-price periods and withdrawal during high-price periods • Improves demand-supply balancing • Enhances operational flexibility across the gas network • Optimizes pipeline and LNG terminal utilization
3	**Trading Ecosystem & Gas Market Development**	• Improves liquidity on Indian Gas Exchange • Strengthens transparent price discovery • Enables time arbitrage opportunities • Supports advanced contracts (seasonal, balancing, forward products) • Facilitates growth of a mature gas-based economy

Additionally, strategic reserves give governments the ability to respond effectively to external market pressures, ensuring affordable and reliable gas supply. For rapidly growing economies like India, these reserves enhance energy resilience, facilitate the transition to a gas-based economy, and promote long-term stability and growth, ultimately building resilience, maintaining supply continuity, and enabling better market management amid uncertainties.

Table 19: How gas storage can help India and benefit IGX

For India	Energy security, supply reliability, reduced import risk, price stability, support for gas-based economy
For IGX	Higher liquidity, better price discovery, time arbitrage opportunities, sophisticated trading products, stronger benchmark development

Natural Gas as a cleaner alternative to support India's energy transition

The environmental argument for a gas-based economy is rooted in its chemical efficiency and lower emission profile compared to coal and furnace oil.

A. Carbon Dioxide (CO_2) Emissions

Natural gas emits roughly 45-50% less CO_2 than coal and 25-30% less than oil per unit of energy produced.

- Coal: ~95-100 kg CO_2 per MMBtu

- Natural Gas: ~53 kg CO_2 per MMBtu.

B. Particulate Matter and Air Quality

Unlike coal or diesel, natural gas combustion produces negligible amounts of sulfur dioxide (SO_2) and near-zero particulate matter (PM2.5/PM10).

- **Nitrogen Oxides (NOx):** Gas-fired plants emit 80% less NOx compared to coal plants.
- **Sulfur:** Natural gas contains only trace amounts of sulfur, eliminating the need for expensive Flue Gas Desulfurization (FGD) systems.

C. Operational Efficiency

Natural gas turbines can reach combined-cycle efficiencies of over 60%, whereas conventional sub-critical coal plants often hover around 33-35%

Fuel Type	CO_2 Emissions (Kg CO_2/GJ)	Notes
Coal	94-101	Highest among major fuels; dominant in Indian power sector
Oil	73-75	Transport fuel and industry
Natural Gas	50-56	40-50% lower CO2 emissions than coal, emits less SO_x, NO_2 and particulate matter

Source: IEA

Natural gas is the only conventional fuel capable of providing "dispatchable" power to back up the intermittency of solar and wind energy. Natural gas is a critical component of India's energy transition. While still a small fraction of total energy (~6 -7%), it offers significant environmental and operational advantages over coal and oil. With policy support and infrastructure expansion and integration with renewable energy, natural gas is positioned as a bridge fuel that can accelerate India's shift to cleaner, more sustainable energy system.

As India pushes toward its Net Zero 2070 goal, natural gas will remain indispensable for the foreseeable future as a transition fuel that lowers the carbon intensity of the industrial and transport sectors without compromising economic growth.

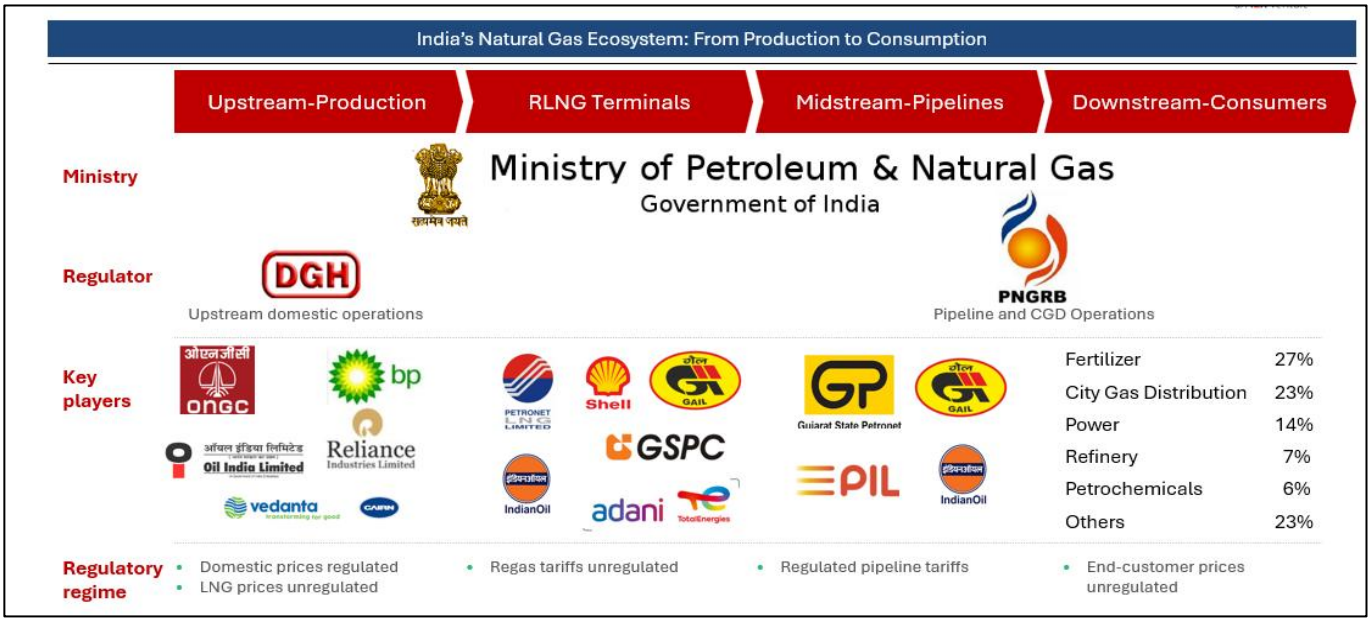
Relevant regulations, tariff frameworks, government policies impacting trading

Table 20: Institutional and Regulatory Architecture - Key Regulatory Bodies

	Regulator	Remarks
Ministry of Petroleum & Natural Gas Government of India	**Ministry of Petroleum and Natural Gas (MoPNG)**	Responsible for • Policy-making authority. • Allocates domestic gas, sets priority sectors (fertilizer, CGD, power). • Drives reforms for market-based pricing and gas trading hub
पी एन जी आर बी PNGRB	**Petroleum and Natural Gas Regulatory Board (PNGRB)**	The PNGRB was established under the PNGRB Act, 2006. PNGRB is the core regulator for: • Pipeline tariffs • City Gas Distribution (CGD) networks • Market access and infrastructure • Plays a central role in enabling competitive gas market through gas exchange like IGX.

	Regulator	Remarks
DGH	**Directorate General of Hydrocarbons (DGH)**	The DGH is the technical arm of the MoPNG and is responsible for regulating and promoting the upstream oil and gas sector. Key roles of the DGH include: • Upstream regulatory oversight and technical advisory to the government • Resource assessment, acreage management and licensing • Monitoring field development and data repository management • Contract administration support, policy implementation support • Promotion of exploration investment The DGH also conducts auctions for the domestic gas having complete marketing and pricing freedom through its empaneled agencies.

Figure 62: Regulatory gas sector construct in India



Source: MoPNG

We also see opportunity for growth in the power sector. As per the PNGRB, power sector consumption is projected to increase from approximately 7.96 BCM in Fiscal 2026 to approximately 13.03 BCM (CAGR of approximately 13.11%) by 2030. Increasing electricity demand, rising renewable energy penetration and the need for flexible generation sources are expected to support the use of gas-based power plants for balancing and peak-load requirements. The availability of competitively priced spot LNG and development of short-term gas procurement mechanisms are expected to improve the operational viability of gas-based power generation and increase participation from this sector in exchange-based gas procurement.

Module 4: Strategic positioning of Indian Gas Exchange

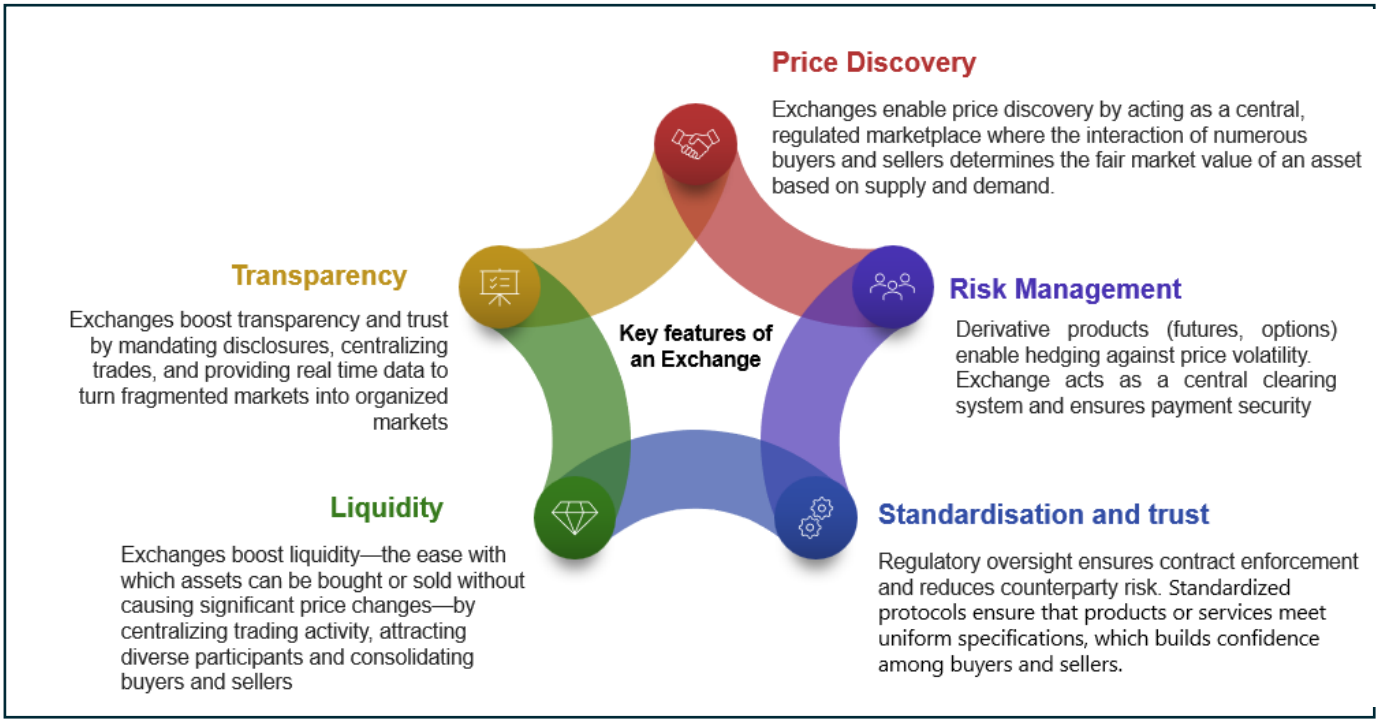
Key natural gas trading exchanges and role played by them in global markets

An exchange is an organized marketplace where buyers and sellers trade standardized physical and financial instruments such as equities, commodities, derivatives, or energy contracts under a regulated framework. Exchanges provide a transparent and efficient platform for price discovery by matching supply and demand in real time.

Commodity Trading has made its impressive journey lasting as long as the human civilization. The commodity markets have seen it all from world wars to global financial crises, and now the pandemic and the Russia/Ukraine clash. The roots of commodity trading can be traced back as early as between 4500 BC and 4000 BC in Sumer (modern-day Iraq). The Sumerians used clay writing tablets that contained information such as the number of goods to be delivered, date of delivery, etc. Such a contract has a resemblance to the futures derivatives contract used today. In the early days, civilizations were involved in the trading of goods such as cattle, gold, silver, grains, etc.

The establishment of the Chicago Board of Trade (CBOT) in the 19th century was an important milestone in the history of commodity trading. CBOT initially offered commodity trading for corn and wheat with further expansion to plywood and silver in 1969. The volumes in commodity markets have grown at an exponential rate with further potential to rise with the advent of modern technology and online trading. Some of the biggest commodity exchange markets in the world are the Chicago Board of Trade (CBOT), London Metals Exchange (LME), New York Mercantile Exchange (NYMEX), Shanghai Futures Exchange (SHFE), and European Energy Exchange (EEE).

Figure 63: Key features of exchange



They are widely used across sectors such as financial markets (stocks, bonds), commodities (oil, gas, metals), and increasingly in energy markets (electricity, carbon credits, LNG trading).

Global Evolution of Exchanges

Historically, exchanges began as physical trading hubs such as the New York Stock Exchange (NYSE) and London Stock Exchange (LSE) in the 18th–19th centuries, where traders met on the floor for open outcry trading.

With technological advancement:

- 1980s–2000s: Transition to electronic trading platforms, improving speed and accessibility.
- Emergence of specialized exchanges like Intercontinental Exchange and Chicago Mercantile Exchange expanded trading into commodities and derivatives.
- Recent years: Digitization, algorithmic trading, and integration of global markets have led to highly liquid, 24/7 trading ecosystems, including energy and carbon markets.

Exchanges themselves are evolving. There are several types of exchanges around the world that facilitate the trading of financial instruments, either with physical locations, like the New York Stock Exchange (NYSE), or completely electronic, like the Nasdaq stock market.

The most common and well-known type of asset exchanges are exchanges where equities and equity linked securities are traded, for example the NYSE, the LSE (London Stock Exchange) and the Tokyo Stock Exchange.

Commodity Exchanges tend to trade mainly in agricultural products and other raw materials (like wheat, barley, sugar, cotton, cocoa, coffee, oil, and metals). Trading includes various types of derivatives contracts based on these commodities, such as forwards, futures and options. The Chicago Mercantile Exchange is one of the largest of these types of exchanges.

Derivatives exchanges specialize in trading futures, options, and other derivative instruments, often integrated with commodity or stock exchanges. The London Metals Exchange is a good example.

A commodity exchange is a market in which multiple buyers and sellers trade commodity-linked contracts on the basis of rules and procedures laid down by the exchange. In developed countries, such exchanges typically act as a platform for trade in futures contracts, or standardized contracts for future delivery. In the developing world, a commodity exchange may act in a broader range of ways to stimulate trade in the commodity sector. This may be through the use of instruments other than futures, such as the cash or “spot” trade for immediate delivery, forward contracts.

Evolution of Exchanges in India

India’s exchange landscape has undergone a rapid transformation:

- Early trading was dominated by regional, floor-based exchanges like the Bombay Stock Exchange.
- The launch of the National Stock Exchange in 1992 marked a shift to fully electronic, screen-based trading, significantly improving transparency and efficiency.
- Expansion into commodities through exchanges like Multi Commodity Exchange strengthened price discovery in physical markets.

While power exchanges in India, led by Indian Energy Exchange, commenced operations over 18 years ago and have since evolved into a mature and integral part of the power market ecosystem, gas exchange remains at a relatively nascent stage in India. Indian Gas Exchange commenced operations only in 2020, and the market is still in the early phases of development and liquidity evolution.

Gas Exchanges

Traditionally, gas trade was dominated by long-term bilateral contracts indexed to oil prices and tied to fixed delivery points. The emergence of organized trading platforms and hubs has shifted pricing toward market-based mechanisms, allowing supply and demand fundamentals to determine value and improving the efficiency of gas allocation across regions.

Gas Exchanges have transformed global gas markets by moving from opaque bilateral contracts to transparent market pricing, enabling efficient price discovery, liquidity, and risk management and integrating regional markets into a global gas ecosystem.

Gas exchanges, trading platforms, and the development of physical and virtual gas hubs have fundamentally transformed global natural gas markets by introducing transparency, liquidity, and flexibility into what was historically a rigid, contract-based industry.

At their core, gas trading hubs and exchanges provide transparent price discovery by bringing together buyers and sellers into an organized marketplace. Unlike historically opaque, bilateral contracts or regulated allocations, exchanges allow natural gas to have publicly accessible pricing benchmarks that reflect real-time supply and demand conditions. This improves visibility into market dynamics and reduces information asymmetry, which is essential for efficient energy planning and investment decisions.

Table 21: Key benefits and value created by gas exchanges

Benefit	How it works	Impact / Value Created	Global Example
Transparent Price Discovery	Open Auctions, Continuous trading - visible bids/offers create real-time prices reflecting real time market dynamics	Eliminates opacity through standardized contracts; creates benchmark pricing and helps understand market dynamics	Henry Hub, TTF used as global references
Market Liquidity	Large number of buyers/sellers + standardized contracts	Easier entry/exit, tighter spreads, efficient markets	TTF became most liquid gas hub globally
Risk Management (Hedging)	Futures, options, swaps allow price locking	Reduces price volatility risk for buyers/sellers	Henry Hub futures used by US producers/utilities and TTF by European producers/ consumers
Market Integration	Hub-based trading enables arbitrage across regions	Connects regional markets to global gas system	LNG flows shifts between EU/Asia based on TTF vs JKM price signals
Reduced Transaction Costs	Standardized contracts + exchange trading replace negotiations	Lower legal, brokerage, and negotiation costs	TTF/ICE swaps reduce OTC complexity
Fast / On-Click Procurement	Electronic trading platforms enable instant buying/selling	High operational flexibility and responsiveness	Spot gas procurement linked to TTF in European gas Exchanges
Counterparty Risk Elimination	Clearing house becomes central counterparty	Removes default risk; increases trust	ICE clearing guarantees settlements and delivery in TTF/HH
Payment Security to Seller	Margining + clearing ensures guaranteed settlement	Sellers get assured, timely payments	Payments in Exchange-cleared futures cleared by Clearing Houses
Improved Cash Cycle	Daily settlement (mark-to-market) reduces delays	Faster cash flows; lower working capital needs	Futures markets settle daily in global hubs
Level Playing Field	Equal access to price and platform	Small players compete with large buyers	Open access trading at TTF/JKM

Benefit	How it works	Impact / Value Created	Global Example
Demand-Supply Efficiency	Real-time pricing reflects scarcity/surplus	Optimal allocation of gas resources	Europe attracted LNG during high TTF prices
Flexibility in Contracts	Spot, short-term, and customized tenures available	Reduces rigidity of long-term contracts	Variety of contracts ranging from same-day to 2-5 years on futures exchanges.
Encourages Competition	Multiple participants + transparent pricing	Drives efficiency, reduces monopolistic behaviour	Liberalized EU gas markets
Supports Energy Transition	Enables gas to complement renewables via flexible markets	Facilitates cleaner energy mix	Gas hubs support renewable-heavy EU grid

Gas Exchange Vs Gas Trading Hub

Gas exchanges and trading platforms support risk management and hedging by enabling forward markets, futures and options contracts. These instruments allow companies to lock in prices for future gas purchases or sales, insulating them from short-term volatility and enabling long-term planning with greater certainty. The broad range of contract maturities — including futures extending many years ahead — helps companies manage long-term exposure to gas price risk, an increasingly important capability in a market influenced by geopolitical shifts, supply changes and demand variability.

The global natural gas market relies on a network of physical and virtual trading hubs that establish benchmarks, manage risk and facilitate the physical flow of molecules.

Exchanges contribute to market transparency and regulatory oversight. Organized markets often publish transaction data, price benchmarks and open interest metrics that regulators and policymakers can use to monitor market conditions and ensure fair trading practices. This transparency contributes to stronger confidence in gas markets and supports broader objectives such as energy security and efficient allocation of resources.

Role played by key physical and virtual hubs in global markets

Trading platforms and gas exchanges — such as futures and spot markets like CEGH in Austria, EEX (Germany & Central Europe), Get Baltic in Baltics, Shanghai Petroleum and Gas Exchange(SHPGX) in China, SPIMEX in Russia etc. associated with hubs like the Title Transfer Facility (TTF) in Europe, Henry Hub in the United States, National Balancing Point (NBP) in United Kingdom, Central European Gas Hub (CEGH) in Austria - have become central components of the global natural gas landscape. These markets have transformed the way gas is priced, traded, hedged and ultimately consumed around the world.

Physical trading hubs like Henry hub have played a central role in this evolution by serving as actual delivery and balancing points where gas can be injected, withdrawn, and traded. Examples include pipeline-linked hubs and LNG import terminals that function as regional market nodes. These hubs concentrate supply and demand at strategic infrastructure junctions, improving network utilization and enabling gas to flow toward the highest-value markets. By anchoring trading activity to real infrastructure, physical hubs improve operational flexibility, support short-term balancing, and help ensure security of supply, particularly in liberalized markets where multiple suppliers and buyers interact.

The development of virtual hubs like PEG, THE (Trading Hub Europe), CEGH (Central European Gas Hub), has further enhanced market integration and efficiency. Virtual hubs allow gas to be traded across an entire pipeline system rather than at a single physical location, effectively creating a notional market zone where ownership can be exchanged independently of the precise delivery point. This has been especially important in Europe, where entry-exit systems and virtual trading points have enabled deep liquidity, fostered cross-border trade, pool liquidity across multiple delivery points, and reduced fragmentation between national markets. Virtual hubs simplify transactions,

reduce logistical constraints, and encourage participation from financial traders as well as physical market players, thereby strengthening liquidity and price reliability.

Together, physical and virtual hubs have underpinned the emergence of global gas benchmarks that increasingly influence LNG trade. The linkage between regional hub prices and LNG spot indices has integrated previously regional gas markets into a more interconnected global system. LNG cargoes now respond dynamically to price signals from these hubs, flowing to regions where prices are highest and demand is strongest. This market-based allocation mechanism has improved the efficiency of global gas distribution and supported higher overall utilization of LNG infrastructure, reinforcing gas's role as a flexible energy source.

These market structures have also had a direct impact on natural gas consumption patterns. By improving price transparency and supply flexibility, hubs and exchanges have made gas more competitive against alternative fuels such as coal and oil in power generation and industry. Utilities and industrial users can optimize fuel switching based on market prices, while governments and regulators can design policies based on clearer cost signals. The resulting improvement in market confidence has encouraged investment in pipelines, storage, LNG terminals, and gas-fired power generation, reinforcing the role of gas as a cornerstone fuel in many energy systems.

Overview of key gas exchanges/ hubs across the world

Table 22: Key gas exchanges globally

Exchange	Location & market presence	Contract Types Available	Latest Trading Volume / Liquidity	Key Strategic Insights (Exchange Functioning & Importance)
Intercontinental Exchange (ICE / ICE Endex)	London/ Amsterdam; Global; dominant across Europe and increasingly LNG linked global pricing	TTF futures/options, NBP contracts, JKM LNG futures, cleared OTC gas swaps, monthly/quarterly/calendar strips	250.8 mn natural gas contracts (H1 2025)	• Functions as the world's leading gas derivatives marketplace, enabling global risk transfer, speculative participation and benchmark price discovery. • ICE's pricing significantly influences European gas procurement, LNG arbitrage economics and international gas hedging strategies. Its clearing ecosystem provides strong counterparty confidence and capital efficiency.
CME Group / New York Mercantile Exchange	Chicago/ New York City; North America with global benchmark influence	Henry Hub futures/options, basis swaps, OTC-cleared gas swaps, LNG-linked hedging contracts	~400,000 daily Henry Hub contracts; ~1.7 mn OI	• Serves as the global reference benchmark for pipeline gas pricing. Its contracts are central to North American gas procurement, storage optimization and LNG export pricing. • The exchange plays a critical role in converting physical gas market fundamentals into transparent market-based price signals.
European Energy Exchange (EEX)	Leipzig; Pan European multi market gas exchange	TTF/THE/PEG/PVB futures, spot gas, balancing products, monthly/quarterly/yearly contracts	4,564 TWh (H1 2025)	• Operates as Europe's rapidly expanding multi-market gas trading platform, integrating diverse regional hubs into a unified clearing and trading framework. • Its importance lies in enhancing cross-border market efficiency and improving continental gas market integration.

Exchange	Location & market presence	Contract Types Available	Latest Trading Volume / Liquidity	Key Strategic Insights (Exchange Functioning & Importance)
Central European Gas Hub (CEGH)	Vienna; Central & Eastern Europe	Within-day, day-ahead, monthly, quarterly, seasonal and annual gas products	~394 TWh exchange + 575 TWh VTP volume	• Functions as a regional balancing and price-discovery hub for Central and Eastern Europe. • Its significance stems from its strong interconnection with European transmission infrastructure, enabling efficient regional gas balancing and hub-based physical delivery optimization.
GET Baltic	Vilnius; Baltic states + Finland	Within-day, day-ahead, week-ahead, monthly products, capacity-linked contracts	1.36 TWh monthly peak (2025)	• Operates as a tightly integrated regional physical gas exchange connecting multiple national gas systems. • It plays an essential role in transparent cross-border gas allocation and efficient pipeline capacity utilization across Baltic-Finnish markets.
Hellenic Energy Exchange (HEnEx)	Athens; Greece and Southeast Europe	Day-ahead gas, balancing products, intraday balancing	Emerging liquidity	• Primarily functions as a balancing and regional optimization platform supporting Greece's gas system. • Its strategic importance is increasing as Greek LNG infrastructure and interconnector development strengthen Southeast European gas flows.
Tokyo Commodity Exchange (TOCOM)	Tokyo; Japan	LNG futures, JKM-linked products, energy derivatives	Limited sustained liquidity	• Represents one of the earliest formal attempts to create exchange-based LNG derivatives in Asia. • Its importance lies in supporting Asian benchmark development efforts, though liquidity challenges reflect Asia's continued reliance on OTC and bilateral LNG contracting.
Abaxx Exchange	Singapore; Asia Pacific/ global LNG trade corridor	Physically deliverable LNG futures, carbon-linked LNG contracts	Early-stage	• Functions as a next-generation digital commodity exchange focused on physically deliverable LNG benchmark creation. • Its strategic importance lies in attempting to establish transparent Asian LNG pricing and digitally integrated commodity settlement systems.
Shanghai Petroleum and Natural Gas Exchange (SHPGX)	Shanghai; China domestic	Spot LNG, LNG cargo auctions, monthly LNG contracts, pipeline gas contracts	Multi-million tonne physical turnover	• Operates as China's primary physical natural gas and LNG transaction platform. • Its significance lies in facilitating domestic price discovery, LNG procurement efficiency, state-backed supply coordination and

Exchange	Location & market presence	Contract Types Available	Latest Trading Volume / Liquidity	Key Strategic Insights (Exchange Functioning & Importance)
				increasing RMB-based energy market participation.
Shanghai Futures Exchange (ShFE)	Shanghai	Gas-linked energy benchmark experimentation	Limited gas-specific turnover	• Functions as part of China's broader commodity pricing ecosystem. • While still limited in standalone gas relevance, it plays a strategic role in long-term efforts to expand Chinese energy benchmark influence.
Saint Petersburg International Mercantile Exchange (SPIMEX)	St. Petersburg; Russian domestic market	Domestic natural gas spot contracts	Moderate domestic turnover	• Primarily serves Russia's domestic gas trading needs by facilitating physical spot transactions and improving domestic pricing transparency. • Its strategic importance is largely internal rather than international.

Table 23: Key global natural gas hubs

Hub / Benchmark	Exchange	Region	Typical Pricing Unit	Role in LNG Markets
Henry Hub	NYMEX/CME	US (Louisiana)	USD / MMBtu	Global benchmark for U.S. gas; futures widely used for hedging and LNG pricing reference. World's most liquid physical hub and connected to the US gulf coast LNG export terminals
Title Transfer Facility (TTF)	ICE	Netherlands	€/MWh	Is a virtual trading point in the Netherlands. Europe's key natural gas price benchmark, heavily traded and used to price LNG imports. Also known as the Global Balancing Hub.
National Balancing Point (NBP)	ICE	UK	Pence / therm	Europe's oldest virtual hub UK & wider European gas benchmark, second most traded in Europe after TTF.
Japan-Korea Marker (JKM)	Platts/ ICE	Asia	USD / MMBtu	A price assessment for spot LNG delivered to Japan, Korea, Taiwan, and China. Asia's most widely used LNG price marker, used in both financial and physical contracts.
AECO	AECO	Canada	CAD / MMbtu	Regional Canadian hub included in ICE's portfolio.

1.Intercontinental Exchange (ICE)

Founded in May 2000 by Jeffrey Sprecher, ICE was born from the acquisition of Continental Power Exchange (CPEX). Its primary mission was to modernize the opaque, manual over the counter (OTC) energy markets into a transparent electronic marketplace.

ICE is a leading global provider of technology and data to a broad range of customers including financial institutions, corporations and government entities. By combining our world class technology with our data services and operating expertise, we add transparency and enable customer efficiency gains across our networks which include global futures, equities, fixed income and U.S. residential mortgages.

2.New York Mercantile Exchange (NYMEX), Chicago Mercantile Exchange (CME)

CME Group, a Delaware stock corporation, is the holding company for CME, CBOT, NYMEX, COMEX, NEX Group plc (NEX) and their respective subsidiaries. The holding company structure is designed to provide strategic and operational flexibility. CME Group's Class A common stock is listed on the Nasdaq Global Select Market (Nasdaq) under the ticker symbol "CME."

The New York Mercantile Exchange (NYMEX), established in 1872 as a dairy exchange (Butter and Cheese Exchange of New York), evolved into the world's largest physical commodity futures exchange. The New York Mercantile Exchange (NYMEX) is the world's largest marketplace for physical commodity futures trading. It plays a key role in setting prices for major resources like oil and metals.

In 1994, NYMEX merged with COMEX to become the largest physical commodity exchange at that time. By 2008, NYMEX was not able to commercially survive on its own in the wake of the global financial crisis and merged with the CME Group of Chicago. The merger brought a list of energy, precious metal, and agricultural products to the CME Group of exchanges.

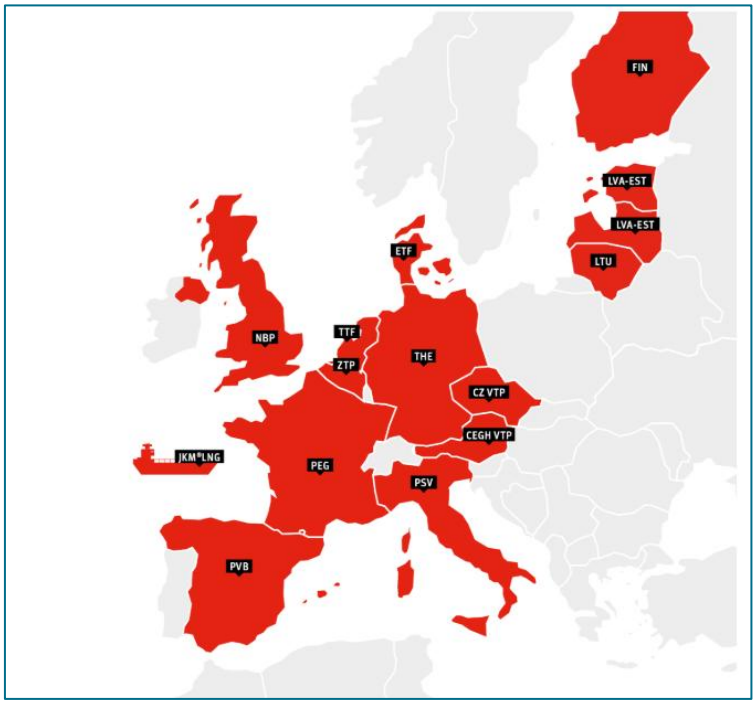
NYMEX is regulated by the Commodity Futures Trading Commission (CFTC), which is an independent agency of the United States government tasked with the promotion of competitive and efficient futures markets as well as the protection of investors against manipulation, abusive trade practices, and fraud.

3.European Energy Exchange (EEX)

Based in Leipzig, Germany, EEX is the central pillar of the European energy transition, formed by the 2002 merger of LPX Leipzig Power Exchange and EEX (Frankfurt). EEX is an exchange under the German Exchange Act and a regulated market within the context of MiFID. EEX has the following executive bodies: the Exchange Council, the Management Board of the Exchange, Market Surveillance and the Sanctions Committee.

EEX offers natural gas contracts across Europe. The product range covers spot, futures and options contracts for the major European gas hubs as well as trading in location spread products between these market areas. EEX also offers a Trade Registration service for JKM LNG contracts against the S&P Platts JKM assessment.

Figure 64: EEX market areas



Source: EEX

Key Products and volumes

The EEX gas ecosystem pans spot gas markets, gas futures and derivatives, LNG linked contracts, spread products, gas indices, renewable gas, Guarantees of Origin (GoO) products.

Table 24: EEX gas trading products and volumes

Segment	Key Products / Contracts	Major Hubs / Markets	2025 trading volume	Key Insights
Gas Derivatives (Largest Segment)	Monthly, quarterly, seasonal & yearly gas futures; physical & financial futures; options; spread products	TTF, THE, PEG, NBP, PSV, ZTP, CEGH	~5,114 TWh	Largest gas segment on EEX; driven by hedging, volatility management and LNG-linked risk management
Gas Spot Markets	Day-ahead, within-day and balancing gas contracts	TTF, THE, PEG, NBP, PSV, ZTP, CEGH	3,429.4 TWh	Used for physical balancing and short-term procurement across Europe.
Dutch TTF Market	Spot & derivatives contracts	Netherlands	1.414.7 TWh	Europe's benchmark gas hub and dominant LNG pricing reference in Europe
German THE Market	Spot & futures contracts	Germany	860.8 TWh	Germany's unified gas trading hub with rapidly rising liquidity

Segment	Key Products / Contracts	Major Hubs / Markets	2025 trading volume	Key Insights
French PEG market	Spot & futures contracts	France	289.6 TWh	Key French balancing and procurement hub
Italian PSV Market	Gas futures & spot contracts	Italy	NA	Increasing Southern European gas liquidity and LNG integration
Belgian ZTP Market	Spot & futures	Belgium	293.3 TWh	Strong growth in Northwest European balancing markets
UK NBP Market	Spot & derivatives	United Kingdom	321.8 TWh	Important balancing and LNG-linked UK gas benchmark.
Austria CEGH Gas Market	Spot & physical/financial futures	Austria	154.1 TWh	Gateway hub for Central Europe and LNG inflows
US Natural gas markets	US gas trading products	US	280.7 TWh	Stable volumes in North American gas markets
Gas Spread Products	Hub-to-hub spread contracts	TTF-THE, TTF-PEG, etc.	Strongly growing due to cross-border arbitrage	Used for regional gas price arbitrage and balancing
LNG-linked Gas Products	LNG-related futures registration and TTF-linked products	Pan-European	Increasing relevance post Russia-Ukraine crisis	LNG increasingly integrated into European hub pricing.
Gas Indices	EEX Neutral Gas Prices (NGP), EGSI	TTF, FIN, Baltic, etc.	Continuous pricing indices available	Benchmark price discovery and settlement reference.
Renewable Gas / GO Products	Guarantees of Origin (GO) Futures, biogas certificates	European environmental markets	3.7 TWh traded in Nov 2025 alone	Reflects rapid growth of renewable gas and green molecule markets.

Indian Gas Exchange (IGX): Exchange overview, key product offerings and market model

Traditionally, gas users in India executed bilateral contracts based on non-transparent, time-consuming negotiations with limited flexibility and high take-or-pay penalties that were unfavorable to marginal gas users. The Indian gas market is also heavily reliant on international benchmark price index prices as illustrated in below table, exposing Indian market to risks and volatilities of unrelated geographies.

Table 25:Core structure of Indian gas pricing

Segment	Pricing basis
Domestic natural gas (legacy fields) and New Well Gas (NWG)	Administered Pricing Mechanism (APM) linked to crude oil pricing
HPHT gas pricing (Deepwater/ Ultra deepwater, difficult fields)	Price ceiling is market linked (linked to alternate fuels which are benchmarked to international indices)
LNG imports	Crude linked or linked to global benchmarks (Henry Hub etc.)
Spot gas	Linked to pricing benchmarks (JKM, WIM, TTF)

IGX was incorporated by IEX as its 100% subsidiary in November 2019. IEX India's premier electricity exchange, a publicly listed company on NSE and BSE since October 2017 managed by a professional board and regulated by the Central Electricity Regulatory Commission (CERC). IEX is a nationwide, automated trading platform for physical delivery of electricity, renewable power, renewable energy certificates and energy saving certificates. IEX operates India's largest electricity trading platform in terms of total electricity traded in the last three Fiscals. IEX has played a key role in developing transparent, efficient and nationwide power markets in India, with significant experience in market design, price discovery, risk management and regulatory engagement. The exchange platform enables efficient price discovery and increases the accessibility and transparency of the power market in India while also enhancing the speed and efficiency of trade execution. IEX operates India's largest electricity trading platform, with an 84.3% market share in terms of total electricity traded in Fiscal 2026 and has significant experience in establishing and managing electronic exchange-based marketplaces in the energy sector. In Fiscal 2026, IEX achieved its highest-ever traded electricity volume 141.1 BU and is India's largest electricity trading platform. IEX has been approved and regulated by the Central Electricity Regulatory Commission since June 27, 2008 and has been ISO certified for Quality Management, Information Security Management, and Environmental Management since August 2016.

The IGX was launched on June 15, 2020, as a gas trading platform and post receiving the PNGRB authorization in December 2020, it began operations as the country's first automated official authorized gas exchange. The PNGRB is the official regulator of the exchange. IGX is India's first and only authorized national level physical delivery-based gas trading exchange, providing an organized, transparent and technology-enabled marketplace for trading natural gas. Unlike several international gas trading exchanges where a significant proportion of contracts are financially settled, IGX operates a predominantly physical delivery-based market model that facilitates actual transfer and delivery of natural gas.

There was no true benchmark of a single price to determine the real price of natural gas in India that is reflective of the local market and price dynamics. To bring greater transparency and ease of doing business, The IGX launched an IT enabled trading platform facilitating trading under flexible spot & forward contracts to discover indigenous gas benchmark prices, reflecting actual Indian market condition. In addition to spot physical delivery contracts such as intraday, day-ahead and daily contracts, IGX also offers physical delivery contracts within its forward contracts offering, with tenures extending up to six months, whereas other international gas exchanges are limited to spot contracts of intraday, day ahead and daily in the physical delivery segment.

IGX operates as a neutral, electronic marketplace that connects buyers (industrial consumers, power, city gas distributors) and sellers (importers, producers). It is the only exchange in India that currently facilitates physical delivery of gas based on trade facilitation at the exchange. IGX's market model creates significant operational differentiation and high entry barriers, as it requires integration with transportation infrastructure, coordination with

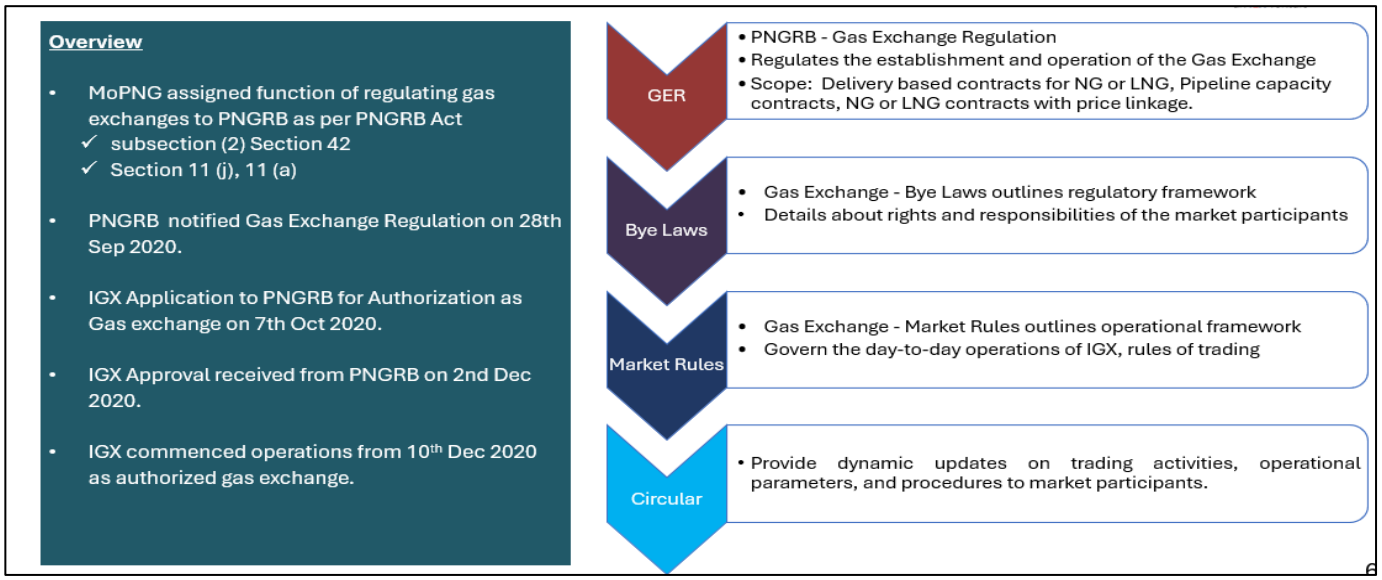
multiple pipeline operators, robust clearing and settlement mechanisms, and operational expertise. The need to establish and maintain regulatory and technological infrastructure, while possessing exchange domain expertise along with spot gas market domain knowledge, makes the operation of a gas exchange operationally complex, thereby limiting the ability of new entrants to replicate similar platforms. The existence of a dedicated regulatory framework for gas exchanges, together with IGX's early authorization under this framework and continued policy engagement, positions IGX as a central institutional exchange for organized gas trading in India.

To align with the Gas Exchange Regulations (GER) floated by PNGRB and build with the aim of creating a strong institutional platform for the gas sector, IEX divested 52.7% stake in IGX to strategic partners like GAIL, IOCL, ONGC, NSE, Adani Gas, Torrent Gas.

PNGRB notified the Gas Exchange Regulations (GER) in September 2020.IGX was licensed by the PNGRB as an authorized Gas Exchange on 2nd December 2020.

IGX is since then operating under the PNGRB's Gas Exchange Regulations 2020. It is the only exchange in India that currently facilitates physical delivery of gas based on trade facilitation at the exchange.

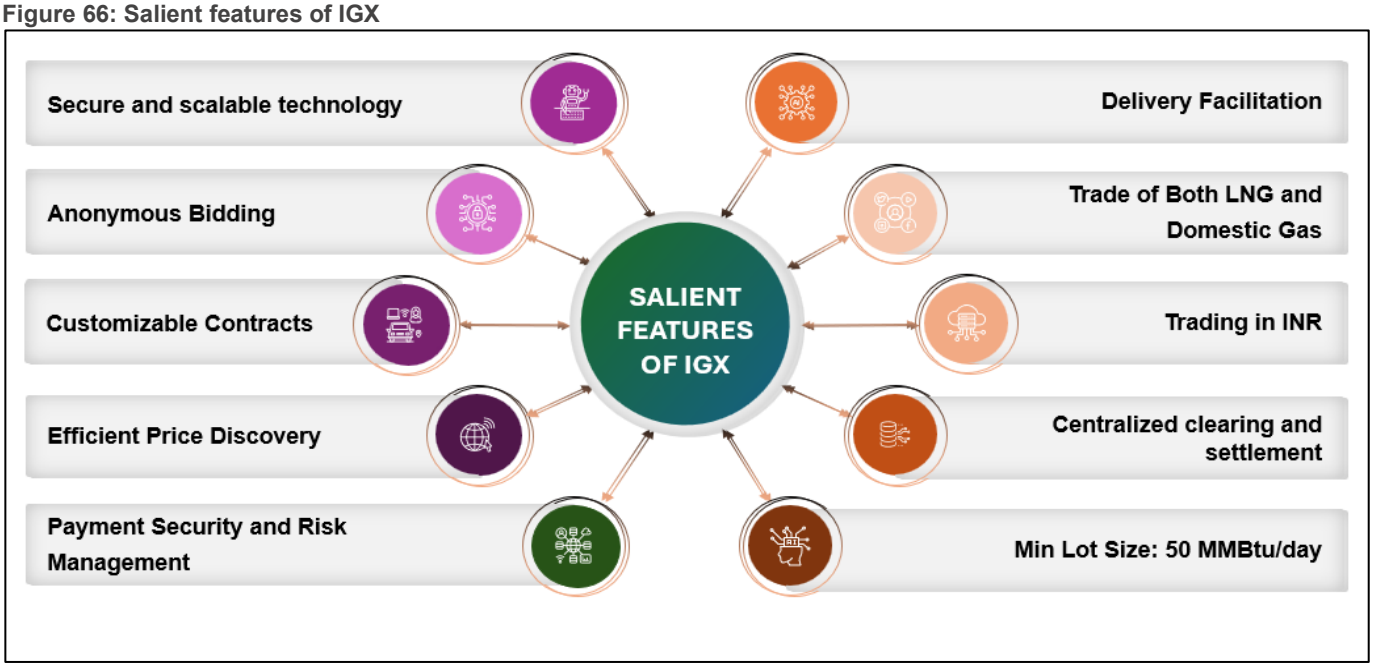
Figure 65: Regulatory overview of gas exchanges in India



Source: IGX

The exchange enhances the accessibility, transparency, and efficiency of India's natural gas market by improving the speed of trade execution through a fully automated electronic platform and by enabling transparent, market-driven pricing outcomes.

Figure 66: Salient features of IGX



Currently limited to trading Regasified LNG, domestic gas with pricing freedom and part domestic HPHT gas with ceiling price the platform aims to evolve into a transparent, cost reflective and uniform pricing mechanism for the entire Indian gas market. Currently, the IGX operates across 19 delivery points, comprising LNG terminals, pipeline interconnection points, and various domestic gas field landfall points. These points are grouped into 6 gas hubs viz. West, South, East, North, Central, North-East hub. The South, East and North-East regions of India are expected to witness greater gas pipeline connectivity in the next few years, as participation from city gas distribution networks and industries increase.

The exchange supports delivery-based trading through 8 contract types (fixed price): intraday, day-ahead, daily, weekly, weekday, fortnightly, monthly and balance of month. The exchange has also recently launched index linked contracts of 3 months and 6 months linked to GIXI, JKM, WIM and Dated Brent.

The gas exchange market in India is still developing in terms of liquidity and depth.

IGX presently competes with bilateral and over-the-counter trading mechanisms, integrated energy companies, gas aggregators, LNG suppliers, brokers, and digital trading or marketplace platforms

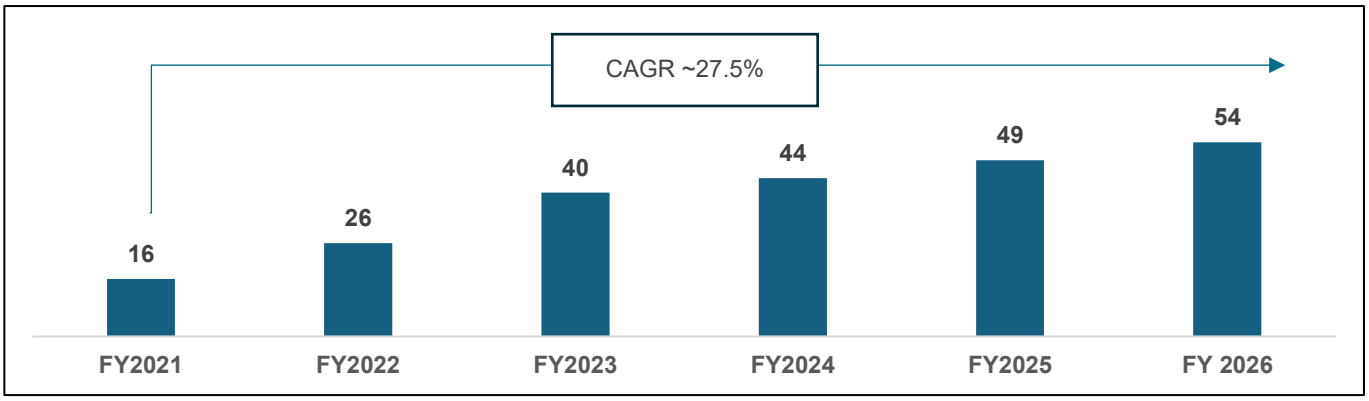
Key features of the gas exchange

Table 26: Key features of Indian Gas Exchange

Feature	Description
Secure and Scalable Technology	Rapid, accurate, secure, and efficient trading with pre- and post-trade functionalities, capable of handling complex orders, user-friendly web-based platform
Anonymous Bidding	Bidders remain anonymous, with each bidder unaware of their counterparty
Efficient Price Discovery	Double-sided closed auction with uniform price mechanism or Continuous trade mechanisms

Feature	Description
Flexibility	Various contract types (Intraday, Day-Ahead, Daily, Weekdays, Weekly, Fortnightly, Balance of Month, Monthly, 3 Month and 6 Month) with customization options
Risk Management	Secure bid monitoring, counterpart guarantee, and margin requirements to ensure market integrity
Transparency	Neutral and transparent trading platform with standard contracts and publicly available price discovery
Clearing & Settlement	Periodic determination of financial and delivery obligations, with settlement according to IGX's settlement calendar
Delivery facilitation	Delivery options at identified active hubs: **Delivered transactions**: IGX books capacity on behalf of buyer **Ex-hub transactions**: Buyer acts as shipper, books capacity, and manages pipeline settlements

Figure 67:IGX members growth



Source: IGX

IGX has seen a steady growth in the number of members. The membership clientele is quite diversified with companies from both public and private sectors becoming members of IGX, ranging from producers, importers to resellers as elaborated below

Table 27: Key Members of IGX

	Category	Remarks and Members
	Gas Producers & E&P Companies	Major domestic producers such as ONGC etc. with marketing and pricing freedom (granted under the MoPNG notification of August 19, 2021) can sell through IGX.
	LNG Terminal Operators / Importers	Terminal operators across the country like HPCL etc., sell RLNG on the platform, with Dahej and Hazira being the most active free market delivery points.
	City Gas Distribution (CGD) Companies	The single largest buyer category by participant count and volume share. CGD entities are active on the platform, including Mahanagar Gas, GAIL Gas Ltd, Gujarat Gas, Torrent Gas, HPCL, BPCL etc., and other entities from PNGRB's CGD bidding rounds.
	Power Generators	Gas-based power producers etc. trade (Buy & Sell) on IGX.
	Refineries & Petrochemicals	Entities such as BPCL, HPCL, and participate as both potential sellers (refinery off-gas, internal gas reallocation) and buyers.

	Category	Remarks and Members
	Industrial Consumers & Aggregators	The Others category in ceiling-price auctions comprises participants including steel, cement, ceramics, glass, and textile manufacturers. Trading & Clearing Members function as aggregators, enabling smaller industrial consumers to access exchange prices without direct membership

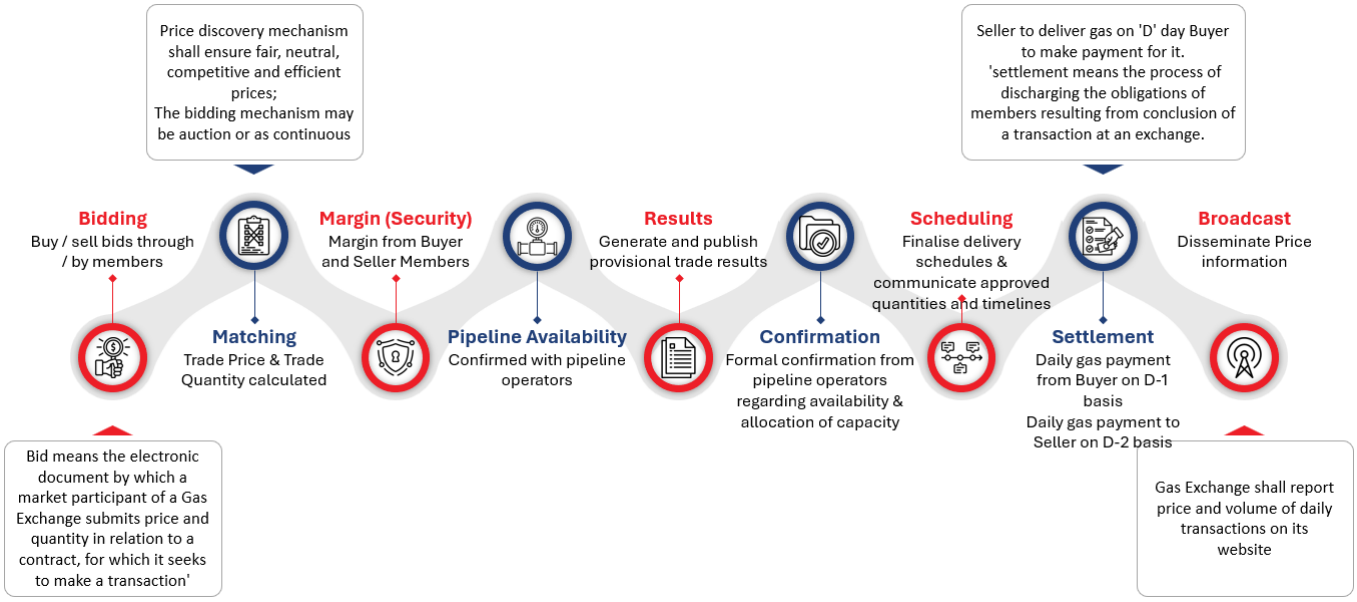
Source: IGX

Figure 68: IGX Hub and Delivery Point distinction

Hub	• Country is divided into 6 regional gas hubs i.e Northern, Southern, Eastern, Western, Central, and North-Eastern • A group of Delivery Points that are in regional proximity
Delivery Point	• The location for delivery of gas against the traded contracts • IGX operates 19 delivery points which facilitate physical flow of molecules from gas sources to consumption center. • Eg: Dahej, Hazira, Gadimoga, Mallavaram, Dabhol, Dhamra etc.

Through its exchange, IGX has facilitated gas trading under flexible spot and forward contracts to discover indigenous gas benchmark prices, reflecting actual market conditions, thereby supporting the development of a competitive gas market ecosystem in India.

Figure 69: Trade flow at IGX



IGX's Impact on India's Economy and Nation-Building Efforts

IGX strengthens India's gas market by improving liquidity and expanding gas-to-consumption pathways, with standardized contracting that supports predictable supply and fair access. It also supports competitive pricing for both buyers and suppliers and bolsters energy security by enabling more flexible sourcing and reducing dependence on any single route or supplier. By developing gas terminals into delivery hubs and improving tradability, IGX can lower logistical frictions, attract investment, and make the energy system more resilient which are the key inputs to nation-building through sustainable growth.

Gas Index of India (GIXI)

IGX has developed India's first indigenous, institutional gas price index, GIXI, which enables price discovery for domestic gas with pricing freedom, based on actual trades executed and delivered on IGX's Exchange.

GIXI stands for the Gas IndeX of India, which is the flagship price index launched by the Indian Gas Exchange to reflect natural gas spot prices in India. GIXI serves as a transparent, nationwide benchmark reflecting spot gas prices

across delivery points, regions and the market as a whole. It is the only nationwide price index reflecting natural gas spot prices based on actual deliveries.

The GIXI price excludes ceiling price gas, ssLNG and LDC's. These prices are currently either regulated and the market pricing differs from traditional spot pricing mechanism.

GIXI helps the market participants to know the inland gas prices, benchmark gas price and help take suitable decisions of purchase and sale. GIXI also acts as a precursor for the Gas derivatives which will help the market players in hedging their prices.

GIXI pricing methodology

To designate suitable delivery points, the country is demarcated into 6 regional hubs i.e., Northern, Western, Eastern, Southern, Central and North-Eastern Hub within which multiple delivery points are located. GIXI will be calculated for various hubs and delivery points, with IGX prices being discovered based on actual deliveries making it a true market reflection based on dynamics like demand, supply, taxation, transmission tariffs, domestic/LNG supply mix, storage, etc. GIXI represents aggregated gas price for all regional hubs and all contracts for delivery during a particular month. It is determined daily once and calculated separately for each delivery month.

Figure 70: GIXI Price calculation

$$GIXI\ Month = \frac{\Sigma\,(Price\ of\ all\ contracts\ traded\ at\ all\ hubs\ for\ Delivery\ Month) * (Volume\ traded\ at\ all\ hubs\ in\ all\ contracts\ for\ Delivery\ Month)}{\Sigma\,(Volume\ traded\ in\ all\ hubs\ for\ all\ contracts\ in\ Delivery\ Month)}$$

Source: IGX

Therefore, it is represented as GIXI- 'Month' for example, GIXI-Jan23, GIXI-Feb 23, etc. GIXI is also calculated hub-wise and is represented as GIXI- 'Hub' for example, GIXI-Jan West, GIXI-Jan North etc. Similarly, price for deliveries in January in the Northern Hub is named GIXI- Jan 23 North. GIXI is calculated as Volume-weighted average price for all gas excluding the ceiling price gas, ssLNG and LDCs.

GIXI is increasingly being used by market participants as a price reference, as it provides participants with a transparent and market-driven reference price, as opposed to bilateral contracts with a lack of transparency and appropriate pricing signals as per local market dynamics.

Trading of domestic gas through exchange

Sale of domestic gas (with marketing and pricing freedom) through exchange (OM dated 19 Aug 2021)

The MoPNG vide an Office Memorandum dated 19 Aug 2021, granted approval to the IGX to trade domestic gas on its platform. This notification provides an additional mechanism for domestic gas producers who have been granted pricing and marketing freedom to sell their products. Henceforth, Domestic gas having marketing and pricing freedom may be sold through the gas exchange platform. This is applicable to producers operating under regimes that provide such freedom, including producers under the Discovered Small Field (DSF) Policy, Coal Bed Methane (CBM) blocks, and other fields granted specific marketing and pricing freedom by the Government.

As per the OM, such domestic gas producers are authorized to sell up to 500 million standard cubic meters (MMSCM) or 10 % of annual production from contract area, whichever is higher, annually through gas exchange.

Major such domestic gas producers viz. RIL, ONGC, Cairn Vedanta, HOEC etc. are selling through the exchange.

Sale of test gas through exchange (OM dated 22 Nov 2021)

This memorandum, issued by the Ministry of Petroleum and Natural Gas (Govt. of India) on November 22, 2021, outlines the policy for the monetization of Ad-hoc/Test Gas produced during well testing. Traditionally, this gas was flared (burned off); these guidelines now allow for its sale to prevent gas flaring and boost domestic production.

Sales are regulated by the duration of the well test:

< 3 Months	Allowed for sale; requires committee notification
3–6 Months	Sales on Arm's Length basis; require prior committee approval.
>6 months	Sale on Arm's Length basis; requires DGH justification and Govt. approval.

Impact on IGX

This regulation serves as a direct catalyst for IGX trading:

- ✓ **Explicit Approval**: Clause 4 of the regulation specifically authorizes the sale of test gas through Gas Exchanges, providing legal clearance for producers to sell these volumes.
- ✓ **Market Liquidity:** It converts previously wasted (flared) gas into immediate "spot" supply, increasing the volume of gas available for trading on the exchange.
- ✓ **Transparent Price Discovery:** The mandate for "Arm's Length" sales makes IGX the ideal platform for producers to demonstrate fair market pricing to regulators.
- ✓ **Ease of Compliance:** Small or short-term gas volumes are easier to sell via an exchange than through complex, long-term bilateral contracts.

For IGX, this policy transforms waste (flared gas) into a tradable commodity, providing the exchange with more participants and reinforcing its role as the primary venue for transparent price discovery in India.

Comparison between DGH empaneled agencies and IGX for domestic gas sales

As per the Natural Gas Marketing Reforms (2020) notified by MoPNG, it introduced standard, transparent e-bidding procedures to determine market prices for domestically produced gas. Key aspects included marketing freedom for approved Field Development Plans (FDPs), permitting affiliates to participate in bidding, and promoting ease of doing business to transition toward a gas-based economy.

The policy aims to provide standard procedure for sale of natural gas in a transparent and competitive manner to discover market price by issuing guidelines for sale by contractor through e-bidding. This will bring uniformity in the bidding process across the various contractual regimes and policies to avoid ambiguity and contribute towards ease of doing business.

The policy has also permitted Affiliate companies to participate in the bidding process in view of the open, transparent and electronic bidding. This will facilitate and promote more competition in marketing of gas. However, rebidding will have to be done in case only affiliates participate, and there are no other bidders.

Now, upstream producers can sell gas both on empaneled agencies on DGH and the Indian Gas Exchange (IGX).

While auctions are held on both the empaneled agencies (DGH conducted) and the IGX, below mentioned differences bring out the distinctions in the way the gas is procured from the platforms:

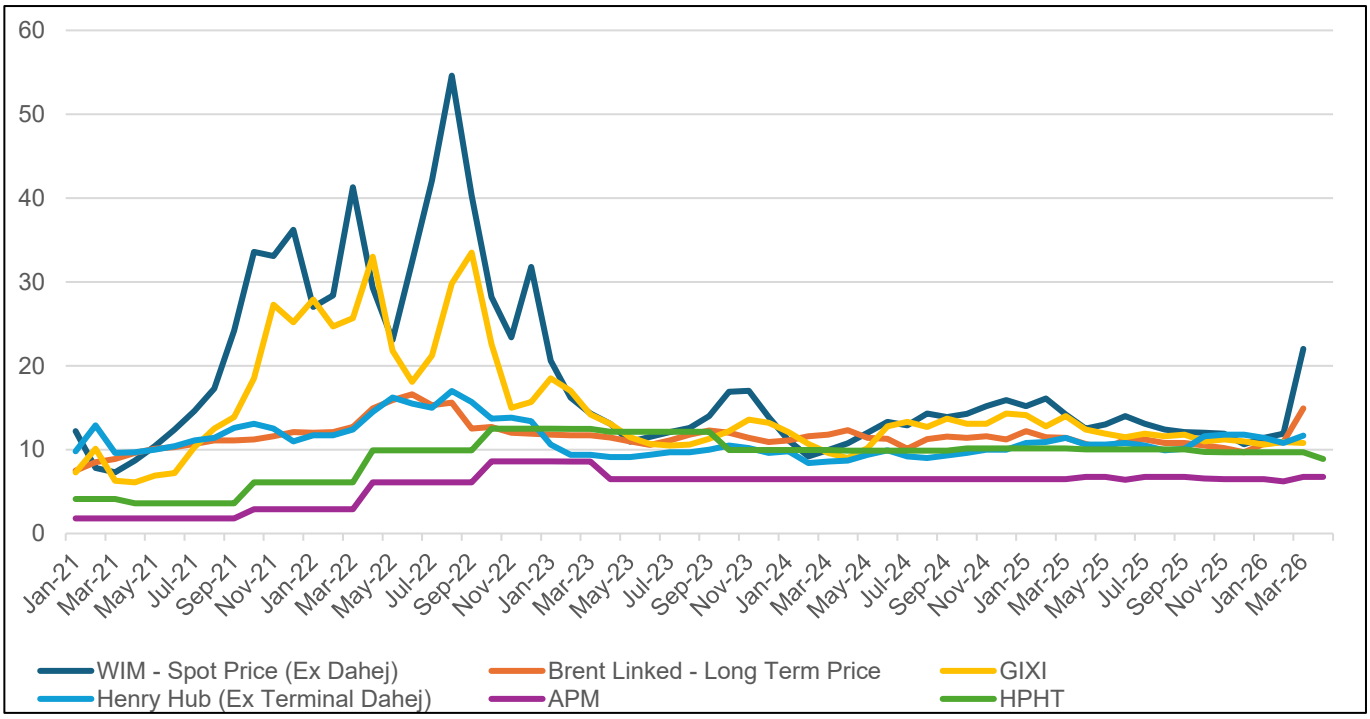
Table 28: Comparison between IGX and DGH Empanelled Agencies

Feature	DGH Empaneled Agencies (E-Auction)	Indian Gas Exchange (IGX)
Mechanism Type	Bilateral / Long-Term Auction	Exchange Trading / Hub-Based
Sales Process	The producer (seller) engages an empaneled independent agency (e.g., C1 India, MJunction, etc.) to conduct a custom e-bidding/e-auction for a specific quantity of gas.	Members (buyers/sellers) trade on a fully automated, anonymous electronic platform via standardized contracts.
Contract Tenor	Typically for Medium to Long-Term gas supply (e.g., 2 years, 3-5 years). The auction discovers a price formula for the entire tenure.	Offers a range of contracts: Spot (Day-Ahead, Daily, Weekly) and Forward/Long Duration (Monthly, Quarterly, 3/6-Months).
Price Discovery	One-time Price Discovery through a closed-bid or open-bid e-auction for a large quantity. The final price is often a formula linked to an international benchmark (e.g., JKM, Brent) or a fixed premium over a government-notified price.	Real-time Price Discovery through anonymous trading sessions (e.g., Double-sided Closed Auction with Uniform Price, or Continuous Trade). The price is market-driven.
Flexibility & Liquidity	Low Flexibility. Deals are fixed-term, high-volume, and customized. Suited for large, long-term consumers. Low Liquidity as it's a one-off sale.	High Flexibility. Allows granular, short-term, and long-term contracts. Ideal for managing immediate supply demand mismatches. High Liquidity due to continuous trading.
Counterparty Risk	Directly with Buyer(s). The producer's risk is tied to the successful bidder(s) fulfilling the long-term Gas Sales Agreement (GSA).	Managed by the Exchange/Clearing Corporation. IGX guarantees the financial settlement of trades, significantly reducing counterparty risk for members.
Transparency	Public auction is a transparent process, but the price is specific to that one GSA for the entire tenure.	High Transparency. All transactions occur on an open platform, and a benchmark price index (e.g., GIXI) is published, reflecting market sentiment.
Buyer Base	Specific buyers who participate in the auction, usually large companies, utilities, and CGD entities.	Any PNGRB-authorized entity registered as an IGX member (gas producers, marketers, traders, and large consumers).
Suitability for Producer	Suitable for large, committed volumes and securing revenue certainly for a longer period.	Suitable for small/ad-hoc volumes, test gas, managing temporary excess/deficit capacity, and gaining quick market access. Short term gas of up to 1 year tenure.
Player participation	Higher Volume Thresholds (~10,000 SCMD) limits participation of entities with smaller requirement.	For IGX the minimum volume threshold is **(50 MMBTU ~ 1250 SCMD)** and therefore allows participation entities with smaller volume requirements.

Since the exchange too is an empanelled agency on the DGH, it will further add to volumes and liquidity on the IGX, specially on the longer tenures.

Comparison of gas prices: APM, HPHT, Spot LNG and Term LNG- comparison with GIXI IGX price

Figure 71:IGX prices vs other price benchmarks, $/MMBtu



Source: IGX, Crisil analysis

Projected: Henry Hub: As per the EIA April 2026 data, natural gas prices to increase through the early 2030s, remaining between $5/MMBtu and $6/MMBtu at the Henry Hub benchmark in most cases.
Brent: It is projected that the Brent crude oil price increases above $75/b in the late 2030s, which then supports increased oil production through most of the 2040s.
Other spot LNG prices are expected to be priced < $10/MMBtu in wake of the upcoming wave of supply from the Middle East and the USA

Role played by IGX in indigenous price discovery

Price discovery is a fundamental element of any efficient energy market. In India, natural gas pricing has historically been administered or linked to international benchmarks, limiting the development of a domestic price signal reflective of local demand–supply conditions. The establishment of the Indian Gas Exchange (IGX) in 2020 marked a critical step toward creating an indigenous, market-based price discovery mechanism for natural gas in India.

Pre-IGX Pricing Landscape in India

Before IGX, gas pricing in India was characterized by:

Table 29: Pre IGX pricing landscape

	APM gas	Oil Indexed LNG pricing	Bilateral contracts
Remark	• Prices set by the government • Based on international hub benchmarks (e.g.,	LNG imports priced based on: • Brent crude oil • Long-term contracts dominated	Prices negotiated privately between buyers and sellers

	APM gas	Oil Indexed LNG pricing	Bilateral contracts
	Henry Hub, Alberta, Russia) • Revised semi-annually		
Limitation	Did not reflect domestic demand–supply dynamics	Prices linked to oil markets, not gas markets	Lack of transparency and right pricing signals as per local market dynamics

In consideration of the above pricing mechanism, it was realized that there is a strong absence of a domestic gas price benchmark reflecting the Indian market conditions and the regional demand variations.

Gas Index of India (GIXI)

The IGX developed the Gas Price Index of India (GIXI) which represents the volume-weighted average prices Based on actual trades on IGX reflecting the

- Domestic market conditions
- Regional demand-supply dynamics

This is the first indigenous gas price benchmark in India.

IGX is enhancing transparency in gas pricing by providing real time market information based in live price data, trade volumes and bid ask spreads. This is important to reduce information asymmetry and improving decision making based on sourcing and pricing.

The IGX has emerged as a critical platform for developing indigenous price discovery in India's natural gas sector. By enabling transparent, competitive, and real-time trading, IGX has introduced a domestic pricing mechanism that reflects local market conditions, reduces reliance on international benchmarks, and enhances overall market efficiency. Although its current share remains limited, its role is expected to expand significantly as India progresses toward a more liberalized and market-driven gas economy

Key takeaway

The Indian Gas Exchange plays a pivotal role in establishing an indigenous gas pricing mechanism in India by facilitating transparent price discovery through competitive market forces, thereby laying the foundation for a robust and self-reliant gas market.

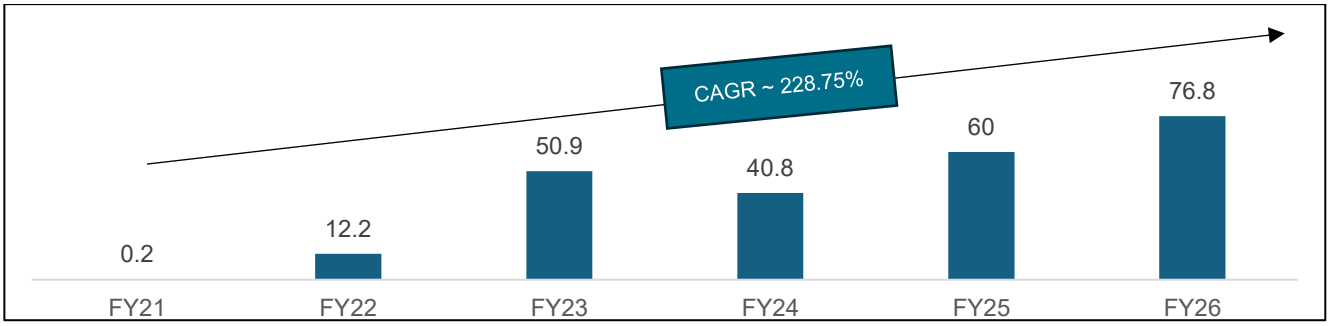
IGX traded volumes

Exponential Growth Trajectory

IGX has emerged as India's first and only automated gas trading platform, growing from near-zero volumes in FY21 and 12.2 million MMBtu (0.3075 BCM) traded in FY22 to 76.8 million MMBtu (1.935 BCM) traded in FY2026— a ~58% 4-year CAGR. The exchange now facilitates ~3% of India's total gas consumption across 19 delivery points, 6 regional hubs, and 10 contract types, with 200+ registered participants.

The jump from FY-2022 (12.2) to FY-2026 (76.8) represents the tipping point where the market moved from experimental trades to essential procurement.

Figure 72: IGX traded volumes, in Mn MMBtu



Source: IGX

Contract wise traded volumes

1.The Dominance of Monthly Contracts

Monthly contracts are the undisputed backbone of IGX volumes, accounting for ~64% of the total FY26 volumes (48.8 Mn MMBtu out of 76.79 Mn MMBtu).

Strategic Shift: The jump from 7.8 Mn MMBtu in FY22 to 48.8 Mn MMBtu in FY26 signaled a move by industrial buyers to secure competitive gas transparently.

- **Current Peak:** FY26 shows the highest monthly volume ever recorded, indicating that Exchange-based procurement is now a significant alternative to traditional bilateral contracts.

2. High Growth in Medium-Term Flexibility

While Monthly contracts lead, Fortnightly and Weekly contracts show significant traction:

- **Fortnightly (~14% in FY26):** This has emerged as the second most popular contract type, providing a middle ground for gas utilities to manage inventory without committing to a full month.

- **Weekly (~5% in FY26):** Peaked significantly in FY26, showing that players use this segment to adjust for immediate demand surges or supply disruptions.

3. Explosion of Short-Term "Intraday" and "Day Ahead"

The most recent data (FY26) shows a massive spike in closer-to day operational flexibility:

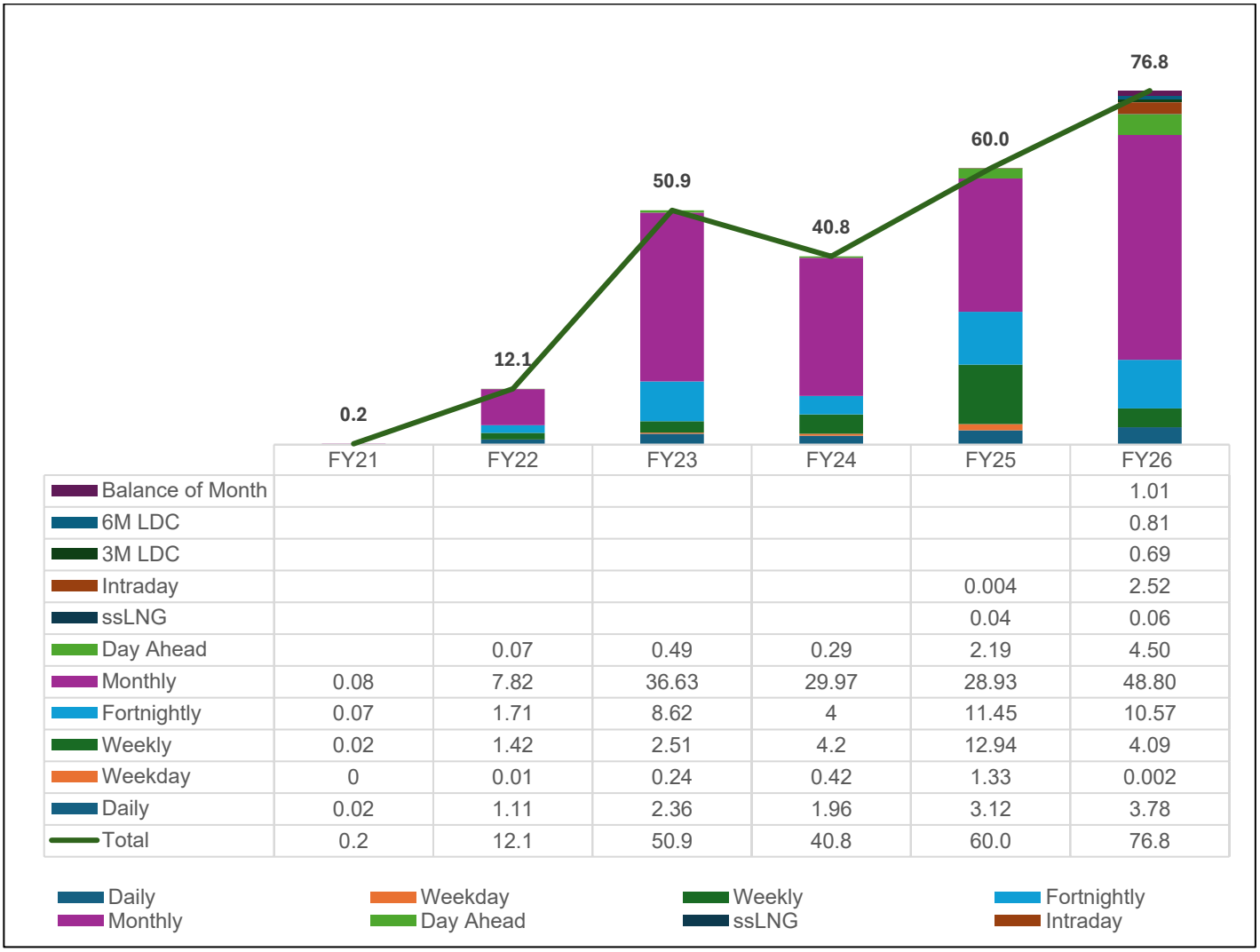
- **Intraday Trading**: Practically non-existent until recently, it surged to 2.52 Mn MMBTU in FY26. This suggests that the market is becoming liquid and responsive to needs of gas based power plants for meeting peak shortages.

- **Day Ahead**: Has grown steadily, hitting a record 4.49 Mn MMBTU in FY26, reflecting better participation from Industries, Power plants and CGD entities managing daily fluctuations and power plants meeting day-ahead dispatch advice from despatchers and markets.

4. Introduction of Long Duration Contracts (LDC)

For the first time in FY26, LDC contracts were introduced for 3 months (0.69 Mn MMBtu) and 6 months (0.80 Mn MMBtu). **Key Insight**: The introduction of 3-month and 6-month contracts proves that IGX is successfully catering to long-term buyers. This allows buyers to hedge against seasonal price spikes (like summer cooling demand or winter heating) directly on the exchange.

Figure 73: IGX contract wise traded volumes, Mn MMBtu



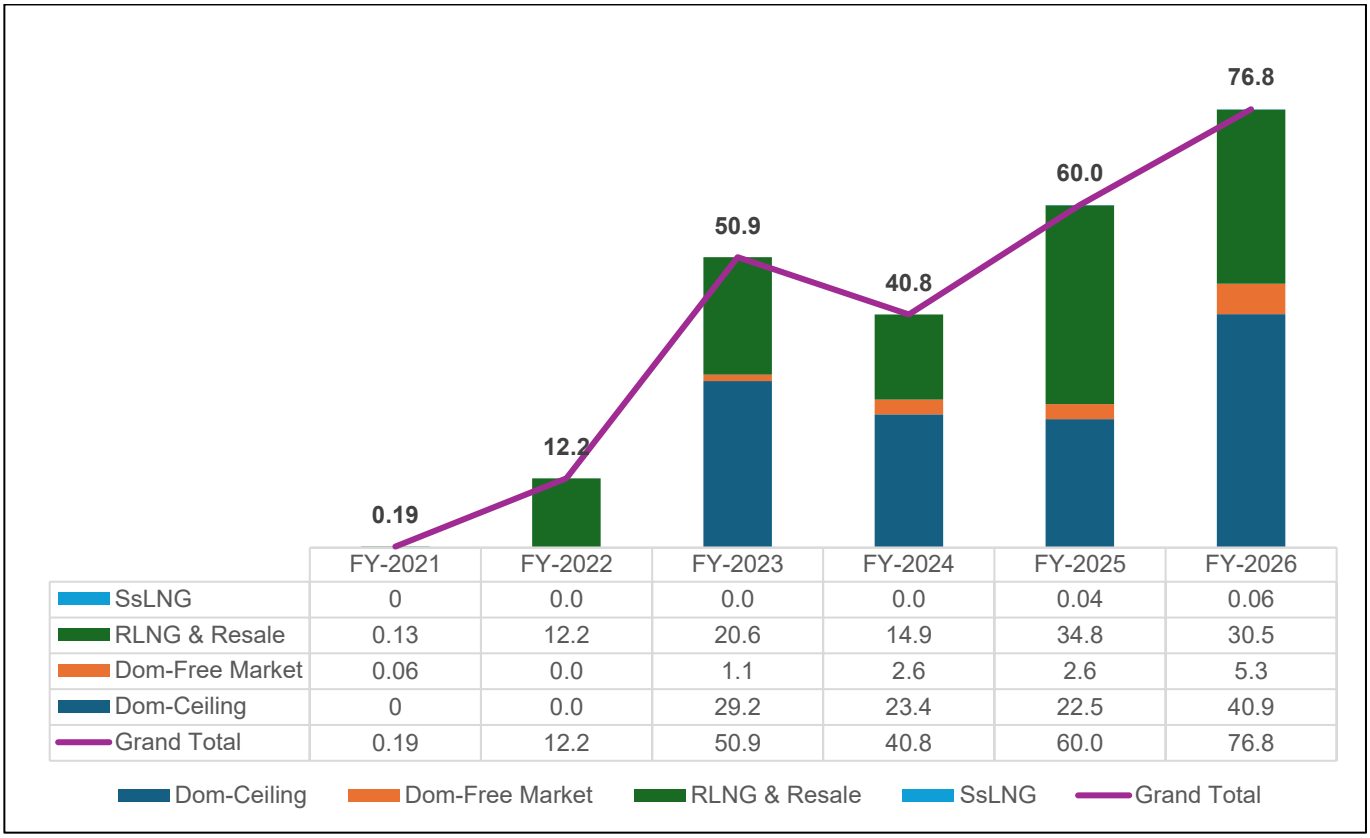
	FY21	FY22	FY23	FY24	FY25	FY26
Balance of Month						1.01
6M LDC						0.81
3M LDC						0.69
Intraday					0.004	2.52
ssLNG					0.04	0.06
Day Ahead		0.07	0.49	0.29	2.19	4.50
Monthly	0.08	7.82	36.63	29.97	28.93	48.80
Fortnightly	0.07	1.71	8.62	4	11.45	10.57
Weekly	0.02	1.42	2.51	4.2	12.94	4.09
Weekday	0	0.01	0.24	0.42	1.33	0.002
Daily	0.02	1.11	2.36	1.96	3.12	3.78
Total	0.2	12.1	50.9	40.8	60.0	76.8

Source: IGX

Domestic HPHT Gas

A significant portion of the recent growth is driven by the government's policy to allow HPHT domestic gas to be traded on the exchange.

Figure 74: IGX traded volumes, by type of gas

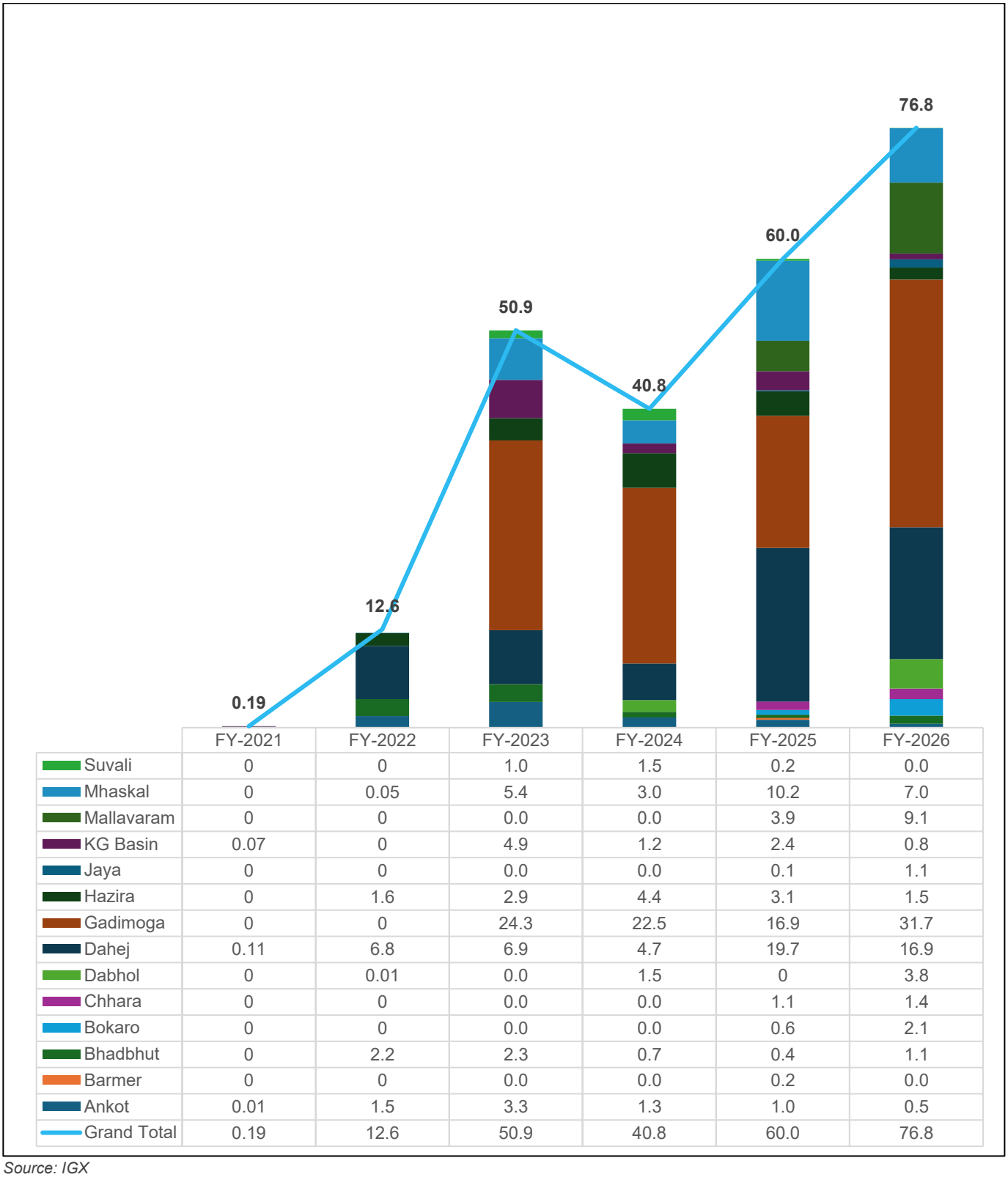


	FY-2021	FY-2022	FY-2023	FY-2024	FY-2025	FY-2026
SsLNG	0	0.0	0.0	0.0	0.04	0.06
RLNG & Resale	0.13	12.2	20.6	14.9	34.8	30.5
Dom-Free Market	0.06	0.0	1.1	2.6	2.6	5.3
Dom-Ceiling	0	0.0	29.2	23.4	22.5	40.9
Grand Total	0.19	12.2	50.9	40.8	60.0	76.8

Source: IGX

IGX traded volumes by delivery point

Figure 75:IGX traded volumes by delivery point, Mn MMBtu



	FY-2021	FY-2022	FY-2023	FY-2024	FY-2025	FY-2026
Suvali	0	0	1.0	1.5	0.2	0.0
Mhaskal	0	0.05	5.4	3.0	10.2	7.0
Mallavaram	0	0	0.0	0.0	3.9	9.1
KG Basin	0.07	0	4.9	1.2	2.4	0.8
Jaya	0	0	0.0	0.0	0.1	1.1
Hazira	0	1.6	2.9	4.4	3.1	1.5
Gadimoga	0	0	24.3	22.5	16.9	31.7
Dahej	0.11	6.8	6.9	4.7	19.7	16.9
Dabhol	0	0.01	0.0	1.5	0	3.8
Chhara	0	0	0.0	0.0	1.1	1.4
Bokaro	0	0	0.0	0.0	0.6	2.1
Bhadbhut	0	2.2	2.3	0.7	0.4	1.1
Barmer	0	0	0.0	0.0	0.2	0.0
Ankot	0.01	1.5	3.3	1.3	1.0	0.5
Grand Total	0.19	12.6	50.9	40.8	60.0	76.8

Source: IGX

Key Delivery Points

Two delivery points alone account for over 60% of FY26 volumes:

- **Gadimoga (41% in FY26):** Currently the most active delivery point of IGX. Its volumes spiked in FY-2023 and have grown consistently, reaching 31.7 Mn MMBtu in FY-2026. This reflects the critical role of domestic gas from the KG-D6 basin.
- **Dahej (22% in FY26):** The primary hub for imported LNG, showing India's continued reliance on Regasified LNG (RLNG) by Fertilizers, CGDs, industries, refiners and petrochemical plants.

Emergence of New Strategic Hubs

The data reveals a shift from a concentrated market to a more distributed one:

- **Mhaskal:** Witnessed a massive jump from 0.05 Mn MMBtu (FY22) to 6.97 MN MMBtu (FY26). This highlights its importance a convenient option to source from multiple points being an interconnecting point.
- **Bokaro & Chhara:** These points only started showing significant activity in FY26, indicating the integration of CBM (Coal Bed Methane) and new LNG terminals into the exchange ecosystem.
- **Dabhol's Surge:** Dabhol saw a 10x increase in FY26 (reaching 3.77 Mn MMBtu), due to higher utilization by major nearby gas-based power plants and improved utilization of the Konkan LNG terminal due to breakwater commissioning and it becoming all-weather terminal.

Key regulations and factors impacting natural gas trading in India

Table 30: Key regulations impacting gas trading in India

<table>
<tr><th>SN</th><th>Regulation</th><th>Remark</th><th>Impact on IGX / gas trading in India</th></tr>
<tr><td>1</td><td>Petroleum and Natural Gas Regulatory Board (Gas Exchange) Regulations</td><td>Provides regulatory framework for establishment and operation of gas exchanges in India; defines governance, approval, oversight and surveillance of contracts on exchange.</td><td>Enabled establishment of IGX as authorized gas exchange</td></tr>
<tr><td>2</td><td>Petroleum and Natural Gas Regulatory Board (Access Code for Common Carrier or Contract Carrier Natural Gas Pipelines) Regulations</td><td>Governs open access to pipelines, capacity booking, scheduling, balancing and transportation arrangements</td><td>• Enables third-party pipeline access.
• Influences contract types and booking timelines, gate closures etc.
• Facilitates gas delivery for exchange trades</td></tr>
<tr><td>3</td><td>Petroleum and Natural Gas Regulatory Board (Determination of Natural Gas Pipeline Tariff) Regulations</td><td>Unified Tariff Framework (Major Reform)
PNGRB introduced "One Nation, One Grid, One Tariff".
Key Features:
Earlier: 3-zone tariff system on each pipeline network
Now: 2-zone unified tariff (2025–26 reform) across the whole grid
<table>
<tr><th>Zone</th><th>Distance</th><th>Tariff (Rs/MMBtu)</th></tr>
<tr><td>Zone 1</td><td>Up to 300 KM</td><td>54</td></tr>
<tr><td>Zone 2</td><td>>300 KM</td><td>110.02</td></tr>
</table></td><td>• Reduces delivered cost disparities
• Improves pan-India arbitrage opportunities
• Enhances liquidity on IGX
• Makes gas competitive vs coal and LPG</td></tr>
</table>

SN	Regulation	Remark	Impact on IGX / gas trading in India
		Special Provision: CNG & domestic PNG get Zone-1 tariff nationwide	
4	**Taxation framework**	State-wise Taxes (Value Added Tax) instead of common Goods and Services Tax (GST). This results in high variation in gas prices across different States. One notable consequence is that GST paid on the procurement of plant and machinery cannot be claimed as input tax credit, as no input credit on VAT is available. While natural gas is excluded from the GST framework, regasification activities associated with Liquified Natural Gas (LNG) attract GST. Notably, the regasification process currently attracts a high GST rate of 18%, leading to an increase in the landed cost of LNG for domestic consumers.	State wise VAT variation distorts price discovery and interstate trade. It requires separate delivery points and creation of virtual hubs, unviable. Traders are unable to properly arbitrage across regions. Trade churn is lower as resale does not get input credit of taxes.

Need for and importance of the gas exchange in the country

India's natural gas sector has traditionally operated under a highly regulated framework, characterized by administered pricing, long-term bilateral contracts, and government-controlled allocation mechanisms. While such a system ensured supply security for priority sectors, it led to inefficiencies, lack of transparency, and limited market development.

With the increasing importance of natural gas as a transition fuel in India's energy mix, there emerged a strong need for a market-based mechanism that could facilitate efficient price discovery, improve supply flexibility, and integrate domestic and global gas markets. The establishment of the Indian Gas Exchange (IGX) in 2020 represents a major reform aimed at addressing these structural challenges and enabling the evolution of a competitive gas market ecosystem.

Table 31: Importance of gas exchange in India

SN	Statement	Remark	IGX impact
1	**Lack of Transparent Price Discovery**	**Problem:** Price discovery in Bilateral markets lacks • transparency • competition • Absence of a market-based benchmark price **Need:** • A transparent platform for: • Competitive bidding • Real-time price signals	IGX fulfills this need by: • Providing exchange-based price discovery • Creating domestic benchmarks such as GIXI
2	**Rigid contractual framework**	**Problem:** Heavy reliance on: • Long-term LNG contracts • Fixed supply agreements **Limitations:** • Lack of flexibility • Inability to respond to price changes **Need:** Short-term, flexible trading mechanisms	IGX enables this by introducing customizable contracts ranging from day ahead to fortnightly to long duration contracts

SN	Statement	Remark	IGX impact
3	**Small consumers unable to negotiate**	**Problem:** • Smaller players depended only on marketers • Access to competitive price limited **Need:** **A centralized platform to:** • Aggregate demand and supply • Increase participation	IGX brought small lots of 50 MMBtu/day so that smaller customers are able to buy their requirement.
4	**Flexible Sourcing**	**Problem:** • Customers had no choice of weekly/daily sourcing as per needs **Need:** • Choice of contracts across all timeframes in short term	• IGX enables this by providing multiple tenors of contracts.
5	**Policy Push Toward Gas-Based Economy**	The government has set an ambitious target to increase the % share of natural gas in the primary energy mix to 15% by 2030. Without competitive markets, demand growth would be stunted.	• IGX is a key enabler of this transition by improving competition and sourcing dynamics
6	**For Monetizing domestic gas**	Problem: • Sudden increase in production or reduction in customer offtake results in reduction in production volumes or flaring • For new fields, long term production profile is difficult to forecast thus offering volumes for 2-3 years may not be feasible	• IGX allows domestic gas producers maintain production levels and avoid flaring, by selling such volumes on Exchange

Strategic partnerships / collaborations

The Indian Gas Exchange (IGX), launched in 2020, represents a major institutional reform in India's natural gas sector, enabling transparent, market-based gas trading. As India moves toward a gas-based economy, IGX has increasingly focused on strategic collaborations and partnerships to deepen market liquidity, improve infrastructure utilization, and align with global gas trading practices.

Strategic partnerships are critical for IGX because:
- India's gas market is still evolving
- Infrastructure access remains fragmented
- Market liquidity is limited

Thus, collaborations help IGX scale operations, integrate markets, and develop new products

Table 32: Strategic partnerships and collaborations of IGX

SN	Partnership / collaboration	Remarks
1	**Collaboration with S&P Global Commodity Insights**	In December 2023, IGX entered into an agreement with S&P Global Commodity Insights (now, S&P Global Energy) for use of international gas and energy benchmarks such as JKM, WIM and Platts Dated Brent, which are proprietary price assessments of S&P Global Energy for long duration contracts on the exchange Key Objective: Index linked contracts are designed to help participants manage longer term price risk, align gas procurement with broader energy market trends and adopt structured pricing strategies These contracts are made available on a rolling basis and support participants seeking longer tenor exposure with transparent price linkage

SN	Partnership / collaboration	Remarks
2	**Collaboration with Gujarat State Petroleum Corporation Limited and GIFT City entities**	In January 2024, IGX entered into MoU with Gujarat State Petroleum Corporation Limited and GIFT City entities for development of a mechanism for hydrogen trading. Key Objective: • Develop hydrogen trading ecosystem in India • Explore market framework for green hydrogen trading • Support energy transition initiatives
3	**Collaboration with ACME Cleantech Solutions Private Limited**	In February 2024, IGX entered into an MoU with ACME Cleantech Solutions Private Limited for cooperation and collaboration towards development of the green hydrogen and ammonia market in India. Key Objective: • Develop green hydrogen and ammonia market ecosystem • Explore trading opportunities in emerging green fuels • Support India's clean energy transition
4	**Collaboration with European Energy Exchange (and another entity)**	In October 2024, IGX entered into a cooperation agreement with European Energy Exchange and another entity to support development of a hydrogen trading market in India. Key Objective: • Leverage European expertise in hydrogen markets • Support market design and ecosystem development • Promote knowledge sharing and best practices
5	**Collaboration with Central European Gas Hub (CEGH)**	IGX signed a MoU with Central European Gas Hub (CEGH) in 2025. Key Objectives: Develop gas trading hub expertise in India Leverage European experience in: Gas market liberalization Hub-based pricing systems **Explore trading in**: • Natural gas • Renewable gases (hydrogen, biomethane, e-methane) **The collaboration focuses on**: • Market design and development • Training and knowledge sharing • Exchange operations and best practices **Significance:** This is IGX's first major international collaboration, aligning India's gas market with European hub-based systems.
6	**Infrastructure Collaboration with LNG Terminal Operators** **Partnership with Hindustan Petroleum Corporation Limited (HPCL)**	MoU signed in 2026 during India Energy Week **Key Features:** Enables exchange-based booking of regasification capacity **Specifically, for**: Chhara LNG Terminal (Gujarat) **Functional Role:** • IGX provides a digital platform for capacity booking

SN	Partnership / collaboration	Remarks
		• Introduces market-based access to LNG infrastructure **Impact:** • Improves utilization of LNG terminals • Enhances transparency in infrastructure access • Encourages wider participation by market players **Strategic importance:** This is a major structural reform, linking: Gas trading (IGX) + Physical infrastructure (LNG terminals) A global liquefaction boom is creating a supply glut, driving buyers away from rigid long-term contracts toward spot markets.
7	**Collaboration with PRISMA**	In September 2025, IGX entered into an MoU with PRISMA, a European gas market platform, for cooperation towards development of modern, transparent and efficient gas markets. Key Objective: • Explore digital solutions for gas and LNG trading • Exchange operational knowledge and best practices • Support development of efficient gas market infrastructure
8	**Financial Market Collaboration** **Partnership with National Stock Exchange of India (NSE)**	In April 2026, IGX signed agreement with National Stock Exchange of Indie Limited (NSE) to launch Indian natural gas derivative contracts based on IGX's benchmark Price Index GIXI (Gas IndeX of India) at NSE. **Objective:** • Launch natural gas futures contracts **Expected Benefits:** • Hedging against price volatility • Development of derivatives market • Strengthening price benchmarks • Increased liquidity in IGX physical market

The Indian Gas Exchange has emerged as a key institutional platform for India's natural gas market, and its strategic collaborations are central to its growth trajectory. Existing partnerships with international hubs, LNG infrastructure operators, and technology providers have laid the foundation for a transparent and efficient gas trading ecosystem. Going forward, deeper collaborations with financial markets, pipeline operators, LNG players, and renewable gas sectors will be critical in transforming IGX into a fully automated gas trading hub comparable to global benchmarks.

New upcoming products and contracts on Indian Gas Exchange (IGX)

Table 33: Upcoming products / contracts on IGX

SN	Product	Remarks
1	**Long Duration contracts** 1 year and 2 years	• The exchange has submitted an application to the regulator to introduce longer duration contracts (in addition to existing contracts) with a tenure of 1 year and 2 years. • The terms and conditions for 1-Year and 2-Year contracts will be similar to the existing 3-Month and 6-Month contracts. • This will help develop liquidity, develop competitive price benchmarking, develop transparency and ensure longer-term volumes on the exchange.
2	**RLNG terminal capacity booking**	• Significant idle regasification capacity exists across various RLNG terminals. Existing capacity holders often lock in terminal capacity under long-term agreements. But without

SN	Product	Remarks
		a structured framework to release or trade unused capacity, third-party users are unable to access infrastructure on a flexible or short-term basis • A standardized regas capacity booking platform will enable sellers to make their idle regasification capacity available to the market. This will help increase open access, optimum utilization of the terminal infrastructure and evolution of a flexible liquid gas market.
3	**LNG trading on high seas**	• As regasification capacity expands, LNG imports rise, and buyers seek greater procurement flexibility, exchange-based LNG transactions can enable transparent pricing, efficient spot procurement, and improved supply optimization. • For India, deeper LNG participation on IGX would enhance market liquidity, strengthen domestic price discovery, and support the transition toward a more competitive and market-driven natural gas ecosystem. • IGX has submitted an application to regulator to conduct high seas LNG trading on its platform. Model involves extending the trading platform access to international LNG sellers trading solely on their own account, thereby enabling their participation on the exchange
4	**CBG trading**	• With the Government of India's initiatives such as the DPI scheme for connecting CBG plants to the CGD network and trunk pipelines, CBG is gradually entering the mainstream gas ecosystem and becoming accessible to a wider set of market participants. Exchange-based trading can facilitate transparent and efficient trade between CBG producers and willing buyers, including CGD entities and industrial consumers seeking to increase procurement of green gas and meet sustainability objectives.
5	**CBG certificates trading**	• It was recommended in the PNGRB HLEC report by Mr Ajay Tyagi that To promote compliance with blending mandates and incentivize overachievement, a Renewable Gas Certificate (RGC) mechanism should be established, enabling CGD entities falling short of meeting blending obligations to procure certificates from compliant entities or CBG producers. • Voluntary buyers may also participate to make their gas usage green. A transparent, market-based system for issuance, trading (via PNGRB-authorized gas exchanges), and regulatory oversight should be implemented, with PNGRB designated as the nodal regulator • Initiative supports the recent CBG blending obligations and aims to create a market similar to Renewable Energy Certificates (RECs) in the power sector
6	**Petroleum products trading**	• Petroleum exchange enables transparency and brings market-based price discovery to petroleum products. It helps refiners, oil marketing companies, and bulk consumers to trade petroleum products. • It also enhances competition, lower transaction and counterparty risks, and improves supply and inventory planning through real-time market signals • IGX has submitted an application to the PNGRB to introduce petroleum products trading on the IGX platform starting with products such as Furnace Oil (FO), Non-domestic LPG, Bitumen and Aviation Turbine Fuel (ATF).
7	**Hydrogen Index and trading**	• IGX also has plans of launching a Hydrogen Index for the country and to also develop a platform to enable Hydrogen trading in the country.

Key features about new upcoming products

Table 34: Key features of other market opportunities for IGX

Segment	Remarks	Global examples	Potential in India	How IGX can play a role
LNG High Seas Trading	Trading of LNG cargoes while vessels are already in transit before final discharge at destination terminals. Cargoes may be diverted or re-sold based on regional price arbitrage and demand shifts.	Europe's TTF-linked LNG optimization, Singapore LNG trading ecosystem, JKM-based spot cargo swaps, Shell/BP/Vitol cargo portfolio trading.	India's LNG imports are expected to rise significantly with growing CGD, industrial and power demand. Increased spot LNG procurement creates opportunities for trading.	IGX can develop spot LNG trading and integrate LNG procurement with domestic gas markets. It can gradually evolve into a regional LNG balancing hub.
RLNG Terminal Capacity Booking	Transparent digital platforms enable or re trading of booking of regasification capacity, unloading slots and terminal infrastructure access	European LNG terminals operate secondary slot booking and transparent access mechanisms. Capacity trading is common in Europe's liberalized gas infrastructure markets.	India currently has underutilized LNG terminals with long-term locked capacities. Transparent slot access can improve utilization and allow smaller buyers to access RLNG infrastructure.	IGX can create an exchange-based RLNG slot booking platform for primary and secondary capacity trading, improving infrastructure efficiency and enabling short-term RLNG procurement.
Renewable Gas Certificates (RGCs)	Tradable certificates representing renewable gas. Similar to renewable energy certificates in power markets.	Europe's Guarantees of Origin (GoOs), UK Green Gas Certification Scheme, US Renewable Natural Gas credits.	India's SATAT and green fuel policies create strong potential for renewable gas certification markets, especially for industries facing ESG and CBAM compliance requirements.	IGX can create transparent renewable gas certificate trading platforms, enabling price discovery, ESG-linked procurement and green gas traceability.
Compressed Biogas (CBG) Trading	Exchange-based trading of upgraded biogas produced from agricultural waste, municipal waste and organic feedstock.	Germany, Denmark and Sweden inject biomethane into gas grids and trade renewable gas through organized systems.	India has abundant agricultural residue and a large feedstock base. CBG can reduce LNG imports, support rural energy ecosystems and strengthen energy security. The Government of India has introduced various initiatives to promote production, transportation and consumption of CBG, including integration of CBG into the existing gas infrastructure network.	IGX can create standardized CBG contracts, facilitate exchange-based procurement, provide benchmark pricing and integrate CBG into national gas balancing markets.

Segment	Remarks	Global examples	Potential in India	How IGX can play a role
Petroleum Product Trading	Organized exchange-based trading of petroleum products such as naphtha, fuel oil, jet fuel, gasoline and diesel.	ICE, CME-NYMEX, SGX and DME actively trade petroleum products and derivatives globally.	India is a major refining and petroleum export hub but lacks a robust organized spot trading ecosystem for refined products.	IGX can eventually expand into petroleum product spot trading, refinery balancing markets and short-term fuel procurement platforms.
Hydrogen Trading	Trading green hydrogen, ammonia and hydrogen-linked environmental attributes through organised platforms and long-term contracts.	Europe's hydrogen corridors, Japan-Korea hydrogen import ecosystem, Middle East ammonia export markets.	India's National Green Hydrogen Mission (NGMH) positions the country as a major future producer and exporter of green hydrogen and ammonia.	IGX can create hydrogen benchmark prices, hydrogen certificate systems, exchange-based hydrogen trading and support cross-border hydrogen commerce.
Hydrogen and Derivatives' Price Indices	Benchmark prices representing market-based valuation of green hydrogen, blue hydrogen, grey hydrogen, ammonia and associated environmental attributes. These indices support price discovery.	EEX Hydrogen Index, CEGH Hydrogen index, S&P Global Hydrogen Assessments, .	India's National Green Hydrogen Mission aims to position the country as a major producer and exporter of low-cost green hydrogen and ammonia. As production scales up, transparent hydrogen benchmark pricing will become essential for exports, domestic procurement.	IGX can develop India-focused hydrogen benchmark indices for green hydrogen and ammonia, facilitate transparent price discovery.

IGX Business Risks and Challenges

1. Regulatory & Policy Risks (The Enabling Environment)

This category encompasses macro-level government interventions and fiscal structures that dictate the playing field for IGX.

Exclusion from the GST Framework: Natural gas remains outside the Goods and Services Tax (GST) regime in India. Instead, it is subject to varying state-level Value Added Taxes (VAT) and Central Sales Tax (CST). This creates a cascading tax structure that penalizes inter-state trading, heavily disincentivizing buyers from leveraging a national-level digital exchange.

Regulated Price Caps and Allocations: A large portion of India's domestically produced natural gas (especially APM gas) is subject to strict government allocation guidelines (e.g., prioritized for City Gas Distribution and Fertilizers) and price ceilings. This leaves very little "free commercial gas" available for open market price discovery on an exchange.

Dual-Regulator Compliance Complexity: IGX operates under the regulatory oversight of the PNGRB. Navigating evolving mandates—such as unbundling marketing from transportation, pipeline open-access rules, and mandatory gas-release programs—creates ongoing compliance and pivoting risks.

2. Infrastructure & Supply Chain Risks (The Physical Layer)

Unlike equity or digital-asset exchanges, IGX is a compulsory physical delivery-based exchange. If the gas cannot physically move, the trade cannot execute.

Pipeline Connectivity and Bottlenecks: The physical architecture of India's gas grid is highly fragmented. While the Western and Northern regions are well-connected, Eastern and Southern regions lack integrated pipeline depth. This geographical imbalance restricts IGX's ability to scale nation-wide virtual hubs.

The "Contractual Path" vs. "Entry-Exit" Tariff Deficit: Historically, pipeline tariffs in India were distance-based (contractual path). While the government has introduced unified tariffs, a full-scale, predictable, non-discriminatory "Entry-Exit" tariff system is still maturing. High or unpredictable transit costs distort exchange-driven price discovery.

Lack of Commercial Gas Storage: India lacks significant commercial or strategic underground natural gas storage facilities. Without storage buffers to manage sudden surges or drops in supply, physical delivery timelines on short-term exchange contracts carry high operational fragility.

3. Market & Liquidity Risks (The Commercial Layer)

These risks impact the trading volumes, participation depth, and the economic viability of the exchange platform.

Opaqueness of Bilateral Monopolies: The Indian gas market is traditionally dominated by a few massive, public-sector anchors (like GAIL, IOCL, ONGC) acting via long-term, bilateral Power Purchase Agreements (PPAs) or Fuel Supply Agreements. Breaking these deeply entrenched, long-term legacy contracts to drive volumes to a spot exchange is a massive behavioral and structural challenge.

De-linked Global Volatility vs. Domestic Affordability: India relies heavily on imported LNG to meet demand. Extreme volatility in global indices (like JKM or Brent) can cause domestic spot prices on IGX to skyrocket, pricing out highly price-sensitive Indian consumers (e.g., gas-based power plants) and drying up market liquidity overnight.

Competition from Alternative Energy and Substitutes: For industrial buyers, natural gas competes directly with dirtier but cheaper alternatives (like coal, fuel oil, or petcoke) and rapidly scaling commercial renewable energy (solar/wind). If exchange gas prices lose parity, volume migration happens swiftly.

4. Operational, Technology & Counterparty Risks (The Platform Layer)

This captures the risks in terms of running the exchange infrastructure itself and managing its clearing and settlement obligations.

Physical Delivery Default & Force Majeure Handling: In a delivery-based exchange, a pipeline rupture, technical failure at an LNG regasification terminal, or a sudden upstream production halt constitutes a delivery default. Managing financial clearing, margin payouts, and legal liabilities during upstream force majeure events poses severe operational risk.

System Integrity & Capacity Booking Sync: IGX's platform must seamlessly sync with the physical capacity bulletin boards of various pipeline operators in real time. Any data lag or failure in verifying "available pipeline capacity" before matching a trade can lead to system gridlock or unmatched physical flows.

Nascent Derivative Interconnectivity: While the launch of natural gas derivatives (e.g., via the NSE linked to IGX's GIXI index) help manage risk, any disconnect or lack of convergence between the physical spot prices on IGX and the financial derivative layer could lead to speculative distortion or arbitrage loops.

Module 5: Enablers for a vibrant gas trading market in India

While there are multiple demand drivers for natural gas consumption in India, a fully functioning liquid natural gas market is one of the key drivers. Liquid and competitive gas markets worldwide have yielded substantial economic benefits to the sector, fostering demand expansion, and concurrently providing price signals that incentivize new investments.

A liquid natural gas market becomes even more crucial for India as we are looking to increase natural gas share from 7% to 15%. Enhanced market liquidity will reduce entry barriers for new suppliers, increase the number of participants in the market, ultimately increasing the price competitiveness of the gas market. India being a price-sensitive country, enhanced market liquidity can be the key to reducing domestic gas and LNG's prices, ultimately increasing natural gas consumption. However, natural gas market liquid is limited due to current market structure, regulatory constraints, and other challenges.

Consequently, the market is mostly limited to bilateral contracts between natural gas producers/marketers and consumers. Developing competitive gas markets and attracting investments for gas infrastructure development requires regulatory reforms, structural changes, and liquid markets.

A liberalised gas market in India is crucial to fostering competition, ensuring price transparency, and enhancing the efficiency of the natural gas sector. A free gas market would lead to market-driven pricing, transparency, boosting investment in gas infrastructure, efficient allocation of resources, and increased liquidity in the market.

Natural gas hubs/markets play a crucial role in gas markets, serving as the focal point in a gas network. In the European Union and the US, hubs are used as the central pricing point for the network's natural gas. In these countries, financial derivative contracts are priced off the gas supplied at these hubs. With higher transactions in a hub, the price transparency increases, and transaction costs decrease.

This leads to an increase in the attractiveness and reliability of hubs to manage gas portfolio hedging and optimisation. Trading within hubs allows an increased transparency of the prices, leading to formation of stronger and clearer economic signals for the market participant.

Key enablers and growth drivers for promoting natural gas trading in India

India is still in the process of liberalizing its gas market. With the launch of the Indian Gas Exchange (IGX), India has taken a positive step in the direction of building a liquid gas market, but overall market liquidity still remains low.

Some of the key enablers or drivers to increase gas market liquidity in India are:

Table 35: Key enablers for gas trading in India

SN	Roadblock/ risks/ barrier	Remark
1	**Transparent, Symmetric Information and Level Playing Field**	• India requires a unified and real-time information framework providing visibility on pipeline capacities, LNG terminal availability, transmission flows, maintenance schedules and market transactions. As recommended in the PNGRB Vision 2040 report, implementation of an online real-time bulletin board integrated with SCADA systems can improve transparency, optimise capacity utilisation and establish a level playing field for all market participants.

SN	Roadblock/ risks/ barrier	Remark
2	**Faster and Flexible Access Mechanisms**	• Indian gas consumers currently face rigid capacity booking systems, whereas mature gas markets provide near real-time and flexible access arrangements. Introduction of short-notice, same-day and intraday capacity booking, and market-based balancing mechanisms can significantly improve market responsiveness and support sectors with volatile demand such as CGD and power.
3	**Establishment of an Independent System Operator (ISO)**	• Establishment of an Independent System Operator (ISO), as recommended under the PNGRB Vision 2040 report, is critical to ensure transparent, efficient and non-discriminatory operation of the gas transmission network. A ISO-led framework supported by standardised GTAs, common IT systems and transparent booking mechanisms can facilitate development of a liquid and competitive gas market.
4	**Transparent Third-Party Access (TPA)**	• Development of a transparent and non-discriminatory Third-Party Access regime across pipelines and RLNG terminals is essential for improving market liquidity and competition. The PNGRB Vision 2040 report highlights the need for common capacity booking platforms, transparent SOPs, UIOLI provisions and secondary trading of terminal capacity to prevent capacity hoarding and improve infrastructure utilisation.
5	**Better Transmission Tariff Regime / Entry-Exit System**	• Existing contract path-based tariffs fragment the market and restrict re-trading of gas. The PNGRB Vision 2040 report recommends transition towards route-agnostic transmission tariffs, including an Entry-Exit system or single unified tariff framework, which can facilitate creation of a virtual gas hub, improve liquidity and enable seamless nationwide gas trading.
6	**GST Inclusion for Natural Gas**	• The exclusion of natural gas from the GST regime leads to cascading taxes, operational inefficiencies and fragmented markets. Inclusion of natural gas under GST with input tax credit availability would support the vision of “One Nation, One Market”, improve ease of doing business and facilitate creation of a one virtual hub across nation.
7	**Expansion of Pipeline Infrastructure in South and North-East India**	• Significant parts of South and East India continue to face limited pipeline connectivity, restricting gas accessibility and market participation. Expansion of the National Gas Grid, development of spur pipelines and synchronised connectivity between LNG terminals and demand centres are critical enablers identified in the PNGRB Vision 2040 report for creation of an integrated national gas market.
8	**Expansion of City Gas Distribution (CGD) Infrastructure**	• Continued expansion of CGD infrastructure is essential to deepen gas penetration across transport, industrial, commercial and domestic segments. Improved last-mile connectivity, wider PNG and CNG access and development of additional CGD networks can support demand aggregation and improve liquidity on gas trading platforms.
9	**Standardisation of Contracts and Market Practices**	• India currently lacks standardised frameworks across pipeline operators like GTAs, imbalance charging mechanisms and other operational practices. The PNGRB Vision 2040 report highlights that inconsistent rules and practices create inefficiencies and hinder seamless market access. Standardisation of contracts and operating procedures would improve market efficiency and transparency.

SN	Roadblock/ risks/ barrier	Remark
10	**Access to CGD Geographical Areas**	• Open CGD Geographical Areas for third-party access after the marketing exclusivity period is over. This will promote competition by allowing other marketers to supply gas through existing networks. It can improve infrastructure utilization and provide consumers with greater supplier choice. Clear access rules, capacity allocation, and tariff mechanisms will be needed for smooth implementation.
11	**Policy changes - Fertilizer Gas Exchange Participation**	• Amend the Gas Pooling Guidelines 2015 to encourage fertilizer units to participate on gas exchanges. This will support transparent price discovery and increase liquidity in the gas trading market. Fertilizer units can benefit from more flexible and market-linked gas procurement options. The framework should address subsidy treatment, price volatility, and supply reliability concerns.

India's scope to increase exchange-based gas procurement

The global natural gas market is increasingly defined by a shift from rigid oil-indexation to transparent, hub-based pricing. While mature markets like the United States (Henry Hub) and Europe (TTF) have achieved 80% to 100% hub-based price discovery, India remains in its infancy.

Currently, only ~3% of India's gas is traded via the IGX. The share of Exchange-based gas trading volumes is estimated to be ~7% of India's overall natural gas consumption in Fiscal 2030. This massive disparity underscores a significant opportunity for structural reform and market expansion as India moves toward a gas-based economy.

Table 36: Key exchanges and % of gas traded via exchange

Region	Exchange / Hub	Share of Gas Traded via Hub/Exchange	Key Insight
Europe (overall hubs)	Multiple hubs (TTF, NBP, THE, etc.)	~80%+ exchange/hub-based pricing	Transition from oil-indexation to hub pricing completed
United States	Henry Hub (CME/NYMEX)	~95–100% gas priced via hub indexation	Fully liquid financial + physical market
Eurasia / Russia	SPIMEX (St Petersburg)	< 10%	Majority remains under long term regulated bilateral contracts
India	Indian Gas Exchange	~3% of gas traded via exchange	Early-stage market; significant headroom for growth

India's exchange-based gas procurement remains at a nascent stage compared with mature global markets, highlighting significant untapped potential for growth. As India advances toward greater gas market liberalization, expands pipeline and LNG infrastructure, and faces external decarbonization pressures such as CBAM, market-based gas sourcing is expected to gain stronger traction.

This transition can substantially deepen liquidity on IGX, strengthen transparent domestic price discovery, and position the exchange as a critical enabler of India's evolving gas-based energy ecosystem.

Growth drivers for natural gas trading in India

1. **Rapid Expansion of CGD Networks**: City Gas Distribution is the primary demand driver, with over 300 geographical areas authorized for city gas, driving up CNG volumes and domestic PNG connections. Supported by PNGRB's bidding rounds, the number of CNG stations increased from ~1,500 in 2018 to 8,000+ by 2025, with authorized CGD networks now covering ~95% of India's population across 307 GAs. This unprecedented scale-up has significantly reduced fuel-availability barriers, enabling deeper penetration of CNG vehicles in both metro

and non-metro markets. Furthermore, PNGRB is working with the states to expand India's CGD infrastructure, targeting 126.3 million PNG connections and 18,336 CNG stations by 2034. The rising CGD network coupled with dwindling domestic production and increasing imports will provide an opportunity and is a key driver for gas trading in India.

2. **Government Focus on "Gas-Based Economy":** To align with decarbonization goals, the government promotes natural gas as a cleaner alternative in transport (CNG), domestic use (PNG), and industrial sectors (fertilizer, steel, petrochemicals). The Government of India has articulated a strategic vision to increase the share of natural gas in the primary national energy mix to ~15% by 2030, from ~7% currently. as part of its broader transition toward cleaner, more efficient and more flexible energy systems. This policy direction is rooted in the recognition that natural gas emits significantly lower levels of carbon dioxide, sulfur dioxide and particulate matter than coal and oil, and can therefore serve as a transition fuel while renewable energy capacity scales up. The government has consistently stated its ambition to raise the share of natural gas in India's primary energy mix from about 6% – 7% toward 15% over the medium to long term, aligning energy security, environmental sustainability and economic growth objectives. This policy direction is supported by initiatives aimed at fuel switching, emission reduction, and energy security.

3. **Expansion of LNG Infrastructure:** India is witnessing sustained investments in LNG regasification terminals and national gas pipeline infrastructure, aimed at improving supply availability, connectivity, and market integration. Pipeline expansion enhances inter-regional gas flow and price discovery, while LNG capacity additions increase flexibility of supply sourcing, thereby supporting development of a more dynamic and liquid gas trading ecosystem.

4. **Industrial and Fertilizer Sector Growth:** Fertilizer plants and refineries are shifting toward natural gas as a critical feedstock. Since these sectors are some of the largest gas consuming sectors, the opportunity for gas trading for consumption within these sectors is huge.

5. **Development of Market Infrastructure & Trading Ecosystem:** The Indian natural gas market is expected to benefit from ongoing regulatory and policy initiatives aimed at enhancing market efficiency, improving infrastructure utilization and facilitating exchange-based gas trading. The introduction of open access frameworks under PNGRB regulations enables third-party access to CGD and pipeline infrastructure on a non-discriminatory basis, facilitating competitive gas sourcing and trading. Additionally, the development of gas trading hubs and exchanges is expected to enhance price discovery, liquidity, and short-term trading mechanisms, supporting the transition toward a market-driven gas economy.

   Key reforms under consideration include introduction of a market friendly tariff framework i.e. single unified tariff or entry-exit tariff and the inclusion of natural gas under the GST regime which is expected to improve affordability of gas and together both the reforms will reduce transaction complexities and support the pooling of liquidity on exchange through development of a single nation-wide virtual hub. In addition, the proposed incorporation of an independent system operator is expected to facilitate non-discriminatory access to pipeline infrastructure and enhance transparency in the system. The enablement of open access provisions for consumers within CGD geographical areas is expected to increase supplier choice, promote competition and facilitate wider participation in market-based gas procurement. Further, the Draft PNGRB (Access Code for Common Carrier or Contract Carrier Natural Gas Pipelines) Regulations, 2025 proposes a more transparent, flexible and consumer friendly capacity booking framework, including online, 24x7 capacity booking and booking on intraday and day-ahead basis. Collectively, these reforms are expected to enhance liquidity, improve price discovery and support the development of a more competitive and vibrant gas trading ecosystem in India.

   Together, expanding infrastructure, improving LNG availability and favorable pricing dynamics and ongoing regulatory, policy reforms are expected to drive growth in natural gas consumption and support the development of a deeper and more liquid gas market in India.

6. **Unified Tariff:** PNGRB has rationalised the natural gas pipeline tariff structure by replacing the earlier three-zone, distance-based regime with a two-zone framework—Zone 1 up to 300 km and Zone 2 beyond 300 km—effective 1 January 2026, in line with the "One Nation, One Grid, One Tariff" objective. Under the new regime, transportation tariffs are fixed at ₹54/MMBtu for Zone 1 and ₹102.86/MMBtu for Zone 2, with CNG and domestic PNG consumers nationwide charged uniformly at the Zone 1 tariff, irrespective of distance. The new tariff structure is expected to make CNG and D-PNG more affordable, especially in distant markets. PNGRB has further conveyed its intent to move towards a single grid tariff. This shall be a great enabler for traded markets as gas-on-gas competition will emerge in true sense and sourcing gas across any point on the grid would become feasible.
7. **Potential impact of inclusion of natural gas under GST:** The potential inclusion of natural gas under the GST regime has emerged as a key policy reform with broad implications for the industrial sector and infrastructure players. At present, natural gas is outside the GST framework and is subject to state-level value-added taxes (VATs) and central excise duties, resulting in a fragmented tax regime and cascading tax burdens. With GST inclusion, gas consumers – particularly large-volume industrial users served by CGD networks – would benefit from lower effective tax incidence, improved input tax credit benefits and more uniform pricing across states.
8. LNG Usage in transportation and Bunkering

PNGRB Vision 2040 – Natural Gas Infrastructure in India – Report of the High-Level Expert Committee.

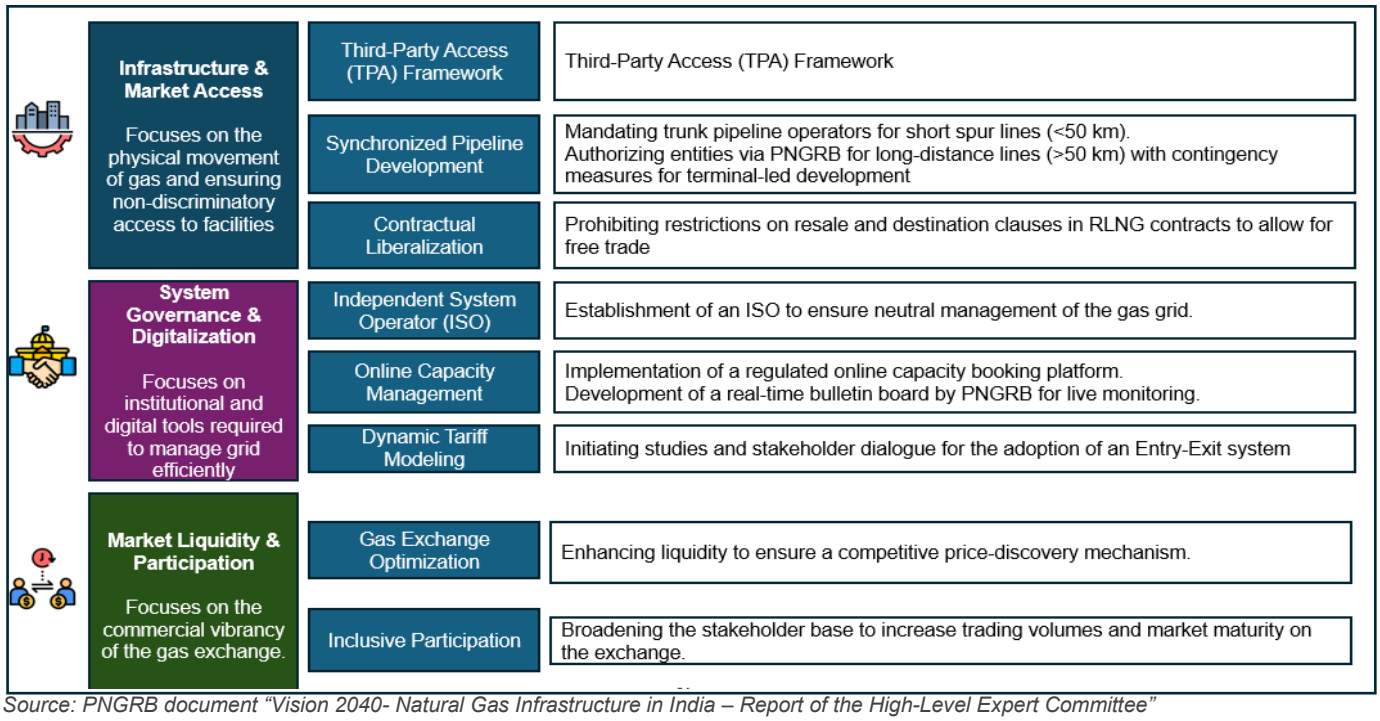
The PNGRB constituted a High-Level Expert Committee (HLEC) on May 3, 2024, headed by Mr DK Sarraf, former Chairperson PNGRB and former CMD-ONGC, consisting of leaders and experts from across the natural gas value chain to chart a long-term roadmap for the sector. The Committee carried out extensive consultations with industry stakeholders and policymakers, and leveraged deep industry insights, decades of collective experience, and a shared commitment to nation-building.

The result of this collaborative effort is the Vision 2040 – Natural Gas Infrastructure in India, a forward-looking document that lays out a comprehensive blueprint for expanding the reach, depth, and resilience of India's natural gas ecosystem. This vision document reflects a thorough assessment of current infrastructure, demand dynamics, policy environment, and global trends.

It provides a sector-by-sector analysis of natural gas sector—spanning city gas distribution (CGD), industry, power, fertilisers, transport, biogas, and liquefied natural gas (LNG)—while also addressing critical enablers such as pipelines, LNG terminals, gas storage, pricing, taxation, and free gas market in India.

It identifies existing challenges, future opportunities, and based on learnings from other countries, recommends actionable interventions required to position natural gas as a key pillar in India's energy mix over the next two decades.

Figure 76:Key recommendations of Vision 2040 Committee for a free gas market in India

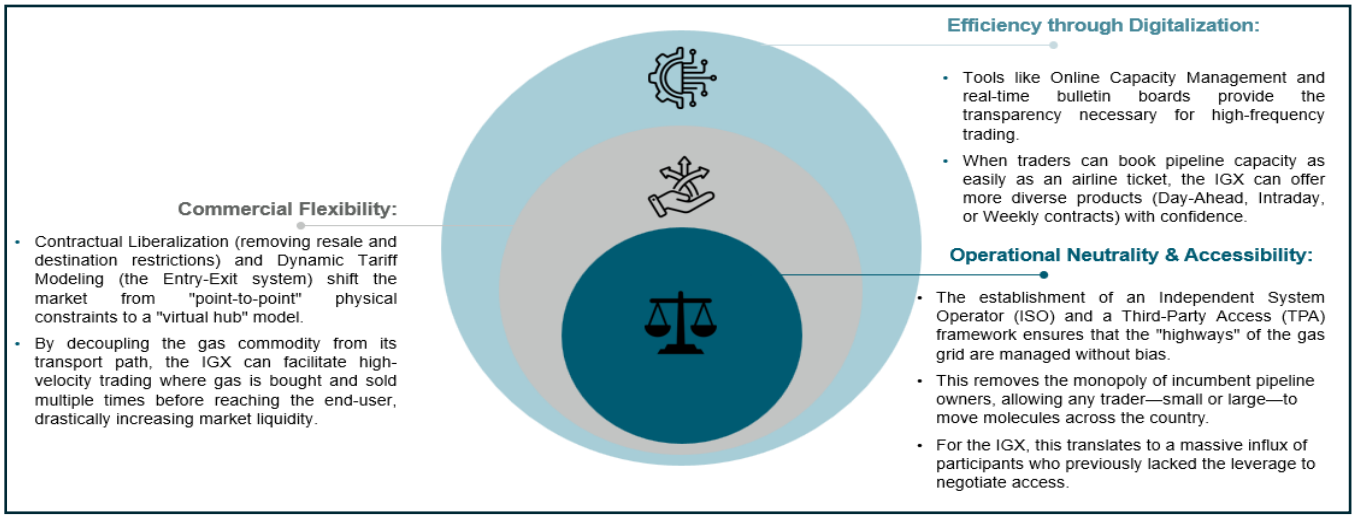


Source: PNGRB document "Vision 2040- Natural Gas Infrastructure in India – Report of the High-Level Expert Committee"

The recommendations outlined in the PNGRB "Vision 2040" report create a cohesive ecosystem designed to transform India's gas sector from a rigid, contract-heavy landscape into a dynamic, liquid marketplace. By integrating infrastructure unbundling with digital governance, these reforms directly empower the Indian Gas Exchange (IGX) to function as the nation's central nervous system for energy.

The synergy of these points drives a 3-pronged advancement in market maturity:

Figure 77: Recommendations from Vision 2040 report benefiting IGX



In summary, these points work in a feedback loop: neutral access brings more participants; liberalized contracts provide the volume to trade; and digital tools provide the speed required for modern commerce.

This collective shift transforms the IGX from a niche platform into a robust, high-volume marketplace that reflects the true economic value of gas in India, ultimately lowering costs for the end consumer through intense competition.

PNGRB – Draft (Access code for Common/ Contract Carrier Natural Gas Pipelines) Regulations, 2025

Though PNGRB Vision 2040 Committee recommendations were advisory in nature. In line with above report, PNGRB issued draft Access Code 2025 (DAC) to implement few recommendations relating to streamlining of third-party access to pipeline network.

The draft proposes to regulate transport capacities. Introduces an independent system operator. The draft also seeks to introduce greater operational flexibility. This includes RE & intraday capacity booking, provisions for capacity transfer and trading, and lower ship-or-pay obligations for long-term bookings. At the same time, it shorter and faster nomination timelines, and tighter imbalance curing provisions allowing access in 6-hour blocks during the day in place of 3-day gate closure for capacity booking.

These changes are significant and are likely to have wide-ranging implications across the gas value chain.

Table 37: Key regulations from the Draft Access Code 2025

SN	Category	Key changes	Key insights / Market Impact	Impact on IGX
1	**Market Structure and Governance Reforms**		Creates a uniform and regulated market-access architecture, reducing contractual fragmentation and improving transmission governance	Builds confidence for market participants to transact through IGX by creating standardized pipeline access rules and reducing contractual uncertainty
2	**Transparency & Digital Infrastructure**	• Real-time capacity disclosure • Operational data reporting • NGGMS /GABB digital platform • Maintenance disclosures • Compliance reporting obligations	Improves information symmetry and enables better market decision-making	Better visibility on transmission availability allows traders to execute exchange transactions with greater certainty, supporting improved trading efficiency on IGX
3	**Flexible Capacity Access & Market Development**	• Intraday booking (4 slots/day) • Capacity release mechanism • Secondary capacity trading • Interruptible capacity access • MDQ revision flexibility • Exchange-linked capacity release provisions	Introduces flexibility similar to mature gas hubs, enabling responsive and dynamic gas flows	Highest positive impact on IGX. Enables short-duration physical delivery flexibility, facilitates spot and same-day trading, improves liquidity, and supports development of more active exchange-based products
4	**Operational Discipline & System Efficiency**	• Imbalance penalties • Unauthorized overrun charges • Imbalance fund • Own-use disclosure • Gas quality monitoring • Interconnection provisions	Strengthens system discipline, improves balancing efficiency and optimizes pipeline utilization	More reliable delivery infrastructure reduces execution risk for exchange trades and improves confidence in physical settlement through IGX

Core Provisions of the 2025 Draft Access Code

The Draft Access Code 2025 by the PNGRB aims to enhance transparency and non-discriminatory access to natural gas pipelines in India.

Table 38: impact of core provisions of the Draft Access Code, 2025

Core Provision of the 2025 Draft	Impact on IGX
The latest draft introduces several structural changes to how pipeline capacity is declared, booked, and managed. **Standardized Capacity Declaration:** • Transporters can now declare capacity on a daily basis through a centralized digital portal (linked to the National Gas Grid Management Services). • This eliminates the information asymmetry where only large incumbents knew the "true" available capacity in certain spur lines. **Uniform Imbalance Management (IMS):** • The draft integrates the Imbalance Management Services directly into the access code. Shippers are permitted a wider "tolerance band" (typically +/- 5% to 10% depending on the pipeline length) before penalties kick in. • It introduces "netting of Imbalances" across different entry and exit points for the same shipper within a single pipeline system. **Short-Term Booking Windows:** To facilitate spot trading, the draft mandates that a specific percentage (proposed at 25% of common carrier capacity) be reserved for short-term bookings (less than 1 month). This prevents long-term contract holders from "hoarding" pipeline capacity. **Electronic Booking & Bulletin Board:** Draft requires the transporters to maintain a Real-time Bulletin Board showing available capacity for the next 7 days. Bookings must be processed through an automated, non-discriminatory "First Come, First Served" or "Auction-based" mechanism for oversubscribed segments. **Inter-Pipeline Transfers:** The draft provides a framework for "Wheeling" where gas can be transferred between interconnected pipelines of different operators with a single nomination process, simplifying the "pancaked" nomination headache.	The Access Code is the "operating manual" for delivery of trades on the exchange. It further streamlines delivery based trades. **Facilitation of "Day-Ahead" and "Intra-Day" Markets** The draft allows for dynamic scheduling. Previously, pipeline booking had to be frozen 72 hours in advance. The new code allows IGX participants to book capacity within hours of a trade, enabling a true "Intra-day" market where gas can be bought and moved almost in real-time. **Reduction in Transaction Costs (Imbalance Factor)** For a trader on IGX, the risk of "Imbalance Charges" (penalties for not injecting exactly what they draw) was a major deterrent. By allowing Secondary Capacity Trading and Imbalance Netting, IGX members can trade their "imbalance positions" with each other, turning a potential penalty into a tradable commodity. **Intraday Capacity Booking:** The capacity booking can be executed in 4 time slots (6 hours / slot). The request for intra day capacity booking can be raised 2 hours prior to scheduled nomination. The NGGMS/ transporter shall provide an online web-based portal to facilitate this booking arrangement. This capacity booking shall attract additional charges =5% of the applicable unified transportation tariff. This enables IGX to facilitate intraday contracts efficiently **NGGMS/ ISO** National Gas Grid Management Services (NGGMS) or an Independent System Operator (ISO) may be appointed by the board to regulate access to common carrier or contract carrier so as to ensure fair trade and competition amongst entities under these Regulation to ensure nondiscriminatory transportation access, capacity, booking, monitoring, operation planning and control. **Price Convergence** With standardized access, the "location premium" of gas decreases. **Impact:** A buyer in Kochi and a buyer in Ludhiana can bid on the same molecule of gas at IGX, knowing that the Access Code 2025 guarantees the transporter cannot deny "Open Access" if the Bulletin Board shows capacity. This leads to Price Convergence across India's regional hubs. **Boost to Long-Duration Contracts (LDCs)** IGX recently launched 3–6-month contracts.

Core Provision of the 2025 Draft	Impact on IGX
Independent System Operator	In matured markets, an ISO is an independent entity responsible for overseeing operating, maintaining and developing a countries or region's natural gas transmission network. The key role of an ISO is to ensure nondiscriminatory, transparent, and efficient access to the gas pipeline system for all market participants without pipeline entities' bias. Though some of the entities have developed platforms for capacity booking, the absence of a common ISO for natural gas pipelines in India creates several challenges, particularly in capacity booking at short notice, and market transparency. Without an ISO, India's efforts to develop a liquid gas market and a trading hub face significant roadblocks. The absence of an independent and centralized operator results in fragmented infrastructure management, making it difficult to implement uniform gas balancing, scheduling, and dispatching mechanisms across different pipeline networks. **Capacity Hoarding**: Without a neutral clearinghouse, long-term contract holders often underutilize their booked capacity. A lack of an ISO makes it difficult for spot traders on the Indian Gas Exchange (IGX) to access this "shadow capacity" in real-time. **Information Asymmetry:** Traders currently rely on transporters to self-declare available capacity. Centralized, real-time "Bulletin Board" (a standard ISO feature) will encourage small participants to trade for shorter durations also. **Uniform Imbalance Management:** In an ISO-led market, imbalances (gas injection vs. withdrawal) are managed in a uniform manner unlike current situation where each pipeline operators manage own and third party trades in different way. It will manage imbalances through a single national pool. Currently, traders moving gas across multiple pipelines face "pancaked" penalties and separate imbalance rules for each operator.

The Draft Access Code 2025 can be viewed as a **four-pillar reform framework**:

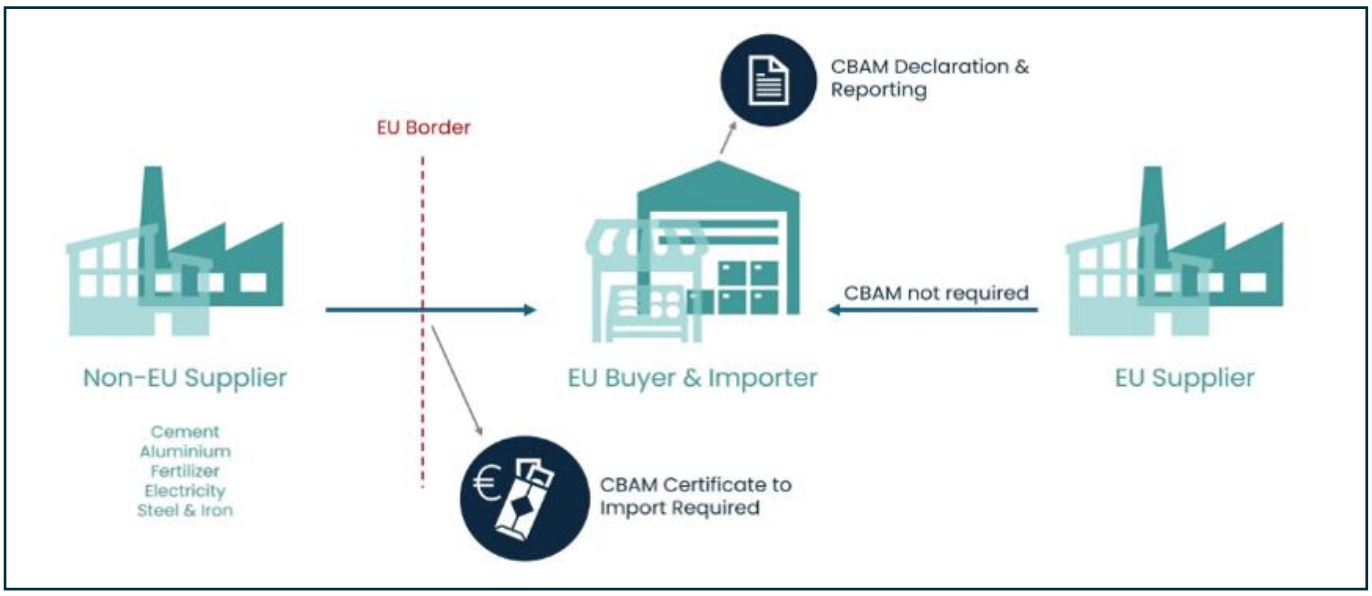
System Modernization	+	**Digital Transparency**	+	**Flexible market access**	+	**Operational discipline**

Together, these reforms create the institutional and operational foundation required for India's transition toward a more competitive, liquid and market-driven natural gas ecosystem.

Carbon Border Adjustment Mechanism (CBAM)

The CBAM was proposed by the European Commission in July 2021 as part of its "Fit for 55" package. The transition period of CBAM started in October 2023 and is going to enter the final phase in January 2026. It is an environmental policy instrument through which the EU applies the same carbon costs to imported products as it applies to firms operating in the EU. The aim is to reduce carbon leakage by levying a price on carbon emissions and achieve climate neutrality by 2050.

Figure 78: Carbon Border Adjustment Mechanism (CBAM)



Source: Sustaira, link

Implementation timeline

- **Transitional phase (2023-2025)**: During this period, **only reporting obligations exist for EU importers, with no financial obligations.**
- **Definitive phase (from 2026):** The **full system will apply from 2026,** including financial obligations for carbon certificates.

It currently applies to the import of certain goods and selected precursors from six sectors, including aluminium, cement, electricity, fertilisers, iron and steel, and hydrogen

CBAM operates by requiring importers to purchase certificates that correspond to the carbon emissions embedded in their goods. The price of these certificates is linked to the average weekly price of EU ETS allowances, ensuring that the cost of carbon is consistent for both domestic and imported products.

Table 39: CBAM impact on India

Key Area	Impact on India
Exports	Higher cost of Indian exports to EU, impacting competitiveness of carbon-intensive sectors
Industrial Transition	Faster shift toward cleaner production technologies and lower-carbon manufacturing
Compliance & Policy	Greater need for carbon accounting, emissions reporting, and domestic carbon market reforms
Energy Market	Rising preference for lower-carbon fuels, accelerating shift from coal/furnace oil to natural gas and renewables
Gas Market	More switching from dirtier alternatives to clean ones including switching from coal to gas leading to PNG/LNG consumption and boosting exchange-based gas trading (IGX)
Investment Outlook	Increased investments in cleaner energy infrastructure, efficiency upgrades, and decarbonization solutions

CBAM creates opportunities for India by incentivizing green manufacturing, boosting low-carbon exports, attracting climate-focused investments, and strengthening India's position in global clean-value chains. As industries move

towards cleaner fuels to retain export competitiveness, natural gas becomes the most immediate transition option, creating stronger demand for market-based gas procurement.

Table 40: Impact on CBAM on IGX

CBAM Trigger	Impact on India's Gas Market	Impact on IGX
Pressure to reduce carbon emissions	Export-oriented industries shift from coal and furnace oil to lower-carbon natural gas	Increased industrial participation on the exchange
Need for cleaner industrial fuel mix	Higher adoption of PNG and LNG across manufacturing sectors	Greater demand for exchange-traded gas contracts
Compliance cost optimization	Industries seek cost-efficient fuel procurement through competitive market pricing	Higher trading activity and improved price discovery
Industrial decarbonization push	Expansion of gas infrastructure, pipelines, LNG access and downstream connectivity	Deeper and broader gas market participation
Operational flexibility requirements	Preference for short-term and flexible gas sourcing over rigid long-term contracts	Growth in spot and short-duration contract volumes
Energy transition investments	Increased capex toward gas-based systems and cleaner industrial processes	Stronger long-term market depth and liquidity
Rising gas demand from carbon-sensitive sectors	Growth in consumption from steel, aluminum, ceramics, glass and chemicals	Higher sustained throughput on IGX

Impact of geopolitical scenarios on gas markets in India

Geopolitical conflicts have historically had a significant impact on global crude oil and natural gas markets by disrupting supply chains, trade routes, and market sentiment. The Russia–Ukraine conflict in 2022 triggered one of the most severe global energy shocks in recent decades, with Russia curtailing pipeline gas deliveries to Europe by approximately 80bcm, creating a major supply deficit and pushing global gas prices to record highs.

The crisis significantly tightened global LNG markets as Europe increased LNG imports to replace Russian pipeline gas, intensifying competition for cargoes in Asia and leading to sustained volatility in oil and gas prices. Crude oil prices also surged following the invasion amid sanctions on Russian energy exports and fears of supply disruption, with benchmark prices reaching multi-year highs and triggering what the IEA described as a global energy crisis with far-reaching implications for energy security and trade flows.

The recent escalation in conflict in the Middle East has further heightened volatility in global energy markets, particularly due to disruptions in the supply of gas through the Strait of Hormuz in the Middle East, one of the world's most critical energy supply routes which accounts for approximately 20% of global oil and LNG trade, approximately ~40% of the gas imports for India comes through the Strait of Hormuz and its supply is currently disrupted. This has led to a reduction in the availability of gas and an overall increase in the cost of gas, leading to spikes in oil and gas prices and tightening supply conditions in international markets

In response to the same, the Government of India's announced priority order for natural gas allocation which is positive for CGD companies, as it ensures 100% supply for CNG and domestic PNG, along with 80% supply for industrial and commercial PNG based on the past six-month average consumption.

Table 41: Impact of the Iran US geopolitical crisis for Indian gas market

Development	Recent Trigger / Action	Positive Fallout for India
Accelerated PNG transition in LPG-served urban areas	Govt's March 2026 notification enables phasing out LPG where PNG	Frees LPG cylinders for rural/non-pipeline geographies, reduces import

Development	Recent Trigger / Action	Positive Fallout for India
	infrastructure exists, with migration timelines for connected households	dependence via Hormuz, improves supply resilience
OMC-led LPG-to-PNG migration push	Recent Office Memorandums linked additional LPG allocations to states that expedite PNG rollout and consumer migration	Creates policy incentive for faster CGD penetration and demand formalization
Pipeline expansion fast-tracking	New 2026 Right-of-Way order of 24th Mar,26 streamlines permissions / land access for CGD infrastructure	Faster city gas network buildout leads to larger domestic gas consumption base
Supply discipline & contingency preparedness	Govt publicly assured uninterrupted LPG/PNG/CNG supply during Hormuz tensions	Builds consumer confidence and prevents panic-driven market distortion
Fuel diversification focus	Hormuz risk highlighted overdependence on imported LPG (much routed via Gulf)	Pushes structural shift toward pipeline gas, LNG diversification, domestic market depth
Higher policy urgency for CGD monetization	States incentivized to clear approvals quickly	Improves utilization of existing CGD assets and strengthens gas ecosystem economics

India's gas market is well positioned for a sustainable energy transition. A major driver of this transition is the continued expansion of India's gas infrastructure ecosystem. The government has prioritized the development of a nationwide gas grid through the National Gas Grid initiative, enabling stronger connectivity between gas supply sources and key demand centres across the country.

Significant investments have been made in cross-country pipelines, regional transmission networks and spur lines to industrial clusters, fertilizer plants and city gas distribution areas, strengthening market accessibility and improving supply reliability. In parallel, LNG import infrastructure has been expanded through additional regasification terminals on both the western and eastern coasts is enhancing India's ability to access global LNG markets and diversify supply sources. Collectively, these initiatives are expected to foster a more integrated, efficient and accessible national gas market.

With the infrastructure currently under construction, LNG regasification capacity is expected to increase from 78.4 BCM/year (57.7 MTPA) to 113.1 BCM/year (83.2 MTPA) (44.19% growth), while the natural gas pipeline network is expected to expand from 27,427 km to 35,916 km (30.95% growth).

Also, the CGD pipeline network is expected to increase from current 3,21,630 km to 5,46,867 km (70.03% growth). This infrastructure strategy is designed to remove regional disparities in gas access and create a physically integrated national gas market.

Strategic takeaway

The Indian natural gas market is benefiting from favorable global supply dynamics and evolving procurement patterns. Increased global LNG supply, driven by capacity additions in key exporting regions, has contributed to relatively competitive spot LNG prices in recent periods. This has supported a gradual shift among market participants toward short-term and spot procurement strategies, as compared to traditional long-term contracting structures.

As gas markets deepen and supply sources diversify, there is expected to be increasing adoption of spot and short-term gas procurement. IGX is well positioned to benefit from the expected structural shift from bilateral over-the-counter transactions towards organized exchange-based trading

The Iran–US / Hormuz situation, despite short-term volatility, can act as a **forcing function for structural reform**.

It pushes India toward:

✓ Faster PNG penetration
✓ Smarter LNG diversification
✓ More exchange-based gas procurement

✓ Better infrastructure utilization
✓ Stronger domestic price discovery
✓ Deeper gas market liquidity

Scope of the Exchange and the Total Addressable Market (TAM)

India's gas market is entering a structurally different phase driven by global LNG oversupply, infrastructure expansion, and regulatory liberalization.

Globally, LNG supply is set to expand significantly over the next 3–5 years with major liquefaction additions from the US, Qatar North Field expansion, and Africa. This wave of new supply is expected to create a more diversified LNG market balance, resulting in more competitive pricing compared to the 2022–23 period. As a result, buyers like India are expected to increase reliance on spot and short-term LNG procurement, improving liquidity in traded markets.

Simultaneously, the global LNG fleet is expanding, with a growing number of LNG carriers enabling destination flexibility and arbitrage opportunities. This improves the feasibility of short-term and exchange-based trading, which directly supports the development of gas exchanges like IGX.

On the domestic side, India is undergoing rapid gas infrastructure expansion, including:

- Pipeline connectivity expansion under the national gas grid
- North-East Gas Potential of 20 MMSCMD
- CGD network expansion across new geographical areas
- Increased regasification capacity
- Push for domestic gas exploration
- Push for Compressed Bio Gas

This enhances last-mile connectivity and market depth, enabling more participants to access gas and trade it.

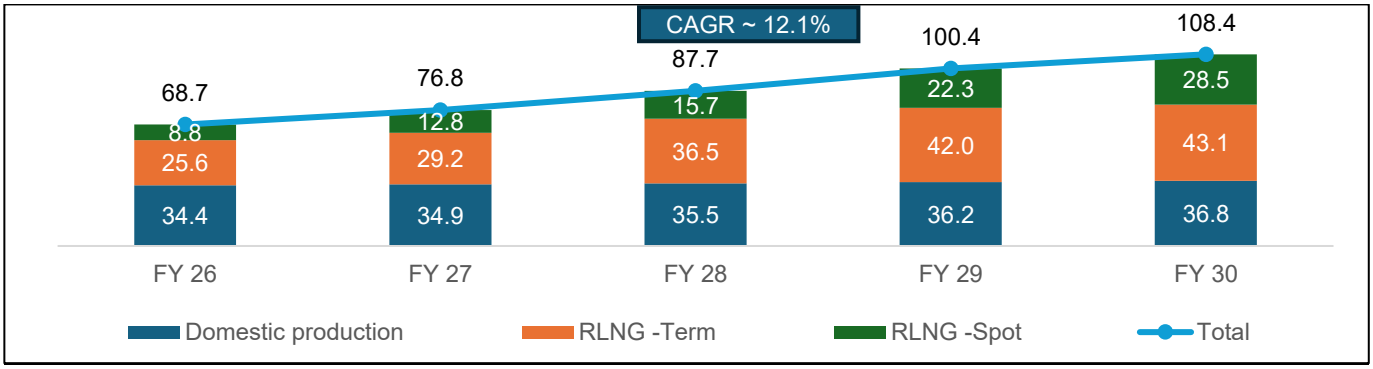
Regulatory developments are equally critical. Key policy directions such as:

- Draft PNGRB Access Code (2025) enabling more flexible capacity booking
- Movement towards entry-exit tariff regimes
- Push for market-based pricing and gas trading hubs
- Potential Independent System Operator (ISO) formation
- Increased open access in CGD networks
- Gradual unbundling of pipeline and marketing entities

are all aligned towards creating a more liquid, transparent gas market, directly supporting exchange-based trading.

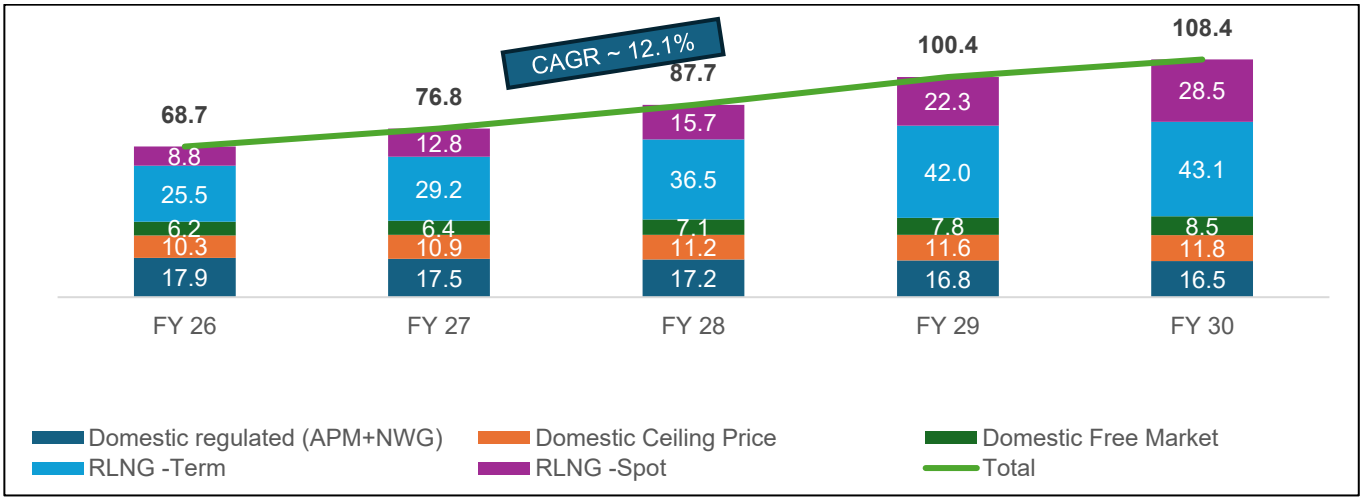
The share of LNG increases materially to ~66% by FY30, indicating that India becomes structurally dependent on imported gas. Domestic production remains relatively stable, with limited upside, particularly in APM gas, which is expected to decline gradually. Growth in domestic supply is primarily driven by HPHT and market-linked gas, which are more flexible and relevant for trading.

Figure 79:Projected gas consumption in India, split between domestic and LNG volumes, BCM



- India's gas mix is structurally shifting towards LNG, due to constrained domestic production growth and strong demand from CGD, industrial, and power sectors.
- Contracted LNG provides base supply, while spot LNG supports growth which is expected to be ~35–40% of LNG imports, driven by global supply expansion (US, Qatar), increased LNG shipping capacity, and relatively softer spot prices — making it the most tradable segment.
- Domestic production remains largely stable, but the increasing share of HPHT and free-market gas (with pricing freedom) enhances the tradable pool, even as APM gas continues to decline and remains non-tradable. However, as per Kirit Parikh recommendations, part/full of APM and HPHT gas progressively shall be on market based pricing.
- Global LNG oversupply, expanding pipeline and CGD infrastructure in India, and supportive policy measures (market-based pricing, access code reforms, exchange-linked trading provisions) collectively improve liquidity and enable growth in exchange-based gas trading.
- NSE has received SEBI approval for gas futures linked to IGX price benchmark, GIXI. Post-launch of these gas futures by NSE will help support physical trades on IGX.

Figure 80: Projected split between supply of gas, BCM



India's spot LNG share is expected to increase from ~30% to ~40%, reflecting a balanced procurement strategy. This is supported by:

- global LNG supply expansion
- improved shipping flexibility

- lower price risk environment
- increasing buyer sophistication

While long-term contracts continue to provide supply security, spot LNG becomes the marginal and most flexible source, making it the primary contributor to exchange-based trading.

The MoPNG vide an Office Memorandum dated 19 Aug 2021, granted approval to the IGX to trade domestic HPHT gas with price ceiling on its platform. This notification provides an additional mechanism for domestic HPHT gas (with price ceiling) producers who have been granted pricing and marketing freedom to sell their products. The policy applies to the HPHT gas producers like RIL-BP and ONGC in KG-D6 gas fields.

Such domestic gas producers were authorized to sell up to 500 million standard cubic meters (MMSCM) or 10 % of annual production from contract area, whichever is higher, annually through gas exchanges.

Table 42: Key considerations for projecting gas supply for projecting IGX TAM

Segment	Trend (FY26–FY30)	YoY % change considered	Key Growth / Decline Drivers	Key Constraints	IGX Relevance
Domestic APM + NWG Gas	Declining (17.9 to 16.5)	-2%	Mature legacy fields (ONGC/OIL); natural reservoir decline; policy shift away from administered pricing	Limited new discoveries; allocation to priority sectors (fertilizer, CGD); regulated pricing	✗ Not tradable (excluded from IGX TAM)
Domestic HPHT Gas	Moderate growth (10.3 to 11.8)	3%	Deepwater / ultra-deepwater developments; HELP regime incentives; premium pricing for difficult gas	High capex; technical complexity; long development timelines	☑ Tradable; contributes to IGX TAM but currently limited to 10% of production and expected to be 30% from FY28
Domestic Free Market Gas	Strong growth (6.2 to 8.5)	+10%	Pricing freedom; HELP/OALP exploration; private/JV participation (RIL-BP, Vedanta); market-linked demand	Execution risks; infrastructure dependency; price sensitivity of demand	☑ Tradable; contributes to IGX TAM
RLNG Spot	Strong growth (8.8 to 28.5)	+31%	Increasing share of spot procured LNG	Adoption dependent on competitive spot prices.	☑ Core IGX TAM segment
RLNG Term	Strong growth (25.5 to 43.1)	+13%	Incremental new RLNG term contracts	Dependency on LNG price outlook.	⚠ Partial relevance (as part of term RLNG gets retraded on IGX)

IGX Total Addressable Market (TAM)

IGX TAM	LNG	Domestic Gas		
	Spot LNG +	**Free Market Gas**	**+**	**10% of domestic HPHT gas (with ceiling price) till FY26 and 30% from FY27 onwards**

APM gas is excluded from TAM as it currently remains price-regulated and allocation-driven, limiting its tradability. and Government has not given any roadmap for freeing APM and other ceiling price gas, despite recommendations of Kirit Parikh Committee.

The MoPNG vide an Office Memorandum dated 19 Aug 2021, granted approval to IGX to trade domestic gas with marketing and pricing freedom on its platform. This notification provides an additional mechanism for such domestic gas producers who have been granted pricing and marketing freedom to sell their products.

Such domestic gas producers were authorized to sell up to 500 million standard cubic meters (MMSCM) or 10 % of annual production from contract area, whichever is higher, annually through gas exchanges.

This regulation has been considered to derive the TAM for IGX. For the purpose of estimating the TAM, HPHT gas volumes from RIL and ONGC have been considered subject to the 10% production cap till FY26 and 30% production cap FY27 onwards. The 30% limit FY27 onwards has been considered given the fact that IGX has made representation to Ministry of PNG for removal of the current 10%/ 0.5 BCM limit and the same is under consideration for either removal of the entire cap increasing the current limit of the cap, the decision is expected in FY27. The remaining domestic gas production viz domestic free market gas is distributed across multiple producers and contract areas and is not expected to breach the limits of either 10% production at present or 30% production in future.

The TAM for exchange-based gas trading, freely tradable gas volumes, including RLNG and domestic gas with marketing and pricing freedom, subject to the current regulatory cap permitting only up to 10% of domestic production to be traded through gas exchanges, is expected to grow at a CAGR of approximately 24.7% from Fiscal 2026 to Fiscal 2030, significantly higher than the projected growth in overall natural gas consumption of approximately 11.7%. This growth is expected to be driven by increasing availability of spot LNG, and the anticipated increase or removal of the existing volume cap (of current 10%) on sale of domestic gas through exchange. As a result, a growing share of India's natural gas consumption is expected to be transacted through transparent, exchange-based platform, supporting deeper liquidity and efficient price discovery.

IGX's share of the TAM in India's total gas consumption is expected to increase from approximately 24.53% in Fiscal 2026 to approximately 37.41% in Fiscal 2030. IGX's share in total gas consumption is expected to increase from 2.82% in Fiscal 2026 to 6.32% in Fiscal 2030, growing at a CAGR of 37.2%. Historical exchange volumes have grown at a CAGR of 58.55% between Fiscal 2022 and Fiscal 2026.

Figure 81:IGX Total Addressable Market (TAM), BCM

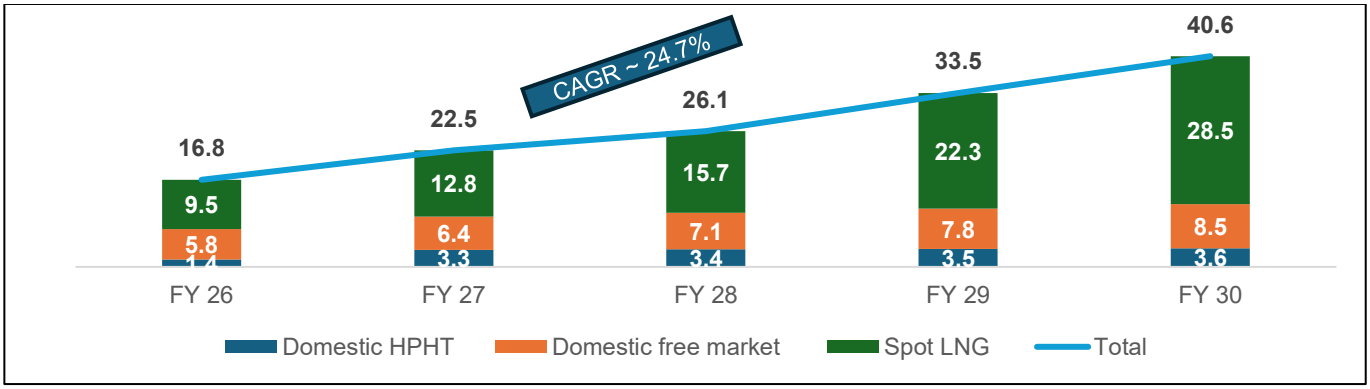
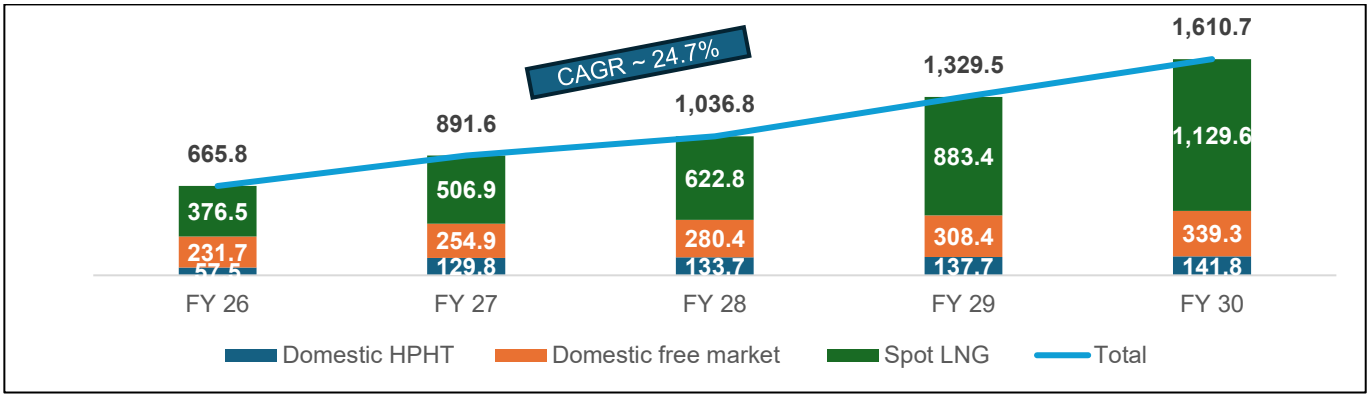


Figure 82:IGX Total Addressable Market (TAM), Mn MMBTU



IGX TAM more than doubles from ~17 BCM (670 Mn MMBtu) to ~41 BCM (1600 Mn MMBtu). This growth is primarily driven by spot LNG expansion, which is inherently more tradable due to its short-term and flexible nature. Domestic market-linked gas (HPHT + free market) provides a stable but gradually growing base. If the Kirit Parikh recommendations on freeing domestic APM gas are implemented in future, then the IGX TAM will further increase.

IGX Tradeable (realizable) volumes

In Fiscal 2026, IGX facilitated approximately 2.82% of India's total gas consumption, with traded volumes of 1.94 BCM in the period. To calculate the tradeable (realizable) volumes on the exchange, capture rates are anchored to current market reality by calibrating to observed volumes on Indian Gas Exchange.

Total IGX volume (FY26): ~ 1.94 BCM (76.8 Mn MMBtu)

India total consumption in the TAM segments (FY26):

- Spot RLNG = 8.76 BCM (347.6 Mn MMBtu)
- Domestic gas (HPHT) = 10.29 BCM (408.4 Mn MMBtu)
- Domestic gas (Free market) = 6.20 BCM (246.2 Mn MMBtu)

To calculate the capture rate of each domestic gas (HPHT and Free market gas, the calculation is done as below:

Capture rate calculation for % domestic gas and Spot LNG			% capture rate
Domestic capture rate	HPHT gas	IGX HPHT/ HPHT total	1.03 BCM / 10.29 BCM = ~10.0 %
	Free market gas	IGX free market / Free market total	0.13/6.20 = ~2.2%
Spot Capture rate		Spot IGX volume / Spot RLNG	0.77 BCM / 8.76 BCM = ~ 8.8%

Formula to calculate the IGX tradeable (realizable) volumes	(Spot LNG * Spot capture rate) + (HPHT *HPHT capture rate) + (Free market gas * Free market gas capture rate)

Considering all facts and considerations listed above, the below is the projected tradeable, realizable volumes through the exchange.

Figure 83:IGX projected volume, BCM

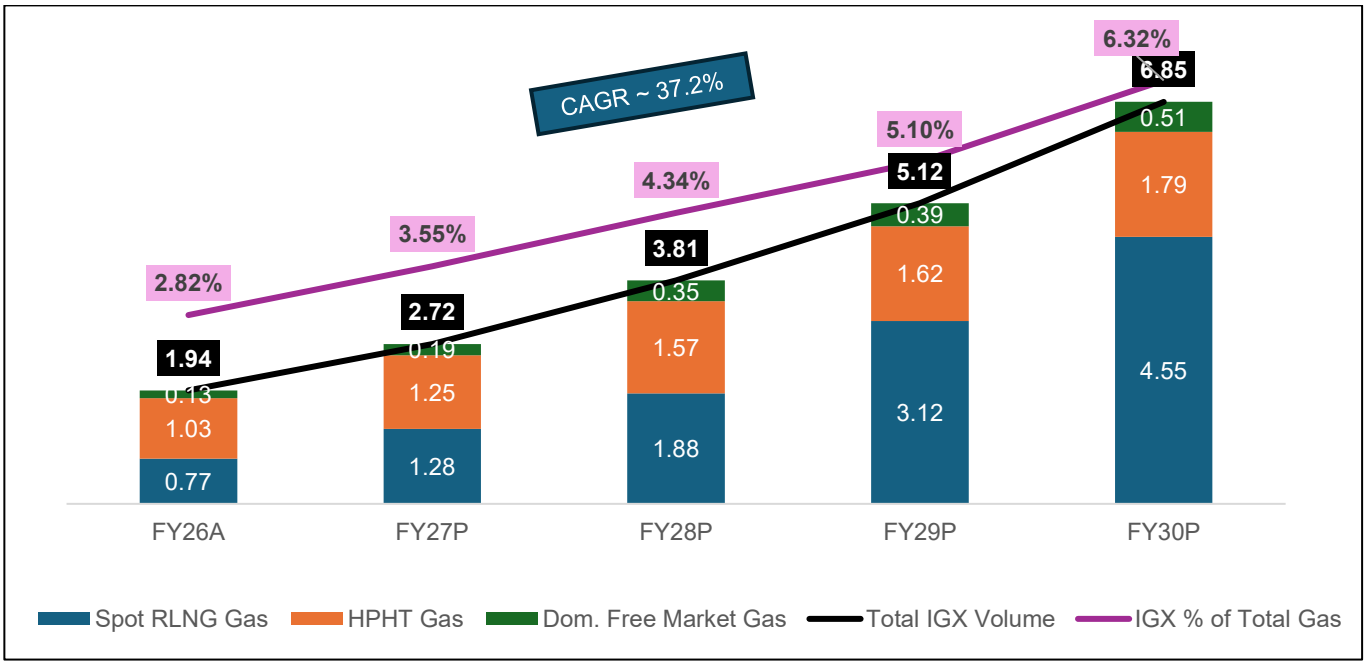
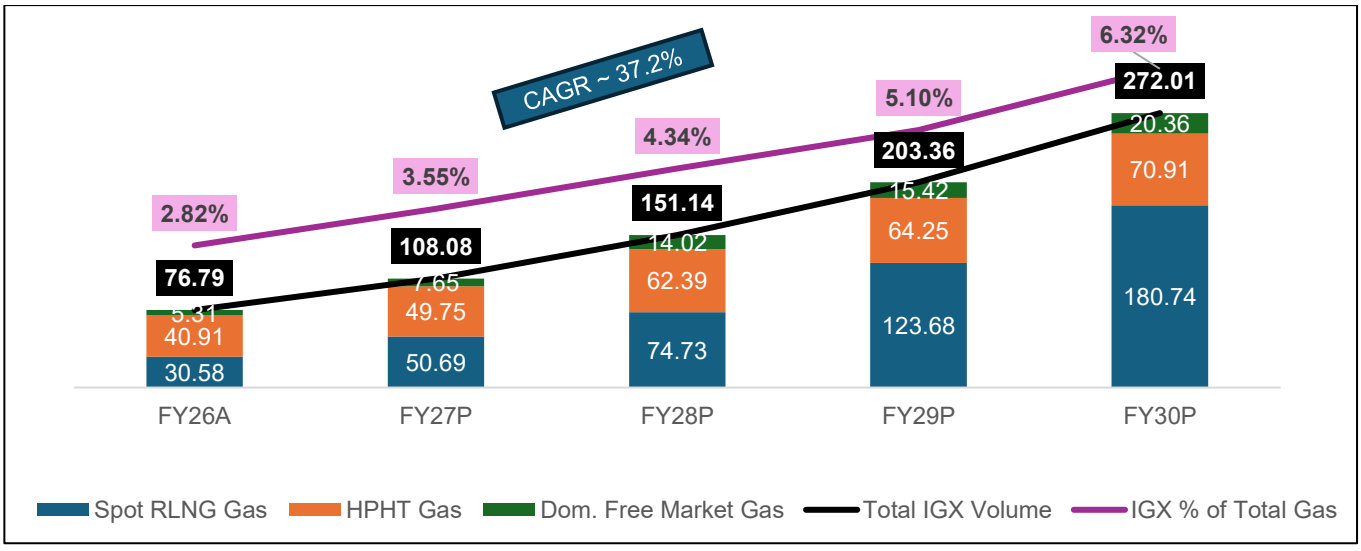


Figure 84:IGX projected volume, Mn MMBTUs



Step by step calculation of IGX projected volumes, BCM					
Parameter	**FY26**	**FY27**	**FY28**	**FY29**	**FY30**
India Total Gas Consumption					
a) Dom. HPHT Gas	10.3	10.9	11.2	11.6	11.9
b) Dom. Free Market Gas	6.2	6.4	7.1	7.8	8.5
c) Dom. APM + NWG Gas	17.9	17.5	17.2	16.8	16.5
d) Term LNG	25.5	29.2	36.5	42.0	43.1
e) Spot LNG	8.8	12.8	15.7	22.3	28.5
f) Total LNG (e+f)	34.4	42.0	52.2	64.2	71.5
g) Total Gas Market (d+g)	68.7	76.8	87.7	100.4	108.4
IGX TAM Calculation					
IGX TAM (Dom. HPHT (10% in FY26, 30% FY27 onwards) + Dom. Free market + RLNG spot)	16.4	22.5	26.1	33.5	40.6
Capture rate taken					
Spot LNG Capture Rate	8.8%	10.0%	12.0%	14.0%	16.0%
HPHT Capture Rate	10.0%	11.5%	14.0%	14.0%	15.0%
Dom Free Market Capture Rate	2.2%	3.0%	5.0%	5.0%	6.0%
IGX volume calculation					
Spot LNG IGX Calculation	8.8×8.8%	12.8×10.0%	15.7×12.0%	22.3×14.0%	28.5×16.0%
Spot LNG IGX Volume	0.77	1.28	1.88	3.12	4.55
HPHT Gas Volume Calc.	10.3×10.0%	10.9×11.5%	11.2×14.0%	11.6×14.0%	11.9×15.0%
HPHT Gas Volume	1.03	1.25	1.57	1.62	1.79
Dom. Free Market Gas Calculation	6.2×2.2%	6.4×3.0%	7.1×5.0%	7.8×5.0%	8.5×6.0%
Free Market IGX Volume	0.13	0.19	0.35	0.39	0.51
Total IGX Volume (BCM)	1.94	2.72	3.81	5.12	6.85
IGX % of Total Gas	2.8%	3.5%	4.3%	5.1%	6.3%
IGX % of TAM	11.8%	12.1%	14.6%	15.3%	16.9%

Table 43: Key insights from the projected IGX TAM and tradeable (realizable) volumes

FY	IGX TAM (bcm)	IGX Volume (bcm)	IGX % of Total Gas	Key Insights (Detailed & Fact-backed)	Key Developments / Enablers
FY26	16.4	1.94	2.82%	• IGX remains in an early stage with limited liquidity and ~3% penetration of total gas consumption 69.7 BCM (2766 Mn MMBtus) • Trading is largely driven by domestic HPHT gas and RLNG. • East, South (Tamil Nadu, Kerala, Karnataka) and North-East still to be integrated with the National Gas Grid. • State-wise VAT making gas costlier. • Common ISO yet to be operationalised. • Third Party Access still needs to improve. • The market remains predominantly bilateral, with pricing still anchored to contracts rather than exchange discovery.	Early expansion of CGD networks; gas grid connectivity improving but still fragmented; initial policy push toward gas trading hubs; limited exchange-linked contracts
FY27	22.5	2.72	3.5%	• IGX volumes increase as LNG availability improves and market participants begin shifting toward short-term procurement. • Global LNG supply begins to loosen with new capacity additions, leading to relatively softer prices and enabling higher spot participation (~30% of LNG). India's gas demand rises 77.01 BCM (3056 Mn MMBTUs), supported by industrial recovery and CGD expansion.	Increasing LNG imports; better regas utilization; coupled with regulatory enablers like enactment of new pipeline Access Code enabling flexible capacity booking. Gradual increase in exchange participation; initial impact of policy push for market-based pricing and trading (Removal of cap/ increase to 30% on HPHT gas limit.).
FY28	26.1	3.81	4.3%	• IGX gains relevance as a price discovery platform, with improving liquidity and participation. • Spot LNG volumes increase 15.7 BCM (622 Mn MMBTUs), supported by global supply additions and improved shipping availability. • Domestic gas mix shifts toward market-linked gas, enhancing tradability. India's gas consumption crosses 87 BCM (3490 Mn MMBTUs), with CGD becoming a major demand driver.	Expansion of national gas grid; CGD coverage widens significantly; higher pipeline connectivity; improved access to gas across regions; rising role of industrial demand. Policy decisions like Natural Gas under GST to improve gas affordability and tradability. Expected movement toward entry-exit tariff regime leading to ease of trading, development of virtual hubs; improved pipeline utilization;
FY29	33.5	5.12	5.1%	• Strong growth phase driven by rapid increase in spot LNG 22.3 BCM (883 Mn MMBTUs) and improved domestic gas participation.	Discussions on setup of ISO and market unbundling

FY	IGX TAM (bcm)	IGX Volume (bcm)	IGX % of Total Gas	Key Insights (Detailed & Fact-backed)	Key Developments / Enablers
				• IGX captures a higher share of the tradable pool indicating improving market depth. • Structural reforms begin translating into higher liquidity, though contracts still dominate a large share of volumes. • Total gas demand approaches 101 BCM (4008 Mn MMBTUs), with LNG accounting for ~60%+.	
FY30	40.6	6.85	6.3%	• IGX emerges as a meaningful trading platform, with volumes ~4x from FY26 and capturing ~15–16% of TAM. • Spot LNG becomes the primary driver 28.47 BCM (1130 Mn MMBTUs), ~40% of LNG), supported by global LNG oversupply, increased liquefaction capacity, and a growing LNG fleet. India's total gas demand reaches 109 BCM (4325 Mn MMBTUs), with LNG share ~66%. • Domestic gas remains stable 102 MMSCMD (4047 Mn MMBTUs) but increasingly market-linked, improving participation. • Despite strong growth, IGX penetration remains ~7%, indicating significant headroom compared to global hubs (30–80%).	Global LNG supply expansion (US, Qatar) leading to softer prices; LNG vessel additions supporting flexible trade; 10% exchange trading provision for HPHT gas with no price restriction; expansion of CGD and pipeline networks; push for open access, ISO formation, and market-based trading mechanisms

IGX's total addressable market in Fiscal 2026 stood at 16.40 BCM, representing approximately 24.53% of India's total gas consumption, indicating headroom (from 2.82% to 24.53%) for further growth in exchange-based trading. The growth opportunity is expected to be further amplified by the fact that the addressable market for exchange-based trading is projected to grow at a significantly faster pace than overall gas consumption.

Table 44: Factors affecting gas trading at IGX

SN	Particular	Remark	Impact on IGX
1	**Global Supply wave**	• Approximately 345–350 Bcm of new LNG export capacity is coming online globally by 2030. 2025 and 2026 have seen record-high Final Investment Decisions (FIDs) in the US and Qatar. • Although the recent geopolitical crisis may delay this upcoming capacity, recent reports suggest the work towards repairs and expansion has already started and is progressing at rapid pace.	Lower spot prices attract industrial consumers (Fertilizer, Power, Steel) to switch to gas from alternative fuels and to buy on spot market including from the exchange rather than being locked into rigid 20-year term deals.
2	**Price Convergence**	This abundance of supply is expected to result in a structural surplus, keeping spot prices (JKM/WIM)	

SN	Particular	Remark	Impact on IGX
		competitive or lower than oil-indexed long-term contracts	
3	**Infrastructure bottleneck being addressed**	TAM growth is physically limited by where the gas can flow. Recent developments include: **Terminal Access**: New open-access terminals are allowing third-party players (not just the terminal owners) to import and sell gas. North-East Access: Region has potential to add almost 3 bcm in domestic gas. South and East Regions: Both regions are currently not connected with Central grid and therefore connectivity will allow buyers /sellers in these region access to IGX. **The Unified Tariff (UFT)**: Effective January 1, 2026, the PNGRB has shifted to a simplified unified tariff structure. This reduction in tariff zones (now simplified to 2 zones) eliminates the "additive" cost of moving gas across multiple pipelines.	A buyer in the South/East can purchase gas from a terminal in the West without paying four different pipeline charges, immediately expanding the "Addressable" geography for every trade on IGX.
4	**Removal/ Increase of Volume Cap on domestic gas trade**	The "10% domestic gas" allowance to trade on the IGX is a critical liquidity anchor. **HPHT Gas**: This gas from the KG Basin (ONGC/RIL) is now a major volume driver on IGX.	Higher / No volume cap will allow more gas to come on Exchange for trade
5	**Market Framework Changes**	The PNGRB 2040 vision outlines the final transition **Independent System Operator (ISO):** Moving the management of pipelines to a neutral ISO ensures "nondiscriminatory" access. This prevents "affiliate bias" and allows any small trader to use the grid to deliver gas sold on IGX. **Virtual Hubs**: Unlike physical hubs (like Dahej or Hazira), a Virtual Hub allows all gas in a region to be treated as a single pool. This prevents price fragmentation and allows IGX to offer a "National Gas Price Index." Making the GIXI more effective and reliable **GST Inclusion:** While still under deliberation in 2026, the potential shift of natural gas into the GST regime would allow industrial buyers to claim Input Tax Credit (ITC). This is the "holy grail" for TAM growth, as it would instantly make natural gas 12–20% more cost-competitive against dirty fuels like furnace oil.	Will help build liquidity on the exchange, improving pipeline access to customers, making re-trade attractive and pricing competitive.
6	**Launch of GIXI-linked Gas Futures**	Launch of GIXI-linked gas futures would enable market participants to hedge price volatility, improve	Will deepen liquidity in spot market of IGX.

SN	Particular	Remark	Impact on IGX
		forward price discovery, and align India's gas market with mature global gas hubs.	

India is poised for sustained long-term economic expansion and is projected to emerge as the world's third-largest economy by 2030. In line with this growth trajectory, the Government of India has identified natural gas as a key pillar in the country's evolving energy mix, recognizing its role as a cleaner, more efficient and flexible fuel that supports the transition toward a lower-carbon economy.

Owing to its significantly lower emissions profile compared to coal and oil, natural gas is increasingly being positioned as an important transition fuel while renewable energy capacity continues to scale up.

Reflecting this strategic focus, the government has consistently reiterated its objective of increasing the share of natural gas in India's primary energy mix from the current ~6%–7% toward 15% over the medium to long term, supporting energy security, environmental sustainability and broader economic development.

Module 6: Peer Benchmarking

Benchmarking of trade volumes of exchanges in India (NSE, BSE, IEX, MCX) with IGX and their evolution overtime

India's exchange ecosystem today spans mature financial markets and emerging energy markets, represented majorly by the National Stock Exchange of India (NSE), Bombay Stock Exchange (BSE), Multi Commodity Exchange (MCX), Indian Energy Exchange (IEX) and Indian Gas Exchange (IGX).

NSE and BSE form the backbone of India's capital markets, offering equity, debt and derivatives trading at massive scale with revenues and profits running into thousands of crores, driven by high-frequency financial trading and data services. MCX extends this market architecture to commodities such as crude oil, metals and agricultural products, enabling hedging and price discovery for the real economy through futures and options. IEX represents a structural shift toward infrastructure-based spot markets, operating auction-driven electricity markets that facilitate physical delivery and transparent power price discovery across India. IGX, the youngest of the group, applies a similar exchange-based model to natural gas and LNG, providing a platform for spot and short-term gas trading and aiming to institutionalize gas price discovery in India.

Together, these exchanges illustrate a continuum from mature financial exchanges (NSE, BSE), to commodity derivatives (MCX), to physical energy markets (IEX and IGX), with scale and profitability declining along this spectrum but growth rates increasing—making IGX the smallest yet fastest-growing, and strategically important for India's transition toward market-based energy pricing.

Table 45: Key exchanges in India

Exchange	Primary Focus	Core Model	Established	Market Model	Contracts traded	Clearing
NSE	Equity, debt, derivatives	Order driven continuous	1994	Stocks and derivatives market	Equity, Index Futures, Options, Currency	NSE Clearing Ltd (NCL) – wholly owned clearing arm
BSE	Equity, debt, derivatives	Order driven continuous	1875	Stocks and derivatives market	Equity, SME, Index Options	ICCL
MCX	Commodity derivatives	Derivatives exchange	2003	Commodity futures/ options	Crude oil, gold, silver, agri futures	MCXCCL
IEX	Power and certificates trading	Double sided auction, continuous trading	2008	Physical power & REC	Day-Ahead Market (DAM), Real-Time Market (RTM), Term Ahead Market (TAM), Renewable Energy Certificate (REC)	IEX

Exchange	Primary Focus	Core Model	Established	Market Model	Contracts traded	Clearing
IGX	Delivery-based physical gas trading platform	Double-Sided Open Auctions, Continuous Trade	2020	Physical Gas	Spot contracts, Forward Contracts	IGX

Source: Individual company websites

Table 46: Key exchanges in India and market details

Exchange	Established	Market Model	Contracts & Coverage	Trade Volumes & Financials	Role in Market
NSE	1994	Electronic, order-driven	Equities, Equity & Index futures & options, Currency derivatives, Interest rate derivatives & debt instruments	₹2,650.11 crore net profit in Q4 FY25, up 7% YoY	Central to India's capital formation and risk transfer
BSE	1875	Order-driven, central clearing	Equities & SME segment, Equity derivatives, Debt securities	Notable growth in revenue and derivatives participation	Complementary role to NSE, SME and small & mid-cap segments
MCX	2003	Centralized futures & options	Crude oil, precious metals, base metals, agriculture commodities	₹135 crore net profit in Q4 FY25, up 54% YoY	Critical for price discovery in commodity markets
IEX	2008	Electronic power trading	Electricity, Renewable Energy Certificates, Term Ahead Market	121 BUs electricity traded in FY25, up 19% YoY: ₹657.4 crore revenue	Backbone of India's transparent electricity price discovery process
IGX	2020	Physical Gas	Spot gas contracts, Forward gas contracts	76.8 million MMBtu (1935 MMSMC) in FY26, up by 28% yoy; PAT - ₹41.9 crores (up 35% YoY from ₹30.9 crores in FY25)	Enables efficient and competitive discovery of gas prices

Source: Individual company websites

Global gas markets operate under different institutional structures depending on their level of maturity. The Intercontinental Exchange (ICE) represents a fully developed financial and physical gas trading ecosystem, while the Australian Energy Market Operator (AEMO) manages a regulated, physical wholesale electricity and gas markets.

Operational Benchmarking

Benchmarking with global peers

Table 47: Key features of exchanges - Operational benchmarking

Category	Parameter	IGX (India)	ICE	AEMO	SHPGX (China)	SPIMEX (Russia)
Market Structure & Design	Financial vs Physical Orientation	Physical spot	Financial dominated	Fully physical	Hybrid	Physical dominant
	Market Model	Exchange-based (emerging competitive)	Exchange-led, competitive	System operator model	State-influenced exchange model	State-influenced exchange
	Product Offerings	Spot, Forward contracts	Futures, options, swaps, Spot (DA/ID) (UK)	Physical balancing	Spot + mid/long-term + LNG	Spot + forward physical
	Contract Tenure	Day-ahead to six-months	Spot to multi-year	Real-time to day-ahead	Spot to medium-term	Spot to medium-term
	Delivery Mechanism	Physical	Financial + Physical	Physical	Physical (pipeline + LNG)	Physical
	Price Discovery Mechanism	Spot-based	Continuous forward curve: ICE provides continuous, forward-looking price discovery.	Operational pricing; AEMO provides operational, short-term price signals for balancing supply and demand.	Hybrid	Exchange-based
	Market Evolution Stage	Early-stage	Mature	Intermediate	Developing	Developing
	Benchmark Pricing Role	GIXI, nationwide benchmark price index	Global benchmarks	None	Domestic benchmark aspiring regional	Domestic benchmark
	Balancing Mechanism	Limited	Market-driven	Centrally coordinated	Hybrid	Centrally influenced
Market Depth & Performance	Traded Volumes	Low but growing (MMSCMD level)	Extremely high (global benchmarks; multi-TCF equivalent annually)	Moderate (PJ scale)	Moderate-high (BCM scale)	Moderate (BCM scale)
	Contracts Traded	Limited contracts/day	Millions daily (derivatives-heavy)	Not contract-based (dispatch volumes)	Growing contracts; state-driven	Moderate contracts
	Scale and Liquidity	Low but growing	Extremely high	Moderate	Moderate-high	Moderate
	Volatility Handling	High volatility risk	Hedging via derivatives	Operational balancing	State-managed	Regulated
	Transparency	Increasing	Very high	Moderate	Moderate	Moderate
	Risk Management Tools	Derivative contracts absent	Advanced	Minimal	Limited	Limited

Category	Parameter	IGX (India)	ICE	AEMO	SHPGX (China)	SPIMEX (Russia)
	Participant Diversity	Moderate	Very high	Limited	Moderate	Low-moderate
	Global Market Integration	Limited	Fully global	Limited	Increasing	Limited
Infrastructure & Access	Market Coverage	India	Global (US, Europe, LNG, UK hub)	National (Australia)	National with regional LNG reach	National (Russia-centric)
	Infrastructure Dependency	Very high	Low	Very high	High	Very high
	Pipeline Network Impact	Critical	Minimal	Critical	Expanding	Critical
	Market Access / Entry Barriers	Limited	Open global	Restricted	Restricted	Restricted
	Technology & Trading Systems	Developing	Highly advanced	Operational systems	Developing	Developing
	Delivery Infrastructure	National grid evolving	Global hubs	National grid	Expanding LNG + pipelines	Pipeline-centric
Governance, Regulation & Strategy	Regulatory Environment	Regulated	Liberalized	Highly regulated	Highly regulated	Highly regulated
	Policy Influence / Govt Role	Moderate-high	Minimal	High	Very high	Very high
	Revenue Model	Transaction fees	Trading + clearing fees	System charges	Exchange + state-backed	Transaction fees
	Clearing & Settlement	Moderate	Advanced	Moderate	Developing	Moderate
	Scalability Potential	High potential	Already global	Limited	Very high	Moderate
	Strategic Objective	Market development & Regional Pricing	Global price discovery	System stability	Regional pricing	Domestic transparency

Table 48: Key insights from operational comparison of the exchanges

Key insight	Remarks
Market Maturity & Liquidity Gap	Global exchanges like ICE operate at multi-TCF scale with millions of contracts traded daily, supported by deep financial participation and global integration. In contrast, IGX functions at MMSCMD-level volumes, significantly limiting liquidity and price efficiency. SHPGX and SPIMEX fall in between, operating at BCM-scale volumes, supported by government mandated domestic market depth and policy backing.
Divergent Market Models	Two distinct models emerge globally: • Market-driven model (ICE): Liberalized, financialized, and participant-led • State-driven model (SHPGX, SPIMEX): Liquidity supported through policy mandates and controlled participation IGX currently operates in a hybrid model but lacks both the financial depth of ICE and the policy push seen in China and Russia, slowing its development.
Financial Depth & Price Discovery	ICE offers a full suite of derivatives (futures, options, swaps), enabling robust hedging and forward price curves. ICE also operates UK gas spot, forward and futures markets. Operates virtual National Balancing Point (NBP). IGX operates spot and forward physical contracts (day-ahead to six-months), resulting in:

Key insight	Remarks
	• Limited risk management tools • Lower participation from financial players This constrains its ability to evolve into a benchmark pricing hub.
Infrastructure as the Binding Constraint	Infrastructure is the primary dependability for IGX. Limited pipeline connectivity and uneven network access restrict participation and fragment the market. In contrast: • AEMO and SHPGX benefit from integrated national grids • ICE operates highly integrated UK gas markets Thus, in India, infrastructure directly impacts liquidity and market depth.
Participation & Market Depth	Mature markets like ICE have a diverse participant base including financial institutions, traders, utilities, and producers. Emerging markets (IGX, SHPGX, SPIMEX) are dominated by physical players, limiting trading sophistication and volumes
Role of Government & Policy	Government influence is a key differentiator: • Minimal in ICE - market forces drive efficiency • High in SHPGX/SPIMEX - policy accelerates liquidity creation • Moderate in IGX - ongoing reforms, but limited enforcement Stronger policy support could accelerate IGX's transition to a deeper market.

Table 49: IGX - Operational Details

Particulars	FY21	FY22	FY23	FY24	FY25	FY26
Trade Volume (Million MMBTu)	0.28	12.2	50.9	40.84	60.12	76.79
Total number of trades (number)	42	443	2355	998	1,692	1,924
Total Trade Value (INR million)	NA	NA	NA	36,711.66	61,593.73	71,815.36
Average Trade Value (INR million)	NA	NA	NA	36.79	36.40	37.33
No. of registered participants (number)	16	26	40	303	343	360

Table 50: IEX - Operational Details

Particulars	FY21	FY22	FY23	FY24	FY25	FY26
Trade Volume (billion units)	74	102	97	110	121	141
Total number of trades (number)	NA	NA	NA	NA	NA	NA
Total Trade Value (INR million)	NA	NA	NA	NA	NA	NA
Average Trade Value (INR million)	NA	NA	NA	NA	NA	NA
No. of registered participants (number)	6,947	7,352	7,783	7900+	8500+	NA

Table 51: AEMO - Operational Details

Particulars	FY21	FY22	FY23	FY24	FY25	FY26
Trade Volume (BU)	NA	NA	NA	NA	NA	NA
Total number of trades (number)	NA	NA	NA	NA	NA	NA
Total Trade Value (INR million)	2.58	5.20	8.41	NA	5.40	NA
Average Trade Value (USD billion)	NA	NA	NA	NA	NA	NA

No. of registered participants (number)	NA	NA	NA	NA	644 (NEM) 95 AEMO industry members	NA

Table 52: ICE - Operational Details

Particulars	CY21	CY22	CY23	CY24	CY25	CY26*
Trade Volume (Billion units)	1.51	1.50	1.64	2.06	2.34	0.895
Total number of trades (Energy trades) in million contracts traded)	1,514 (782)	1,501 (753)	1,647 (883)	2,066 (1099)	2,345 (1256)	895 (437)
Total Trade Value (USD million)	1,852	1,866	2,224	2,689	3,017	NA
Average Trade Value (USD million)	NA	NA	NA	NA	NA	NA
No. of registered participants (number)	NA	NA	NA	NA	NA	NA

Sources: ICE reports, 10K,10Q forms, ICE Monthly statistics tracking, News reports. *As of Mar 31, 2026, ICE reports data in calendar year basis

Table 53: MCX - Operational Details

Particulars	FY21	FY22	FY23	FY24	FY25	FY26
Trade Volume (bn units)	50.0	49.0	138.7	258.6	395.1	NA
Total number of trades (million lots)	40	39	116	227	390	NA
Total Trade Value (INR million lakhs)	133	264	320	562	1,306	NA
Average Trade Value (INR million lakhs)	0.5	1.0	1.2	2.2	5.1	NA
No. of registered participants (number)	NA	NA	NA	NA	NA	NA

*Source: MCX Annual Reports, website *includes data only for natural gas (both Natural gas mini and natural gas), includes FUTCOM and OPTFUT. Trade volumes are calculated using traded contracts (lots) and lot size (Natgas mini – 250 MMBtu, Natgas – 1250 MMBtu)*

Table 54: BSE - Operational Details

Particulars	FY21	FY22	FY23	FY24	FY25	FY26
Trade Volume (Crores)	10,456	16,222	13,552	21,207	19,952	13,660
Total number of trades (Crores)	55	79.5	67.2	82.6	103.3	54.5
Total Trade Value (INR million Crores)	1.05	1.33	1.03	1.63	1.93	1.19
Average Trade Value (INR)	19,000	16,838	15,305	19,714	18,720	21,870
No. of registered participants (number)	NA	NA	NA	723	863	NA

Source: BSE historical equity data

Table 55: NSE - Operational Details

Particulars	FY21	FY22	FY23	FY24	FY25	FY26*
Trade Volume (Crores)	NA	NA	NA	55,062,500	11,587,500	777,235,000
Total number of trades (Crores)	NA	NA	NA	44,050	9,270	621,788

Total Trade Value (INR million Crores)	NA	NA	NA	1,196	240	12,900
Average Trade Value (INR)	NA	NA	NA	NA	NA	NA
No. of registered participants (number)**	40,000,000	59,400,000	72,700,000	91,600,000	112,800,000	129,100,000

Source: SEBI Monthly Bulletin Reports, NSE investor PAN series
**The data for FY26 includes the total trade volume, no. of trades and trade value for the overall energy commodity and not only for natural gas*
***Registered participants is shown as unique registered PANs / investors, not trading members*
Note: The trading of energy futures and options contracts via NSE started from FY24 onwards, hence the data is added from FY24-FY26
The trade volume for FY24: contains 99.94% NSE Futures and 0.06% NSE Options, for FY25: contains 8.14% NSE Futures and 91.86% NSE Options

Financial Benchmarking

Global Peers

ICE (in USD million)			
Metric	**2024**	**2025**	**2026***
Total Revenues (Net)	$11,761	$12,640	NA
Revenue Growth (%)	18.80%	7.50%	NA
EBITDA	$6,075	$6,709	NA
EBITDA Margin (%)	51.70%	53.10%	NA
EBITDA Growth (%)	23.60%	10.40%	NA
Profit Before Tax (PBT)	$3,628	$4,346	NA
Profit After Tax (PAT)	$2,802	$3,370	NA
PAT Margin (%)	23.8%	26.7%	NA
PAT Growth (%)	14.9%	20.3%	NA
Net Profit Ratio (%)	23.8%	26.7%	NA
Current Ratio	0.99	1.02	NA
ROE (%)	13.1%	15%	NA
ROCE (%)	8.6%	9.3%	NA
Trade Volume (Billion units)	2.06	2.34	0.89
Total number of trades (Energy trades) in million contracts traded)	2,066 (1099)	2,345 (1256)	895 (437)
Total Trade Value (USD million)	2,689	3,017	NA
Average Trade Value (USD million)	NA	NA	NA
No. of registered participants (number)	NA	NA	NA
AEMO (in USD million)			
Metric	**FY24**	**FY25**	**FY26**
Total Revenues (Net)	456.7	632.2	NA
Revenue Growth (%)	-61.8%	-27.8%	NA
Gross Profit	NA	NA	NA
Gross Margin (%)	NA	NA	NA
EBITDA	323.9	429	NA
EBITDA Margin (%)	70.9%	67.9%	NA
EBITDA Growth (%)	71.7%	24.5%	NA
Profit Before Tax (PBT)	-32.1	36.4	NA
Profit After Tax (PAT)	-28.5	47.2	NA
PAT Margin (%)	-6.2%	7.5%	NA
PAT Growth (%)	-132.9%	-265.6%	NA
Net Profit Ratio (%)	-5.97%	6.79%	NA

Current Ratio	1.14	1.52	NA
ROE (%)	-25.2%	-45.2%	NA
ROCE (%)	49.4%	82.5%	NA
Trade Volume (Million	NA	NA	NA
Total number of trades (Energy trades) in million contracts traded)	NA	NA	NA
Total Trade Value (USD million)	NA	5.40	
Average Trade Value (USD million)	NA	NA	NA
No. of registered participants (number)	NA	644 (NEM) 95 AEMO industry members	NA

**2026 data is as of March 31, 2026*

Indian Peers

IGX (in INR Crores)			
Metric	**FY24**	**FY25**	**FY26**
Total Revenues	546.19	690.82	848.39
Revenue Growth (%)	-11.9%	26.5%	22.81%
EBITDA	339.16	462.42	584.55
EBITDA Margin (%)	97.33%	94.44%	96.07%
Adj EBITDA Margin	62.10%	66.71%	69.08%
EBITDA Growth (%)	-15.7%	36.3%	26.4%
Profit Before Tax (PBT)	30.72	40.46	
Profit After Tax (PAT)	231.09	309.59	419.27
PAT Margin (%)	42.3%	44.8%	49.4%
PAT Growth (%)	-17.7%	34%	35.43%
Net Profit Ratio (%)	66.14%	63.41%	68.63%
Current Ratio	1.62	1.8	1.51
ROE (%)	21.94%	23.41%	25.63%
ROCE (%)	26.96%	27.76%	31.62%
Trade Volume (Million MMBTu)	40.84	60.12	76.79
Total number of trades (number)	998	1,692	1,924
Total Trade Value (INR million)	36,711.66	61,593.73	71,815.36
Average Trade Value (INR million)	36.79	36.4	37.33
No. of registered participants (number)	303	343	360
IEX (in INR Crores)			
Metric	**FY24**	**FY25**	**FY26**
Total Revenues (Net)	5507.8	6542.9	7449.4
Revenue Growth (%)	16.18%	18.79%	13.85%
EBITDA	4801.3	5740.3	6503.7
EBITDA Margin (%)	106.89%	106.82%	105.90%
Adj EBITDA Margin	87.17%	87.71%	87.28%
EBITDA Growth (%)	17.19%	19.56%	13.3%
Profit Before Tax (PBT)	466.14	564.54	645.56
Profit After Tax (PAT)	3414.4	4146.5	4737.1
PAT Margin (%)	61.99%	63.37%	63.59%
PAT Growth (%)	16.65%	21.44%	14.24%
Net Profit Ratio (%)	61.99%	63.37%	63.59%
Current Ratio	1.58	1.57	2
ROE (%)	39.41%	40.53%	39.4%

ROCE (%)	53.06%	54.04%	52.16%
Trade Volume (Billion Units)	110	121	141
Total number of trades (number)	NA	NA	NA
Total Trade Value (INR million)	NA	NA	NA
Average Trade Value (INR million)	NA	NA	NA
No. of registered participants (number)	7900+	8500+	NA
MCX (in INR Crores)			
Metric	**FY24**	**FY25**	**FY26**
Total Revenues (Net)	758.94	1208.86	2429
Revenue Growth (%)	30.6%	59.3%	100.9%
EBITDA	138.18	763.6	1774.00
EBITDA Margin (%)	20.20%	68.60%	76.90%
Adj EBITDA Margin	18.21%	63.17%	72.84%
EBITDA Growth (%)	-34.9%	452.6%	132.3%
Profit Before Tax (PBT)	101.98	699.4	1695.23
Profit After Tax (PAT)	83.11	560.04	1332.00
PAT Margin (%)	11%	46.3%	54.8%
PAT Growth (%)	-44.2%	573.9%	137.8%
Net Profit Ratio %	11.0%	46.3%	54.8%
Current Ratio	1.23	1.87	NA
ROE (%)	7.4%	37.1%	NA
ROCE (%)	4.6%	24.1%	NA
Trade Volume (bn MMBtu)	258.6	395.1	NA
Total number of trades (million lots)	227	390	NA
Total Trade Value (INR million lakhs)	562	1,306	NA
Average Trade Value (INR million lakhs)	2.2	5.1	NA
No. of registered participants (number)	NA	NA	NA
BSE (in INR Crores)			
Metric	**FY24**	**FY25**	**FY26**
Total Revenues (Net)	1371.04	2957.34	5148.10
Revenue Growth (%)	43.7%	115.7%	59.1%
EBITDA	1043.2	1812.05	3327.5
EBITDA Margin (%)	73.20%	61.30%	71.50%
Adj EBITDA Margin	62.91%	55.99%	67.18%
EBITDA Growth (%)	210.6%	73.7%	83.6%
Profit Before Tax (PBT)	992.22	1748.27	3168.5
Profit After Tax (PAT)	771.66	1322.32	2475.5
PAT Margin (%)	56.3%	44.7%	48.1%
PAT Growth (%)	742.3%	71.4%	88.0%
Net Profit Ratio (%)	48.2%	40.7%	48.1%
Current Ratio	1.19	1.59	NA
ROE (%)	28.7%	38.2%	NA
ROCE (%)	22.8%	30.50%	NA
Trade Volume (Crores)	21,207	19,952	13,660
Total number of trades (Crores)	82.6	103.3	54.5
Total Trade Value (INR million Crores)	1.63	1.93	1.19
Average Trade Value (INR)	19,714	18,720	21,870
No. of registered participants (number)	723	863	NA
NSE (in INR Crores)			

Metric	FY24	FY25	FY26
Total Revenues (Net)	16,433.61	19,176.83	18,713
Revenue Growth (%)	28.7%	16.7%	-2.4%
EBITDA	11,623.83	16,021.37	14,650
EBITDA Margin (%)	78.00%	96.90%	99.60%
Adj EBITDA Margin	70.12%	86.58%	88.33%
EBITDA Growth (%)	11.5%	37.8%	-8.6%
Profit Before Tax (PBT)	11,184.28	15,474.78	14,026
Profit After Tax (PAT)	8,305.74	12,187.69	12,188.69
PAT Margin (%)	50.5%	63.6%	65.1%
PAT Growth (%)	12.9%	46.7%	0.0%
Net Profit Ratio (%)	50.5%	63.6%	65.1%
Current Ratio	1.33	1.79	1.65
ROE (%)	46.7%	51.0%	43.7%
ROCE (%)	33.4%	35.8%	30.4%
Trade Volume (Crores)	55,062,500	11,587,500	777,235,000
Total number of trades (Crores)	44,050	9,270	621,788
Total Trade Value (INR million Crores)	1,196	240	12,900
Average Trade Value (INR)	NA	NA	NA
No. of registered participants (number)**	91,600,000	112,800,000	129,100,000

Formulae Used:
Gross Margin = Revenue from Operations – Cost of material - Purchases of stock-in-trade of natural gas - Changes in Inventories – Excise Duty
EBITDA = Profit Before Tax + Finance Cost + Depreciation & Amortization
EBITDA Margin = EBITDA / Total Income
Adj EBITDA margin = EBITDA / Total Income
*EBITDA Growth = (EBITDA in Current Year/EBITDA in Previous Year - 1)*100*
Total Income = Revenue from Operations + Other Income
*Revenue Growth = (Revenue from Operations in Current Year/Revenue from Operations in Previous Year-1)*100*
PAT Margin = Profit After Tax / Revenue from Operations
RoE= PBT/ Total Equity
RoCE = EBIT / Average of Capital Employed
*Net Profit Ratio% = (PAT/ Revenue) *100*
Current Ratio = Current Assets/ Current Liabilities
EBIT = Profit Before Tax + Finance Cost – Other Income
Capital Employed = Tangible Net Worth + Net Debt
Total Equity = Equity Share Capital + Other Equity

Intercontinental Exchange (ICE)

In 2000, ICE was founded with the idea of transforming energy markets by creating a network that removed barriers and provided greater transparency, efficiency and access.

ICE today has reportable business segments:

- Exchanges;
- Fixed Income and Data Services; and
- Mortgage Technology.

In the Exchanges Segment ICE operates multiple trading venues, including 13 regulated exchanges and six clearing houses which are strategically positioned in major market centers around the world, including the U.S., U.K., European Union, or EU, Canada, Asia Pacific and the Middle East.

The company plays a critical role in global energy price discovery by facilitating both physical and financial trading through transparent and liquid spot and futures markets. ICE's integrated ecosystem of exchanges, clearing services, and market data solutions has enabled the development of mature and efficient gas markets globally. Over the years, ICE has diversified beyond commodity trading into data services, mortgage technology, and fixed income infrastructure, while maintaining strong profitability and operating margins. Its financial performance reflects the scalability and resilience of exchange-led market infrastructure businesses driven by increasing market participation, trading activity, and demand for risk management products.

Table 56: Key financial metrics – Intercontinental Exchange (ICE), in USD Millions

Metric	2021	2022	2023	2024	2025
Total Income	$9,168	$9,636	$9,903	$11,761	$12,640
Revenue from Operations	$7,146	$7,292	$7,988	$9,279	$9,931
Revenue Growth (%)	$7,146	$7,292	$7,988	$9,279	$9,931
EBITDA	11.2%	5.1%	2.8%	18.8%	7.5%
EBITDA Margin (%)	$7,130	$3,455	$4,917	$6,075	$6,709
EBITDA Growth (%)	99.8%	47.4%	61.6%	65.5%	67.6%
Profit Before Tax (PBT)	$5,698	$1,808	$2,894	$3,628	$4,346
Profit After Tax (PAT)	$4,096	$1,498	$2,438	$2,802	$3,370
PAT Margin (%)	57.3%	20.5%	30.5%	30.2%	33.9%
PAT Growth (%)	94.3%	-63.4%	62.8%	14.9%	20.3%
Net Profit Ratio (%)	44.7%	15.5%	24.6%	23.8%	26.7%
Current Ratio	1.01	1.05	1.00	0.99	1.02
ROE (%)	25.0%	7.9%	11.2%	13.1%	15.0%
ROCE (%)	8.6%	8.1%	7.2%	8.6%	9.3%

Source: ICE Annual reports

Australian Energy Market Operator (AEMO)

AEMO was established by the Council of Australian Governments (COAG) on 1 July 2009 to manage the National Electricity Market (NEM) in the eastern and south-eastern states and Australian gas markets.

In the years following its establishment, AEMO's responsibilities have progressively grown. This has included adding various gas market functions and becoming the market and independent power system operator for Western Australia from 2015.

AEMO is a public utility organization that manages gas and electricity markets in Australia. It manages the National Electricity Market (NEM), the Wholesale Electricity Market (WEM) and the Victorian gas transmission network.

AEMO also facilitates electricity and gas full retail contestability, overseeing these retail markets in eastern and southern Australia. It is additionally responsible for national transmission planning for electricity and the establishment of a Short-Term Trading Market (STTM) for gas.

AEMO is an independent, not-for-profit company with membership comprising state and federal governments (60% membership interest) and energy industry participants (40% membership interest).

Table 57: Key financial metrics – AEMO, in USD Millions

Metric	FY21	FY22	FY23	FY24	FY25
Total Income	934.71	353.78	527.80	477.60	695.20

Metric	FY21	FY22	FY23	FY24	FY25
Revenue from Operations	896.71	1,006.57	1,195.82	456.70	632.20
Revenue Growth (%)	6.60%	12.25%	18.80%	-61.81%	38.43%
Gross Profit	38.90	71.71	151.60	65.10	158.00
Gross Margin (%)	4.3%	7.1%	12.7%	14.3%	25.0%
EBITDA	705.5%	84.3%	111.4%	-57.1%	142.7%
EBITDA Margin (%)	934.71	353.78	527.80	477.60	695.20
EBITDA Growth (%)	896.71	1,006.57	1,195.82	456.70	632.20
Profit Before Tax (PBT)	2.3	16.4	86.6	-32.1	36.4
Profit After Tax (PAT)	2.3	16.5	86.6	-28.5	47.2
PAT Margin (%)	0.3%	1.6%	7.2%	-6.2%	7.5%
PAT Growth (%)	-108.91%	615.30%	426.38%	-132.91%	-265.61%
Net Profit Ratio (%)	0.25%	4.65%	16.41%	-5.97%	6.79%
Current Ratio	1.02	1.03	1.14	1.14	1.52
ROE (%)	-13.77%	1158.83%	99.31%	-54.59%	34.44%
ROCE (%)	0.96%	4.09%	16.79%	-3.54%	6.06%

Source: AEMO

Indian Gas Exchange (IGX)

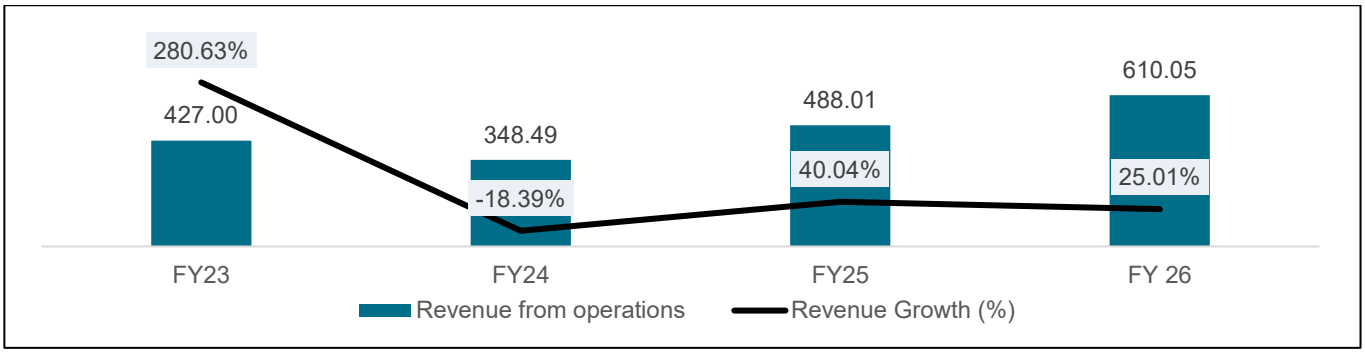
Table 58: Financial Benchmarking - IGX, values in million INR

Metric	FY21	FY22	FY23	FY24	FY25	FY26
Total Income	22.01	174.68	619.81	546.19	690.82	848.39
Revenue from Operations	NA	112.18	427.00	348.49	488.01	610.05
Revenue Growth (%)	NA	693.64%	280.63%	-18.39%	40.04%	25.01%
EBITDA	-106.91	34.31	402.32	339.17	460.88	586.08
EBITDA Margin (%)	NA	19.60%	64.90%	97.33%	94.44%	96.07%
EBITDA Growth (%)	NA	34.34	402.32	339.16	460.88	558.25
adj. EBITDA Margin (%)	-485.73%	19.64%	64.91%	62.10%	66.71%	69.08%
Profit Before Tax (PBT)	NA	22.93	375.66	307.17	403.04	558.25
Profit After Tax (PAT)	-81.25	17.55	280.37	230.5	307.93	558.25
PAT Margin (%)	NA	15.64%	65.66%	66.14%	63.10%	91.51%
PAT Growth (%)	NA	-	1498.01%	-17.79%	33.59%	81.29%
Net Profit Ratio (%)	NA	10.04%	45.23%	42.20%	44.57%	65.80%
Current Ratio	NA			1.62	1.8	1.51
ROE (%)	-22.58%	2.72%	35.31%	21.94%	23.30%	25.72%
ROCE (%)	-21.13%	4.04%	41.09%	26.96%	27.66%	31.71%

Source: IGX, Crisil analysis

Revenues and Revenue growth

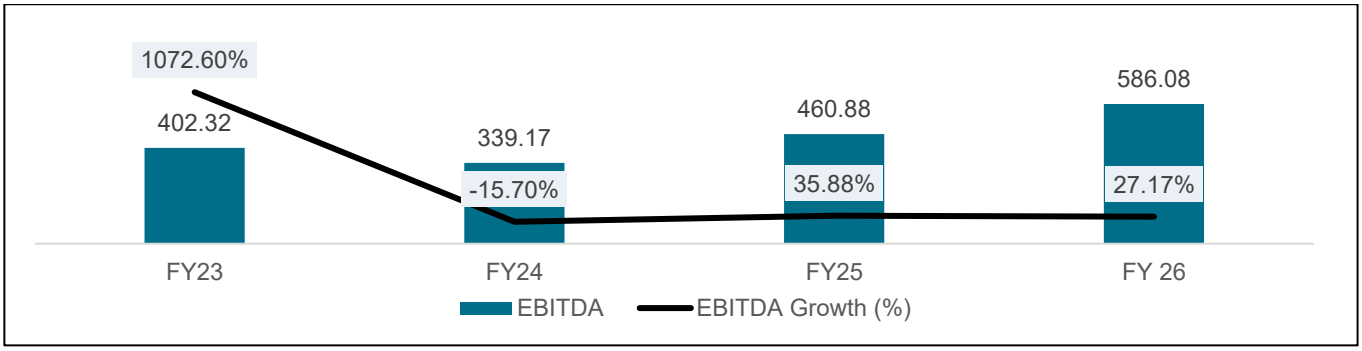
Figure: IGX - Revenues and Revenue growth, In million INR



Source: IGX

EBITDA and EBITDA Growth %, INR million

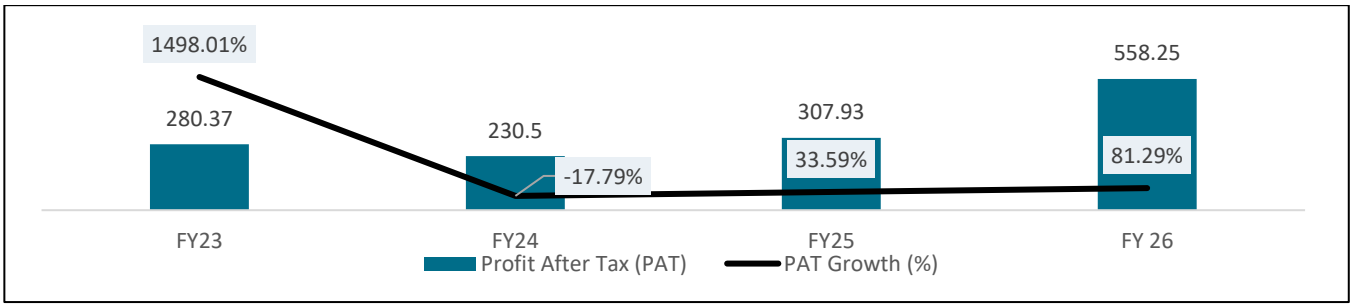
Figure 85: IGX - EBITDA and EBITDA Growth %, INR million



Source: IGX

PAT and PAT growth%, INR million

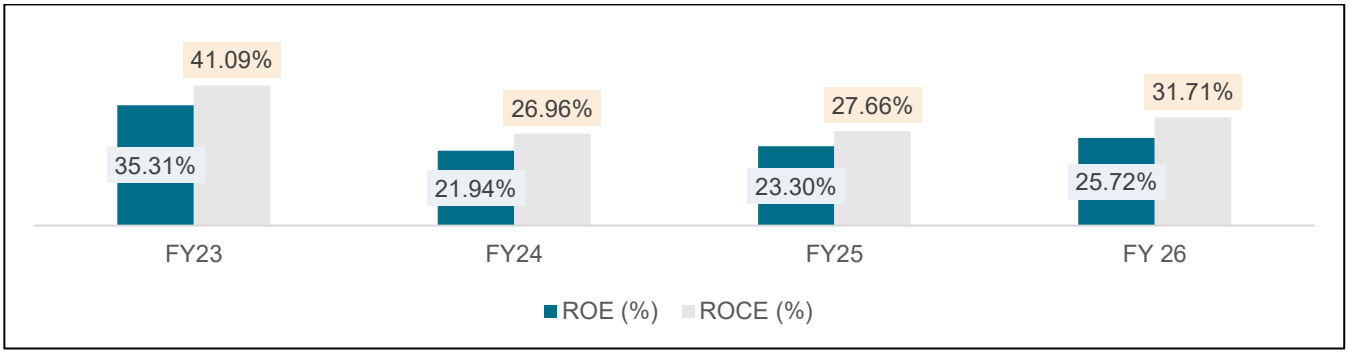
Figure 86: IGX - PAT and PAT growth %, INR millions



Source: IGX

ROE and ROCE

Figure 87: IGX - ROCE and ROE



Source: IGX

Key Takeaways

Financial metrics highlight that IGX is in an early scaling phase, ICE represents a fully mature high-margin exchange model, and AEMO operates under a fundamentally different non-commercial framework—making it structurally incomparable on profitability metrics.

The financial comparison clearly reflects the evolutionary stages of gas market institutions. The Indian Gas Exchange operates as a high-growth but small-scale platform with strong margins, the Intercontinental Exchange represents a globally mature, highly profitable and diversified exchange ecosystem, while the Australian Energy Market Operator functions as a regulated system operator with no profit-maximization objective.

Financial Benchmarking with Indian Peers

Indian Energy Exchange (IEX)

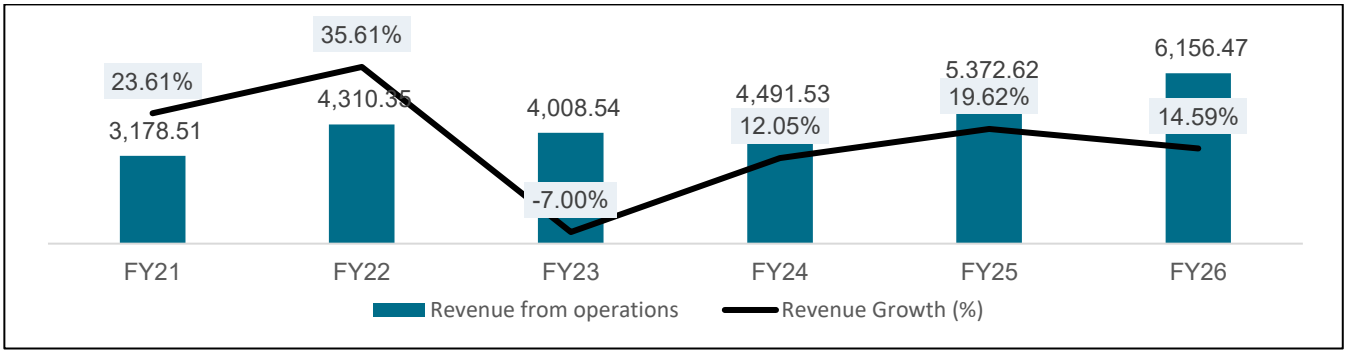
Table 59: Financial benchmarking, IEX, in million INR

Metric	FY21	FY22	FY23	FY24	FY25	FY26
Total Income	3,573.90	4,778.80	4,740.60	5,507.80	6,542.90	7,469.52
Revenue from operations	3,178.51	4,310.35	4,008.54	4,491.53	5,372.62	6,156.47
Revenue Growth (%)	23.61%	35.61%	-7.00%	12.05%	19.62%	14.59%
EBITDA	2,970.73	4,176.52	4,103.52	4,801.09	5,738.85	6,519.51
EBITDA Margin (%)	93.46%	96.90%	102.37%	106.89%	106.82%	105.90%
adj. EBITDA margin	83.12%	87.40%	86.56%	87.17%	87.71%	87.28%
EBITDA Growth (%)	22.54%	40.59%	-1.75%	17.00%	19.53%	13.60%
Profit After Tax (PAT)	2,134.90	3,025.10	2,927.00	3,414.40	4,146.50	4,737.10
PAT Margin (%)	67.17%	70.18%	73.02%	76.02%	77.18%	76.95%
PAT Growth (%)	21.50%	41.70%	-3.24%	16.65%	21.44%	14.24%
Net Profit Ratio (%)	59.74%	63.30%	61.74%	61.99%	63.37%	63.42%
Current Ratio	0.19	0.15	0.13	0.16	0.16	2.00
ROE (%)	46.33%	49.05%	39.38%	39.41%	40.53%	39.40%
ROCE (%)	61.60%	65.12%	52.62%	53.06%	54.04%	52.16%

Source: IEX, Crisil analysis

Revenues and Revenue growth %, INR million

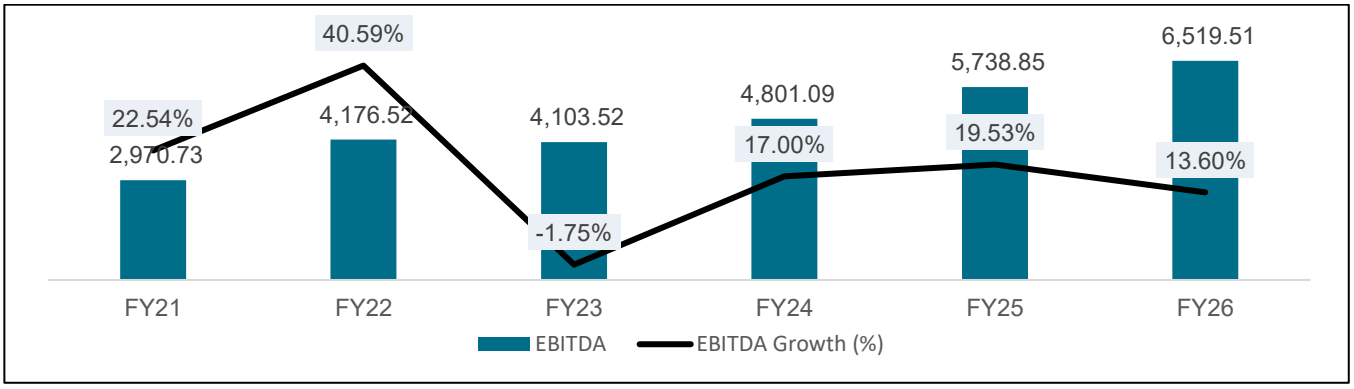
Figure: IEX - Revenues and Revenue growth, In INR million



Source: IEX

EBITDA and EBITDA Growth %, INR million

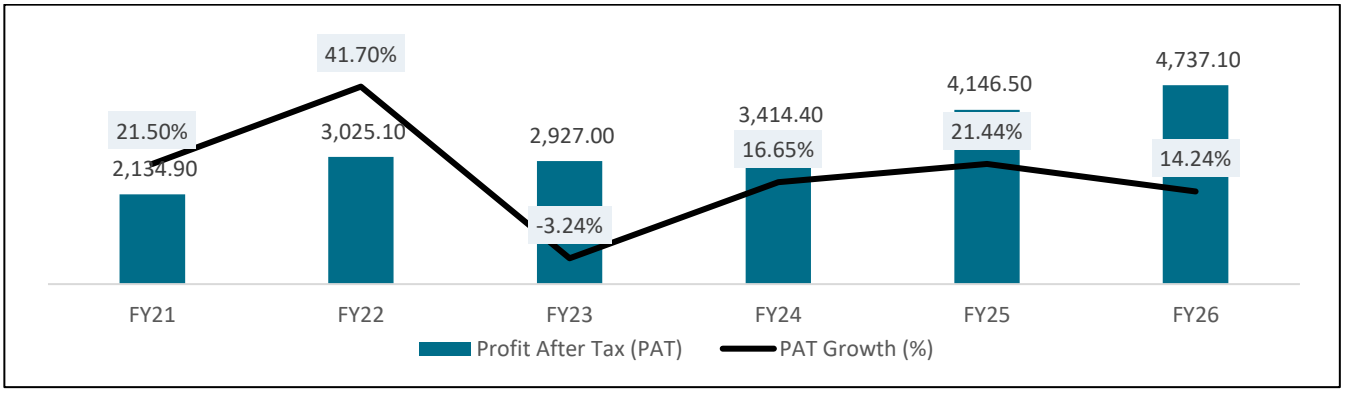
Figure 88: IEX - EBITDA and EBITDA growth%, INR million



Source: IEX

PAT and PAT growth%, INR million

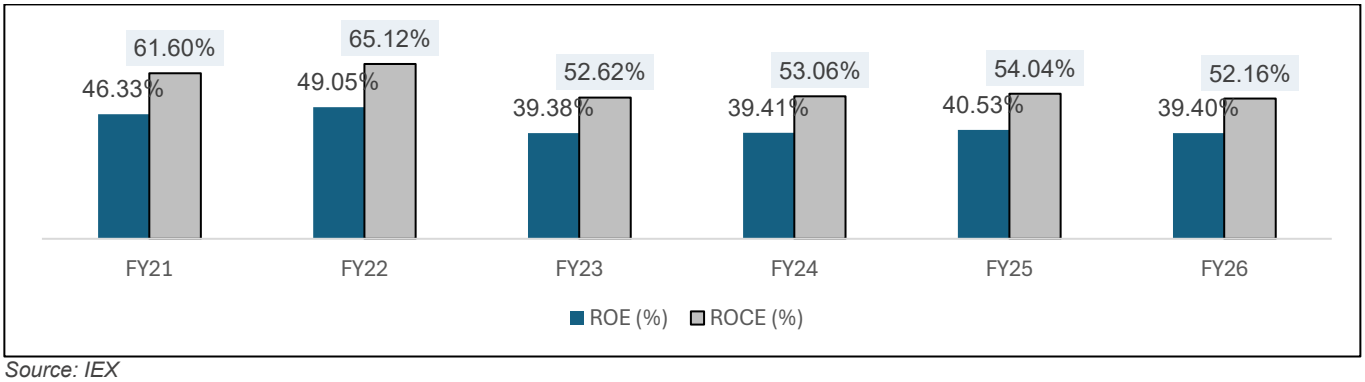
Figure 89: IEX - PAT and PAT growth%, INR million



Source: IEX

ROE and ROCE

Figure 90: IEX - ROE, ROCE, in %



Source: IEX

Multi Commodity Exchange (MCX)

Table 60: MCX - Financial benchmarking, MCX, in INR million

Metric	FY21	FY22	FY23	FY24	FY25	FY26
Total Income	4,943.40	4,333.10	5,811.70	7,589.40	12,088.60	24,290.00
Revenue from Operations	3,905.60	3,668.10	5,135.10	6,835.50	11,126.60	23,020.00
Revenue Growth (%)	-1.8%	-6.1%	40.0%	33.1%	62.8%	106.9%
EBITDA	2,890.00	2,069.80	2,123.70	1,381.80	7,636.00	17,691.80
EBITDA Margin (%)	74.0%	56.4%	41.4%	20.2%	68.6%	76.9%
Adj. EBITDA Margin (%)	58.46%	47.77%	36.54%	18.21%	63.17%	72.84%
EBITDA Growth (%)	8.2%	-28.4%	2.6%	-34.9%	452.6%	131.7%
Profit Before Tax (PBT)	2,667.50	1,840.50	1,905.70	1,019.80	6,994.00	16,952.30
Profit After Tax (PAT)	2,252.20	1,434.50	1,489.70	831.10	5,600.40	13,320.00
PAT Margin (%)	57.7%	39.1%	29.0%	12.2%	50.3%	57.9%
PAT Growth (%)	-4.8%	-36.3%	3.8%	-44.2%	573.9%	137.8%
Net Profit Ratio %	45.6%	33.1%	25.6%	11.0%	46.3%	54.8%
Current Ratio	2.02	2.30	1.81	1.23	1.87	NA
ROE (%)	18.8%	13.0%	12.9%	7.4%	37.1%	NA
ROCE (%)	13.7%	9.2%	9.0%	4.6%	24.1%	NA

Bombay Stock Exchange (BSE)

Table 61: Financial benchmarking, BSE, in INR million

Metric	FY21	FY22	FY23	FY24	FY25	FY26
Total Income	6,546.50	7,431.50	9,539.40	15,960.00	32,363.00	51,481.00
Revenue from Operations	5,013.70	7,431.50	8,155.30	13,710.40	29,573.40	48,340.00
Revenue Growth (%)	11.3%	48.2%	9.7%	68.1%	115.7%	63.5%
EBITDA	2,207.40	3,977.00	2,710.40	10,040.80	18,120.40	34,583.00

Metric	FY21	FY22	FY23	FY24	FY25	FY26
EBITDA Margin (%)	44.0%	53.5%	33.2%	73.2%	61.3%	71.5%
adj. EBITDA Margin (%)	33.72%	53.52%	28.41%	62.91%	55.99%	67.18%
EBITDA Growth (%)	588.3%	80.2%	-31.8%	270.5%	80.5%	90.9%
Profit Before Tax (PBT)	1,525.70	3,272.60	2,480.30	9,922.20	17,482.70	31,685.00
Profit After Tax (PAT)	1,417.00	2,449.30	916.10	7,687.00	13,170.60	24,755.00
PAT Margin (%)	28.3%	33.0%	11.2%	56.1%	44.5%	51.2%
PAT Growth (%)	1074.9%	72.9%	-62.6%	739.1%	71.3%	88.0%
Net Profit Ratio (%)	21.6%	33.0%	9.6%	48.2%	40.7%	48.1%
Current Ratio	2.04	1.81	1.61	1.19	1.59	NA
ROE (%)	6.1%	11.7%	8.8%	28.7%	38.2%	NA
ROCE (%)	5.3%	10.2%	7.7%	22.8%	30.5%	NA

National Stock Exchange (NSE)

Table 62: Financial benchmarking, NSE, in INR million

Metric	FY21	FY22	FY23	FY24	FY25	FY26
Total Income	62,023.30	88,737.90	127,653.60	164,336.10	191,768.30	187,133.70
Revenue from operations	56,248.20	83,131.30	118,562.30	147,800.10	171,406.80	166,013.10
Revenue Growth (%)	60.3%	47.8%	42.6%	24.7%	16.0%	-3.1%
EBITDA	46,909.71	72,227.40	94,383.90	115,230.90	166,033.10	165,286.90
EBITDA Margin (%)	83.4%	86.9%	79.6%	78.0%	96.9%	99.6%
adj. EBITDA Margin (%)	75.63%	81.39%	73.94%	70.12%	86.58%	88.33%
EBITDA Growth (%)	-38.5%	95.8%	13.5%	11.5%	37.8%	-8.6%
Profit Before Tax (PBT)	44,649.70	88,737.90	100,415.80	111,842.80	154,747.80	140,260.00
Profit After Tax (PAT)	35,734.20	51,982.90	73,559.90	83,057.40	121,876.90	121,886.90
PAT Margin (%)	63.5%	62.5%	62.0%	56.2%	71.1%	73.4%
PAT Growth (%)	89.6%	45.5%	41.5%	12.9%	46.7%	0.0%
Net Profit Ratio (%)	57.6%	58.6%	57.6%	50.5%	63.6%	65.1%
Current Ratio	1.51	1.71	2.14	1.33	1.79	1.65
ROE (%)	38.4%	57.6%	49.0%	46.7%	51.0%	43.7%
ROCE (%)	28.5%	44.1%	38.4%	33.4%	35.8%	30.4%

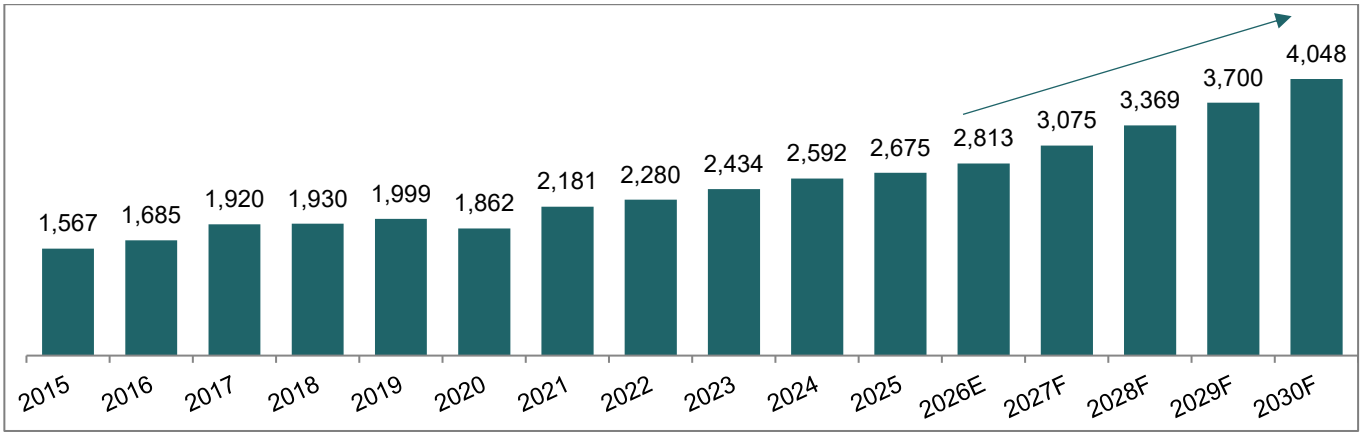
ANNEXURES

Annexure 1: GDP per Capita at current prices and its growth

India's GDP Per Capita (at current prices) is likely to reach ~USD 4,048 by 2030, growing at a CAGR of 9.5% between 2026 and 2030. This boost in per capita GDP levels will play a crucial role in propelling India's vision to become a USD 5 trillion economy by 2030. This upward trend in per capita GDP levels will be supported by domestic structural reforms, fiscal prudence, monetary policy stability, reduced input costs, falling price pressures, political stability, and rapid urbanization.

Expansion of capacity utilisation and productivity across critical sectors such as manufacturing, transport, infrastructure, construction, chemicals, telecom, and financial services will lead to a sustained growth in GDP per capita levels, with positive spillovers being witnessed in India's economic growth.

Figure 91: GDP per capita, at current prices (US Dollars) and growth, %, India, 2015-2030F

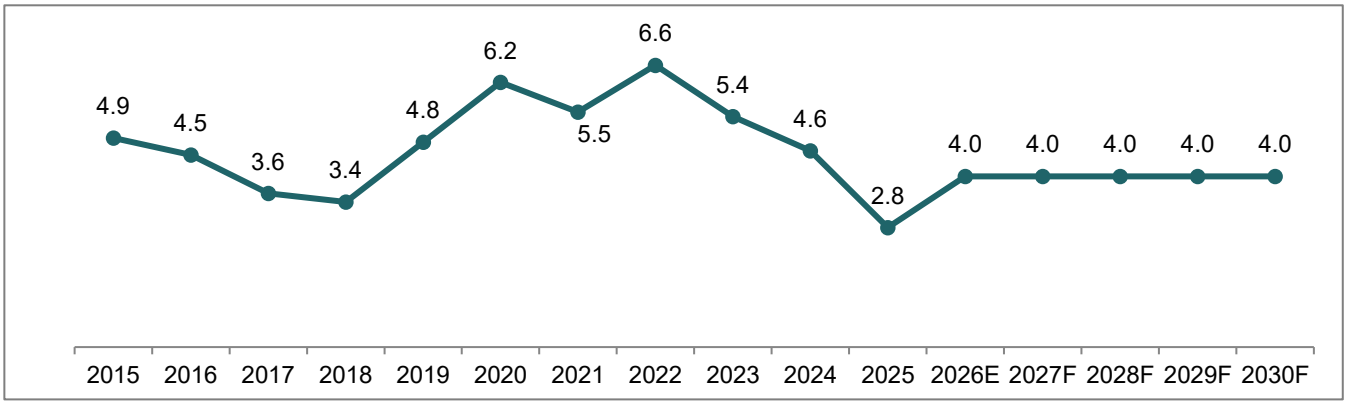


Note: F-Forecast
Source: International Monetary Fund (IMF) World Economic October 2025

Increased infrastructural investment inflows, an accelerating green transition, strengthening energy and commodity supply chains, and building multi-industry economies of scale for the digital economy will boost competitiveness, enhance efficiency, and create new job opportunities, thus promoting India's transition to an upper-income country over the coming decade. However, geopolitical tensions, extreme climate events, and international financial sector volatility can present short-term to medium-term challenges to this growth outlook.

Annexure 2: India Inflation

Figure 92: India Inflation Rate (Average Consumer Prices) (%) 2015-2030F



Note: E-Estimated, F-Forecast
Source: International Monetary Fund (IMF) World Economic Outlook October 2025

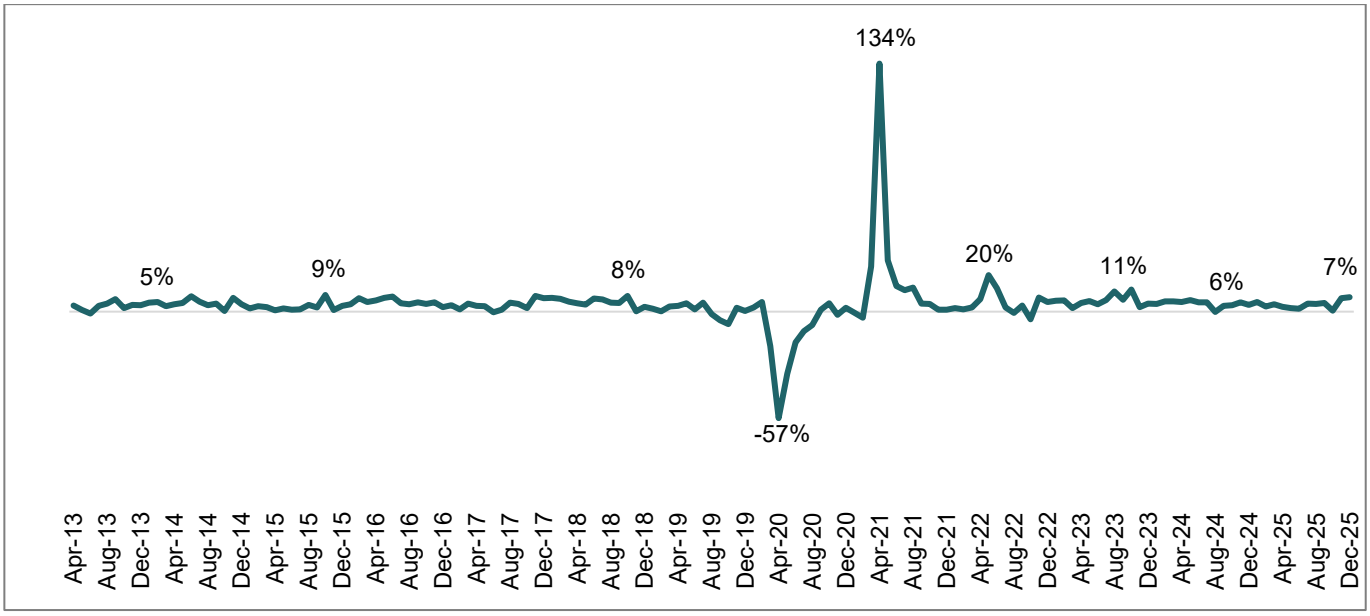
India's inflation trajectory over the past decade reflects an orthodox monetary policy cycle guided by the Reserve Bank of India's (RBI) inflation-targeting framework. Between 2015 and 2018, consumer price inflation moderated from approximately 4.9% to 3.4%, supported by favorable global commodity prices, improved agricultural output, and coordinated fiscal-monetary policies. However, global shocks temporarily disrupted this stability—inflation rose to 6.2% during the 2020 COVID-19 pandemic and surged to 6.6% in 2022 amid the Russia-Ukraine war's impact on commodity prices and supply chains. Since then, inflation has steadily declined to 5.4% in 2023, an estimated 4.6% in 2024, and most recently recorded at 3.21% in February 2026 and 3.40% in March 2026, remaining comfortably within the RBI's 2%–6% target band. This recent moderation has been driven by stable core inflation and contained price pressures in non-food segments, though some uptick in food and commodity prices has been observed.

Looking ahead, inflation is forecast to stabilize at approximately 4.0% from 2026 through 2030, aligning with the RBI's medium-term target and assuming macroeconomic stability, normal monsoons, and contained global price pressures. However, this baseline projection remains vulnerable to external shocks given India's structural dependence on imported energy, fertilizers, and intermediate goods. Factors such as crude oil price spikes, geopolitical disruptions, or sharp rupee depreciation could disrupt this trajectory and push inflation beyond current forecasts.

Annexure 3: Index of Industrial Production IIP & its growth

Industry momentum strengthened in December 2025 as the Index of Industrial production rose by 7.8%, reaching its highest level in over 2 years, after registering a high growth of 7.2%(RE) in November 2025. Growth in IIP in December 2025, is driven by across the board surge in Manufacturing (8.1%), mining (6.8%) and electricity (6.3%).. Consumer durables IIP, as per the use-based classification , posted the largest growth at 7.9% in FY-25 compared to the previous fiscal, infrastructure/construction goods and the capital goods categories at 6.7% and 5.6%, respectively. In June 2025, the highest IIP year-on-year growth was posted by infrastructure/construction goods and intermediate goods at 7.2% and 5.5%, respectively, whereas capital goods and consumer durable goods' IIP growth stood at 3.5% and 2.9%, respectively.

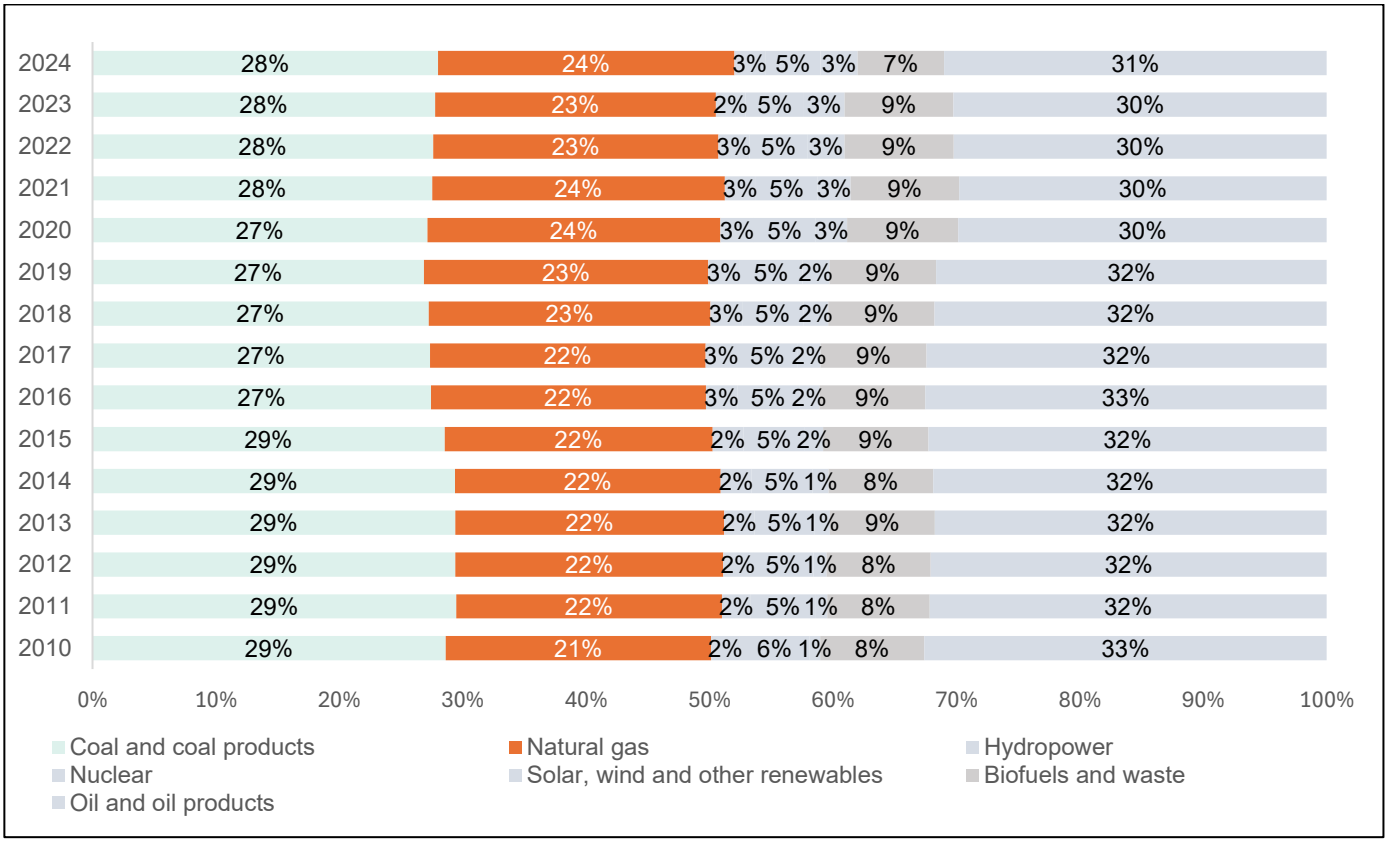
Figure 93: IIP Growth (%) 2013 to 2025



Source: MOSPI

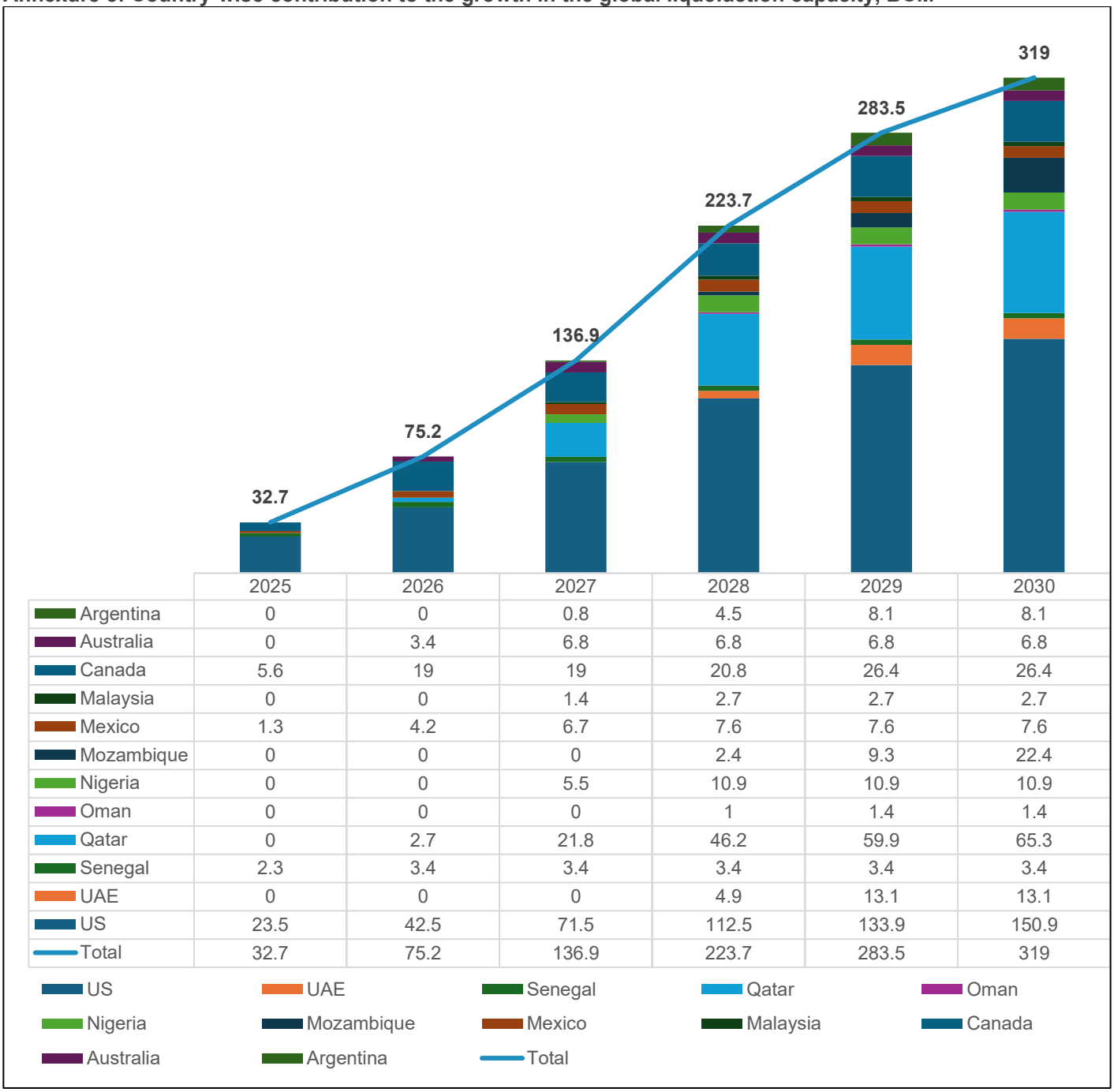
Annexure 4: World energy supply split by source

Figure 94: World energy supply by source, by % share



Source: IEA World Energy balances

Annexure 5: Country-wise contribution to the growth in the global liquefaction capacity, BCM



	2025	2026	2027	2028	2029	2030
Argentina	0	0	0.8	4.5	8.1	8.1
Australia	0	3.4	6.8	6.8	6.8	6.8
Canada	5.6	19	19	20.8	26.4	26.4
Malaysia	0	0	1.4	2.7	2.7	2.7
Mexico	1.3	4.2	6.7	7.6	7.6	7.6
Mozambique	0	0	0	2.4	9.3	22.4
Nigeria	0	0	5.5	10.9	10.9	10.9
Oman	0	0	0	1	1.4	1.4
Qatar	0	2.7	21.8	46.2	59.9	65.3
Senegal	2.3	3.4	3.4	3.4	3.4	3.4
UAE	0	0	0	4.9	13.1	13.1
US	23.5	42.5	71.5	112.5	133.9	150.9
Total	32.7	75.2	136.9	223.7	283.5	319

Source: IEA

Annexure 6: Consolidated Financials for all Global and Indian Peers

Table 63:Consolidated financials - ICE, AEMO, IEX, IGX, MCX, BSE and NSE

ICE (in USD million)						
Metric	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Total Income	$9,168	$9,636	$9,903	$11,761	$12,640	NA
Revenue from Operations	$7,146	$7,292	$7,988	$9,279	$9,931	NA
Revenue Growth (%)	$7,146	$7,292	$7,988	$9,279	$9,931	NA
EBITDA	11.2%	5.1%	2.8%	18.8%	7.5%	NA
EBITDA Margin (%)	$7,130	$3,455	$4,917	$6,075	$6,709	NA
EBITDA Growth (%)	99.8%	47.4%	61.6%	65.5%	67.6%	NA
Profit Before Tax (PBT)	$5,698	$1,808	$2,894	$3,628	$4,346	NA
Profit After Tax (PAT)	$4,096	$1,498	$2,438	$2,802	$3,370	NA
PAT Margin (%)	57.3%	20.5%	30.5%	30.2%	33.9%	NA
PAT Growth (%)	94.3%	-63.4%	62.8%	14.9%	20.3%	NA
Net Profit Ratio (%)	44.7%	15.5%	24.6%	23.8%	26.7%	NA
Current Ratio	1.01	1.05	1.00	0.99	1.02	NA
ROE (%)	25.0%	7.9%	11.2%	13.1%	15.0%	NA
ROCE (%)	8.6%	8.1%	7.2%	8.6%	9.3%	NA
AEMO (in USD million)						
Metric	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**
Total Income	934.71	353.78	527.80	477.60	695.20	NA
Revenue from Operations	896.71	1,006.57	1,195.82	456.70	632.20	NA
Revenue Growth (%)	6.60%	12.25%	18.80%	-61.81%	38.43%	NA
Gross Profit	38.90	71.71	151.60	65.10	158.00	NA
Gross Margin (%)	4.3%	7.1%	12.7%	14.3%	25.0%	NA
EBITDA	705.5%	84.3%	111.4%	-57.1%	142.7%	NA
EBITDA Margin (%)	934.71	353.78	527.80	477.60	695.20	NA
EBITDA Growth (%)	896.71	1,006.57	1,195.82	456.70	632.20	NA
Profit Before Tax (PBT)	2.3	16.4	86.6	-32.1	36.4	NA
Profit After Tax (PAT)	2.3	16.5	86.6	-28.5	47.2	NA
PAT Margin (%)	0.3%	1.6%	7.2%	-6.2%	7.5%	NA
PAT Growth (%)	-108.91%	615.30%	426.38%	-132.91%	-265.61%	NA
Net Profit Ratio (%)	0.25%	4.65%	16.41%	-5.97%	6.79%	NA
Current Ratio	1.02	1.03	1.14	1.14	1.52	NA
ROE (%)	-13.77%	1158.83%	99.31%	-54.59%	34.44%	NA
ROCE (%)	0.96%	4.09%	16.79%	-3.54%	6.06%	NA
IGX (in INR million)						

Metric	FY21	FY22	FY23	FY24	FY25	FY26
Total Income	22.01	174.68	619.81	546.19	690.82	848.39
Revenue from Operations		112.18	427.00	348.49	488.01	610.05
Revenue Growth (%)		693.64%	280.63%	-18.39%	40.04%	25.01%
EBITDA	-106.91	34.31	402.32	339.17	460.88	586.08
EBITDA Margin (%)		19.60%	64.90%	97.33%	94.44%	96.07%
EBITDA Growth (%)		34.34	402.32	339.16	460.88	558.25
adj. EBITDA Margin (%)	-485.73%	19.64%	64.91%	62.10%	66.71%	69.08%
Profit Before Tax (PBT)		22.93	375.66	307.17	403.04	558.25
Profit After Tax (PAT)	-81.25	17.55	280.37	230.5	307.93	558.25
PAT Margin (%)		15.64%	65.66%	66.14%	63.10%	91.51%
PAT Growth (%)		-	1498.01%	-17.79%	33.59%	81.29%
Net Profit Ratio (%)		10.04%	45.23%	42.20%	44.57%	65.80%
Current Ratio				1.62	1.8	1.51
ROE (%)	-22.58%	2.72%	35.31%	21.94%	23.30%	25.72%
ROCE (%)	-21.13%	4.04%	41.09%	26.96%	27.66%	31.71%
IEX (in INR million)						
Metric	FY21	FY22	FY23	FY24	FY25	FY26
Total Income	3,573.90	4,778.80	4,740.60	5,507.80	6,542.90	7,469.52
Revenue from operations	3,178.51	4,310.35	4,008.54	4,491.53	5,372.62	6,156.47
Revenue Growth (%)	23.61%	35.61%	-7.00%	12.05%	19.62%	14.59%
EBITDA	2,970.73	4,176.52	4,103.52	4,801.09	5,738.85	6,519.51
EBITDA Margin (%)	93.46%	96.90%	102.37%	106.89%	106.82%	105.90%
adj. EBITDA margin	83.1%	87.3%	86.5%	87.16%	87.71%	87.28%
EBITDA Growth (%)	22.54%	40.59%	-1.75%	17.00%	19.53%	13.60%
Profit After Tax (PAT)	2,134.90	3,025.10	2,927.00	3,414.40	4,146.50	4,737.10
PAT Margin (%)	67.17%	70.18%	73.02%	76.02%	77.18%	76.95%
PAT Growth (%)	21.50%	41.70%	-3.24%	16.65%	21.44%	14.24%
Net Profit Ratio (%)	59.74%	63.30%	61.74%	61.99%	63.37%	63.42%
Current Ratio	0.19	0.15	0.13	0.16	0.16	2.00
ROE (%)	46.33%	49.05%	39.38%	39.41%	40.53%	39.40%
ROE (%)	46.33%	49.05%	39.38%	39.41%	40.53%	39.40%
ROCE (%)	61.60%	65.12%	52.62%	53.06%	54.04%	52.16%
MCX (in INR million)						
Metric	FY21	FY22	FY23	FY24	FY25	FY26
Total Income	4,943.40	4,333.10	5,811.70	7,589.40	12,088.60	24,290.00
Revenue from Operations	3,905.60	3,668.10	5,135.10	6,835.50	11,126.60	23,020.00

Revenue Growth (%)	-1.8%	-6.1%	40.0%	33.1%	62.8%	106.9%
EBITDA	2,890.00	2,069.80	2,123.70	1,381.80	7,636.00	17,691.80
EBITDA Margin (%)	74.0%	56.4%	41.4%	20.2%	68.6%	76.9%
Adj. EBITDA Margin (%)	58.46%	47.77%	36.54%	18.21%	63.17%	72.84%
EBITDA Growth (%)	8.2%	-28.4%	2.6%	-34.9%	452.6%	131.7%
Profit Before Tax (PBT)	2,667.50	1,840.50	1,905.70	1,019.80	6,994.00	16,952.30
Profit After Tax (PAT)	2,252.20	1,434.50	1,489.70	831.10	5,600.40	13,320.00
PAT Margin (%)	57.7%	39.1%	29.0%	12.2%	50.3%	57.9%
PAT Growth (%)	-4.8%	-36.3%	3.8%	-44.2%	573.9%	137.8%
Net Profit Ratio %	45.6%	33.1%	25.6%	11.0%	46.3%	54.8%
Current Ratio	2.02	2.30	1.81	1.23	1.87	NA
ROE (%)	18.8%	13.0%	12.9%	7.4%	37.1%	NA
ROCE (%)	13.7%	9.2%	9.0%	4.6%	24.1%	NA
BSE (in INR million)						
Metric	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**
Total Income	6,546.50	7,431.50	9,539.40	15,960.00	32,363.00	51,481.00
Revenue from Operations	5,013.70	7,431.50	8,155.30	13,710.40	29,573.40	48,340.00
Revenue Growth (%)	11.3%	48.2%	9.7%	68.1%	115.7%	63.5%
EBITDA	2,207.40	3,977.00	2,710.40	10,040.80	18,120.40	34,583.00
EBITDA Margin (%)	44.0%	53.5%	33.2%	73.2%	61.3%	71.5%
adj. EBITDA Margin (%)	33.72%	53.52%	28.41%	62.91%	55.99%	67.18%
EBITDA Growth (%)	588.3%	80.2%	-31.8%	270.5%	80.5%	90.9%
Profit Before Tax (PBT)	1,525.70	3,272.60	2,480.30	9,922.20	17,482.70	31,685.00
Profit After Tax (PAT)	1,417.00	2,449.30	916.10	7,687.00	13,170.60	24,755.00
PAT Margin (%)	28.3%	33.0%	11.2%	56.1%	44.5%	51.2%
PAT Growth (%)	1074.9%	72.9%	-62.6%	739.1%	71.3%	88.0%
Net Profit Ratio (%)	21.6%	33.0%	9.6%	48.2%	40.7%	48.1%
Current Ratio	2.04	1.81	1.61	1.19	1.59	NA
ROE (%)	6.1%	11.7%	8.8%	28.7%	38.2%	NA
ROCE (%)	5.3%	10.2%	7.7%	22.8%	30.5%	NA
NSE (in INR million)						
Metric	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**
Total Income	62,023.30	88,737.90	127,653.60	164,336.10	191,768.30	187,133.70
Revenue from operations	56,248.20	83,131.30	118,562.30	147,800.10	171,406.80	166,013.10
Revenue Growth (%)	60.3%	47.8%	42.6%	24.7%	16.0%	-3.1%
EBITDA	46,909.71	72,227.40	94,383.90	115,230.90	166,033.10	165,286.90

EBITDA Margin (%)	83.4%	86.9%	79.6%	78.0%	96.9%	99.6%
adj. EBITDA Margin (%)	75.63%	81.39%	73.94%	70.12%	86.58%	88.33%
EBITDA Growth (%)	-38.5%	95.8%	13.5%	11.5%	37.8%	-8.6%
Profit Before Tax (PBT)	44,649.70	88,737.90	100,415.80	111,842.80	154,747.80	140,260.00
Profit After Tax (PAT)	35,734.20	51,982.90	73,559.90	83,057.40	121,876.90	121,886.90
PAT Margin (%)	63.5%	62.5%	62.0%	56.2%	71.1%	73.4%
PAT Growth (%)	89.6%	45.5%	41.5%	12.9%	46.7%	0.0%
Net Profit Ratio (%)	57.6%	58.6%	57.6%	50.5%	63.6%	65.1%
Current Ratio	1.51	1.71	2.14	1.33	1.79	1.65
ROE (%)	38.4%	57.6%	49.0%	46.7%	51.0%	43.7%
ROCE (%)	28.5%	44.1%	38.4%	33.4%	35.8%	30.4%

Formulae Used:
Gross Margin = Revenue from Operations – Cost of material - Purchases of stock-in-trade of natural gas - Changes in Inventories – Excise Duty
EBITDA = Profit After Tax + Tax Expense + Finance Cost + Depreciation & Amortization
EBITDA Margin = EBITDA / Total Income
*EBITDA Growth = (EBITDA in Current Year/EBITDA in Previous Year - 1)*100*
Adj EBITDA margin = EBITDA / Total Income
Total Income = Revenue from Operations + Other Income
*Revenue Growth = (Revenue from Operations in Current Year/Revenue from Operations in Previous Year-1)*100*
PAT Margin = Profit After Tax / Revenue from Operations
RoE= PBT/ Total Equity
RoCE = EBIT / Average of Capital Employed
*Net Profit Ratio% = (PAT/ Revenue) *100*
Current Ratio = Current Assets/ Current Liabilities
EBIT = Profit Before Tax + Finance Cost – Other Income
Capital Employed = Tangible Net Worth + Net Debt
Total Equity = Equity Share Capital + Other Equity